



PETROLEUM DIVISION

09 NOV 1989.

PEP 111 OTWAY BASIN VICTORIA

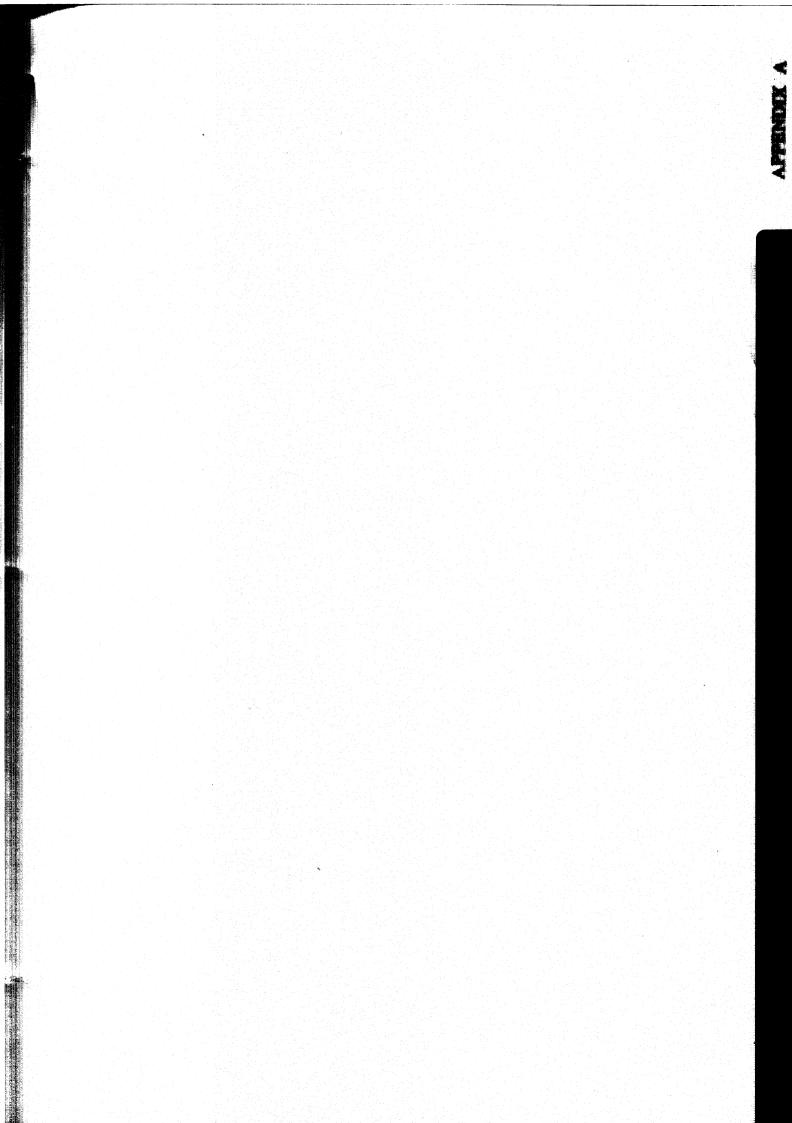
# WINDERMERE-2

WELL COMPLETION REPORT VOLUME II

(W992)

inora Resources

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09 NOV 1989

APPENDIX A

DAILY DRILLING REPORTS

#### DAILY DRILLING REPORT (ONSHORE)

<u>DOL/DSS</u> 4/0 <u>Report No.</u> 1 <u>Date</u> 9/3/89

Well WINDERMERE NO.2

1

MTA MANE 4500 40

1	WEII WINDERMERE NO.2 DUL/1055 4/0	REPORT NO. 1 DE	11te 9/3/69
2	Total Depth 24 m Progress 24 m Last csg	20" @ 10 m.	Logged to - m
3	Current Activity DRILLING 17 1/2" SURFACE HOLE		
4	Dev/Depth		LAST BOP TEST -
6		<u>M/Out</u> <u>Metres</u> 22 24 10	Hrs M/Hr I.B.G. 1.5 6.7 -
7 8	Bit         WOB         RPM         STK         LNR         SPM         GPM         PSI           1         2.20k         120         8.5         5         145         715         1200           15         6         65	AV NV SHP 8HP 61 88 98 10	
9	BHA Description: BIT-BIT SUB (& FLOAT)-8" MONEL- 12X 6 1/2" DC'S- 6 X HWDP	8" DC-STABILISER-2X8"	DC'S-
10	WELL COSTS: Daily\$ 240,559 Cum\$ 240,559	MUD: Daily\$ 269	<u>Cum\$</u> 269
11	$\frac{\text{WT}}{9.1} \frac{\text{VIS}}{46} \frac{\text{PV}}{10} \frac{\text{YP}}{27} \frac{\text{Gels}}{14/24} \frac{\text{WL}}{-} \frac{\text{FC}}{-} \frac{\text{HT/HP}}{8.0} \frac{\text{Ph}}{.05}$	- <u>Pm Ca Cl MBT SC</u> - 560 9K 17.5 5.5	Sand NO3 KCL NaCl 1/4 - 2% -
Mud Mai	atl's Used: 20 KWIKTHIK, 1 CAUSTIC, 1 LIME		
13	WATER (bbls) Used Bal Used Bal	CEMENT (941b) Used Bal	FUEL (litres) Used Bal 20.8klts
14	POB: Oper 1 Contr 15 Service GEOD 2, HALL	[ 1, MI 1	Total 20
FROM 0000		<u>OPERATION</u> 1. Rig Up/Down	DAY CUM
1700 1800 2100 2230	KELLY COCK 3.0 DRILLED RATHOLE AND MOUSEHOLE 1.5 MADE UP 17 1/2" BHA	2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, Tub 12.Cementing 13.NU, Test BOPCsg 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools, etc 21.WOW/WOC 22.Completion 23.P & A 24.FIT 25.D/H Trouble 26.Surf.Trouble	1.5 1.5
-		27.CUM TOTAL	1.5 1.5

SATISTIA GUARANTARA TOTAL OFFICE TO THE

1	Well WINDERMERE NO.2	DOL/DSS	5/1 Report	<u>40.</u> 2	<u>Date</u>	10/3/89
2	Total Depth 341 m Progress	317m	Last csg 20	" @ 10	m. Logged to	- m
3	Current Activity RUNNING 13 3/8	" SURFACE	CASING			
4	Dev/Depth 1/40@ 94m; 1/20	@ 186 m;	0 ° @ 328	m.	LAST BOP	TEST -
6	BitMakeTypeSize1VarelL11417 1	<u>\$/N</u> /2" 298	o 01 <u>Noz</u> 01 3x22	341	Metres Hrs 331 14 1/2	M/Hr <u>I.B.G.</u> 22.8 2.2.I
7 8	Bit         WOB         RPM         STK         LNR           1         2.20k         120         8.5         5           15         6	<u>SPM GPM</u> 145 715 65	1200 <u>AV</u>	<u>NV</u> <u>SH</u> 88 98	<u>Р</u> <u>ВНР</u> <u>%НР</u> 8 10 11	<u>Tor</u> <u>HP/in</u> – 0.04
9	BHA Description: BIT-BIT SUB (& 12X 6 1/2" DC'S- 6 X HWDP		" MONEL-8" DC	-STABILISE	R-2X8" DC'S-	
10	WELL COSTS: Daily\$ 40,813	<u>Cum\$</u> 28	81,372 <u>MUD</u> :	Daily\$	1652 <u>Cum\$</u>	1921
11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	C <u>HT/HP</u> - 8	<u>Ph</u> <u>Pf/Mf</u> <u>Pm</u> B.O .O5 -	<u>Ca</u> <u>Cl</u> <u>MI</u> 560 9K 17	8 <u>1 SC Sand</u> 7.5 5.5 1/4	NO3 KCL NaC1 - 2% -
Mud Ma	atl's Used: 20 KWIKTHIK, 80 KCI	L, 1 LIME				

13	WATER (bbls)	BARITE	(100lb)	CEMENT	(941b)	FUEL (1	itres)	_
	Used Bal	Used	Bal	Used	Bal	Used	Bal	
		-	-	-	_			
14	<u>POB</u> : <u>Oper</u> 1 <u>Contr</u> 15	Service	GEOD 2, HALI	LI 1, MI	1		<u>Total</u>	21
FROM OOOO	HRS DETAILS OF PAST 24 H 3.0 DRILLED TO 69M	DURS OPERATIONS	3	<del>-</del>	PERATION Rig Up/Down		DAY	CUM
0300	0.5 RAN SURVEY - MI	SRUN			Drilling		13.5	14.5
0330	0.5 DRILLED TO 73M				Reaming			0.5
0400	0.5 RAN SURVEY - MI	SRUN		<u>         4.</u>	Coring			
0430	0.5 DRILLED TO 111M	Ī		5.	Circ.& Cond		1.5	1.5
0500	1.0 CIRCULATED & RA			6.	Trips		1.5	1.5
0600	5.0 DRILLED TO 205M			7.	Repair Rig		1.0	1.0
1100	0.5 CIRCULATED & RA			8.	Rig Maint.			
1130	4.5 DRILLED TO 341M			9.	Dev.Survey		2.5	2.5
1600	1.5 CIRCULATED HOLE				Log & Perf			
1730	1.5 POH.STRAPPED OU		ECTION		RU RunCsg,Tub		4.0	4.0
1900	2.0 RIGGED FOR CASI				Cementing			
2100	1.0 REPAIRED POWER				NU,Test BOPCsg			
2200	2.0 RAN 13 3/8" SUR	FACE CASIN	G		PU/LD,DP/DC			
				15.				
		•			Loss Circ	•		
•					Remed.Cmt'g			
					Fishing			
					Control Press			
					WOO/Tools,etc			
)					MOM/MOC			
					Completion			
					P & A			
				24.1				
					D/H Trouble			
					Surf.Trouble			
				27.0	CUM TOTAL		24.0	25.5

#### DAILY DRILLING REPORT (ONSHORE)

	Well WINDERMERE NO.2	DOL/DSS 6/2	Report No.	3	<u>Date</u> 11/3	/89
2	Total Depth 341 m Progress	– m Last	csg 13 3/	/8"@ 314 m.	Logged to -	m
3	Current Activity (00.00 hours ]	12/3/89) NIPPLI	E UP BOP'S			
4	•	@ - m; -	• @ - m.		LAST BOP TEST	_
-		,	Noz	M/Out Met	-	
C	<u> </u>	<u> </u>	<u>1002</u>	nyout net	<u>res Hrs M/H</u> 	<u>I.B.G</u> . –
6						
7 8 <sub>.</sub>	Bit WOB RPM STK LNR	<u>SPM                                    </u>	<u>PSI AV</u> -	<u>NV SHP</u> 	<u>BHP %HP</u> 	<u>Tor HP/in</u> 
9	8HA Description: BIT-BIT SUB (8 12X 6 1/2" DC'S- 6 X HWDE		VEL-8" DC-ST	CABILISER-2X	X8" DC'S-	
10	WELL COSTS: Daily\$ 63,147	<u>Cum\$</u> 345,01	9 <u>MUD</u> :	Daily\$ Nil	Cum\$1	921
11	WT         VIS         PV         YP         Gels         WL         F           9.0         34         8         11         7/13         -         -	<u>- HT/HP Ph</u> 8.0	<u>Pf/Mf Pm Ca</u> 480	<u>Cl</u> <u>MBT</u> 7K 15	$\begin{array}{ccc} \underline{\texttt{SC}} & & \underline{\texttt{Sand}} & \underline{\texttt{NO3}} \\ 5 & & \underline{\texttt{Tr}} & - \end{array}$	<u>KCL NaCl</u> 1.2% -
Mud Mai	tl's Used: NIL CEMENTING MATERIALS:	27 MAGCOGEL, 2	CALCIUM CH	LORIDE, 728	CLASS G CEMEN	$\Gamma$
13		ARITE (1001b) Used Bal	CEMENT (	(941b) Bal	FUEL (litres) Used Bal	
14	POB: Oper 1 Contr 15 Servi	ce GEOD 2, I	IALLI 1, MI	1	<u>Total</u>	21
<u>FROM</u> 0000	HRS DETAILS OF PAST 24 HOURS OPER 4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR	S & 2 PUPS	1. F 2. [	PERATION Rig Up/Down Drilling	DAY	<u>CUM</u> 14.5
	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR 313.98M 0.5 RIGGED UP CEMENTING H	EAD & LINES	1. F 2. C 3. F	Rig Up/Down	DAY	CUM
0000	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR 313.98M 0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR	EAD & LINES	1. F 2. I 3. F 4. C 5. C	Rig Up/Down Orilling Reaming Coring Circ.& Cond	<u>DAY</u>	14.5 0.5
0000	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR 313.98M 0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER) 2.0 PUMPED 50 BBLS WATER.	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX PRESSURE	1. F 2. I 3. F 4. C 5. C 6. T	Rig Up/Down Orilling Reaming Coring		14.5 0.5
0000 0430 0500	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR 313.98M 0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER) 2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX PRESSURE PSI. MIXED &	1. F 2. I 3. F 4. C 5. C 6. T 7. F 8. F	Rig Up/Down Drilling Reaming Coring Circ.& Cond Frips Repair Rig Rig Maint.		14.5 0.5 3.5 1.5
0000 0430 0500	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTE 313.98M 0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER) 2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX PRESSURE PSI. MIXED & 14.3% .3PPG,FOLLOWER	1. F 2. I 3. F 4. C 5. C 6. T 7. F 8. F 9. D	Rig Up/Down Orilling Reaming Coring Circ.& Cond Grips Repair Rig		14.5 0.5 3.5 1.5
0000 0430 0500	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTE 313.98M  0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER)  2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX PRESSURE PSI. MIXED & 14.3% .3PPG,FOLLOWER 18 PPG.	1. F 2. I 3. F 4. C 5. C 6. T 7. F 8. F 9. D 10.L 11.R	Rig Up/Down Orilling Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Log & Perf RU RunCsg,Tub	2.0	14.5 0.5 3.5 1.5 1.0 2.5
0000 0430 0500	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTE 313.98M 0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER) 2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 14.3% .3PPG,FOLLOWER 18 PPG.	1. F 2. I 3. F 4. C 5. C 6. T 7. F 8. F 9. D 10.L 11.R	Rig Up/Down Drilling Reaming Coring Circ.& Cond Frips Repair Rig Rig Maint. Dev.Survey Log & Perf	2.0	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5
0000 0430 0500	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR 313.98M 0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER) 2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15 DISPLACED MUD USING R BUMPED PLUG AT 0855HR PRESSURE TESTED CASIN	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 4.3% .3PPG,FOLLOWED .8 PPG. EIG PUMP. ES 11/3/89. G TO 3000PSI.	1. F 2. I 3. F 4. C 5. C 6. T 7. F 8. F 9. D 10.L 11.R 12.C 13.N	Rig Up/Down Drilling Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Log & Perf RU RunCsg,Tub Cementing RU,Test BOPCsg	2.0 4.5 2.5	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5
0000 0430 0500	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR 313.98M  0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER)  2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15 DISPLACED MUD USING R BUMPED PLUG AT 0855HR PRESSURE TESTED CASIN OK. EST.140 BBLS CEME  9.5 WOC.CUT CONDUCTOR. AN TOPPED UP WITH 88SX "	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 4.3% .3PPG, FOLLOWED 8 PPG. EIG PUMP. ES 11/3/89. EG TO 3000PSI. ENT RETURNS. EN/CMT DROPPED G" WITH 4%	1. F 2. E 3. R 4. C 5. C 6. T 7. R 8. R 9. D 10.L 11.R 12.C 13.N 14.P 15.D 16.L	Rig Up/Down Orilling Reaming Coring Circ.& Cond Orips Repair Rig Rig Maint. Dev.Survey Log & Perf RU RunCsg,Tub Cementing RU,Test BOPCsg DU/LD,DP/DC DST Loss Circ Remed.Cmt'g	2.0 4.5 2.5	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5
0000 0430 0500 0700	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTR 313.98M  0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER)  2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15 DISPLACED MUD USING R BUMPED PLUG AT 0855HR PRESSURE TESTED CASIN OK. EST.140 BBLS CEME  9.5 WOC.CUT CONDUCTOR. AN	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 4.3% .3PPG, FOLLOWED 8 PPG. EIG PUMP. ES 11/3/89. EIG TO 3000PSI. ENT RETURNS. EN/CMT DROPPED G" WITH 4% 13M RKB.	1. F 2. I 3. R 4. C 5. C 6. T 7. R 8. R 9. D 10.L 11.R 12.C 13.N 14.P 15.D 16.L 17.R	Rig Up/Down Orilling Reaming Coring Circ.& Cond Grips Repair Rig Rig Maint. Oev.Survey .og & Perf RU RunCsg,Tub Cementing RU,Test BOPCsg OU/LD,DP/DC OST Coss Circ Remed.Cmt'g Fishing	2.0 4.5 2.5	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5
0000 0430 0500 0700	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTE 313.98M  0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER)  2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15 DISPLACED MUD USING R BUMPED PLUG AT 0855HR PRESSURE TESTED CASIN OK. EST.140 BBLS CEME  9.5 WOC.CUT CONDUCTOR. AN TOPPED UP WITH 88SX " CAC1 USING STINGER AT  5.5 SLACKED OFF CASING & LANDING JOINT. INSTAL	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 4.3% .3PPG, FOLLOWED 8 PPG. EIG PUMP. ES 11/3/89. EG TO 3000PSI. NT RETURNS. N/CMT DROPPED G" WITH 4% 13M RKB. BACKED OUT LED FMC 3000	1. F 2. F 3. F 4. C 5. C 6. T 7. F 8. F 9. D 10.L 11.R 12.C 13.N 14.P 15.D 16.L 17.R 18.F 19.C 20.W	Rig Up/Down Orilling Reaming Coring Circ.& Cond Grips Repair Rig Rig Maint. Oev.Survey Log & Perf RU RunCsg, Tub Cementing RU,Test BOPCsg OU/LD,DP/DC OST LOSS Circ Remed.Cmt'g Cishing Control Press 100/Tools,etc	2.0 4.5 2.5 5.5	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5 5.5
0000 0430 0500 0700	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTE 313.98M  0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER)  2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15 DISPLACED MUD USING R BUMPED PLUG AT 0855HR PRESSURE TESTED CASIN OK. EST.140 BBLS CEME  9.5 WOC.CUT CONDUCTOR. AN TOPPED UP WITH 88SX " CACI USING STINGER AT  5.5 SLACKED OFF CASING &	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 4.3% .3PPG, FOLLOWED 6.8 PPG. EIG PUMP. ES 11/3/89. EG TO 3000PSI. NT RETURNS. N/CMT DROPPED G" WITH 4% 13M RKB. BACKED OUT LED FMC 3000 AR BUSHING.	1. F 2. F 3. F 4. C 5. C 6. T 7. F 8. F 9. D 10.L 11.R 12.C 13.N 14.P 15.D 16.L 17.R 18.F 19.C 20.W	Rig Up/Down Orilling Reaming Coring Circ.& Cond Grips Repair Rig Rig Maint. Oev.Survey Log & Perf RU RunCsg, Tub Cementing RU,Test BOPCsg OU/LD,DP/DC OST LOSS Circ Remed.Cmt'g Gishing Control Press	2.0 4.5 2.5	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5 5.5
0000 0430 0500 0700	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTE 313.98M  0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER)  2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15 DISPLACED MUD USING R BUMPED PLUG AT 0855HR PRESSURE TESTED CASIN OK. EST.140 BBLS CEME  9.5 WOC.CUT CONDUCTOR. AN TOPPED UP WITH 88SX " CAC1 USING STINGER AT  5.5 SLACKED OFF CASING & LANDING JOINT. INSTAL PSI BRADENHEAD C/W WE	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 4.3% .3PPG, FOLLOWED 6.8 PPG. EIG PUMP. ES 11/3/89. EG TO 3000PSI. NT RETURNS. N/CMT DROPPED G" WITH 4% 13M RKB. BACKED OUT LED FMC 3000 AR BUSHING.	1. F 2. I 3. F 4. C 5. C 6. T 7. F 8. F 9. D 10.L 11.R 12.C 13.N 14.P 15.D 16.L 17.R 18.F 19.C 20.W 21.W 22.C 23.P	Rig Up/Down Orilling Reaming Coring Circ.& Cond Grips Repair Rig Rig Maint. Oev.Survey Log & Perf RU RunCsg, Tub Cementing RU, Test BOPCsg OU/LD, DP/DC OST LOSS Circ Remed.Cmt'g Cishing Control Press HOW/WOC Completion O & A	2.0 4.5 2.5 5.5	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5 5.5
0000 0430 0500 0700	4.5 RAN TOTAL OF 26xR3 JT 68 & 72 PPF K55 BUTTE 313.98M  0.5 RIGGED UP CEMENTING H 2.0 CIRCULATED CASING (PR WATER)  2.0 PUMPED 50 BBLS WATER. TESTED LINES TO 3000 PUMPED 413SX "G" WITH PREHYDGEL (BWOW) @ 11 BY 227SX "G"NEAT @ 15 DISPLACED MUD USING R BUMPED PLUG AT 0855HR PRESSURE TESTED CASIN OK. EST.140 BBLS CEME  9.5 WOC.CUT CONDUCTOR. AN TOPPED UP WITH 88SX " CAC1 USING STINGER AT  5.5 SLACKED OFF CASING & LANDING JOINT. INSTAL PSI BRADENHEAD C/W WE	ES & 2 PUPS ESS CASING TO EAD & LINES EPARING MIX  PRESSURE PSI. MIXED & 4.3% .3PPG, FOLLOWED 6.8 PPG. EIG PUMP. ES 11/3/89. EG TO 3000PSI. NT RETURNS. N/CMT DROPPED G" WITH 4% 13M RKB. BACKED OUT LED FMC 3000 AR BUSHING.	1. F 2. I 3. F 4. C 5. C 6. T 7. F 8. F 9. D 10.L 11.R 12.C 13.N 14.P 15.D 16.L 17.R 18.F 19.C 20.W 21.W 22.C 23.P 24.F	Rig Up/Down Orilling Reaming Coring Circ.& Cond Grips Repair Rig Rig Maint. Oev.Survey Log & Perf RU RunCsg, Tub Cementing RU, Test BOPCsg OU/LD, DP/DC OST LOSS Circ Remed.Cmt'g Cishing Control Press HOW/WOC Completion O & A	2.0 4.5 2.5 5.5	14.5 0.5 3.5 1.5 1.0 2.5 8.5 2.5 5.5

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DEC HAME, ATTOM AD

#### DAILY DRILLING REPORT (ONSHORE)

	1	Well WINDERMERE NO.2 DOL/DSS 7/3 R	deport No. 4	<u>Date</u> 12/3/89
b	2	Total Depth 604 m Progress 263m Last csg	13 3/8"@ 314 m.	Logged to — m
	3	Current Activity RUNNING SURVEY (24HRS 12/3/89)		
	4	<u>Dev/Depth</u> 0 °@ 396m; 1/2° @ 462 m; 1/2° @	585 m.	LAST BOP TEST 12/3/89
	6	Bit         Make         Type         Size         S/No         No           2         Varel         L135         12 1/4"         23998         2x1		tres Hrs M/Hr T.8.G. 63 7.5 35.1 -
	7 8	Bit         WOB         RPM         STK         LNR         SPM         GPM         PSI           2         2.0k         120         15         6         100         306         1550           8.5         6         55         347	AV NV SHP 123 312 590 186	8HP %HP Tor HP/in − 2.44
	9	BHA Description: BIT-BIT SUB (& FLOAT)-8" MONEL-S STAB- 1 8"DC-XO-12X 6 1/2" DC'S-JARS-1X6 1/2"		'S-
	10	WELL COSTS: Daily\$ 29,728 Cum\$ 374,747	MUD: Daily\$ 15	36 <u>Cum\$</u> 3457
	11	$\frac{\text{WI}}{8.7}$ $\frac{\text{VIS}}{41}$ $\frac{\text{PV}}{9}$ $\frac{\text{YP}}{15}$ $\frac{\text{Gels}}{4/7}$ $\frac{\text{WL}}{16.4}$ $\frac{\text{FC}}{3}$ $\frac{\text{HT/HP}}{-}$ $\frac{\text{Ph}}{9.5}$ $\frac{\text{Pf/Mf}}{0.1}$	Pm Ca Cl MBT 240 19.5 7.5	$\frac{\text{SC}}{2}$ 1/4 $\frac{\text{Sand}}{50}$ $\frac{\text{NO3}}{\text{O.5}}$ $\frac{\text{KCL}}{2\%}$ $\frac{\text{NaCl}}{3\%}$
	Mud Mat	1's Used: 80 SALT, 10 SPERSENE, 5 SODA ASH, 2 2 NITRATE	CAUSTIC, 8 POLYSA	•
				( ध
	13	WATER (bbls) BARITE (1001b)	CEMENT (941b)	FUEL (litres)
		Used Bal Used Bal	Used Bal	Used Bal 1300 31700
				1000 01700
	14	POB: Oper 2 Contr 15 Service GEOD 2, HALLI	1 1, MI 1	Total 22
	FROM 0000	HRS DETAILS OF PAST 24 HOURS OPERATIONS 3.0 NIPPLED UP BOP'S	OPERATION No. 10 (Page 1)	DAY CUM
	0300	1.0 CHANGED PIPE RAMS TO 4 1/2"	<ol> <li>Rig Up/Down</li> <li>Drilling</li> </ol>	7.5 22.0
	0400	2.0 PREPARED TO PICK UP 12 1/4" BHA	3. Reaming	2.5 3.0
		RIGGED UP HALLIBURTON ON KILL LINE	4. Coring	
	0600	1.0 PRESSURE TESTED WELLHEAD, BLIND RAMS	5. Circ.& Cond	3.5
		HCR, & INNER CHOKE LINE VALVE TO 2500PSI.OK.	6. Trips	3.0 4.5
	0700	3.0 MADE UP 12 1/4" BHA & RIH.TAGGED	7. Repair Rig 8. Rig Maint.	1.0
		CEMENT AT 301M	9. Dev.Survey	1.5 4.0
	1000	2.0 WITH HALLIBURTON ON CHOKE LINE,	10.Log & Perf	
		PRESSURE TESTED KELLY COCKS, PIPE RAMS & KILL LINE VALVES TO 2500PSI	11.RU RunCsg, Tub	8.5
		HYDRIL TO 1500PSI (TESTED MANIFOLD	12.Cementing 13.NU,Test BDPCsg	2.5 9.0 14.5
		LINES & VALVES & STABBING VALVES	14.PU/LD,DP/DC	710
	1000	TO 2500PSI INDEPENDENTLY. OK.)	15.DST	
	1200 1430	2.5 DRILLED OUT CEMENT 0.5 WASHED 314 - 341M. DRILLED TO 344M	16.Loss Circ	
	1500	0.5 CONDUCTED FIT. LEAK OFF @ 540PSI/	17.Remed.Cmt'g 18.Fishing	
		8.9PPG (EQUIVALENT MUD WEIGHT =	19.Control Press	
	1500	19.0 PPG)	20.W00/Tools,etc	-
	1530 1800	2.5 DRILLED TO 414M 0.5 RAN SURVEY	21.WOW/WOC	9.5
	TOOU		22.Completion	•
		1.5 DRILLED TO 480M	23.P & A	
	1830 2000	1.5 DRILLED TO 480M 0.5 RAN SURVEY	23.P & A 24.FIT	0.5 0.5
	1830 2000 2030	0.5 RAN SURVEY 3.0 DRILLED TO 604M		0.5 0.5
	1830 2000	0.5 RAN SURVEY	24.FIT	0.5 0.5 24.0 73.5

RIG NAME: ATCO A2

DRILLING SUPERVISOR: J. F. OZOLINS

## DAILY DRILLING REPORT (ONSHORE)

	DAIL! DRILLING REFO	KT (ONSHOKE)		
1	Well WINDERMERE NO.2 DOL/DSS 8/4	deport No. 5	Date	13/3/89
2	Total Depth 1003 m Progress 399m Last csg	13 3/8"@ 314 m.	Logged t	<u>o</u> – m
3	Current Activity DRILLING 12 1/4" HOLE (24HRS 13,	/3/89)		
4	<u>Dev/Depth</u> 1/4°@ 720m; 1/2° @ 852 m; 1/2° @	975 m.	LAST BO	P TEST 12/3/89
	<u>Bit Make Type Size S/No No</u>	<u>z M/Out Metr</u>	oo Uro	M/Hr T.B.G.
		$\frac{2}{14,22}$ - $\frac{1000}{66}$		<u>M/Hr</u> <u>T.B.G</u> . 25.5 -
6				
	<u>Bit WOB RPM STK LNR SPM GPM PSI</u>	AV NV SHP	<u>BHP</u> %H:	<u>P Tor HP/in</u>
7	2 20- 120 8.5 6 100 571 1550	$\frac{108}{108}  \frac{273}{516}$	206 40	
8	30 15 6 42	163		
9	BHA Description: BIT-BIT SUB (& FLOAT)-8" MONEL-S	STABILISER-2X8" DC'	S-	
	STAB- 1 8"DC-XO-12X 6 1/2" DC'S-JARS-1X6 1/		3	
10	WELL COSTS: Daily\$ 16300 Cum\$ 391,047	MUD: Daily\$ 3572	2 <u>Cum\$</u>	7030
11	WT VIS PV YP Gels WL FC HT/HP Ph Pf/Mf	<u>Pm Ca</u> C1 MBT	er eand	NOT VOL NOOT
11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		<u>SC</u> <u>Sand</u> 5 1/4	
			·	
Mud Mai	:1's Used: 120 SALT, 2 SPERSENE, 4 CAUSTIC, 15 20 POLYSAL	PAC, 3 NITRATE,		
	-			
13	WATER (bbls) BARITE (1001b)	CEMENT (941b)	FUEL (1	itres)
	Used Bal Used Bal	Used Bal	Used	Bal
		· <u>-</u>	4800	31700
14	POB: Oper 2 Contr 15 Service GEOD 2, HALLI	1, MI 1		Total 22
FROM	HRS DETAILS OF PAST 24 HOURS OPERATIONS	OPERATION		DAY CUM
0000	0.5 DRILLED TO 641M (SHAKERS BLINDING)	1. Rig Up/Down		
0030	0.5 CHANGE TO LARGER SHAKER SCREENS	2. Drilling		18.5 40.5
0100	0.5 DRILLED TO 670M (STILL LOSING MUD OVER SHAKER)	<ol> <li>Reaming</li> <li>Coring</li> </ol>		3.0
0130	1.0 CHANGE TO LARGER SHAKER SCREENS.	5. Circ.& Cond		0.5 4.0
	BUILD UP MUD VOLUME.	6. Trips		1.5 6.0
0230	3.0 DRILLED TO 737M	7. Repair Rig		1.0
0530	0.5 RAN SURVEY	8. Rig Maint.		
0600 1100	5.0 DRILLED TO 861M 0.5 CIRCULATED, RAN SURVEY, MISRUN,	9. Dev.Survey		2.0 6.0
1100	REPAIRED MUDLOGGERS DEPTH SYSTEM.	10.Log & Perf 11.RV RunCsg,Tub		8.5
1130		12.Cementing		2.5
1200	0.5 CIRCULATED & RAN SURVEY	13.NU,Test BOPCsg		14.5
1230	1.5 DRILLED TO 898M	14.PU/LD,DP/DC		
1400	0.5 CIRCULATED	15.DST		
1430	1.5 MADE WIPER TRIP TO SHOE.HOLE GOOD	16.Loss Circ		
1600	6.5 DRILLED TO 993M	17.Remed.Cmt'g		
2230	0.5 RAN SURVEY	18.Fishing		
2300	1.0 DRILLED TO 1003M	19.Control Press		
		20.W00/Tools,etc 21.WOW/WOC		9.5
		22.Completion		7.3
		22.00mp1001011		

23.P & A 24.FIT

25.D/H Trouble 26.Surf.Trouble

27.CUM TOTAL

0.5

1.5

97.5

1.5

24.0

#### DAILY DRILLING REPORT (ONSHORE)

				<del></del>		
1	Well WINDERMERE NO.2	DOL/DSS 9/5	Report No. 6	Date	14/3/	89
2	Total Depth 1200 m Progress	197m Last csg	13 3/8"@ 314	m. Logged t	<u>o</u> –	m
3	Current Activity DRILLING 12 1	/4" HOLE (24HRS 14	1/3/89)			
4	<u>Dev/Depth</u> 1/20@ 1098m; 1/20	@ 1184 m; - ° @	) - ' m.	LAST BO	P TEST	12/3/89
6	8it         Make         Type         Si           2         Varel         L135         12           3         Reed         S13G         12	1/4" 23998 23	oz <u>M/Out</u> 14,22 1197 14,22 –	Metres Hrs 856 36.5 3 .5	25.	$5 \ 7 \ \overline{5} \ 1/8$
7 8	Bit         MOB         RPM         STK         LNR           2         20-30         120         8.5         6           -         30         -         15         6	SPM         GPM         PSI           100         571         1550           30         495         1550	AV NV SH 108 273 5		<u>P T</u>	or <u>HP/in</u> 1.75
9	BHA Description: BIT-BIT SUB ( STAB- 1 8"DC-XO-12X 6 1/				jars)	
10	WELL COSTS: Daily\$ 21599	<u>Cum\$</u> 412,646	MUD: Daily\$	1172 <u>Cum\$</u>	820	01
11	WT VIS PV YP Gels WL 9.4 45 11 14 4/14 8.0	FC HT/HP Ph Pf/M 1 - 8.8 .05	f <u>Pm Ca Cl M</u> - 280 27K :	31 <u>SC</u> <u>Sand</u> 20 7 <b>Tr</b>		KCL NaCl 2.5
Mud Ma	tl's Used: 50 KCL, 3 SPERSEN	E, 2 CAUSTIC, 1 NI	TRATE, 1 BIOCIDI	3		
13	WATER (bbls)	BARITE (1001b)	CEMENT (941b)	FUEL (1:	itres)	
		Used Bal	Used Bal	Used	Bal	
		- 370	- 671	4550	2238	50
14	POB: Oper 2 Contr 15 Serv	rice GEOD 2, HALL	I 1, MI 1, CE 1		Total	23
FROM	HRS DETAILS OF PAST 24 HOURS OPE	RATIONS	OPERATION		DAY	CUM
0000	1.0 DRILLED TO 1013M		1. Rig Up/Down		<u></u>	
0100	1.0 CIRCULATED SAMPLE		2. Drilling		11.0	51.5
0200	0.5 REPAIR NO.2 PUMP		3. Reaming		3.5	6.5
0230	4.5 DRILLED TO 1116M		4. Coring			
0700	0.5 CIRCULATED & RAN SUR	VEY	5. Circ.& Cond		2.5	6.5
0730	4.5 DRILLED TO 1193M		6. Trips		5.0	11.0
1200	1.0 CIRCULATED SAMPLE		7. Repair Rig		0.5	1.5
1300	0.5 DRILLED TO 1197M		8. Rig Maint.	•	1.0	1.0
1330	0.5 CIRC, RAN SURVEY, PUMP	ED KCL PILL	9. Dev.Survey		0.5	6.5
			7. DOT. OUT 107			
1400	1.0 POH TO 905M		10.Log & Perf			
1400 1500				ub		8.5

12.Cementing

13.NU, Test BOPCsg

14.PU/LD,DP/DC

16.Loss Circ

18.Fishing

17.Remed.Cmt'g

19.Control Press

20.W00/Tools,etc 21.WOW/WOC

22.Completion 23.P & A 24.FIT

25.D/H Trouble 26.Surf.Trouble

27.CUM TOTAL

15.DST

2.5

14.5

9.5

0.5

1.5

121.5

24.0

2 SINGLES TO 885M

I.G). RIH TO SHOE

1.5 RIH TO 922M

1197M

1600

1730

1830

1930

2100

2330

1.5 FINISHED POH (885-800M TIGHT)

1.0 SLIPPED & CUT DRILLING LINE

1.0 CHANGED BIT. INSPECT STABS (BOTH

2.5 REAMED 922-944M, 1026-1057M & 1072-

0.5 BROKE IN NEW BIT & DRILLED TO 1200M

#### DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2	<u>DOL/DSS</u> 10/6	Report No. 7	<u>Date</u> 15/3/89
2	Total Depth 1559 m Progress	359m <u>Last c</u>	<u>sg</u> 13 3/8"@ 314 r	n. <u>Logged to</u> — m
3	Current Activity DRILLING 12 1/	4" HOLE (24HRS	15/3/89)	
4	<u>Dev/Depth</u> 1 °@ 1309m; 1/4°	@ 1461 m; - º	@ - m.	LAST BOP TEST 12/3/89
6	BitMakeTypeSize3ReedS13G12.1		Noz M/Out 2x14,22 -	Metres         Hrs         M/Hr         I.B.G.           362         21.5         16.8         -
7 8	Bit         WOB         RPM         STK         LNR           3         30-40         110         8.5         6           -         -         120         15         6	SPM         GPM         PS           75         482         160           40         -         -		
9	BHA Description: BIT-BIT SUB (& STAB- 1 8"DC-XO-12X 6 1/2			
10	WELL COSTS: Daily\$ 21528	<u>Cum\$</u> 434,174	MUD: Daily\$ 2	2628 <u>Cum\$</u> 10,829
11	WT VIS PV YP Gels WL F 9.4 44 9 16 8/18 12.4 2	C <u>HT/HP Ph P</u> - 8.8.0	f/Mf	
Mud Ma	tl's Used: 50 KCL, 5 SPERSENE	, 7 CAUSTIC, 6	PAC, 20 POLYSAL	_
13	WATER (bbls) BA	RITE (1001b)	CEMENT (941b)	FUEL (litres)
13				
		sed Bal	Used Bal 671	Used Bal 4250 18100
14	_	400	- 671	4250 18100
14 <u>FROM</u>	POB: Oper 3 Contr 15 Servio	400 ce GEOD 2, HA		4250 18100
FROM 0000	POB: Oper 3 Contr 15 Servion  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M	400 CE GEOD 2, HA	- 671 LLI 2, MI 1, CE 1 ,  OPERATION 1. Rig Up/Down	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY CUM</u>
FROM 0000 0630	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC C	400 CE GEOD 2, HA	- 671  LLI 2, MI 1, CE 1 ,  OPERATION  1. Rig Up/Down 2. Drilling	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY CUM</u> 21.0 72.5
FROM 0000	POB: Oper 3 Contr 15 Servior  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO	400 CE GEOD 2, HA	- 671 LLI 2, MI 1, CE 1 ,  OPERATION 1. Rig Up/Down	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY CUM</u>
FROM 0000 0630 0700	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M	400 CE GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY CUM</u> 21.0 72.5
FROM 0000 0630 0700 0730 1030	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPERS 6.5 DRILLED TO 1327M 0.5 REPAIRED HYDROMATIC CONTROL OF THE C	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY</u> <u>CUM</u> 21.0 72.5 6.5  1.0 7.5 11.0
FROM 0000 0630 0700 0730 1030	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CONTROL  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY</u> <u>CUM</u> 21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5
FROM 0000 0630 0700 0730 1030 1100 1630	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC COROLLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint.	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY</u> <u>CUM</u> 21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0
FROM 0000 0630 0700 0730 1030 1100 1630 1700	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC COROLLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey	4250 18100  JVP 1 <u>Total</u> 25 <u>DAY</u> <u>CUM</u> 21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5
FROM 0000 0630 0700 0730 1030 1100 1630	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC COROLLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint.	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test BOPCse	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test 80PCse 14.PU/LD,DP/DC	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test BOPCs 14.PU/LD,DP/DC 15.DST	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test 80PCse 14.PU/LD,DP/DC	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test BOPCse 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tut 12.Cementing 13.NU,Test 80PCs 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tut 12.Cementing 13.NU,Test 80PCs 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.W00/Tools,etc	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5 14.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test BOPCse 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.HOW/WOC	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test BOPCs 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.WOW/WOC 22.Completion	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5 14.5
FROM 0000 0630 0700 0730 1030 1100 1630 1700 1900	POB: Oper 3 Contr 15 Service  HRS DETAILS OF PAST 24 HOURS OPER  6.5 DRILLED TO 1327M  0.5 REPAIRED HYDROMATIC CO  0.5 RAN SURVEY  3.0 DRILLED TO 1393M  0.5 WORK ON SCR RELAY FOR UNIT  5.5 DRILLED TO 1479M  0.5 RAN SURVEY  2.0 DRILLED TO 1506M  1.0 CIRCULATED SAMPLE	400 CB GEOD 2, HA ATIONS HAIN	- 671  LLI 2, MI 1, CE 1,  OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU Run Csg.Tul 12.Cementing 13.NU,Test BOPCse 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.HOW/WOC	4250 18100  JVP 1 Total 25  DAY CUM  21.0 72.5 6.5  1.0 7.5 11.0 1.0 2.5 1.0 1.0 7.5 8.5 2.5 14.5

25.D/H Trouble 26.Surf.Trouble

27.CUM TOTAL

1.5

145.5

24.0

#### DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2 DOL/DSS 11/7	Report No. 8 <u>Date</u>	16/3/89
2	Total Depth 1744 m Progress 185m Last csg	13 3/8"@ 314 m. Logged	to – m
3	Current Activity WORK TIGHT HOLE POH TO PICK UP	CORE BARREL	
4	<u>Dev/Depth</u> O º@ 1585m; - º @ - m; - º @	- m. <u>LAST B</u>	OP TEST 12/3/89
6		oz <u>M/Out Metres</u> Hrs 14,22 1744 547 41.	
7 8	Bit         WOB         RPM         STK         LNR         SPM         GPM         PSI           3         35-40         110         8.5         6         75         482         1600           -         -         120         15         6         40         -         -	AV         NV         SHP         8HP         34           91         230         449         125         23           137         -         -         -         -         -	
9	BHA Description: BIT-BIT SUB (& FLOAT)-8" MONEL-STAB- 1 8"DC-XO-12X 6 1/2" DC'S-JARS-1X6 1		jars)
10	WELL COSTS: Daily\$ 27763 Cum\$ 461,837	MUD: Daily\$ 3148 Cum\$	13,977
11	WI         VIS         PV         YP         Gels         WL         FC         HT/HP         Ph         Pf/Mt           9.3         41         9         12         2/7         6.4         1         -         9.3         11/1	<u>f Pm Ca Cl MBI SC Sanc</u> 4 - 280 18.5K 22.5 6.8 Tr	
Mud Ma	tl's Used: 40 KCL, 7 CAUSTIC, 15 PAC, 20 POLYSA	L	
13	WATER (bbls) BARITE (1001b)	CEMENT (941b) FUEL (1	litres)
	Used Bal Used Bal	Used Bal Used	Bal
	- 400	- 671 4250	13860
14	POB: Oper 3 Contr 14 Service GEOD 2, HALL	I 2, MI 1, CE 1 , JVP 2	Total 25
FROM	HRS DETAILS OF PAST 24 HOURS OPERATIONS	<u>OPERATION</u>	DAY CUM
0000		1. Rig Up/Down	
0300 0330	0.5 CIRCULATED AND RAN SURVEY 17.0 DRILLED TO 1743.78	2. Drilling	20.0 92.5
2030		<ol> <li>Reaming</li> <li>Coring</li> </ol>	0.5 7.0
2200	0.5 PUMPED KCL PILL, DROPPED SURVEY	5. Circ.& Cond	2.0 9.5
2230	1.0 POH. STRAP OUT	6. Trips	1.0 12.0
2330		7. Repair Rig	2.5
	@ 1561M	8. Rig Maint.	1.0
		9. Dev.Survey 10.Log & Perf	0.5 8.0
		11.RU Run Csg.Tub	8.5
		12.Cementing	2.5
		13.NU,Test BOPCsg	14.5
		· 14.PU/LD,DP/DC	
		15.DST 16.Loss Circ	
		17.Remed.Cmt'g	•
		18.Fishing	
		18.Fishing 19.Control Press	
		18.Fishing 19.Control Press 20.WOO/Tools,etc	
		18.Fishing 19.Control Press 20.WOO/Tools,etc 21.WOW/WOC	9.5
		18.Fishing 19.Control Press 20.WOO/Tools,etc	9.5

24.FIT

25.D/H Trouble 26.Surf.Trouble

27.CUM TOTAL

0.5

1.5

169.5

24.0

#### DAILY DRILLING REPORT (ONSHORE)

	1	Well WINDERMERE NO.2	DOL/DSS	12/8	Report No.	9	Date	17/3/	'89
;	2	Total Depth 1749 m Progress	5m	Last csg	13 3,	/8"@ 314 m.	Logged t	<u>o</u> –	m
)	3	Current Activity POH WITH CORE !	NO.1						
	4	Dev/Depth O º@ 1728m; - º @	<b>⊚</b> − m;	_ 0	@ - m.		LAST 80	P TEST	12/3/89
(	6	BitMakeTypeSizeCH1RRChrs'nRC4768 1,PDC	<u>S/No</u> /2" 14405		<u>No z</u> 	<u>M/Out</u> <u>Me</u> 1749 5	tres <u>Hrs</u> 10.5		
	7 8	Bit         WOB         RPM         STK         LNR           CH1         8-10         65         8.5         6           -         -         -         -         -	<u>SPM</u> <u>GPM</u> 86 263 	<u>PSI</u> 500 -	<u>AV</u> 50 60	NV SHP 777	<u>BHP</u> %H 	_	or HP/in -
Ş	9	8HA Description: 8 1/2" CH-60FT 6 1/2" DC'S-6X HWDP (94.5 H			X 6 1/2"	DC'S-JARS-	1X		
-	10	WELL COSTS: Daily\$ 22618	<u>Cum\$</u> 48	34,455	MUD:	Daily\$ 24	44 <u>Cum\$</u>	16	421
-	11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	HT/HP - 9.	Ph Pf/13 .1/.	<u>1f Pm Ca</u> 35 — 300	<u>C1</u> <u>MBT</u> 25K 25	$\frac{SC}{7.3}$ $\frac{Sand}{Tr}$	N03 250	$\frac{\text{KCL}}{3.2}  \frac{\text{NaCl}}{-}$
ţ	1ud Mat	tl's Used: 60 KCL, 5 CAUSTIC, 1	3 PAC, 1	NITRATI	3				
j	13		ITE (1001b)		- CEMENT	·	FUEL (li		
		Used Bal Us	ed Bal 400		Used	8al 370	Used 4240	Bal 259	20
		•	400			310	4240	200	20
) 1	14	POB: Oper 3 Contr 14 Service	e GEOD	2, HALI	LI 3, MI	1, CE 1 ,	JVP 2	Total	26
	FROM 0000	HRS DETAILS OF PAST 24 HOURS OPERA 4.0 WORK THROUGH TIGHT HOL		17M	_	PERATION Rig Up/Down	-	DAY	CUM
	0400	2.0 POH	<u>m 150110</u>	1111		rilling			92.5
C	0600	1.0 LAY DOWN STABILISER, RE		VEY		Reaming			7.0
	0700	1.0 MAKE UP 18M CORE BARRE	L			Coring		11.5	11.5
	0800	0.5 RIH TO SHOE				Circ.& Cond		1.0	10.5
	)830 )900	0.5 SLIPPED DRILLING LINE 1.5 RIH				Trips Repair Rig		6.0	18.0 2.5
	1030	1.0 WASH & REAM TIGHT HOLE	1700-174	3M		Rig Maint.		0.5	1.5
	130	0.5 CIRCULATE				ev.Survey		****	8.0
1	200	0.5 DROP BALL & WAIT FOR P	RESS INCR	EASE		.og & Perf			
1	230	TAG BOTTOM 10.5 CUT CORE NO.1 (1743.78	1740 21-			RV Run Csg.Tub			8.5
	2300	1.0 BREAK OFF CORE & POH.				ementing W,Test BOPCsg			2.5 14.5
						PU/LD, DP/DC			1110
					15.0	ST			
						oss Circ			
						lemed.Cmt'g ishing			
					10.1	•			
					19.0	ontrol Press			
					20.W	ontrol Press 00/Tools,etc			
					20.W 21.W	00/Tools,etc OW/WOC			9.5
					20.W 21.W 22.C	OO/Tools,etc OW/WOC ompletion			9.5
					20.W 21.W 22.C 23.P	OO/Tools,etc OW/WOC ompletion & A			
)					20.W 21.W 22.C 23.P 24.F	OO/Tools,etc OW/WOC ompletion & A		5.0	9.5
•					20.W 21.W 22.C 23.P 24.F 25.D 26.S	OO/Tools,etc OW/WOC ompletion & A IT /H Trouble urf.Trouble			0.5
•					20.W 21.W 22.C 23.P 24.F 25.D 26.S	OO/Tools,etc OW/WOC ompletion & A IT /H Trouble		5.0	0.5

RIG NAME: ATCO A2

DRILLING SUPERVISOR: J E OZOLINS

#### DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2	DOL/DSS	13/9	<u>Report No</u> .	10	<u>D</u> .	ate	18/3,	/89
2	Total Depth 1779 m Progress	30m	Last csg	13 3	/8"@ 314	m.	Logged to	<del>-</del>	m
3	Current Activity CUTTING CORE N	Ю.2							
4	$\underline{\text{Dev/Depth}}  -  \circ @  -  \text{m;}  -  \circ$	@ - m	; - • @	? - m.			LAST BOP	TEST	12/3/89
6		/2" BT4		02 ,2x12	<u>M/Out</u> 1777 -	Metres 28 2	Hrs 3.5 1.5	M/H 8.0 1.3	1.1.I
7 8	Bit         WOB         RPM         STK         LNR           4         30         60         8.5         6           RRCH1         10         70         8.5         6"	<u>SPM</u> <u>GP</u> 120 367 86 263	1600	<u>AV</u> 300 210	NV SHF 375 34 - 24	2 25			Tor HP/in 2.15
9	BHA Description: 8 1/2" CH-60FT 6 1/2" DC'S-6X HWDP (99.5			6 1/2"	DC'S-JAF	S-1X			
10	WELL COSTS: Daily\$ 27093	Cum\$	511,549	MUD:	Daily\$	3061	Cum\$	19	9481
11	WT         VIS         PV         YP         Gels         WL         F           9.3         43         8         15         3/7         6.8         1	<u>C HT/HP</u> - :	<u>Ph</u> <u>Pf/M</u> 9.9 .15/.	<u>f Pm Ca</u> 55 - 1:	<u>cl M8</u> 20 21K 17	<u>1 sc</u> .5 6.3	Sand Tr	<u>N03</u> 250	KCL NaCl -
Mud M	atl's Used: 30 KCL, 8 CAUSTIC,	25 PAC							
13		RITE (1001b) sed Ba 440		CEMENT Used	(941b) 8al 671		FUEL (li Used 3000	tres) Bal 229	
14	POB: Oper 3 Contr 14 Servi	ce GEOI	O 2, HALL	I 3, MI	1, CE 1	, JVP	2	<u>Total</u>	26
FROM OOOC		ATIONS			PERATION Rig Up/Down			DAY	CUM
0230	1.5 RECOVERED 4.3M (78%)C			2.	Drilling			3.5	
0400	BARREL & STOOD BACK I 3.5 RIH WITH 8 1/2" BIT & PICKED UP 4 MORE DC'S	SLICK B	łΑ.	4.	Reaming Coring Circ.& Cond			0.5 3.0 5.0	7.5 14.5 15.5
0730				6.	Trips			12.0	30.0
1030 1300					Repair Rig Rig Maint.				2.5 1.5
1330	2.0 CIRCULATED SAMPLE			9.	Dev.Survey				8.0
1530		TOTOO			Log & Perf	. L.			0.5
1830	MISRUN) 3.0 RIH WITH CORE BARREL				RU Run Csg.T Cementing	מנ			8.5 2.5
2130	0.5 WASH & REAM 1771-1777	M			NU,Test BOPC	<b>5</b> 9			14.5
2200					PU/LD,DP/DC		-		
2230	1.5 DROPPED BALL. CUT NO.	Z CORE	•	15.	DSI Loss Circ				
					Remed.Cmt'g				
			_		Fishing				
			•		Control Pres				
	-				WOO/Tools,et WOW/WOC	;			9.5
				22.	Completion				***
)					P & A				A 5
				24.1 25.1	FII D/H Trouble				0.5
				4.4.	- in trouble				
				26.	Surf.Trouble CUM TOTAL			24.0	1.5 217.5

RIG NAME: ATCO A2

DRILLING SUPERVISOR: J E OZOLINS

1	l	Well WI	NDERMERE	NO.2		DOL	./DSS	14/10	Repo	ort No.	1	1	Date		19/3/	/89	
2	2	Total De	<u>pth</u> 180	)2 m	Progress		23m	Last	csg	13 3	3/8"@ 3	14 m.	Lo	gged to	-	m	
3	3	Current	<u>Activity</u> C	CIRCULA	ATING S	SAMPLI	E										
4	Į.	Dev/Dept	<u>h</u> - 0@	9 — п	n; - º	@ -	m	; -	o @	m.			<u>L</u>	AST BOP	TEST	12/3	3/89
· 6			Make Reed Chr'tn	<u>Type</u> HP51a RC476	<u>\$i</u> a 8 5 8		BT4	862		x12	M/Out 1802 1794	8		Hrs 1.0 12.0	8.0	r ] ) 1. l 25	
7 8			WOB RPM 60 0 80	<u>STK</u> 8.5 8.5	LNR 6 6"			16	00	<u>AV</u> 300 210	<u>NV</u> 375		8HP 254	%HP 74 -			HP/in 2.15
9	)		ription: B HWDP (11				6 1/3	2" DC'	S-DRII	LLING	JARS-	IX 6 1	./2"				
1	.0	WELL COST	TS: Dail	1y <b>\$</b> 2	25214	Cum	<u>\$</u>	536,76	3 <u>MU</u>	JD:	Daily\$	157	'2	Cum\$	21	053	
1	.1	WT VIS 9.2 42	<u>ργ</u> <u>γρ</u> 10 15	Gels 2/7	<u>HL</u> 6.6	FC H	<u>T/HP</u>	<u>Ph</u> 10.0 .	Pf/ <u>Mf</u> 2/.65	Pm C:	<u>a Cl</u> OO 20K	MBT 17.5	<u>\$C</u> 6.0	Sand Tr	<u>N03</u> 250	KCL 2.5	NaCl -
M	ud Mat	l's Used:	30 KC	L, 1 C	CAUSTIC	, 11	PAC										
1	3	u/	ATER (bbls)		,	DA011E	(10016)			<u>rement</u>	(0416)		( u	EL /154	\		
1	.3	_		Bal		Used	(1001b) Ba		<del></del>	Used	(941b) Bal			<u>JEL (lit</u> Jsed			
		0	ocu .	חמו		vseu	440			0580	671			60			
							440		_		OIT		۷0	UU	402	100	
1	4	<u> 908: Ope</u>	<u>er</u> 3 <u>Co</u>	ontr 14	Serv	vice	GEOI	о 2, н	ALLI 3	3, MI	1, CE	1 <sub>.</sub> , J	VP 2		<u>Total</u>	26	
į	FROM	HRS	DETAILS OF	PAST 24				О 2, Н	ALLI 3	g	OPERATION		VP 2	:	Total DAY		<u> </u>
0 !	FROM OOO	HRS 2.0	DETAILS OF CUT CORE	PAST 24 NO.2	HOURS OPE	RATION	<u>s</u> _	·	ALLI 3	<u>(</u> 1.	DPERATION Rig Up/Do		VP 2		DAY	CUM	<del></del>
0 !	FROM	HRS 2.0 1.0	DETAILS OF	PAST 24 NO.2 IME FO	HOURS OPE	CRATION OF DA	<u>s</u> AYLIG <del>I</del>	HT	ALLI 3	1. 2.	OPERATION	- Wn	VP 2			<u>cum</u> 9	1 7.0 7.5
0 0 0	FROM 000 200* 200	HRS 2.0 1.0	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE	PAST 24 NO.2 IME FO CONTI NO.2	HOURS OPE R END NUE CU	ERATION OF DA	S AYLIGH RE NO	HT .2.	ALLI 3	1. 2. 3.	DPERATION Rig Up/Do Drilling	- Wn	VP 2		DAY	<u>cum</u> 9	7.0
0 0 0 1	FROM 000 200* 200 030	HRS 2.0 1.0 8.5 2.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL	PAST 24 NO.2 IME FOR CONTINUO	HOURS OPE OR END NUE CU (1777.	OF DATE OF THE CORE OF THE COR	S AYLIGH RE NO. 93.9M)	HT .2.	ALLI 3	1. 2. 3. 4. 5.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co	wn	VP 2		1.0 13.0 4.5	CUM 9 2 2	77.0 7.5 7.5 0.0
0 0 0 1	FROM 000 200* 200	HRS 2.0 1.0 8.5 2.5 1.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE	PAST 24 NO.2 IME FO CONTTI NO.2 N OUT D 16.8	HOURS OPE OR END NUE CU (1777. M (99%	OF DATE OF TOPE OF THE COPE OF	S AYLICH RE NO. 03.9M; RE.SER	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips	wn	VP 2		1.0 13.0	CUM 9 2 2 3	7.0 7.5 17.5 10.0
0 0 0 1 1	FROM 000 200* 200 030 300	HRS 2.0 1.0 8.5 2.5 1.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL &	PAST 24 NO.2 IME FO. CONTI: NO.2 N OUT D 16.8i STOOD	HOURS OPE R END NUE CU (1777. M (99% BACK	OF DATE OF TOPE OF THE COPE OF	S AYLICH RE NO. 03.9M; RE.SER	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri	- wn nd 9	VP 2		1.0 13.0 4.5 5.0	9 2 2 3	77.0 7.5 17.5 10.0 15.0 2.5
0 0 0 1 1	FROM 000 200* 200 030	HRS 2.0 1.0 8.5 2.5 1.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED O	PAST 24 NO.2 IME FO. CONTI: NO.2 N OUT D 16.8 STOOD N ORDE	HOURS OPE OR END NUE CU (1777. M (99% BACK RS	OF DATE OF THE CORE OF THE COR	S_AYLIGH RE NO. 93.9M; RE.SEH RRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint	wn nd g	VP 2		1.0 13.0 4.5	CUM 9 2 2 3	7.0 7.5 7.5 0.0 5.0 2.5 2.0
0 0 0 1 1 1	FROM 000 200* 200 300 430 530 600	HRS 2.0 1.0 8.5 2.5 1.5 1.0 0.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED 1	PAST 24 NO.2 IME FO. CONTINO.2 NO.2 NOUT D 16.8 STOOD N ORDE P 8 1/3 DRILLII	HOURS OPE OR END NUE CU (1777. M (99% BACK RS 2" BIT	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE ORDER OF TOOLS	S_AYLIGH RE NO. 93.9M; RE.SEH RRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per	nd 9 •	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	77.0 77.5 77.5 90.0 95.0 2.5 2.0
0 0 0 1 1 1 1 1	FROM 000 200* 200 300 430 530 600 630	HRS 2.0 1.0 8.5 2.5 1.5 1.0 0.5 0.5 2.0	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED IN	PAST 24 NO.2 IME FO. CONTINO.2 N OUT D 16.8 STOOD N ORDE P 8 1/3 DRILLII RIH	HOURS OPE IR END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE ORDER OF TOOLS	S_AYLIGH RE NO. 93.9M; RE.SEH RRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs	nd g · y f g.Tub	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	77.0 7.5 77.5 00.0 55.0 2.5 2.0 8.0
1 0 0 0 1 1 1 1 1 1	FROM 000 200* 200 300 430 530 600 630 830	HRS 2.0 1.0 8.5 2.5 1.5 1.0 0.5 0.5 2.0 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERED BARREL & WAITED OF PICKED UN SLIPPED DETAILS BETAILS OF FINISHED DRILLED T	PAST 24 NO.2 IME FO. CONTII NO.2 N OUT D 16.8 STOOD N ORDE P 8 1/2 DRILLII RIH TO 189	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE ORDER OF TOOLS	S_AYLIGH RE NO. 93.9M; RE.SEH RRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing	nd g · y f g.Tub	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	7.0 7.5 7.5 7.5 0.0 5.0 2.5 2.0 8.0
1 0 0 0 1 1 1 1 1 1 1 1	FROM 000 200* 200 300 430 530 600 630 830 900	HRS 2.0 1.0 8.5 2.5 1.5 1.0 0.5 0.5 2.0 0.5 2.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERED BARREL & WAITED OF PICKED UN SLIPPED DETAILED CIRCULATION	PAST 24 NO.2 IME FO. CONTII NO.2 N OUT D 16.8 STOOD N ORDE P 8 1/2 DRILLII RIH IO 189 ED SAM	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE ORDER OF TOOLS	S_AYLIGH RE NO. 93.9M; RE.SEH RRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU, Test B	nd g y f g, Tub	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	77.0 7.5 77.5 00.0 55.0 2.5 2.0 8.0
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERED BARREL & WAITED OF PICKED UN SLIPPED DETAILS BETAILS OF FINISHED DRILLED T	PAST 24 NO.2 IME FOR CONTIL NO.2 N OUT D 16.8 STOOD N ORDE P 8 1/3 DRILLI RIH TO 189 ED SAM TO 1803	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE ORDER OF TOOLS	S_AYLIGH RE NO. 93.9M; RE.SEH RRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing	nd g y f g, Tub	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	7.0 7.5 7.5 7.5 0.0 5.0 2.5 2.0 8.0
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERED BARREL & WAITED OF PICKED UT SLIPPED T FINISHED DRILLED T CIRCULATI DRILLED T	PAST 24 NO.2 IME FOR CONTIL NO.2 N OUT D 16.8 STOOD N ORDE P 8 1/3 DRILLI RIH TO 189 ED SAM TO 1803	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE ORDER OF TOOLS	S_AYLIGH RE NO. 93.9M; RE.SEH RRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU,Test B PU/LD,DP/ DST Loss Circ	nd g y f g Tub OPCsg	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	7.0 7.5 7.5 7.5 0.0 5.0 2.5 2.0 8.0
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTILE NO.2 N OUT D 16.8 STOOD N ORDER P 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU, Test B PU/LD, DP/ DST Loss Circ Remed.Cmt	nd g y f g Tub OPCsg	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	7.0 7.5 7.5 7.5 0.0 5.0 2.5 2.0 8.0
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTILE NO.2 N OUT D 16.8 STOOD N ORDER P 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.	Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU,Test B PU/LD,DP/ DST Loss Circ Remed.Cmt Fishing	wn  g y f g Tub  OPCsg DC	VP 2		1.0 13.0 4.5 5.0	CUM 9 2 2 3	7.0 7.5 7.5 7.5 0.0 5.0 2.5 2.0 8.0
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTILE NO.2 N OUT D 16.8 STOOD N ORDER P 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU, Test B PU/LD, DP/ DST Loss Circ Remed.Cmt	nd  g y f g Tub  OPCsg DC	VP 2		1.0 13.0 4.5 5.0	9 2 2 3	7.0 7.5 7.5 7.5 0.0 5.0 2.5 2.0 8.0
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTILE NO.2 N OUT D 16.8 STOOD N ORDER P 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU, Test B PU/LD, DP/ DST Loss Circ Remed.Cmt Fishing Control P WOO/Tools WOW/WOC	ond  g y f g.Tub  OPCsg DC  'g ress ,etc	VP 2		1.0 13.0 4.5 5.0 0.5	9 2 2 3	7.0 7.5 7.5 9.0 9.5 2.5 2.0 8.0 8.5 2.5 4.5
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTILE NO.2 N OUT D 16.8 STOOD N ORDER P 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU, Test B PU/LD, DP/ DST Loss Circ Remed. Cmt Fishing Control P WOO/Tools WOW/WOC Completio	ond  g y f g.Tub  OPCsg DC  'g ress ,etc	VP 2		1.0 13.0 4.5 5.0 0.5	9 2 2 3	7.0 7.5 7.5 9.0 9.5 2.5 2.0 8.0 8.5 2.5 4.5
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTILE NO.2 N OUT D 16.8 STOOD N ORDER P 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU,Test B PU/LD,DP/ DST Loss Circ Remed.Cmt Fishing Control P WOO/Tools WOW/WOC Completio P & A	ond  g y f g.Tub  OPCsg DC  'g ress ,etc	VP 2		1.0 13.0 4.5 5.0 0.5	9 2 2 3	7.0 7.5 7.5 0.0 5.0 2.5 2.0 8.0 8.5 2.5 4.5
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTINUOUS NO.2 NOUT D 16.8 STOOD NORDED 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU,Test B PU/LD,DP/ DST Loss Circ Remed.Cmt Fishing Control P WOO/Tools WOW/WOC Completio P & A FIT	nd g y f g.Tub OPCsg DC 'g ress ,etc	VP 2		1.0 13.0 4.5 5.0 0.5	9 2 2 3	7.0 7.5 7.5 9.0 9.5 2.5 2.0 8.0 8.5 2.5 4.5
! 00 0 1 1 1 1: 1: 1: 1: 2	FROM 000 200* 200 300 430 530 600 630 830 900 130	HRS 2.0 1.0 8.5 2.5 1.5 1.5 0.5 2.0 0.5 2.5 0.5	DETAILS OF CUT CORE ADJUST T SAVING - CUT CORE POH CHAIL RECOVERE BARREL & WAITED OF PICKED UT SLIPPED I FINISHED DRILLED T CIRCULATI	PAST 24 NO.2 IME FOR CONTINUOUS NO.2 NOUT D 16.8 STOOD NORDED 8 1/3 DRILLII RIH IO 1899 ED SAMI	HOURS OPE R END NUE CU (1777. M (99% BACK RS 2" BIT NG LIN 7M PLE 2M PLE	OF DATE OF TOOLS OF TOOLS OF TOOLS OF TOOLS OF THE OFFICE OF THE OFFICE OF TOOLS OF T	SAYLICH RE NO. 03.9M; RE.SER ERRICH	HT .2. ) RVICED	ALLI 3	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.	DPERATION Rig Up/Do Drilling Reaming Coring Circ.& Co Trips Repair Ri Rig Maint Dev.Surve Log & Per RU Run Cs Cementing NU,Test B PU/LD,DP/ DST Loss Circ Remed.Cmt Fishing Control P WOO/Tools WOW/WOC Completio P & A	operate of the control of the contro	VP 2		1.0 13.0 4.5 5.0 0.5	9 2 2 3	7.0 7.5 7.5 0.0 5.0 2.5 2.0 8.0 8.5 2.5 4.5

1	Well WINDERMERE NO.2 DOL/DSS	15/11 R	eport No. 12	Date	20/3/	'89
2	Total Depth - 1802m Progress -	Last csg	13 3/8"@ 31	4 m. Logged	to -	m
3	Current Activity SLIP & CUT DRILLING LI	NE				
4	Dev/Depth º@ m; º@ m	n; - ° @	m.	LAST E	OP TEST	12/3/89
6		<u>/No №</u> :862 3X11	<u>z</u> <u>M/Out</u> -	Metres Hrs 	<u>M/Hr</u> _	<u>T.B.G</u> .
7 8	<u>Bit WOB RPM STK LNR SPM GI</u>	<u>PM PSI</u> -	<u>AV NV S</u>	SHP 8HP 9	<u>:HP                                    </u>	or HP/in
9	BHA Description: BIT-NBR- 6 1/2" MONEL- DAILY DRILLING JAR- 1 X 6 1				" DC'S-	
10	WELL COSTS: Daily\$ 23,887 Cum\$	568,512	MUD: Daily\$	182 <u>Cum</u> \$	21	,237
11	WT VIS PV YP Gels WL FC HT/HP 9.2 42 11 16 2/5 6.8 1 -	Ph Pf/Mf 10.0 .2	$\begin{array}{ccc} \underline{Pm} & \underline{Ca} & \underline{Cl} \\ \underline{.6} & 80 & \underline{22K} \end{array}$	MBT SC Sar 17.5 5.5 TR		KCL NaCl 2.6 -
Mud Mat	l's Used: 2 PAC					
13	WATER (bbls) BARITE (1001b) Used Bal Used Ba		CEMENT (941b) Used Bal	FUEL ( Used	litres) Bal	
	440		671	0304	3502	0
14	POB: Oper 3 Contr 14 Service JVP	2;GEOD 2,	HALLI 3,MI 1,	CE 1 CHRT 4	Total	30
FROM	HRS DETAILS OF PAST 24 HOURS OPERATIONS		OPERATION		Total DAY	30 <u>cum</u>
FROM 0000 0030	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN	L	OPERATION  1. Rig Up/Dow  2. Drilling			<u>cum</u> 97.0
<u>FROM</u> 0000	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1775)	L	OPERATION 1. Rig Up/Dow 2. Drilling 3. Reaming			97.0 7.5
FROM 0000 0030 0300	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1779)  1802.3M)	L	OPERATION 1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring	n	DAY	97.0 7.5 27.5
FROM 0000 0030 0300	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1779)  1802.3M)  2.5 RIH	L	OPERATION 1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con	n	DAY 0.5	97.0 7.5 27.5 20.5
FROM 0000 0030 0300	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 -	L 5.2-	OPERATION 1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring	n d -	DAY	97.0 7.5 27.5
FROM 0000 0030 0300 0430 0700	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW	L 5.2-	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.	n d	DAY 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5
FROM 0000 0030 0300 0430 0700	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN	L 5.2-	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey	n d	DAY 0.5	97.0 7.5 27.5 20.5 39.0 2.5
FROM 0000 0030 0300 0430 0700	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW)	L 5.2- ) N)	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf	n d	DAY 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0
FROM 0000 0030 0300 0430 0700	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN	L 5.2- ) N)	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey	n d	DAY 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5
FROM 0000 0030 0300 0430 0700 0730	DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW) CLOSED AT 11.07 (6HR SHUTIN PULLED FREE 1707 WEAK AIR BLOW - NGTS	L 5.2- ) N)	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO	n d Tub PCsg	DAY 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0
FROM 0000 0030 0300 0430 0700	DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW) CLOSED AT 11.07 (6HR SHUTIN PULLED FREE 1707 WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN	L 5.2- ) N)	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D	n d Tub PCsg	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0 8.5 2.5 14.5
FROM 0000 0030 0300 0430 0700 0730	DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW) CLOSED AT 11.07 (6HR SHUTIN PULLED FREE 1707 WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UI EXTRA 2000LBS STRING WEIGHT -	L 5.2- ) N)	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO  14.PU/LD,DP/D  15.DST	n d Tub PCsg	DAY 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0
FROM 0000 0030 0300 0430 0700 0730	DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW) CLOSED AT 11.07 (6HR SHUTIN PULLED FREE 1707 WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN EXTRA 2000LBS STRING WEIGHT - PULLED DRY). RECOVERED 299M	L 5.2- ) N)	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO  14.PU/LD,DP/D  15.DST  16.Loss Circ	n d - Tub PCsg C	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0 8.5 2.5 14.5
FROM 0000 0030 0300 0430 0700 0730	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW) CLOSED AT 11.07 (6HR SHUTIN PULLED FREE 1707 WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN EXTRA 2000LBS STRING WEIGHT - PULLED DRY). RECOVERED 299M (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO  14.PU/LD,DP/D  15.DST	n d - Tub PCsg C	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0 8.5 2.5 14.5
FROM 0000 0030 0300 0430 0700 0730	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW) CLOSED AT 11.07 (6HR SHUTIN PULLED FREE 1707 WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN EXTRA 2000LBS STRING WEIGHT - PULLED DRY). RECOVERED 299M (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS  1.5 MADE UP 8 1/2" BIT & STABILISH	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO  14.PU/LD,DP/D  15.DST  16.Loss Circ  17.Remed.Cmt'  18.Fishing  19.Control Press  10. Drilling  19.Control Press  10. Drilling  10. Control Press  10. Remed. Cmt'  10. Control Press  10. Control Press  10. Control Press  11. Rig Up/Dow  12. Control Press  13. NU,Test BO  14. PU/LD,DP/D  15. DST  16. Loss Circ  17. Remed. Cmt'  18. Fishing  19. Control Press  19. Control Press  10. Control Press  10. Control Press  10. Control Press  10. Control Press  11. Remain Press  12. Control Press  13. NU,Test BO  14. PU/LD,DP/D  15. DST  16. Loss Circ  17. Remed. Cmt'  18. Fishing  19. Control Press  19. Control Press  10.	n d Tub PCsg C	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0 8.5 2.5 14.5
FROM 0000 0030 0300 0430 0700 0730 1700 2030 2200	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1773  1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 -  OPEN AT 0730 (7 MIN PREFLOW  CLOSED AT 0737 (1/2HR SHUTIN  REOPEN AT 0807 (3 HR FLOW)  CLOSED AT 11.07 (6HR SHUTIN  PULLED FREE 1707  WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN  EXTRA 2000LBS STRING WEIGHT -  PULLED DRY). RECOVERED 299M  (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS  1.5 MADE UP 8 1/2" BIT & STABILISH  BHA & RIH TO SHOE	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO  14.PU/LD,DP/D  15.DST  16.Loss Circ  17.Remed.Cmt'  18.Fishing  19.Control Pri  20.WOO/Tools,	n d Tub PCsg C	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0 8.5 2.5 14.5
FROM 0000 0030 0300 0430 0700 0730 1700	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (177: 1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 - OPEN AT 0730 (7 MIN PREFLOW CLOSED AT 0737 (1/2HR SHUTIN REOPEN AT 0807 (3 HR FLOW) CLOSED AT 11.07 (6HR SHUTIN PULLED FREE 1707 WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN EXTRA 2000LBS STRING WEIGHT - PULLED DRY). RECOVERED 299M (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS  1.5 MADE UP 8 1/2" BIT & STABILISH	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO  14.PU/LD,DP/D  15.DST  16.Loss Circ  17.Remed.Cmt'  18.Fishing  19.Control Pri  20.WOO/Tools,  21.WOW/WOC	n d Tub PCsg C	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0 8.5 2.5 14.5
FROM 0000 0030 0300 0430 0700 0730 1700 2030 2200	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1773  1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 -  OPEN AT 0730 (7 MIN PREFLOW  CLOSED AT 0737 (1/2HR SHUTIN  REOPEN AT 0807 (3 HR FLOW)  CLOSED AT 11.07 (6HR SHUTIN  PULLED FREE 1707  WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN  EXTRA 2000LBS STRING WEIGHT -  PULLED DRY). RECOVERED 299M  (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS  1.5 MADE UP 8 1/2" BIT & STABILISH  BHA & RIH TO SHOE	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow  2. Drilling  3. Reaming  4. Coring  5. Circ.& Con  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,  12.Cementing  13.NU,Test BO  14.PU/LD,DP/D  15.DST  16.Loss Circ  17.Remed.Cmt'  18.Fishing  19.Control Pri  20.WOO/Tools,  21.WOW/WOC  22.Completion	n d Tub PCsg C	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0 8.5 2.5 14.5
FROM 0000 0030 0300 0430 0700 0730 1700 2030 2200	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1773  1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 -  OPEN AT 0730 (7 MIN PREFLOW  CLOSED AT 0737 (1/2HR SHUTIN  REOPEN AT 0807 (3 HR FLOW)  CLOSED AT 11.07 (6HR SHUTIN  PULLED FREE 1707  WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN  EXTRA 2000LBS STRING WEIGHT -  PULLED DRY). RECOVERED 299M  (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS  1.5 MADE UP 8 1/2" BIT & STABILISH  BHA & RIH TO SHOE	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pro 20.WOO/Tools, 21.WOW/WOC 22.Completion 23.P & A 24.FIT	n  Tub  PCsg C  9  ess etc	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0  8.5 2.5 14.5 19.0
FROM 0000 0030 0300 0430 0700 0730 1700 2030 2200	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1773  1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 -  OPEN AT 0730 (7 MIN PREFLOW  CLOSED AT 0737 (1/2HR SHUTIN  REOPEN AT 0807 (3 HR FLOW)  CLOSED AT 11.07 (6HR SHUTIN  PULLED FREE 1707  WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN  EXTRA 2000LBS STRING WEIGHT -  PULLED DRY). RECOVERED 299M  (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS  1.5 MADE UP 8 1/2" BIT & STABILISH  BHA & RIH TO SHOE	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pri 20.WOO/Tools, 21.WOW/WOC 22.Completion 23.P & A 24.FIT 25.D/H Trouble	n  Tub  PCsg  C  g  ess etc	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0  8.5 2.5 14.5 19.0
FROM 0000 0030 0300 0430 0700 0730 1700 2030 2200	HRS DETAILS OF PAST 24 HOURS OPERATIONS  0.5 DROPPED SURVEY.PUMPED KCL PILL  2.5 POH.RECOVERED SURVEY - MISRUN  1.5 MADE UP TOOLS FOR DST #1 (1773  1802.3M)  2.5 RIH  0.5 HEAD UP FOR TEST  9.5 DST#1 -  OPEN AT 0730 (7 MIN PREFLOW  CLOSED AT 0737 (1/2HR SHUTIN  REOPEN AT 0807 (3 HR FLOW)  CLOSED AT 11.07 (6HR SHUTIN  PULLED FREE 1707  WEAK AIR BLOW - NGTS  3.5 POH WITH TEST TOOLS (PICKED UN  EXTRA 2000LBS STRING WEIGHT -  PULLED DRY). RECOVERED 299M  (10.25BBL) MUDDY WATER.  1.5 LAID DOWN TEST TOOLS  1.5 MADE UP 8 1/2" BIT & STABILISH  BHA & RIH TO SHOE	L 5.2- ) N) )	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pro 20.WOO/Tools, 21.WOW/WOC 22.Completion 23.P & A 24.FIT	n  Tub  PCsg  C  g  ess etc	0.5 4.0 0.5	97.0 7.5 27.5 20.5 39.0 2.5 2.5 8.0  8.5 2.5 14.5 19.0

	1	Well WINDERMERE NO.2 DOL/DSS 16/12	Report No. 13	<u>Date</u> 21/3,	/89
	2	Total Depth 1869 m Progress 67m Last csg	13 3/8" @ 314 m.	Logged to -	m
	3	Current Activity LOGGING (RUNNING FIRST LOG - D	LL/SFL/CR)		
	4	<u>Dev/Depth</u> 1/2°@ 1802m; 1 ° @ 1850m; - °	@ m.	LAST BOP TEST	12/3/89
	6	BitMakeTypeSizeS/NoRR4REEDHP51A8 1/2"BT48623X1	Noz M/Out Metr 1 1869 67		
	7 8	Bit         WOB         RPM         STK         LNR         SPM         GPM         PSI           RR4         30         60         8 1/2"         6         100         306         1425           40	AV NY SHP 58 352 254 250	<del></del>	Tor <u>HP/in</u> - 1.55
	9	BHA Description:			
	10	<u>WELL COSTS</u> : <u>Daily\$</u> 54,252 <u>Cum\$</u> 623,012	MUD: Daily\$ 138	88 <u>Cum\$</u> 22	2,625
	11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1f Pm Ca Cl MBT .50 100 22K 17.5	SC Sand NO3 5.5 TR 200	<u>KCL</u> <u>NaCl</u> –
	Mud Mat	1's Used: 1 CAUSTIC, 9 PAC, 30 KCL			
	13	WATER (bbls) BARITE (1001b)	CEMENT (941b)	FUEL (litres)	
	10	Used Bal Used Bal	Used Bal	Used Bal	_
)		440	- 671	2750 3227	0
	14	POB: Oper 2 Contr 14 Service GEOD 2; HALL	I 3;MI 1;GHRT 4	<u>Total</u>	26
	FROM	HRS DETAILS OF PAST 24 HOURS OPERATIONS	<u>OPERATION</u>	DAY	CUM
	0000	0.5 SLIP & CUT DRILLING LINE 1.5 WORK ON WEIGHT INDICATOR DIAPHRAGM	<ol> <li>Rig Up/Down</li> <li>Drilling</li> </ol>	9.0	106.0
	0200	1.5 RIH	3. Reaming	0.5	8.0
	0330	0.5 WASH & REAM 3M FILL TO BOTTOM	4. Coring	0.3	27.5
	0400	0.5 CIRCULATED	5. Circ.& Cond	4.5	25.0
	0430	0.5 RAN SURVEY - MISRUN	6. Trips	4.0	43.0
	0500	3.0 DRILLED TO 1821M	7. Repair Rig	1.5	4.0
	0800	0.5 CIRCULATED & RAN SURVEY 2.5 DRILLED TO 1840M	8. Rig Maint.	0.5	3.0
	0830 1100	2.0 CIRCULATED SAMPLE	9. Dev.Survey 10.Log & Perf	1.0 3.0	9.0 3.0
	1300	3.5 DRILLED TO 1869M	11.RU RunCsg,Tub	3.0	8.5
•	1630	2.0 CIRCULATED BOTTOMS UP	12.Cementing		2.5
	1830	2.5 PUMPED KCL PILL.DROPPED SURVEY	13.NU,Test BOPCsg		14.5
	0400	РОН.	14.PU/LD,DP/DC	•	
	2100	3.0 RIGGED UP GEARHART. RAN DLL/	15.DST		19.0
		MSFL/GR. LOGGERS DEPTH 1859.5M (ON FILL)	16.Loss Circ 17.Remed.Cmt'g		
		(Siv Tilli)	18.Fishing	•	
			19.Control Press		
		•	20.W00/Tools,etc		1.0
			21.WOW/WOC		9.5
			22.Completion 23.P & Ä		
			24.FIT		0.5
			25.D/H Trouble		5.0
			26.Surf.Trouble		1.5
			27.CUM TOTAL	24.0	290.5

#### DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2	OL/DSS 17/13 Re	eport No. 14	<u>Date</u> 22/3/89
<b>2</b>	Total Depth - 1869m Progress	Nil Last csg	13 3/8"@ 314 m.	Logged to 1859.5m
3	Current Activity OPENING HOLE FROM	M 8 1/2" TO 12 1	/4"	
4	<pre>Dev/Depth</pre>	m; - ° @	m.	LAST BOP TEST 12/3/89
6	<pre>8it Make Type Size 5 REED FP31G 12 1/4" HOLE OPENING</pre>			tres Hrs M/Hr T.8.G. 6 3.5 10.3
7 8	Bit         WOB         RPM         STK         LNR         SPM           5         15         80         8 1/2" 6         120           25         90         15         6         50	0 682 2300	$     \begin{array}{ccc}         & \underline{AV} & \underline{NV} & \underline{SHP} \\         & 129 & 326 & 915 \\         & 194 &   \end{array} $	8HP         %HP         Tor         HP/in           352         38         -         -
9	BHA Description: BIT-BIT SUB-2 X DC'S JARS 1X6 1/2" DC- 6 X H		X 8" DC-XO- 16 X	6 1/2"
10	₩ELL COSTS: Daily\$ 26,631 Cui	um\$ 649,643	MUD: Daily\$ 58	8 <u>Cum\$</u> 22683
11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>HT/HP</u> <u>Ph</u> <u>Pf/Mf</u> - 8.8 .05	$\begin{array}{c cccc} \underline{Pm} & \underline{Ca} & \underline{Cl} & \underline{MBT} \\ \underline{.4} & 180 & 21\mathrm{K} & 17.5 \end{array}$	SC         Sand         NO3         KCL         Nacl           5.6         TR         200         2.7         -
Mud Ma	Matl's Used: 2 CAUSTIC			

13	WATER (bbls	5)	BARITE	(1001b)	CEME	NT (941b)	FUEL (li	tres)	
	Used	Bal	Used	Bal	Use	d Bal	Used	Bal	
)				440		670	1850	304	20
14	<u>POB</u> : <u>Oper</u> 2	Contr 14	Service	GEOD 2, HAI	LI 3; M	[ 1,GHRT 4		Total	26
FROM		OF PAST 24 HO	<u>JRS OPERATION</u>	<u>IS</u>		OPERATION		DAY	<u>cum</u>
0000	10.0 LOGG					1. Rig Up/Down			
		ISHED RUNN		MSFL/GR		2. Drilling			106.5
		GED DOWN (				<ol><li>Reaming</li></ol>		3.5	11.5
1000				LINES & RAN		4. Coring			27.5
				SI WITH 9.2		5. Circ.& Cond		0.5	25.5
		MUD. (CASI	NG AT 31	4M, OPEN		6. Trips		4.0	47.0
		TO 1869M				7. Repair Rig			4.0
1130		ED ON ORDE	RS (LAID	DOWN 8"		B. Rig Maint.			3.0
	MONE	L)			:	9. Dev.Survey			9.0
1330	3.0 MADE	UP HOLE C	PENING A	SSEMBLY		10.Log & Perf		10.0	13.0
	& RI					11.RU RunCsg,Tub			8.5
1630	2.5 LIGH	TLY REAMED	& WASHE	TIGHT HOLE	E	12.Cementing			2.5
	10	63M - 1086	M			13.NU,Test BOPCsg			14.5
	11-	40M - 1172	M	•		14.PU/LD,DP/DC			
		45M - 1254	M			15.DST			19.0
1900	1.0 FINIS	SHED RIH				16.Loss Circ			
2000	0.5 REAM	& WASH 13	M TO TOP	OF 8 1/2"		17.Remed.Cmt'g			
	OH (	@ 1744M		•		l8.Fishing			-
2030	3.5 OPEN	ED 8 1/2"	HOLE TO	l2 1/4",		19.Control Press			
	<b>@</b> 178	80M			:	20.W00/Tools,etc 2.0			3.0
					:	21.WOW/WOC			9.5
						22.Completion			
<b>\</b>					1	23.P & A			
					:	24.FIT		1.5	2.0
	•					25.D/H Trouble		2.5	7.5
-						26.Surf.Trouble			1.5
					2	27.CUM TOTAL		24.0	314.5

RIG NAME: ATCO A2 DRILLING SUPERVISOR: J E OZOLINS

	Well WINDERMERE NO 2	DOL/DSS	18/14 R	eport No. 1	5 <u>D</u>	<u>ate</u> 23/3,	/89
2	Total Depth - 1869m Progress	Nil	Last csg	13/3/8"@ 3	14 m.	Logged to 1859	9m m
3	Current Activity RUNNING 9 5/8	'CASING					
4	Dev/Depth º@ m; º	@ m;	- º @	m.		LAST BOP TEST	12/3/89
6	BitMakeTypeSize5REEDFP31G12 1HOLE OPENING	<u>s/No</u> 1/4" NRC06	9 2X14,		Metres 125	Hrs M/H 15.5 8.1	
7 8	Bit         WOB         RPM         STK         LNR           5         15         80         8 1/2" 6           25         90         15         5	SPM GPM 120 576 50	<u>PSI</u> 2300	AV NV 109 275	SHP 8HI 478 21		Tor HP/in - 1.79
9	BHA Description: BIT-BIT SUB- JARS- 1 X 6 1/2" DC-		C'S STAB	- 1X 8" DC-X	O- 16 X 6	51/2"DC'S	
10	WELL COSTS: Daily\$ 17,424	<u>Cum\$</u> 66	7,067	MUD: Daily\$	1415	<u>Cum\$</u> 24098	3
11	WT         VIS         PV         YP         Gels         WL         F           9.3         39         13         12         2/5         6.8         1	FC HT/HP !	Ph Pf/Mf 1 .1	<u>Pm Ca Cl</u> .4 140 21K	$\begin{array}{cc} \frac{\text{MBT}}{17.5} & \frac{\text{SC}}{6}. \end{array}$	Sand N03 3 TR 200	KCL NaCl 2.7 -
Mud Ma	tl's Used: 3 CAUSTIC, 30 KCL,(		STMENT:		)		
13	WATER (bbls) BA	ARITE (1001b) Used Bal		CEMENT (941b) Used Bal	,	FUEL (litres) Used Bal	<del>-</del>
		-	440	670	_	35840	
14	POB: Oper 2 Contr 14 Servi	on CEOD	O 1141.T.T	1 147 1			00
-	<u> </u>	ce GEOD	Z, HALLI	1, M1 1		<u>Total</u>	22
FROM 0000 1200 1330	HRS DETAILS OF PAST 24 HOURS OPER D 12.0 OPENED 8 1/2" HOLE TO D 1.5 CIRCULATED HOLE CLEAN	RATIONS   12 1/4"	2, HALLI	OPERATION 1. Rig Up/D 2. Drilling	own	<u>DAY</u>	<u>CUM</u> 106.0
0000	HRS DETAILS OF PAST 24 HOURS OPEN D 12.0 OPENED 8 1/2" HOLE TO 1.5 CIRCULATED HOLE CLEAN 3.0 POH 1.0 LAID DOWN 8" COLLARS D 2.5 RIGGED TO RUN CASING, BUSHING	AATIONS D 12 1/4" I PULLED WE		OPERATION  1. Rig Up/D  2. Drilling  3. Reaming  4. Coring  5. Circ.& C  6. Trips  7. Repair R	own ond		106.0 23.5 27.5 27.0 50.0 4.0
0000 1200 1330 1630 1730	HRS DETAILS OF PAST 24 HOURS OPEN D 12.0 OPENED 8 1/2" HOLE TO 1.5 CIRCULATED HOLE CLEAN 3.0 POH 1.0 LAID DOWN 8" COLLARS D 2.5 RIGGED TO RUN CASING, BUSHING	AATIONS D 12 1/4" I PULLED WE		OPERATION  1. Rig Up/D  2. Drilling  3. Reaming  4. Coring  5. Circ. & C  6. Trips  7. Repair R  8. Rig Main  9. Dev.Surve  10.Log & Pe  11.RU RunCs	own  ig t. ey ff	<u>DAY</u>	CUM 106.0 23.5 27.5 27.0 50.0 4.0 3.0 9.0 13.0 8.5
0000 1200 1330 1630 1730	HRS DETAILS OF PAST 24 HOURS OPEN D 12.0 OPENED 8 1/2" HOLE TO 1.5 CIRCULATED HOLE CLEAN 3.0 POH 1.0 LAID DOWN 8" COLLARS D 2.5 RIGGED TO RUN CASING, BUSHING	AATIONS D 12 1/4" I PULLED WE		OPERATION  1. Rig Up/D  2. Drilling  3. Reaming  4. Coring  5. Circ. & C  6. Trips  7. Repair R  8. Rig Main  9. Dev.Surv  10.Log & Pe	own  ig t. ey ff g,Tub BOPCsg	1.5 3.0	CUM 106.0 23.5 27.5 27.0 - 50.0 4.0 3.0 9.0 13.0
0000 1200 1330 1630 1730	HRS DETAILS OF PAST 24 HOURS OPEN D 12.0 OPENED 8 1/2" HOLE TO 1.5 CIRCULATED HOLE CLEAN 3.0 POH 1.0 LAID DOWN 8" COLLARS D 2.5 RIGGED TO RUN CASING, BUSHING	AATIONS D 12 1/4" I PULLED WE		OPERATION  1. Rig Up/D  2. Drilling  3. Reaming  4. Coring  5. Circ.& C  6. Trips  7. Repair R  8. Rig Main  9. Dev.Surv  10.Log & Pe  11.RU RunCs  12.Cementin  13.NU,Test (14.PU/LD,DP)  15.DST  16.Loss Circ  17.Remed.Cm  18.Fishing	own  ig t. ey f g, Tub BOPCsg	DAY  1.5 3.0	106.0 23.5 27.5 27.0 50.0 4.0 3.0 9.0 13.0 8.5 2.5 14.5
0000 1200 1330 1630 1730	HRS DETAILS OF PAST 24 HOURS OPEN D 12.0 OPENED 8 1/2" HOLE TO 1.5 CIRCULATED HOLE CLEAN 3.0 POH 1.0 LAID DOWN 8" COLLARS D 2.5 RIGGED TO RUN CASING, BUSHING	AATIONS D 12 1/4" I PULLED WE		OPERATION  1. Rig Up/D  2. Drilling  3. Reaming  4. Coring  5. Circ.& C  6. Trips  7. Repair R  8. Rig Main  9. Dev.Surve  10.Log & Pe  11.RU RunCs  12.Cementine  13.NU,Test N  14.PU/LD,DP  15.DST  16.Loss Circ  17.Remed.Cm  18.Fishing  19.Control N  20.WOO/Tools  21.WOW/WOC  22.Completic	own  ond  ig  t. ey  f, Tub  3 30PCsg  DC	DAY  1.5 3.0	106.0 23.5 27.5 27.0 50.0 4.0 3.0 9.0 13.0 8.5 2.5 14.5
0000 1200 1330 1630 1730	HRS DETAILS OF PAST 24 HOURS OPEN D 12.0 OPENED 8 1/2" HOLE TO 1.5 CIRCULATED HOLE CLEAN 3.0 POH 1.0 LAID DOWN 8" COLLARS D 2.5 RIGGED TO RUN CASING, BUSHING	AATIONS D 12 1/4" I PULLED WE		OPERATION  1. Rig Up/D  2. Drilling  3. Reaming  4. Coring  5. Circ. & C  6. Trips  7. Repair R  8. Rig Main  9. Dev.Surve  10.Log & Pe  11.RU RunCs  12.Cementing  13.NU,Test in  14.PU/LD,DP,  15.DST  16.Loss Circ  17.Remed.Cm  18.Fishing  19.Control in  20.WOO/Tools  21.WOW/WOC	own  ond  ig  t. ey  f  g, Tub  g  BOPCsg  Press  s, etc  on	DAY  1.5 3.0	CUM  106.0 23.5 27.5 27.0 50.0 4.0 3.0 9.0 13.0 8.5 2.5 14.5 1.0 19.0

#### DAILY DRILLING REPORT (ONSHORE)

1	Well	WINDERME	RE NO.	2	DOL/DS	<u>s</u> 19	/15 <u>Re</u>	eport	No.	16	<u>Date</u>	2	24/3,	/89	
2	Total De	pth -	1869m	Progress	NI	L <u>La</u>	st csg	9	5/8" @	1867m.	Log	gged to	1860	) m	
3	Current	<u>Activity</u>	PREPAR	ING TO	INSTALL	CASIN	G SPOO	L							
4	Dev/Dept	<u>h</u> • (	@	m; o	@	m; -	۰ @		m.		<u>L</u> 4	AST BOP	TEST	12/3	/89
	<u>Bit</u>	<u>Make</u>	Type	<u>Si</u>	ze	S/No	Noz	<u>?</u>	M/0	lut Me	tres	<u>Hrs</u>	M/H	<u>r</u> :	T.B.G.
6	_	-	-	_	_	•	_		_	_		~			
7 8	<u>Bit</u>	<u>₩08</u> <u>RPM</u> — —	STK -	LNR -	<u>SPM</u> 	GPM -	PSI	<u>AV</u>	<u>- NV</u>	<u>SHP</u> -	<u>BHP</u> —	<u>%HP</u> —	-	Tor –	HP/in
9	8HA Desc	ription:											•		
10	WELL COS	TS: Dai	ily\$	257,519	Cum\$	924,	586	MUD:	Dai	ly\$ NI	L	Cum\$	24	1098	
11	WT VIS 9.3 39	PV YP 13 12	Gels 2/5	<u>WL</u> 6.8	FC HT/HF	9.1	<u>Pf/Mf</u> .1	<u>Pm</u> •4	<u>Ca</u> <u>0</u> 140 21	1 MBT K 17.5	$\frac{\text{SC}}{6.3}$	Sand TR 2	<u>N03</u> 200	<u>KCL</u> 2.7	NaCl -
<u>Mud Mat</u>	:l's Used:	CEME	NT MAT		: 56 MAG CLASS CE		6 HAL	AD 3	322; 92	5SX					
13	_	ATER (bbls)		,	BARITE (100				IENT (941b	<del>*</del>		JEL (litr			
	U:	sed	Bal		Used	Bal	44		ed 8 92	<u>al</u> 5	<u> </u>	Ised	Bal 35	840	
14	<u>P08: Op</u>	<u>er</u> 1 <u>(</u>	Contr 1	5 <u>Ser</u>	vice G	EOD 1,				DFS 2,J	/ 1	<u>]</u>	<u> [otal</u>	24	
FROM 0000	HRS 10 O F	DETAILS OF				••			OPERAT 1. Rig U				DAY	CUM	<u> </u>
0000	10.01	47LB/FT	N80 R	3 CASIN	IG TO 18	67M			2. Drill	ing					06.0
		LITTERE TOUR	STAGE						<ol><li>Reami</li></ol>	ng					
		WITH DV 1038M, S				843M &			4. Corin	•			1.0	2	24.5 27.5
1000	1.0		OLLAR .	AT 1855	5M					& Cond			2.5	2	
		1038M, S FLOAT CO RIGGED U WASHED 6	OLLAR JP CIR SM FIL	AT 1855 CULATIN L	5M IG HEAD (				4. Corin 5. Circ. 6. Trips 7. Repai	& Cond r Rig				2 2 5	27.5 29.5 60.0 4.0
1000 1100 1200	1.0	1038M, S FLOAT CX RIGGED U WASHED 6 CIRCULAT RIGGED U	OLLAR DE CIRCONNECTED CASTOLEM CEM	AT 1855 CULATIN L SING CC ENTING	5M IG HEAD ONTENTS HEAD & '	& TESTED			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S	& Cond r Rig aint. urvey				2 2 5	27.5 29.5 50.0
1100	1.0	1038M, S FLOAT CX RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TX	OLLAR DE CIRCO SM FILE CASTON CEM DE CEM DE 3000	AT 1855 CULATIN L SING CC ENTING PSI.CEM	SM NG HEAD ONTENTS HEAD & ' JENTED F	& TESTED IRST			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log &	& Cond r Rig aint. urvey Perf			2.5	2 2 2 5 5	27.5 29.5 30.0 4.0 3.0 9.0
1100	1.0	1038M, S FLOAT CC RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TC STAGE WI 1% HALAI	DLLAR DEPOSITE OF CAME	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED	SM JG HEAD ONTENTS HEAD & ' JENTED F. ASS G CEL O PLUG W.	& TESTED IRST MENT &			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen	& Cond r Rig aint. urvey Perf nCsg,Tub ting			2.5 10.0 4.5	2 2 5 5	27.5 29.5 30.0 4.0 3.0 9.0 3.0 25.0
1100	1.0 2.0	1038M, S FLOAT CO RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TO STAGE WI 1% HALAI 2000PSI DROPPED	DLLAR DEPOSITE OF CEMPO 30000 TH 260 322. AT 13	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU	5M JG HEAD ONTENTS HEAD & ' JENTED F LSS G CE O PLUG W JRS	& TESTED IRST MENT & ITH			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen	& Cond r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg			2.5	1 2 2	77.5 99.5 60.0 44.0 33.0 99.0 33.0 7.0 70.5
1100 1200 1400	1.0 2.0	1038M, S FLOAT CO RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TO STAGE WI 1% HALAI 2000PSI DROPPED COLLAR	DLLAR DE CIR. DE CIR. DE CAMBRE CAMBR	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME	SM SIG HEAD SOUTENTS HEAD & ' SENTED F. SSS G CEI O PLUG W. SRS S & OPEN	& TESTED IRST MENT & ITH ED DV			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg ,DP/DC			2.5 10.0 4.5	1 2 2	27.5 29.5 30.0 4.0 3.0 9.0 3.0 25.0 7.0
1100 1200 1400 1430	1.0 2.0 0.5	1038M, S FLOAT CX RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TX STAGE WI 1% HALAI 2000PSI DROPPED COLLAR CIRCULAT GEL WATE	DLLAR DE CIRCO CIRCO CAMBRIL CAMBRIC C	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME	M IG HEAD ONTENTS HEAD & ' IENTED F. ASS G CE O PLUG W. IRS B & OPENI	& TESTED IRST MENT & ITH ED DV			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST 16.Loss 17.Remed	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg ,DP/DC  Circ .Cmt'g			2.5 10.0 4.5	1 2 2	77.5 99.5 60.0 44.0 33.0 99.0 33.0 7.0 70.5
1100 1200 1400	1.0 2.0 0.5	1038M, S FLOAT CX RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TO STAGE WI 1% HALAI 2000PSI DROPPED COLLAR CIRCULAT GEL WATE CEMENTEI CLASS G	DLLAR DELAR	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME SING & ND STAG % PREHY	M IG HEAD ONTENTS HEAD & ' IENTED F. ASS G CEI O PLUG W. IRS B & OPEN PREPARE EE WITH ( TORATED (	& TESTED IRST MENT & ITH ED DV D 659SX GEL.			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST 16.Loss	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg ,DP/DC  Circ .Cmt'g			2.5 10.0 4.5	1 2 2	77.5 99.5 60.0 44.0 33.0 99.0 33.0 7.0 70.5
1100 1200 1400 1430	1.0 2.0 0.5	1038M, S FLOAT CX RIGGED ( WASHED 6 CIRCULAT RIGGED ( LINES TO STAGE WI 1% HALAI 2000PSI DROPPED COLLAR CIRCULAT GEL WATE CEMENTEI CLASS G BUMPED I	DLLAR DE CIRCON CIRCON CAME CAME CAME CAME CAME CAME CAME CAME	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME SING & ND STAG % PREHY ITH 200	M IG HEAD ONTENTS HEAD & ' IENTED F. ASS G CEI O PLUG W. IRS B & OPEN PREPARE EE WITH ( TORATED (	& TESTED IRST MENT & ITH ED DV D 659SX GEL.			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST 16.Loss 17.Remed 18.Fishi 19.Contr 20.W00/T	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st BOPCsg ,DP/DC  Circ .Cmt'g ng ol Press ools,etc			2.5 10.0 4.5	2 2 2 2 1	27.5 29.5 30.0 4.0 3.0 9.0 3.0 25.0 7.0 20.5 1.0 9.0
1100 1200 1400 1430 1600	1.0 2.0 0.5 1.5 2.0	1038M, S FLOAT CX RIGGED U WASHED G CIRCULAT RIGGED U LINES TO STAGE WI 1% HALAI 2000PSI DROPPED COLLAR CIRCULAT GEL WATE CEMENTEI CLASS G BUMPED I DV STAGE CIP 1815	DLLAR DE CIR. DE CIR. DE CAMBRE COMMENTAL COMM	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME SING & ND STAG % PREHY ITH 200 AR S 24/4/	ONTENTS HEAD & ' HEAD	& TESTED IRST MENT & ITH ED DV D 659SX GEL. CLOSED			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST 16.Loss 17.Remed 18.Fishi 19.Contr 20.WOO/T 21.WOW/W 22.Compl	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg ,DP/DC  Circ .Cmt'g ng ol Press ools,etc DC etion			2.5 10.0 4.5	2 2 2 2 1	27.5 29.5 30.0 4.0 3.0 9.0 3.0 25.0 7.0 20.5 1.0 9.0
1100 1200 1400 1430	1.0 2.0 0.5 1.5 2.0	1038M, S FLOAT CX RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TO STAGE WI 1% HALAI 2000PSI DROPPED COLLAR CIRCULAT GEL WATE CEMENTEI CLASS G BUMPED F DV STAGE	DLLAR DE CIR. DE CIR. DE CAMBRE COMMENTAL COMM	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME SING & ND STAG % PREHY ITH 200 AR S 24/4/ SET CAS	M IG HEAD ONTENTS HEAD & ' IENTED F ASS G CE O PLUG W IRS B & OPEN PREPARE E WITH ( DOPSI & ( 89 SING SLII	& TESTED IRST MENT & ITH ED DV D 659SX GEL. CLOSED			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST 16.Loss 17.Remed 18.Fishi 19.Contr 20.WOO/T 21.WOW/W	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg ,DP/DC  Circ .Cmt'g ng ol Press ools,etc DC etion			2.5 10.0 4.5	1 2 2 1	27.5 29.5 30.0 4.0 3.0 9.0 3.0 25.0 7.0 20.5 1.0 9.0
1100 1200 1400 1430 1600	1.0 2.0 0.5 1.5 2.0	1038M, S FLOAT CX RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TO STAGE WI 1% HALAI 2000PSI DROPPED COLLAR CIRCULAT GEL WATE CEMENTEI CLASS G BUMPED I DV STAGE CIP 1815 LIFTED E HUNG CAS CASING S	DLLAR DE CIR. DE CIR. DE CAMBRE SECONDA DE COLLAR DE COL	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME SING & ND STAG % PREHY ITH 200 AR S 24/4/ SET CAS PREPAR	M IG HEAD IG HEAD IG HEAD INTENTS HEAD & 'IENTED F ISS G CEI INTENTED F ISS G CEI INTENTED IN	& TESTED IRST MENT & ITH ED DV D 659SX GEL. CLOSED PS NSTALL			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST 16.Loss 17.Remed 18.Fishi 19.Contr 20.WOO/T 21.WOW/W 22.Compl 23.P & A 24.FIT 25.D/H T	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg ,DP/DC  Circ .Cmt'g ng ol Press ools,etc DC etion			2.5 10.0 4.5	1 2 2 1	27.5 29.5 30.0 4.0 3.0 9.0 3.0 7.0 20.5 1.0 9.0 3.0 7.5
1100 1200 1400 1430 1600	1.0 2.0 0.5 1.5 2.0	1038M, S FLOAT CX RIGGED U WASHED 6 CIRCULAT RIGGED U LINES TO STAGE WI 1% HALAI 2000PSI DROPPED COLLAR CIRCULAT GEL WATE CEMENTEI CLASS G BUMPED I DV STAGE CIP 1815 LIFTED I HUNG CAS	DLLAR DE CIRCON FILM CONTROL CAME CAME CONTROL CAME CAME CAME CAME CAME CAME CAME CAME	AT 1855 CULATIN L SING CO ENTING PSI.CEM 6SX CLA BUMPED .55 HOU NG BOME SING & ND STAG % PREHY ITH 200 AR S 24/4/ SET CAS PREPAR	SM SIG HEAD SIG CE SIG CE SIG CE SIG CE SIG CE SIG HEAD S	& TESTED IRST MENT & ITH ED DV D 659SX GEL. CLOSED PS NSTALL			4. Corin 5. Circ. 6. Trips 7. Repai 8. Rig M 9. Dev.S 10.Log & 11.RU Ru 12.Cemen 13.NU,Te 14.PU/LD 15.DST 16.Loss 17.Remed 18.Fishi 19.Contr 20.W00/T 21.WOW/W 22.Compl 23.P & A 24.FIT	& Cond  r Rig aint. urvey Perf nCsg,Tub ting st 80PCsg ,DP/DC  Circ .Cmt'g ng ol Press ools,etc DC etion  rouble			2.5 10.0 4.5	2 2 2 2 1	27.5 29.5 30.0 4.0 3.0 9.0 3.0 7.0 20.5 1.0 9.0

RIG NAME: ATCO A2 DRILLING SUPERVISOR: J E OZOLINS

1	Well WI	NDERMERE N	0.2	DOL/	DSS	20/16	Report N	<u>lo</u> .	17	Date		25/3/	89
2	Total Dep	o <u>th</u> 1869	m <u>Progre</u>	ess Nil	m	Last csg	9 5/	/8'' @	1867m	Loggi	ed to	1860	m
3	Current A	Activity DR	ILLING OU	— Г STAGE									
4	Dev/Depth	0 @	m;	· @	m; -	- 0@	m.			LAST	r 80P T	<u>EST</u> 25	/3/89
5 6	8 <u>it</u> 6			Size B 1/2"	<u>\$/No</u> P8251		<u>loz</u> 10 14	M/Out	<u>Met</u>	res	<u>Hrs</u>	M/Hr	<u>T.B.G</u> .
	Bit WO DRILL		STK LNR	<u>SPM</u>	<u>GPM</u>	PSI	<u>AV</u>	<u>NV</u>	<u>SHP</u>	<u>8HP</u>	<u>%HP</u>	Tor	HP/in
9	BHA Descr DC'S	iption: BIT S-DAILY DR	-REAMER-6 ILLING JAI	1/2" DO RS-1 X O	C'S-S7 6 1/2'	ГАВ-2 X ' DC- 63	6 1/2" XHWDP (	MONEL 137 1/	S-STAB- 2 HRS (	-19 X ( )N JARS	3 1/2 3)	**	
10	WELL COST	S: Dailys	20861	Cum\$	<u>)</u> 94	45,447	MUD:	NIL <u>Daily</u>	<u>\$</u>		Cum\$	24	4098
11	WT VIS 9.3 35	$\frac{PV}{8} = \frac{YP}{7}$	Gels WL 1/3 8.0	FC HT 1 -	<u>:/нр</u> - 1	<u>рН</u> <u>Рf</u> 11.5 .7	$\frac{Mf}{1.1}$	Ca Cl 100 22	<u>МВТ</u> К 15.0	$\frac{\text{SC}}{6.4}$	Sand TR	NO3 100	KCL NaCl 2.8 -
12	Mud Matl'	s Used:	NIL	( હ									
13	W	ATER (bbls)		BARITE (	1001b)		CEME	NT (941b)		FU	JEL (lit	tres)	
-	Us		ıl ·		Bal		Used	Bal		Us	ed	Bal	-
					432		400			15	560	32930	)
14	POB: Op	er 2 <u>Cont</u>	<u>r</u> 15 <u>Se</u>	rvice	GEOD	2;HALL	2;IDF	S 1;	JV 1		<u>To</u>	otal 2	23
FROM	HRS	DETAILS OF P	AST 24 HOURS	OPERATIONS	<u>1</u> .		·	OPERATIO	ON_	-	<u>Tc</u>	<u>DAY</u>	23 <u>cum</u>
	HRS	DETAILS OF P	AST 24 HOURS D CASING S	OPERATIONS SPOOL. 7	_ PESTED	)	1	OPERATION OPERAT	ON_ / Down	_	<u>Tc</u>	DAY	CUM
FROM	HRS	DETAILS OF PINSTALLED PACKOFF (	AST 24 HOURS	OPERATIONS SPOOL. T SKET TO	_ PESTED	)	1 2	OPERATION OPERAT	ON /Down ng	L	<u>I</u> (	DAY .	<u>cum</u> 106.0
FROM	HRS 3.5	DETAILS OF PINSTALLED PACKOFF (	AST 24 HOURS D CASING S & RING GAS ED UP BOPS	OPERATIONS SPOOL. T SKET TO	ESTED 3500F	) PSI	1 2 3	OPERATION OPERAT	ON_ /Down ng rillout	L	<u>Tc</u>	DAY .	CUM
<u>FROM</u> 0000	HRS 3.5	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLIREMOVED PLUG. SET	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA T PLUG IN	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING	TESTED 3500F ROM TE	) SI EST	1 2 3 2	OPERATION 1. Rig Up, 2. Drillion 3. Ream/Do 4. Coring 5. Circ.&	ON_ /Down ng rillout	Į.	<u> I</u>	DAY .	106.0 25.5 27.5 29.0
<u>FROM</u> 0000	HRS 3.5	DETAILS OF PINSTALLEI PACKOFF & OK.NIPPLI REMOVED PLUG. SET	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA I PLUG IN P & PRESSU	OPERATIONS SPOOL. TO SKET TO SAPTOR FE CASING RE TEST	TESTED 3500F ROM TE SPOOL TED BL	) SI EST LIND	1 2 3 4 5	OPERATION 1. Rig Up, 2. Drillion 3. Ream/Do 4. Coring 5. Circ.& 6. Trips	ON_ /Down ng rillout Cond.	<u>[</u>	<u>I.</u>	1.0 2.0	106.0 25.5 27.5 29.0 52.0
<u>FROM</u> 0000	HRS 3.5	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED PLUG. SET RIGGED UI RAMS TO A	AST 24 HOURS OF CASING SET UP BOPS 13 3/8"ADAT PLUG IN P & PRESSU	OPERATIONS SPOOL. 7 SKET TO S APTOR FF CASING RE TEST	TESTED 3500F ROM TE SPOOL TED BL	) SI EST LIND	1 2 3 4 5	OPERATION 1. Rig Up, 2. Drillion 3. Ream/Do 4. Coring 5. Circ.& 6. Trips 7. Repair	ON_/Down ng rillout Cond. Rig		<u>I</u> 0	1.0 2.0 9.5	106.0 25.5 27.5 29.0 52.0 13.5
<u>FROM</u> 0000	HRS 3.5	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED PLUG. SET RIGGED UI RAMS TO 4 1500PSI.	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO	OPERATIONS SPOOL. 7 SKET TO S APTOR FF CASING JRE TEST STED HY OKE MANI	TESTED 3500F ROM TE SPOOL TED BL VDRIL IFOLD	SI EST LIND TO	1 2 3 4 5 6	OPERATION  1. Rig Up, 2. Drillin 3. Ream/Dr 4. Coring 5. Circ.& 6. Trips 7. Repair 8. Rig Mai	ON_/Down ng rillout Cond. Rig int.		<u>I</u> 0	1.0 2.0	106.0 25.5 27.5 29.0 52.0 13.5 3.5
<u>FROM</u> 0000	HRS 3.5 5.5	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED PLUG. SET RIGGED UI RAMS TO 4 1500PSI. TVALVES TO	AST 24 HOURS OF CASING SET UP BOPS 13 3/8"ADAT PLUG IN P & PRESSU	OPERATIONS SPOOL. TO SKET TO S APTOR FR CASING JRE TEST ESTED HY KE MANI PIPE RA	TESTED 3500F ROM TE SPOOL TED BL VDRIL IFOLD	SI EST LIND TO	1 2 3 8 6 7	OPERATION  1. Rig Up, 2. Drillin 3. Ream/Do 4. Coring 5. Circ.& 6. Trips 7. Repair 8. Rig Mai 9. Dev.Sun	ON_/Down ng rillout Cond. Rig int. rvey		<u>I</u> 0	1.0 2.0 9.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5
FROM 0000 0330	HRS 3.5 5.5	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED DETAILS OF PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE	AST 24 HOURS D CASING SE RING GASED UP BOPS 13 3/8"ADA T PLUG IN P & PRESSU 4000PSI.TE TESTED CHO D 4000PSI. PIPE RAMS TESTED PI	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING FRE TEST STED HY OKE MANI PIPE RA	TESTED 3500F ROM TE SPOOL TED BL YDRIL IFOLD AMS LE	OSI EST LIND TO EAKED	1 2 3 8 6 7	OPERATION  1. Rig Up, 2. Drillin 3. Ream/Dr 4. Coring 5. Circ.& 6. Trips 7. Repair 8. Rig Mai	ON /Down ng rillout Cond. Rig int. rvey Perf		<u>I</u> 0	1.0 2.0 9.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5
FROM 00000 0330 0900 1830	HRS 3.5 5.5 9.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED DETAILS OF PLUG. SET RIGGED UI RAMS TO A 1500PSI. TVALVES TO REPAIRED PRESSURE PSI.OK.LA	AST 24 HOURS D CASING SE RING GASED UP BOPS 13 3/8"ADA T PLUG IN P & PRESSU 4000PSI.TE TESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN T	OPERATIONS SPOOL. TO SKET TO SAPTOR FE CASING JRE TEST STED HY SKE MANI PIPE RA STEE TO STEE STEE STEE STEE STEE STEE STEE ST	TESTED 3500F ROM TE SPOOL TED BL YDRIL IFOLD AMS LE	EST LIND TO EAKED	1 2 3 4 5 6 7 8 8	OPERATION OPERAT	ON /Down ng rillout Cond. Rig int. rvey Perf Csg,Tub ing		<u> I</u>	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0
FROM 0000 0330 0900	HRS 3.5 5.5	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED DETAILS OF PLUG. SET RIGGED UI RAMS TO A 1500PSI. TVALVES TO REPAIRED PRESSURE PSI.OK.LA INSTALLED	AST 24 HOURS D CASING SE RING GASED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHC D 4000PSI. PIPE RAMS TESTED PI AID DOWN ID WEAR BUS	OPERATIONS SPOOL. TO SKET TO SAPTOR FF CASING JRE TEST STED HY OKE MANI PIPE RA STEP RAMS TEST PLU SHING &	TESTED 3500F ROM TE SPOOL TED BL YDRIL IFOLD AMS LE	EST LIND TO EAKED	1 2 3 4 5 6 7 8 8 9	OPERATION OPERAT	ON //Down ng rillout Cond. Rig int. rvey Perf Csg,Tub ing t BOPCsg		<u>I</u> 0	1.0 2.0 9.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5
FROM 00000 0330 0900 1830 1930	HRS 3.5 5.5 9.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED DETAILS OF PLUG. SET RIGGED UT RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LA INSTALLED X/OS & RU	AST 24 HOURS D CASING SE RING GASED UP BOPS 13 3/8"ADA T PLUG IN P & PRESSU 4000PSI.TE TESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO D WEAR BUS JINNING TOO	OPERATIONS SPOOL. TO SKET TO SAPTOR FF CASING JRE TEST STED HY OKE MANI PIPE RA STEP RAMS TEST PLU SHING & OL	TESTER 3500F 3500F ROM TE SPOOL TED BL (DRIL IFOLD AMS LE JG & X LAID	EST LIND TO EAKED	1 2 3 4 5 6 7 8 9 1 1 1 1	OPERATION OPERAT	ON //Down ng rillout Cond. Rig int. rvey Perf Csg,Tub ing t BOPCsg		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0
FROM 00000 0330 0900 1830	HRS 3.5 5.5 9.5 1.0	DETAILS OF PERSONNELS PACKOFF (OK.NIPPLI) REMOVED DETAILS PLUG. SET RIGGED UI RAMS TO (1500PSI.) VALVES TO REPAIRED PRESSURE PSI.OK.L/ INSTALLEI X/OS & RU MADE UP 1	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA T PLUG IN P & PRESSU 4000PSI.TE TESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINNING TOC BIT #6 & R	OPERATIONS SPOOL. TO SKET TO SAPTOR FF CASING RE TEST ESTED HY OKE MANI PIPE RAMS TPE RAMS EST PLU SHING & OL ETH TO 5	TESTER 3500F 3500F ROM TE SPOOL TED BL (DRIL IFOLD AMS LE JG & X LAID	EST LIND TO EAKED	1 2 3 4 5 6 7 8 9 1 1 1 1 1	OPERATION OPERAT	ON //Down ng rillout Cond. Rig int. rvey Perf Csg, Tub ing t BOPCsg DP/DC		<u> I</u>	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5
FROM 00000 0330 0900 1830 1930 2030 2130 2200	HRS 3.5 5.5 9.5 1.0 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLI REMOVED DETAILS TO REGED UT RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LA INSTALLED X/OS & RU MADE UP ISLIPPED I	AST 24 HOURS D CASING SE RING GASED UP BOPS 13 3/8"ADA T PLUG IN P & PRESSU 4000PSI.TE TESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO D WEAR BUS JINNING TOO	OPERATIONS SPOOL. TO SKET TO SAPTOR FF CASING RE TEST STED HY OKE MANI PIPE RAMS PERAMS EST PLU SHING & OL LINE	TESTER 3500F 3500F ROM TE SPOOL TED BL (DRIL IFOLD AMS LE JG & X LAID	EST LIND TO EAKED	1 2 3 6 7 8 9 1 1 1 1 1	OPERATION OPERAT	ON_/Down ng rillout Cond. Rig int. rvey Perf Csg,Tub ing t BOPCsg DP/DC		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0
FROM 00000 0330 0900 1830 1930 2030 2130	9.5 1.0 1.0 0.5	DETAILS OF PERSONNELLES PACKOFF & OK.NIPPLI REMOVED : PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LA INSTALLES X/OS & RU MADE UP H SLIPPED I RIH.INSTAL TAGGED CH	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R EMENT AT 1	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OPERATION  OPERATION  Ream/Do  Ream/Do  Coring Cori	ON //Down ng rillout  Cond.  Rig int. rvey Perf Csg, Tub ing t BOPCsg DP/DC irc Cmt'g		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0
FROM 00000 0330 0900 1830 1930 2030 2130 2200	9.5 1.0 1.0 0.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLE REMOVED TO PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LAINSTALLED X/OS & RUMADE UP HE SLIPPED IRIH.INSTATAGGED CHOUT CEMEN	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA I PLUG IN P & PRESSU 4000PSI.TE TESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN T D WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OPERATION OPERAT	ON /Down ng rillout Cond. Rig int. rvey Perf Csg, Tub ing t BOPCsg OP/DC irc Cmt'g		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0
FROM 00000 0330 0900 1830 1930 2030 2130 2200	9.5 1.0 1.0 0.5 1.0	DETAILS OF PERSONNELLES PACKOFF & OK.NIPPLI REMOVED : PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LA INSTALLES X/OS & RU MADE UP H SLIPPED I RIH.INSTAL TAGGED CH	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R EMENT AT 1	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 1 1 1 1 1 1 1 2 2 1 1 2 2 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1	OPERATION OPERAT	ON /Down ng rillout Cond. Rig int. rvey Perf Csg, Tub ing t BOPCsg OP/DC irc Comt'g I Press ols, etc		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0 19.0
FROM 00000 0330 0900 1830 1930 2030 2130 2200	9.5 1.0 1.0 0.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLE REMOVED TO PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LAINSTALLED X/OS & RUMADE UP HE SLIPPED IRIH.INSTATAGGED CHOUT CEMEN	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R EMENT AT 1	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 1 2 2 2 2 2 3 3 4 4 5 5 6 6 7 6 8 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6	OPERATION OPERAT	ON //Down ng rillout Cond. Rig int. rvey Perf Csg, Tub ing t BOPCsg OP/DC irc Cmt'g I Press ols, etc ;		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0
FROM 00000 0330 0900 1830 1930 2030 2130 2200	9.5 1.0 1.0 0.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLE REMOVED TO PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LAINSTALLED X/OS & RUMADE UP HE SLIPPED IRIH.INSTATAGGED CHOUT CEMEN	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R EMENT AT 1	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 1 2 2 2 2 2 2 3 3 4 4 5 5 6 6 7 6 8 6 7 6 8 6 7 6 8 6 7 6 8 6 7 6 7	OPERATION OPERAT	ON //Down ng rillout Cond. Rig int. rvey Perf Csg, Tub ing t BOPCsg OP/DC irc Cmt'g I Press ols, etc ;		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0 19.0
FROM 00000 0330 0900 1830 1930 2030 2130 2200	9.5 1.0 1.0 0.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLE REMOVED TO PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LAINSTALLED X/OS & RUMADE UP HE SLIPPED IRIH.INSTATAGGED CHOUT CEMEN	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R EMENT AT 1	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2	OPERATION OPERAT	ON //Down ng rillout Cond.  Rig int. rvey Perf Csg, Tub ing t BOPCsg OP/DC irc Cmt'g I Press ols, etc ction		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0 19.0
FROM 00000 0330 0900 1830 1930 2030 2130 2200	9.5 1.0 1.0 0.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLE REMOVED TO PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LAINSTALLED X/OS & RUMADE UP HE SLIPPED IRIH.INSTATAGGED CHOUT CEMEN	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R EMENT AT 1	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2	OPERATION OPERAT	ON //Down ng rillout Cond. Rig int. rvey Perf Csg, Tub ing t BOPCsg DP/DC irc Cat'g J I Press ols, etc Ction		<u>I</u> 0	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0 19.0
FROM 00000 0330 0900 1830 1930 2030 2130 2200	9.5 1.0 1.0 0.5 1.0	DETAILS OF PINSTALLED PACKOFF & OK.NIPPLE REMOVED TO PLUG. SET RIGGED UI RAMS TO A 1500PSI. TO VALVES TO REPAIRED PRESSURE PSI.OK.LAINSTALLED X/OS & RUMADE UP HE SLIPPED IRIH.INSTATAGGED CHOUT CEMEN	AST 24 HOURS D CASING S RING GAS ED UP BOPS 13 3/8"ADA F PLUG IN P & PRESSU 4000PSI.TE FESTED CHO D 4000PSI. PIPE RAMS TESTED PI AID DOWN TO WEAR BUS JINING TOO SIT #6 & R DRILLING L ALLED DP R EMENT AT 1	OPERATIONS SPOOL. TO SKET TO SAPTOR FR CASING THE TEST STED HY OKE MANI PIPE RA STEST PLUSHING & OL LINE UBBERS 037M.DE	TESTER 3500F 3500F SOM TE SPOOL TED BL TORIL IFOLD AMS LE S TO 4 JG & X LAID	EST LIND TO EAKED COO COS. DOWN	1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2	OPERATION OPERAT	ON //Down ng rillout  Cond.  Rig int. rvey Perf Csg, Tub ing t BOPCsg OP/DC  irc Cmt'g I Press ols, etc Cition		<u>I</u> 6	1.0 2.0 9.5 0.5	106.0 25.5 27.5 29.0 52.0 13.5 3.5 9.0 13.0 25.0 7.0 31.5 1.0 19.0

## DAILY DRILLING REPORT (ONSHORE)

1	Well WI	NDERMERE	NO.2		<u>D01</u>	L/DSS	21/1	7 Rep	ort No	•	18	Da	ite	26/3/	′89	
2	Total Dep	oth 18	69m	Progres	ss Ni	1 m	Last c	sg (	9 5/8	3'' @	1867m	Lo	gged to	1860	m	
3	Current A	<u>lctivity</u>	FINISH	PRESS	URE I	ESTING	. PRE	PARE :	TO ST	ART I	DRILLI!	IG CE	MENT			
4	Dev/Depth	<u>)</u> o	@ m	ı; °	@	m;	_ 0	@	m.			Ĩ	AST BOP	TEST 25	5/3/8	89
5 6	$\frac{Bit}{6}$	Make REED	<u>Type</u> HP43 MUDP	A 8	ize 1/2"	<u>\$/N</u> P825		Noz 10	14	M/Ou	<u>t</u> <u>Me</u>	tres	<u>Hrs</u>	M/Hr	_ <u>I</u>	<u>.B.G</u> .
7 8	Bit WO	<u>ob</u> <u>rpm</u>	STK	LNR	SPM	<u>GPM</u>	<u>PSI</u>	<u>A</u> '	<u>v</u>	<u>NV</u>	<u>SHP</u>	<u>8HP</u>	<u>%HP</u>	<u>To</u>	<u>r</u>	<u>HP/in</u>
9	BHA Descr	iption: B S-DAILY	IT-REA DRILLI	MER-6 NG JAR	1/2" S-1 X	DC'S-S	STAB-2 "DC-	X 6 1 6XHWI	1/2" DP (1	MONE:	LS-STAE /2 HRS	8-19 X ON JA	X 6 1/2 ARS)	2"		
10	WELL COST	S: Dai	ly\$	15890	Cu	<u>ım\$</u> 9	61,337	' <u>M</u> I	UD:	Dail	<u>y\$</u> 12	22	Cum\$	2	4220	)
11	WT VIS	<u>PV YP</u>	Gels -	<u>WL</u> —	<u>FC</u>	<u>HT/HP</u>	<u>H</u> q	<u> </u>	Mf Ca	<u>C1</u>	MBT	<u>sc</u>	Sand	<u>NO3</u>	KCL	NaC1
12	Mud Matl'	s Used:	6 B	ICARB												
	1100	<u> </u>	0 2	1011111					-						( હ	
13		ATER (bbls)				(1001b)			CEMENT	(941b	<b>.</b>		FUEL (li	tres)	_	
	Us	ed	Bal		Used	8al 432			Used	Ва	1		Used	Bal		
						432			400				2400	3053	U	
14	<u> 908: Op</u>	<u>er</u> 2 <u>0</u>	ontr 1	5 Ser	vice	GEOD	2:HAI	J.T 2.	TDFS	1;	JV	1	T	otal	23	
						unon	_,		,	•	•	_	1	-		
FROM		DETAILS O	F PAST 24	4 HOURS O	PERATIO	INS	_,	ш. 2,		OPERAT	ION		<u>.</u>	DAY		<u>M</u> =
0000	$\overline{2.0}$	DETAILS O DRILLEI RIH INS	F PAST 24	4 HOURS O	PERATIO	NS R.	_,		1.	OPERAT Rig U	ION D/Down		<u>.</u>	-	<u>cu</u>	
	$\begin{array}{ccc} \hline 0 & \overline{2.0} \\ 0 & 2.0 \end{array}$	DRILLEI RIH INS DRILLEI	F PAST 24 D OUT 3 STALLII D OUT 6	4 HOURS O STAGE ( NG PIPI OPENING	PERATIO COLLA E RUB G BOM	NS_ R. BERS B & SH	UT	LJI 21,	1. 2. 3.	OPERAT Rig U Drill Ream/	ION p/Down ing Drillout		<u>.</u>	-	<u>CU</u>	06.0 9.5
0000	$\begin{array}{ccc} \hline 0 & \overline{2.0} \\ 0 & 2.0 \end{array}$	DRILLEI RIH INS DRILLEI OFF BAI	F PAST 24 D OUT S STALLII D OUT ( FFLE. 1	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI	PERATIO COLLA E RUB G BOM D OUT	NS R. BERS B & SH FLOAT	UT	LI 2,	1. 2. 3. 4.	OPERAT Rig U Drill Ream/I	ION p/Down ing Drillout			DAY .	11 2' 2'	06.0 9.5 7.5
0000 0200 0400	2.0 2.0 2.0 2.0	DRILLEI RIH INS DRILLEI OFF BAI COLLAR	F PAST 20 D OUT : STALLII D OUT ( FFLE. 1 & CEM	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO	PERATIO COLLA E RUB G BOM D OUT 1857	NS R. BERS B & SH FLOAT M	UT	LI 2,	1. 2. 3. 4.	OPERAT Rig U Drill Ream/ Coring	ION p/Down ing Drillout J & Cond.			<u>DAY</u> 4.0	1: 2: 2: 2:	06.0 9.5 7.5 9.0
0000 0200 0400	2.0 2.0 2.0 2.0	DRILLEI RIH INS DRILLEI OFF BAI	F PASI 24 D OUT : STALLII D OUT ( FFLE. I & CEMI ON HAI	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBUR	PERATIO COLLA E RUB G BOM D OUT 1857	NS_ R. BERS B & SH FLOAT M O ARRI	UT VE	LI 2,	1. 2. 3. 4. 5.	OPERAT Rig U Drill Ream/ Corin Circ. Trips	ION p/Down ing Drillout G & Cond.			DAY 4.0	2 <sup>1</sup> 2 <sup>2</sup> 2 <sup>3</sup> 5	06.0 9.5 7.5 9.0 4.0
0000 0200 0400 0600 0700	2.0 2.0 2.0 2.0 1.0 1.5	DRILLEI RIH INS DRILLEI OFF BAI COLLAR WAITED ATTEMPT - PIPE	F PASI 24 D OUT 6 STALLII D OUT 6 FFLE. I & CEMI ON HAI TED TO RAMS I	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBUR PRESSO LEAKED	PERATIO COLLA E RUB G BOM D OUT 1857 ION TO	NS_ R. BERS B & SH FLOAT M O ARRI	UT VE	ш. 2,	1. 2. 3. 4. 5. 6.	OPERAT Rig U Drill Ream/ Corin Circ. Trips	ION p/Down ing Drillout B & Cond.			<u>DAY</u> 4.0	11 2 2 2 2 5 5 2 2 1 3	06.0 9.5 7.5 9.0 4.0 9.0
0000 0200 0400 0600 0700	2.0 2.0 2.0 2.0	DRILLEI RIH INS DRILLEI OFF BAI COLLAR WAITED ATTEMPT - PIPE REPAIRI	F PASI 24 D OUT ( STALLII D OUT ( FFLE. I & CEMI ON HAI TED TO RAMS I	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBURS PRESSU LEAKED	PERATIO COLLA E RUB G BOM D OUT 18571 ION TO	NS R. BERS B & SH FLOAT M O ARRI EST CAS	UT VE SING	ш. 2,	1. 2. 3. 4. 5. 6. 7. 8.	OPERAT Rig U Drill Ream/I Coring Circ.i Trips Repair Rig Ma Dev.Se	ION  p/Down  ing  prillout  G  Cond.  Rig  aint.  urvey			DAY 4.0	200 200 200 200 200 200 200 200	06.0 9.5 7.5 9.0 4.0 9.0 3.5
0000 0200 0400 0600 0700	2.0 2.0 2.0 2.0 1.0 1.5	DRILLEI RIH INS DRILLEI OFF BAI COLLAR WAITED ATTEMPT - PIPE REPAIRI -FOUND	F PASI 24 O OUT ( STALLII O OUT ( FFLE. I & CEMI ON HAI TED TO RAMS I ED BOP FAULT	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBUR PRESSO LEAKED LEAKS Y GAUGI	PERATIO COLLA E RUB G BOM D OUT 1857 ION TO URE TO	INS R. BERS B & SH FLOAT M O ARRI EST CAS	UT VE SING L		1. 2. 3. 4. 5. 6. 7. 8. 9.	OPERAT  Rig Up Drill Ream/Coring Circ. Trips Repair Rig Ma Dev.St.	DONDOWN ing Orillout G & Cond. Rig aint. urvey Perf			DAY 4.0	11 2 2 2 2 2 5 5 2 1 3	06.0 9.5 7.5 9.0 4.0 9.0 3.5
0000 0200 0400 0600 0700	2.0 2.0 2.0 2.0 1.0 1.5	DRILLEI RIH INS DRILLEI OFF BAI COLLAR WAITED ATTEMPT - PIPE REPAIRI -FOUND PANEL	F PASI 24 D OUT ( STALLII D OUT ( FFLE. I & CEMI ON HAI FED TO RAMS I ED BOP FAULT	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBURS PRESSU LEAKED	PERATIO COLLA E RUB G BOM D OUT 1857 ION TO URE TO	INS R. BERS B & SH FLOAT M O ARRI EST CAS	UT VE SING L		1. 2. 3. 4. 5. 6. 7. 8. 9.	OPERAT  Rig Up Drill Ream/Coring Circ. Trips Repair Rig Ma Dev.St Log & .RU Rut	DONDOWN ing Orillout G & Cond. Rig aint. urvey Perf nCsg,Tub			DAY 4.0	20 22 25 5 21 21	06.0 9.5 7.5 9.0 4.0 9.0 3.5 9.0 3.5
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0000 0200 0400 0600 0700	2.0 2.0 2.0 2.0 1.0 1.5	DRILLEI RIH INS DRILLEI OFF BAI COLLAR WAITED ATTEMPY - PIPE REPAIRI -FOUND PANEL PRESSU -ATTEMI OF SPO	F PASI 20 D OUT ( STALLII D OUT ( STLE. I & CEMI ON HAI TED TO RAMS I ED BOP FAULT INCREA JRE PTED TO OOL BET	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBURY PRESSU LEAKED LEAKS Y GAUCH ASED PI O RETES	PERATIO COLLA E RUB G BOM D OUT 1857 ION TO URE TO	INS R. BERS B & SH FLOAT M O ARRI EST CAS CONTROL AM CLOS	UT VE SING L SING		1. 2. 3. 4. 5. 6. 7. 8. 9. 10 11 12 13	OPERAT  Rig U Drill Ream/ Corin Circ. Trips Repair Rig M Dev.St Log & .RU Ru .Cement .NU,Tes .PU/LD	DON DOWN ing Drillout B Cond. Rigaint. Bryey Perf Cog, Tub			DAY 4.0 2.0 15.5	11 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3	06.0 9.5 7.5 9.0 4.0 9.0 3.5 9.0 3.5 9.0 3.0 7.0
0000 0200 0400 0600 0700	2.0 2.0 2.0 2.0 1.0 1.5	DRILLEI RIH INS DRILLEI OFF BAI COLLAR WAITED ATTEMPY - PIPE REPAIRI -FOUND PANEL PRESSU -ATTEMI OF SPO	F PAST 20 D OUT ( STALLII D OUT ( STLE. I & CEMI ON HAI TED TO RAMS I ED BOP FAULT INCREA JRE PTED TO LEAKED	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBURY PRESSU LEAKED LEAKS Y GAUGH ASED PI O RETES IWEEN I	PERATIO COLLA E RUB G BOM D OUT 1857 ION TO URE TO E ON ( IPE R.	INS R. BERS B & SH FLOAT M O ARRI EST CAS CONTRO AM CLOS OWER FI & BLINI	UT VE SING L SING LANGE D		1. 2. 3. 4. 5. 6. 7. 8. 9. 10 11 12 13	OPERAT Rig Uprill Ream/Coring Circ.i Trips Repair Rig Ma Dev.St Log & .RU Run .Cement .NU, Tes .PU/LD .DST	DON Dy/Down ing Drillout Cond. Rig Aint. Jurvey Perf ACSG, Tub ting St BOPCSG DP/DC			DAY 4.0 2.0 15.5	11 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3	06.0 9.5 7.5 9.0 4.0 9.0 3.5 9.0 3.5 9.0
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0000 0200 0400 0600 0700	2.0 2.0 2.0 2.0 1.0 1.5	DRILLEI RIH INS DRILLEI OFF BAI COLLAR WAITED ATTEMPT - PIPE REPAIRI -FOUND PANEL. PRESSU -ATTEMPT OF SPO RAMS I -POH.LI REPLAO	F PAST 20 D OUT ( FFLE. I & CEMI ON HAI TED TO RAMS I ED BOP FAULT INCREA INCRE	4 HOURS O STAGE ( NG PIPI OPENING DRILLEI ENT TO LLIBURY PRESSU LEAKED LEAKS Y GAUGH ASED PI O RETES IWEEN I	PERATIO COLLA E RUB G BOM D OUT 1857 ION TO URE TO E ON C IPE R ST. LA PIPE & & BL KET &	INS R. BERS B & SHI FLOAT M O ARRI EST CAS CONTRO AM CLOS OWER FI & BLINI SHORTI	UT VE SING L SING LANGE D MS ENED		1. 2. 3. 4. 5. 6. 7. 8. 9. 10 11 12 13 14 15 16	OPERAT Rig Uprill Ream/Coring Circ.i Trips Repair Rig Ma Dev.St Log & .RU Run .Cement .NU, Tes .PU/LD .DST	DONDOWN  ing  Orillout  Cond.  Rig  aint.  urvey  Perf  aCsg,Tub  ting  st BOPCsg  DP/DC  Carc  Cart'g			DAY 4.0 2.0 15.5	11 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3	06.0 9.5 7.5 9.0 4.0 9.0 3.5 9.0 3.5 9.0 3.0 7.0
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RIG NAME: ATOO A2

DRILLING SUPERVISOR: J E OZOLINS

1	Well WINDERMERE NO.2 DOL/DSS 22	/18 Report No. 19	<u>Date</u> 27/3/89
2	Total Depth 2008m Progress 139 m Las	t csg 9 5/8" @ 1867m.	Logged to 1860 m
3	Current Activity DRILLING 8 1/2" HOLE.		
4	Dev/Depth 1/20@ 1936m; 0 @ m; -	o @ m.	LAST BOP TEST 26/3/89
5 6	Bit         Make         Type         Size         S/No           6         REED         HP43A         8 1/2"         P82514	Noz O,10,14 - 139	$\frac{\text{res}}{21.0}  \frac{\text{H/Hr}}{6.6}  \frac{\text{T.B.G.}}{6.6}$
7 8	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	PSI AV NV SHP 1875 136 406 314 235	BHP         \$HP         Tor         HP/in           228         73         375         4.02
9	BHA Description: BIT-REAMER- 61/2" MONEL DC'S-DAILEY DRILLING JARS-1 X 6	-STAB-2X6 1/2" DC'S-STAE 1/2" DC-6XHWDP (158.5 HC	3-19 X 6 1/2" DURS ON JARS)
10	WELL COSTS: Daily\$ 15,923 Cum\$ 977,	260 <u>MUD</u> : <u>Daily\$</u> 1	39 <u>Cum\$</u> 24359
11	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\frac{\text{Pf/Mf}}{20.5} = \frac{\text{Pm}}{1.3} = \frac{\text{Ca}}{360} = \frac{\text{Cl}}{19\text{K}} = \frac{\text{MBT}}{20.6}$	SC         Sand         NO3         KCL         Nacl           7.3         TR         150         2.4         -
12	Mud Matl's Used: 2 SODIUM NITRATE, 2 SOD Control)	IUM SULFITE (Corrosion	
13	WATER (bbls)  BARITE (1001b)	CEMENT (941b)	FUEL (litres)
	Used Bal Used Bal 432	Used Bal 400	Used Bal 3260 27270
14	POB: Oper 2 Contr 15 Service GEOD 2;	IDFS 1;JVP 1;	Total 21
FROM OOOO	HRS DETAILS OF PAST 24 HOURS OPERATIONS  1.5 DRILLED OUT CEMENT AND SHOE	<u>OPERATION</u> 1. Rig Up/Down	DAY CUM
0130 <b>020</b> 0	0.5 DRILLED TO 1872M	2. Drilling 3. Ream/Drillout	21.0 127.0 1.5 31.0
0200	LEAKED OFF WITH 1100PSI/9.2PPG MUD-EMW 12.7PPG	4. Coring	<sub></sub> 27.5
0300		5. Circ.& Cond. 6. Trips	29.5 54.0
1530		7. Repair Rig	29.0
1600	8.0 DRILLED TO 2008M	8. Rig Maint.	3.5
		9. Dev.Survey 10.Log & Perf	0.5 9.5 13.0
		11.RU RunCsg,Tub	25.0
	•	12.Cementing	7.0
	•	13.NU,Test 80PCsg 14.PU/LD,DP/DC	33.0
		14.PO/LD,DP/DC	1.0 19.0
		16.Loss Circ	•/
	•	17.Remed.Cmt'g	
		18.Fishing 19.Control Press	
	•	20.WOO/Tools,etc	4.0
		21.WOW/WOC	9.5
		22.Completion	
		77 N ♦ A	
		<b>23.P &amp; A</b> 24.FIT	1.0 3.0
	-	<b>23.P &amp; A</b> 24.FIT 25.D/H Trouble	1.0 3.0 7.5
	-	24.FIT	

1	Well WINDERMERE NO.2	<u>DOL/DSS</u> 23/19	Report No. 20	<u>Date</u> 28/3/89
2	Total Depth 2172m Progress	164 m <u>Last csg</u>	9 5/8" @ 1867m.	Logged to 1860 m
3	Current Activity DRILLING 8 1/2	" HOLE.		
4	<u>Dev/Depth</u> 3/4°@ 2089m; ° @	m; - ° @	m.	LAST BOP TEST 26/3/89
5 6	BitMakeTypeSize6REEDHP43A8 1		Moz M/Out Metres ,10,14 - 303	Hrs M/Hr 1.8.G. 44.0 6.9
7 8		<u>SPM GPM PSI</u> 96 288 1750		HP 3HP Tor HP/in 325 3.67
9			B-2X6 1/2" DC'S-STAB-1 DC-6XHWDP (181.5 HOUR	
10	WELL COSTS: Daily\$ 15,341	<u>Cum\$</u> 992,723	MUD: Daily\$ 70	<u>Cum\$</u> 24429
11	9.3 33 6 4 1/2 11.2 1 8.4 26 40	l – 9.5 .2, - – 8.5 Tr,	Mf Pn Ca Cl MBT SC /.5 - 440 17.5K 20 6. /.5 - 460 9K	C Sand NO3 KCL NaCl 6 Tr 100 2.2 - Tr 100 0.8
12	Mud Matl's Used: 1 SODIUM NIT	TRATE, 1 SODIUM S	ŞŲLFITE	
13	WATER (bbls) BA Used Bal Us	RITE (1001b) ed 8al 432	CEMENT (941b) Used Bal 400	FUEL (litres) Used Bal 4050 23220
14	POB: Oper 2 Contr 15 Service			Total 21
FROM 0000 1430 1500 1700 1730	HRS DETAILS OF PAST 24 HOURS OPER.  14.5 DRILLED TO 2089M  0.5 FLOWCHECK & CIRCULATE  2.0 DRILLED TO 2018M  0.5 CIRCULATED & RAN SURV	ATIONS E SAMPLE	OPERATION  1. Rig Up/Down 2. Drilling 3. Ream/Drillout 4. Coring 5. Circ.& Cond. 6. Trips 7. Repair Rig	DAY CUM  23.0 150.0 31.0 27.5 0.5 30.5 54.0 29.0
			8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing	3.5 0.5 10.0 13.0 25.0 7.0 33.0 1.0 19.0
			19.Control Press 20.W00/Tools,etc 21.W0W/W0C 22.Completion 23.P & A 24.FIT 25.D/H Trouble 26.Surf.Trouble 27.CUM TOTAL	4.0 9.5 3.0 7.5 1.5 24.0 458.5

1	Well WINDERMERE NO.2	DOL/DSS 24/20 E	Report No. 21	<u>Date</u> 29/3/89
2	Total Depth 2272m Progress	100 m <u>Last csg</u>	9 5/8" @ 1867m.	Logged to 1860 m
3	Current Activity DRILLING 8 1/2	" HOLE.		
4	<u>Dev/Depth</u> 1.50@ 2245m; 0 @	m; - º @	m.	LAST BOP TEST 26/3/89
5 6	Bit         Make         Type         Size           6         REED         HP43A         8 1           7         LONGYEAR         DP13         8 1	/2" P82514 0,1	$0,14$ $2\overline{261}$ $\overline{392}$	
7 8	6 40 70 8 1/2 6	SPM         GPM         PSI           96         288         1775           105         317         1125	$\begin{array}{ccc} \frac{\text{AV}}{136} & \frac{\text{NV}}{406} & \frac{\text{SHP}}{298} \\ 150 & 273 & 208 \end{array}$	8HP         \$HP         Tor         HP/in           208         70         350         3.67           104         50         425         1.83
9	BHA Description: PDC BIT-NB DC'S-DAILEY DRILLING			-10 X 6 1/2"
10	WELL COSTS: Daily\$ 28,407	<u>Cum\$</u> 1,021,130	MUD: Daily\$ 9	2 <u>Cum\$</u> 24520
	8 9.2 33 7 4 1/1 12.0	1 - 9.0 Tr/.	Pm Ca Cl MBT 3 - 440 15.5K 17. 5 - 520 9K -	<u>SC Sand NO3 KCL NaCl</u> 5 6.3 Tr 100 1.9 - 100 0.8
13		RITE (1001b) ed Bal	CEMENT (941b)	FUEL (litres)
		432	Used Bal 400	Used Bal 29800
14	POB: Oper 2 Contr 15 Service	e GEOD 2;IDFS 1	;JVP 1; LONGYEAR 1	Total 22
FROM OOOO		<u>ATIONS</u>	OPERATION 1. Rig Up/Down	<u>DAY CUM</u> 3.5 3.5
1000	0.5 DROPPED SURVEY & PUM	PED PILL	2. Drilling	12.5 162.5
1030 1400		SHOE	<ol> <li>Reaming</li> <li>Coring</li> </ol>	31.0 27.5
1630			5. Circ.& Cond. =	30.5
2000		4M FILL	6. Trips	7.5 61.5
2130	2.5 DRILLED TO 2272M		7. Repair Rig 8. Rig Maint.	29.0 3.5
			9. Dev.Survey	0.5 10.5
			10.Log & Perf	13.0
			11.RU RunCsg,Tub 12.Cementing	25.0 7.0
	·		13.NU,Test BOPCsg	7.0 33.0
•			14.PU/LD,DP/DC	1.0
			15.DST 16.Loss Circ	19.0
		•	17.Remed.Cmt'g	•
	_		18.Fishing	
	•		10 Control Brace	
	·		19.Control Press 20.WOO/Tools,etc	4.0
			20.WOO/Tools,etc 21.WOW/WOC 22.Completion	4.0 9.5
			20.WOO/Tools,etc 21.WOW/WOC 22.Completion 23.P & A	9.5
	· ·		20.WOO/Tools,etc 21.WOW/WOC 22.Completion	
	·		20.W00/Tools,etc 21.W0W/W0C 22.Completion 23.P & A 24.FIT	9.5 3.0

1	Well WINDERMERE NO.2	DOL/DSS	25/21 Report N	<u>o</u> . 22	Date	30/3/89
2	Total Depth 2385m	rogress 113 m	Last csg 9 5/	78" @ 1867m.	Logged to	1860 m
3	Current Activity DRILLING	8 1/2" HOLE.				
4	<u>Dev/Depth</u> 1.25°@ 2298m;	° @ m;	– • @ m	1.	LAST BOP	TEST 26/3/89
5 6	BitMakeType7LONGYEARDP138VARELV437	Size       \$/No         8 1/2"       2856         8 1/2"       8409		M/Out Metr 3217 56 - 68	r <u>es</u> <u>Hrs</u> 9 9	M/Hr I.B.G. 6.2 5%WORN 7.6 -
7	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	LNR SPM GPM 6 105 317 6 100 300		NV SHP 273 208 423 314	BHP %HP 104 50 235 75	
9		IT-NB REAMER-MO ILLING JARS-1 X			-19 X 6 1,	/2"
10	WELL COSTS: Daily\$ 2	0,461 <u>Cum\$</u> 1	,041,159 <u>MUD</u> :	<u>Daily\$</u> N	IL <u>Cum</u> s	24520
11 PITS HOLE 12			9.0 Tr/.3 -	<u>Ca</u> <u>Cl</u> <u>MBT</u> 440 15.5K 15 560 8.5K -	SC Sand 6.3 - 	NO3 KCL NaCl - 100 0.8
13	WATER (bbls)	BARITE (1001b)	CEME	NT (941b)	FUEL (li	tres)
	Used 8al	Used Bal 432	Used	8al 400	Used 2620	8al 27180
14	POB: Oper 2 Contr 15					Total 20
FROM 0000 0630 0700 1030 1100 1500	6.5 DRILLED TO 2317 0.5 CIRCULATED, DROPILL 3.5 POH FOR BIT CHAO 0.5 TURNED REAMER I NO.8 4.0 RIH. NO FILL.	7M DPPED SURVEY, PU ANGE PINS. PICKED UP	MPED 2 3 4 BIT 5 8 9 1 1 1 1 1 1 1	OPERATION  Rig Up/Down  Chrilling Coring Circ.& Cond. Trips Repair Rig Rig Maint. Dev.Survey O.Log & Perf 1.RU RunCsg,Tub 2.Cementing 3.NU,Test BOPCsg 4.PU/LD,DP/DC 5.DST 6.Loss Circ		DAY CUM 3.5 178.0 31.0 27.5 30.5 7.5 69.0 29.0 3.5 0.5 11.0 13.0 25.0 7.0 33.0 1.0 19.0
			1 1 2 2 2 2 2 2 2 2 2 2	7.Remed.Cmt'g 8.Fishing 9.Control Press 0.W00/Tools,etc 1.W0W/W0C 2.Completion 3.P & A 4.FIT 5.D/H Trouble 6.Surf.Trouble 7.CUM TOTAL		0.5 4.5 9.5 3.0 7.5 1.5 24.0 506.5

1	Well WIN	IDERMERE	NO.2		DOL/	DSS	26/22	Report	<u>40</u> . 2	23	Date	<u>)</u>	31/3/	'89
2	Total Dep	<u>th</u> 248	32m	Progress	97	m	Last csg	9 5,	/8" @ 18	367m.	Logg	jed to	1860	m
3	Current Ac	ctivity 1	ORILLIN	G 8 1/	2'' HC	LE.								
4	Dev/Depth	2.5 %	2442m	; 0	@	m;	_ 0	@ r	m.		LA	ST BOP	TEST 2	6/3/89
5 6	9 R BIT N	Make YAREL EED IO 9 WASI	S13G ÆD OUT	8 8 JET R	1/2" 1/2" ECESS	BT1	900 0 853 0	10 14 10 14	_	86 79		Hrs 11.5 12.5	6.	5 1 1 I 3 -
7 8	8 40 9 -		<u>STK</u> 8 1/2 8 1/2		<u>SPM</u> 100 105	<u>GPM</u> 300 317	1800		<u>NV</u> 423 444	SHP 314 380	8HP 235 272	<u>%НР</u> 75 72	3	or HP/in 50 4.15 90 4.80
9	BHA Descri	iption: DC'S-DA					NEL-STA 6 1/2"			S-STAI	B-19 X	6 1/	2''	
10	WELL COSTS	S: Dai	<u>ly\$</u>	17,532	Cum	<u>\$</u> 1	,059,48	3 MUD:	Daily	<u>*</u> \$ 1	NIL	<u>Cum\$</u>		24520
	WT VIS 5 9.2 33 E 8.4 26 Mud Matl's			WL 13.8 -	1		9.0 Tr		<u>Ca</u> <u>Cl</u> 440 15H 680 9K	15	<u>\$C</u> 6.3	<u>Sand</u>  -	N03 100 50	KCL NaCl 1.8 - 0.7
13		ATER (bbls)				(1001b)	····		NT (941b)					_
	Use	<u>ea</u>	Bal		Jsed	8al 432		Used	8al 400		3180	sed	8al 2400	0
14	<u> POB: Ope</u>	<u>er</u> 2 <u>C</u>	ontr 16	Servi	ice	GEOD	2;IDFS	1;HALI	I 1;JVF	1			<u>Total</u>	23
14 <u>FROM</u> OOOC	HRS		F PAST 24	HOURS OPE	RATION	<u>3</u>	2;IDFS		OPERATIO  1. Rig Up/ 2. Drillin	N Down			Total  DAY  15.0	23 <u>CUM</u> 3.5 193.0
FROM 0000 0230 0300	HRS 2.5 0 0.5 0 4.5	DETAILS OF DRILLET PUMP PROCHECKET POH LOCK NOZZLE CIRCLIF	F PAST 24   TO 240 TO 240 TO 240 TO SURFACE TO SURFACE TO RECESS TO SURFACE T	HOURS OPE D3M.LOV CE EQUI DR WASH WASHEI RING (I	RATIONS VERR.  IPMEN HOUT OUT	ATIC T.OK. FOUND AROU	BIT ND	*	OPERATIO  1. Rig Up/ 2. Drillin 3. Reaming 4. Coring 5. Circ.& 6. Trips	N_ Down 9 Cond.			DAY	3.5 193.0 31.0 27.5 30.5 69.0
FROM 0000	HRS 2.5  0 0.5  0 4.5  0 3.5  0 9.0  0 0.5	DETAILS OF DRILLET PUMP PER CHECKEL POH LOCK NOZZLE	F PASI 24 () TO 240 () TO 240 () SURFAC () KING FO () RECESS () & 'O'F () BIT & () TO 246 () TED & F	HOURS OPE D3M.LOV CE EQUI DR WASHEI WASHEI RING (I RIH GOM RAN SUF	RATIONS N/ERR. IPMEN' HOUT OUT LOST	ATIC T.OK. FOUND AROU	BIT ND	7.	OPERATIO  1. Rig Up/ 2. Drillin 3. Reaming 4. Coring 5. Circ.&	N_Down g Cond. Rig nt. vey erf sg,Tub			DAY	3.5 193.0 31.0 27.5 30.5
FROM 00000 0230 0300 0730 1100 2000	HRS 2.5  0 0.5  0 4.5  0 3.5  0 9.0  0 0.5	DETAILS OF DRILLET PUMP PER CHECKET POH LOCUMOZZLE CIRCLIFUCHANGET DRILLET CIRCULAR	F PASI 24 () TO 240 () TO 240 () SURFAC () KING FO () RECESS () & 'O'F () BIT & () TO 246 () TED & F	HOURS OPE D3M.LOV CE EQUI DR WASHEI WASHEI RING (I RIH GOM RAN SUF	RATIONS N/ERR. IPMEN' HOUT OUT LOST	ATIC T.OK. FOUND AROU	BIT ND		OPERATIO  1. Rig Up/ 2. Drillin 3. Reaming 4. Coring 5. Circ.& 6. Trips 7. Repair 8. Rig Mai 9. Dev.Sur 10.Log & P 11.RU RunC 12.Cementi 13.NU,Test 14.PU/LD,D 15.DST 16.Loss Ci 17.Remed.C 18.Fishing 19.Control	N Down 9 Cond. Rig nt. vey erf sg,Tub ng BOPCsg P/DC rc mt'g Press			<u>DAY</u>	CUM  3.5 193.0 31.0 27.5 30.5 69.0 29.0 3.5 11.5 13.0 25.0 7.0 33.0 1.0 19.0
FROM 00000 0230 0300 0730 1100 2000	HRS 2.5  0 0.5  0 4.5  0 3.5  0 9.0  0 0.5	DETAILS OF DRILLET PUMP PER CHECKET POH LOCUMOZZLE CIRCLIFUCHANGET DRILLET CIRCULAR	F PASI 24 ( D TO 240 RESSURE. D SURFACE DKING FORECESS D & 'O'F D BIT & D TO 246 TED & F	HOURS OPE D3M.LOV CE EQUI DR WASHEI WASHEI RING (I RIH GOM RAN SUF	RATIONS N/ERR. IPMEN' HOUT OUT LOST	ATIC T.OK. FOUND AROU	BIT ND		OPERATIO  1. Rig Up/ 2. Drillin 3. Reaming 4. Coring 5. Circ.& 6. Trips 7. Repair 8. Rig Mai 9. Dev.Sur 10.Log & P 11.RU RunC 12.Cementi 13.NU,Test 14.PU/LD,D 15.DST 16.Loss Ci 17.Remed.C 18.Fishing	N Down 9 Cond. Rig nt. vey erf sg,Tub ng 80PCsg P/DC rc mt'g Press ls,etc ion			<u>DAY</u>	CUM  3.5 193.0 31.0 27.5 30.5 69.0 29.0 3.5 11.5 13.0 25.0 7.0 33.0 1.0

1	Well WINDERMERE NO.2	DOL/DSS 27/23	Report No. 24	<u>Date</u> 1/4/89	)
2	Total Depth 2603m Progress	121m <u>Last csg</u>	9 5/8" @ 1867m.	Logged to 1860 m	1
3	Current Activity POH FOR BIT CH	IANGE			
4	<u>Dev/Depth</u> 2 °@ 2542m; 2 °	@ 2588 m; - °	@ m.	LAST BOP TEST 26/	3/89
5 6	Bit         Make         Type         Size           9         REED         S13G         8 1           -         -         -         -			res Hrs M/Hr 0 32.0 6.3	1.8.G. 5 7 I
7 : 8	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>SPM GPM PSI</u> 105 317 2075 	AV NV SHP 148 444 380 	BHP %HP Tor 272 72 390	HP/in 4.80
9	BHA Description: BIT-NB DC'S-DAILEY DRILLING				
10	WELL COSTS: Daily\$ 15,060	<u>Cum\$</u> 1,074,54	3 MUD: Daily\$ 1	VIL <u>Cum\$</u> 24	520
		1 - 9.0 Tr	Mf Pm Ca C1 M8T /.3 - 480 14.5K 15 /.2 - 680 8.5K -	6.0 - 100 1	CL NaCl .6 - .7
13		RITE (1001b)	CEMENT (941b)	FUEL (litres)	
		ed Bal 432	Used Bal 400	Used 8al 3500 20500	-
14	POB: Oper 2 Contr 16 Service	e GEOD 2; IDFS	1; JVP 1	Total 2	2
FROM 0000 1130 1200	0.5 RAN SURVEY 8.0 DRILLED TO 2603M		OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming	<u>DAY</u> 19.5	CUM 3.5 212.5 31.0
2000 2030		ED PILL	4. Coring 5. Circ.& Cond. 6. Trips 7. Repair Rig	3.5	27.5 30.5 72.5 29.0
			8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Tub 12.Cementing	1.0	3.5 12.5 13.0 <b>25.0</b>
					7.0
			13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST		7.0 33.0 1.0 19.0
		•	13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc		33.0 1.0 19.0
		•	13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press		33.0 1.0 19.0

1	Well WINDERMERE NO.2	<u>DOL/DSS</u> 27/24	Report No. 25	Date	2/4/89
2	Total Depth 2737m Progres	s 134m Last csc	9 5/8" @ 1867m.	Logged to	1860 m
3	Current Activity DRILLING 8 1,	/2" HOLE			
4	<u>Dev/Depth</u> 2 •@ 2699m;	m; - °	@ m.	LAST BOP	TEST 26/3/89
5 6	Bit         Make         Type         Si           10         REED         HP43A         8           -         -         -         -			tres Hrs 4 18.0	M/Hr T.B.G. 7.4 -
7 8	Bit         WOB         RPM         STK         LNR           10         40         70         8 1/2         6           -         -         -         15         5	<u>SPM GPM PSI</u> 100 300 2200 		8HP 3HP 285 74 -	Tor HP/in - 5.02 
9	8HA Description: BIT-NE DC'S-DAILEY DRILLIN		AB-2X6 1/2" DC'S-STA DC-6XHWDP (262.5HR		<b>′2</b> ''
10	WELL COSTS: Daily\$ 20818	<u>Cum\$</u> 1,095,36	S1 MUD: Daily\$	40 <u>Cum\$</u>	24560
11 HOLE	WT VIS PV YP Gels WL 26	FC HT/HP PH PF 7.0 O	/Mf Pm Ca Cl MBT /.3 - 240 12K -	SC Sand	NO3 KCL NaCl 100
12	Mud Matl's Used: 1 NITRATE				-
13		BARITE (1001b) Used Bal	CEMENT (941b) Used Bal	FUEL (li Used	tres) Bal
		432	400	2500	18000
14	POB: Oper 2 Contr 16 Serv	vice GEOD 2; IDFS	1 1 4 17 17 1		7 1 3 00
	100. 0001 2 00101 10 0011	vice GEOD 2, IDFS	o I; JVP I		Total 22
FROM 0000	HRS DETAILS OF PAST 24 HOURS OF		<u>OPERATION</u>		DAY CUM
0000	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH 1.0 CHANGED BIT. RIH WI	PERATIONS  TTH BHA	OPERATION  1. Rig Up/Down 2. Drilling		DAY CUM 3.5 18.0 230.5
0000	HRS DETAILS OF PAST 24 HOURS OF 0.5 FINISHED POH 1.0 CHANGED BIT. RIH WI 0.5 SLIPPED DRILLING LI	PERATIONS TH BHA TNE	OPERATION 1. Rig Up/Down 2. Drilling 3. Reaming		DAY CUM 3.5 18.0 230.5 31.0
0000 0030 0130 0200 0500	HRS DETAILS OF PAST 24 HOURS OF 0.5 FINISHED POH 1.0 CHANGED BIT. RIH WI 0.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE - 14.0 DRILLED TO 2699M	PERATIONS TH BHA INE - NO CORRECTION	OPERATION 1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond.		DAY CUM 3.5 18.0 230.5 31.0 27.5 30.5
0000 0030 0130 0200	HRS DETAILS OF PAST 24 HOURS OF 0.5 FINISHED POH 1.0 CHANGED BIT. RIH WI 0.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE - 14.0 DRILLED TO 2699M 0.5 REPAIRED WEIGHT IND	PERATIONS TH BHA INE - NO CORRECTION	OPERATION 1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond. 6. Trips		DAY CUM 3.5 18.0 230.5 31.0 27.5 30.5 4.5 77.0
0000 0030 0130 0200 0500 1900	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M  0.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION 1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond. 6. Trips 7. Repair Rig 8. Rig Maint.		DAY CUM 3.5 18.0 230.5 31.0 27.5 30.5 4.5 77.0 0.5 29.5 0.5 4.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey		DAY CUM 3.5 18.0 230.5 31.0 27.5 30.5 4.5 77.0 0.5 29.5 0.5 4.0 0.5 13.0
0000 0030 0130 0200 0500 1900	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M  0.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M  0.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION 1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond. 6. Trips 7. Repair Rig 8. Rig Maint.		DAY CUM 3.5 18.0 230.5 31.0 27.5 30.5 4.5 77.0 0.5 29.5 0.5 4.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,Tub  12.Cementing		DAY CUM  3.5  18.0 230.5  31.0 27.5 30.5  4.5 77.0 0.5 29.5 0.5 4.0 0.5 13.0 13.0 25.0 7.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,Tub  12.Cementing  13.NU,Test 80PCsg		DAY CUM  3.5  18.0 230.5  31.0 27.5 30.5  4.5 77.0 0.5 29.5 0.5 4.0 0.5 13.0 13.0 25.0 7.0 33.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,Tub  12.Cementing  13.NU,Test BOPCsg  14.PU/LD,DP/DC  15.DST		DAY CUM  3.5  18.0 230.5  31.0 27.5 30.5  4.5 77.0 0.5 29.5 0.5 4.0 0.5 13.0 13.0 25.0 7.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,Tub  12.Cementing  13.NU,Test BOPCsg  14.PU/LD,DP/DC  15.DST  16.Loss Circ		DAY CUM  3.5  18.0 230.5  31.0 27.5 30.5  4.5 77.0 0.5 29.5 0.5 4.0 0.5 13.0 25.0 7.0 33.0 1.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,Tub  12.Cementing  13.NU,Test BOPCsg  14.PU/LD,DP/DC  15.DST		DAY CUM  3.5  18.0 230.5  31.0 27.5 30.5  4.5 77.0 0.5 29.5 0.5 4.0 0.5 13.0 25.0 7.0 33.0 1.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,Tub  12.Cementing  13.NU,Test BOPCsg  14.PU/LD,DP/DC  15.DST  16.Loss Circ  17.Remed.Cmt'g  18.Fishing  19.Control Press		DAY  3.5  18.0  230.5  31.0  27.5  30.5  4.5  77.0  0.5  29.5  0.5  4.0  0.5  13.0  25.0  7.0  33.0  1.0  19.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg, Tub  12.Cementing  13.NU, Test BOPCsg  14.PU/LD, DP/DC  15.DST  16.Loss Circ  17.Remed.Cmt'g  18.Fishing		DAY CUM  3.5  18.0 230.5  31.0 27.5 30.5  4.5 77.0 0.5 29.5 0.5 4.0 0.5 13.0 13.0 25.0 7.0 33.0 1.0 19.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg, Tub  12.Cementing  13.NU, Test BOPCsg  14.PU/LD, DP/DC  15.DST  16.Loss Circ  17.Remed.Cmt'g  18.Fishing  19.Control Press  20.NOO/Tools, etc  21.NOW/NOC  22.Completion		DAY  3.5  18.0  230.5  31.0  27.5  30.5  4.5  77.0  0.5  29.5  0.5  4.0  0.5  13.0  25.0  7.0  33.0  1.0  19.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg, Tub  12.Cementing  13.NU, Test BOPCsg  14.PU/LD, DP/DC  15.DST  16.Loss Circ  17.Remed.Cmt'g  18.Fishing  19.Control Press  20.WOO/Tools, etc  21.WOW/WOC  22.Completion  23.P & A		DAY  CUM  3.5  18.0  230.5  31.0  27.5  30.5  4.5  77.0  0.5  29.5  0.5  4.0  0.5  13.0  13.0  25.0  7.0  33.0  1.0  19.0
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond. 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.WOW/WOC 22.Completion 23.P & A 24.FIT 25.D/H Trouble		DAY  CUM  3.5  18.0  230.5  31.0  27.5  30.5  4.5  77.0  0.5  29.5  0.5  4.0  0.5  13.0  25.0  7.0  33.0  1.0  19.0  4.5  9.5
0000 0030 0130 0200 0500 1900 1930 2130	HRS DETAILS OF PAST 24 HOURS OF O.5 FINISHED POH  1.0 CHANGED BIT. RIH WI O.5 SLIPPED DRILLING LI 3.0 RIH.STRAPPED PIPE -  14.0 DRILLED TO 2699M O.5 REPAIRED WEIGHT IND LEAKS  2.0 DRILLED TO 2718M O.5 CIRCULATED & RAN SU	PERATIONS  THE BHA  INE  NO CORRECTION  DICATOR LINES/	OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.  9. Dev.Survey  10.Log & Perf  11.RU RunCsg,Tub  12.Cementing  13.NU,Test BOPCsg  14.PU/LD,DP/DC  15.DST  16.Loss Circ  17.Remed.Cmt'g  18.Fishing  19.Control Press  20.WOO/Tools,etc  21.WOW/WOC  22.Completion  23.P & A  24.FIT		DAY  CUM  3.5  18.0  230.5  31.0  27.5  30.5  4.5  77.0  0.5  29.5  0.5  4.0  0.5  13.0  25.0  7.0  33.0  1.0  19.0  4.5  9.5

1	Well WINDERMERE NO.2	DOL/DSS	29/25	Report No.	26	Date	3/4/8	9
2	Total Depth 2881m Progres	<u>ss</u> 144m	Last csg	9 5/8" (	@ 1867m.	Logged to	1860	m
3	Current Activity CIRCULATE &	WORK PIPE (7	right ho	OLE ON CONT	NECTION)			
4	Dev/Depth º@ m;	o @ m;	- 0 @	9 m.		LAST BOP	<u>TEST</u> 26	/3/89
5 6			54 O -	0z <u>M</u> 10 13 –	27	res <u>Hrs</u> 8 38.5		
7 8	Bit         WOB         RPM         STK         LNR           10         40         70         8 1/2         6           -         -         -         15         5	<u>SPM</u> <u>GPM</u> 100 300 65 -	<u>PSI</u> 2200 -	AV 141 46		ВНР %НР 285 74 		HP/in 5.02
9	BHA Description: BIT-N DC'S-DAILEY DRILLI						/2"	
10	WELL COSTS: Daily\$ 18,09	O <u>Cum\$</u> 1,	113,450	MUD: I	Daily\$	1891 <u>Cum</u>	<u> </u>	6,412
11	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	FC HT/HP 1 - 9	<u>рн Рf/I</u>	1f Pm Ca -3 - 200	C1 MBT 1.4K 2.5	SC Sand 5 1.6 Tr	<u>N03</u> 250 -	KCL NaCl
12	Mud Matl's Used: 18 PAC, 3	NITRATE, 3	SULFITE	, 1 CAUSTI	C.C			
13	WATER (bbls) Used Bal	BARITE (1001b) Used Bal 432			1b) Bal 400	FUEL (1i Used 3650	Bal	
		452			400	3030	14350	
14	POB: Oper 2 Contr 16 Ser	vice GEOD	2:TDFS	1: JVP 1:H	IALL 1:EAS	ST 1	Total 2	2.4
14 From		vice GEOD PERATIONS	2;IDFS		·	ST 1	Total 2	
FROM 0000 0500	HRS DETAILS OF PAST 24 HOURS 0	PERATIONS		OPER 1 Rig	ATION Up/Down	ST 1	DAY	<u>cum</u> 3.5
<u>FROM</u>	HRS DETAILS OF PAST 24 HOURS 0  5.0 DRILLED TO 2775M  1.0 CIRCULATED & WORKER HOLE ON CONNECTION	PERATIONS  PIPE (TIGH	T	OPER 1. Rig 2. Dri 3. Rea	ATION Up/Down lling ming	ST 1		CUM 3.5 251.0 31.0
FROM 0000 0500	HRS DETAILS OF PAST 24 HOURS 0  5.0 DRILLED TO 2775M  1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT  1.5 REPAIRED NO.1 PUMP	PERATIONS  PIPE (TIGH	T	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir	ATION Up/Down lling ming ing c.& Cond.	ST 1	DAY	CUM 3.5 251.0 31.0 27.5 30.5
FROM 0000 0500	HRS DETAILS OF PAST 24 HOURS 0  5.0 DRILLED TO 2775M  1.0 CIRCULATED & WORKED HOLE ON CONNECTION NO BUILD UP OF CUT  1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M  1.0 CIRCULATED & WORKED	PERATIONS  O PIPE (TIGH  ).PUMPED HV  TINGS.  O PIPE (TIGH	T PILL.	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri	ATION Up/Down lling ming ing c.& Cond.		DAY	CUM 3.5 251.0 31.0 27.5
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0  5.0 DRILLED TO 2775M  1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT  1.5 REPAIRED NO.1 PUMP  15.5 DRILLED TO 2881M  1.0 CIRCULATED & WORKEI HOLE ON CONNECTION	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig	ATION Up/Down lling ming ing c.& Cond. ps air Rig Maint.		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0  5.0 DRILLED TO 2775M  1.0 CIRCULATED & WORKED HOLE ON CONNECTION NO BUILD UP OF CUT  1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M  1.0 CIRCULATED & WORKED	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log	ATION Up/Down lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU	ATION Up/Down lling ming c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU,	ATION Up/Down lling ming c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0 7.0 33.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/	ATION Up/Down lling ming c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0 7.0 33.0 1.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los	ATION Up/Down lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0 7.0 33.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los 17.Rem	ATION Up/Down lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC s Circ ed.Cmt'g		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0 7.0 33.0 1.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los 17.Rem 18.Fis 19.Con	ATION Up/Down lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC s Circ ed.Cmt'g hing trol Press		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0 7.0 33.0 1.0 19.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los 17.Rem 18.Fis 19.Con 20.W00	ATION Up/Down lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC s Circ ed.Cmt'g hing trol Press /Tools,etc		<u>DAY</u> 20.5	CUM  3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0 7.0 33.0 1.0 19.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los 17.Rem 18.Fis 19.Con 20.WO0 21.WOW 22.Com	ATION  Up/Down  lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC  s Circ ed.Cmt'g hing trol Press /Tools,etc /WOC pletion		<u>DAY</u> 20.5	CUM 3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 13.0 25.0 7.0 33.0 1.0 19.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los 17.Rem 18.Fis 19.Con 20.WOO 21.WOW 22.Com 23.P &	ATION  Up/Down  lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC  s Circ ed.Cmt'g hing trol Press /Tools,etc /WOC pletion		<u>DAY</u> 20.5	CUM  3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 25.0 7.0 33.0 1.0 19.0
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los 17.Rem 18.Fis 19.Con 20.WOO 21.WOW 22.Com 23.P & 24.FIT 25.D/H	ATION  Up/Down  lling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC  s Circ ed.Cmt'g hing trol Press /Tools,etc /WOC pletion A  Trouble		<u>DAY</u> 20.5	CUM  3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 25.0 7.0 33.0 1.0 19.0  4.5 9.5
FROM 0000 0500 0600 0730	HRS DETAILS OF PAST 24 HOURS 0 5.0 DRILLED TO 2775M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION NO BUILD UP OF CUT 1.5 REPAIRED NO.1 PUMP 15.5 DRILLED TO 2881M 1.0 CIRCULATED & WORKEI HOLE ON CONNECTION WITH REDUCED GPM DU	PERATIONS  D PIPE (TIGH  ).PUMPED HV  TINGS.  D PIPE (TIGH  AFTER DRILL	T PILL. T ING	OPER 1. Rig 2. Dri 3. Rea 4. Cor 5. Cir 6. Tri 7. Rep 8. Rig 9. Dev 10.Log 11.RU 12.Cem 13.NU, 14.PU/ 15.DST 16.Los 17.Rem 18.Fis 19.Con 20.WOO 21.WOW 22.Com 23.P & 24.FIT 25.D/H	ATION Up/Down Iling ming ing c.& Cond. ps air Rig MaintSurvey & Perf RunCsg,Tub enting Test BOPCsg LD,DP/DC s Circ ed.Cmt'g hing trol Press /Tools,etc /WOC pletion A Trouble f.Trouble		DAY 20.5	CUM  3.5 251.0 31.0 27.5 30.5 77.0 31.0 4.0 13.0 25.0 7.0 33.0 1.0 19.0

1	Well WINDERMERE NO.2 DOL/DSS	30/26 Report N	<u>o</u> . 27	<u>Date</u> 4/4/89
2	Total Depth 2981m Progress 100m	Last csg 9 5/	8" @ 1867m.	Logged to 1860 m
3	Current Activity DRILLING 8 1/2" OH			
4	<u>Dev/Depth</u> 2 °@ 2878m; ° @	m; - ° @ m		LAST BOP TEST 26/3/89
5 6	Bit         Make         Type         Size         S           10         REED         HP43A         8 1/2"         75           -         -         -         -         -	<u>Noz</u> 9454 0 10 13	<u>M/Out</u> <u>Metres</u> - 378	
7 8		<u>PPM PSI AV</u> 00 2250 141 - 245		HP     \$HP     Tor     HP/in       292     74     450     5.14
9	BHA Description: BIT-NB REAMER-N DC'S-DAILEY DRILLING JARS-1	MONEL-STAB-2X6 1 X 6 1/2" DC-6XH	/2" DC'S-STAB-1 WDP (299.5HRS C	9 X 6 1/2" N JARS)
10	WELL COSTS: Daily\$ 34,278 Cum\$	1,147,728 MUD:	Daily\$ 211	8 <u>Cum\$</u> 28,569
11	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	pH Pf/Mf Pm 10.0 .4/.9 -	<u>Ca</u> <u>Cl</u> <u>MBT</u> <u>SC</u> 20 1.5K 6.0	2.4 Tr Tr
12	Mud Matl's Used: 14 PAC, 2 SODIUM SU	JLFITE, 4 CAUSTI	C, 16 POLYSAL	
13	Used Bal Used Ba	b) CEMEN al Used 32		Used Bal
14	POB: Oper 2 Contr 16 Service GEC	OD 2;IDFS 1; JVP	1;HALL 1;EAST	
FROM 0000 0030 0430	0.5 RAN SURVEY - MISRUN 4.0 DRILLED TO 2903M 3.5 LOST PRESSURE.CHECKED SURFACE EQUIPMENT.POH LOOKING FOR WAR	EE 3 ASHOUT. 4	OPERATION Rig Up/Down Drilling Reaming Coring	DAY CUM 3.5 16.5 267.5 31.0 27.5
0800	OK. SLIPPED & CUT DRILLING I	SSURE. 6	. Circ.& Cond. . Trips . Repair Rig	30.5 77.0 31.0
1100 1130		1 1 1 1 1 1 1 1 2 2 2 2	. Dev.Survey 0.Log & Perf 1.RU RunCsg,Tub 2.Cementing 3.NU,Test BOPCsg 4.PU/LD,DP/DC 5.DST 6.Loss Circ 7.Remed.Cmt'g 8.Fishing 9.Control Press 0.W00/Tools,etc 1.WOW/WOC 2.Completion 3.P & A	1.0 5.0 1.0 14.0 13.0 25.0 7.0 33.0 1.0 19.0
			4.FIT 5.D/H Trouble	3.0 5.5 23.5

1								
1	Well WINDERMERE NO.2	DOL/DSS	31/27	Report No	<u>2</u> . 28	Dat	<u>te</u> 5/4	1/89
2	Total Depth 3042m Progres	<u>ss</u> 61m	Last csg	9 5/	'8'' @ 186'	7m. <u>Lo</u> g	ged to 1860	) m
3	Current Activity DRILLING 8	1/2" OH						
4	Dev/Depth º@ m;	° @ m;	_ 0	@ m	١.		LAST BOP TEST	5/4/89
	Dit Make Tune 6	0 (N	_	Non	N (0			
5 6	10 REED HP43A 8	<u>size</u> <u>S/No</u> 1/2" 79454 1/2" BT486	4 0	Noz 10 13 10 13	M/Out 3005 -	<u>Metres</u> 402 37	60.0	$\frac{\text{Hr}}{6.7}$ $\frac{\text{I.B.G.}}{6.8.1/1}$ $\frac{1.8.7}{6.8.1/1}$
7 8	Bit         WOB         RPM         STK         LNR           10         40         70         8         1/2         6           RR4         40         75         8         1/2         6	SPM GPM 100 300 100 300		<u>AV</u> 141 141	466 39	HP 8HP 292 10 292	74	Tor HP/in 350 5.14 350 5.14
9	BHA Description: BIT-J DC'S-DAILEY DRILLING JA	UNK SUB-NB I RS-1 X 6 1/2	REAMER- 2" DC-6	MONEL-S XHWDP-2	TAB-2X6 1 42E-REST	l/2" DC'S G PIPE(3	S-STAB-19 X 810 HRS ON	( 6 1/2"   JARS)
10	WELL COSTS: Daily\$ 21,360	<u>Cum\$</u> 1,	,169,08	8 <u>MUD</u> :	Daily\$	663	Cum\$	29,232
11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	FC HT/HP 9	<u>Ph</u> <u>Pf/</u> 5 .2/	Mf Pm .6 1.1	<u>Ca Cl</u> 40 1.4K	MBT <u>SC</u> 6.0 3.5	<u>Sand</u> <u>NO3</u> Tr 50	KCL NaCl
12	Mud Matl's Used: 12 POLYSA	L, 1 CAUSTIC	C, 3 NI	TRATE			-	
13	WATER (bbls)	BARITE (1001b)		CEMEN	T (941b)		FUEL (litres)	
)	Used Bal	Used Bal 432		Used		6800	Used Ba	
14	<u> POB: Oper 2 Contr</u> 16 <u>Se</u>	rvice GEOD	2;IDFS		1;HALL 1		<u>Total</u>	
FROM	HRS DETAILS OF PAST 24 HOURS O	PERATIONS			OPERATION		DAY	CUM
0000	5.0 DRILLED TO 3005M				. Rig Up/Down	n	<del></del>	3.5
0500	C O LOOM DESCRIPTION OFFICER	HID SURRACH					10.	5 278.0
			N TT		. Drilling . Reaming			
	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI	NG FOR WASHO T AT WELD	TUC	3 4	. Reaming . Coring			30.5 27.5
	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3	NG FOR WASHO T AT WELD CONES.	ЖТ	3 4 5	. Reaming . Coring . Circ.& Cond	i.	0.	30.5 27.5 30.5
1100	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3 0.5 BROKE OF BIT. LAID	NG FOR WASHO T AT WELD CONES. DOWN REAMER	XUT	3 4 5 6	. Reaming . Coring . Circ.& Cond . Trips	i.	0. 9.	30.5 27.5 30.5 86.5
	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3 0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL	.UG.	3 4 5 6 7 8	. Reaming . Coring . Circ.& Cond . Trips . Repair Rig . Rig Maint.	i.		30.5 27.5 30.5
1100	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3 0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP	NG FOR WASHOT AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN	.UG.	3 4 5 6 7 8 9	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint Dev.Survey	i.		30.5 27.5 5 30.5 5 86.5 31.0 5.0 14.0
1100	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3 0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING	NG FOR WASHOT AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO	.UG. ID	3 4 5 6 7 8 9	. Reaming . Coring . Circ.& Cond . Trips . Repair Rig . Rig Maint.			30.5 27.5 5 30.5 5 86.5 31.0 5.0
1100	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN	NG FOR WASHOT AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI	.UG. ID	3 4 5 6 7 8 9 10 11	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Log & Perf RU RunCsg,1	īub	9.	30.5 27.5 30.5 5 86.5 31.0 5.0 14.0 13.0 25.0 7.0
1100	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING.	NG FOR WASHOT AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR	.UG. ID .D	3 4 5 6 7 8 9 10 11 12	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Log & Perf LRU RunCsg,1 Cementing	Tub PCsg	9. <b>3.</b> (	30.5 27.5 30.5 5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0
1100 1130 1430	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND  3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING.  3.5 RIH, REPLACED LOWER CONTINUED RIH.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	.UG. ID :D	3 4 5 6 7 8 9 10 12 12 14 14	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Log & Perf RU RunCsg, 1 Cementing NU, Test BOF PU/LD, DP/DO	Tub PCsg	9.	30.5 27.5 30.5 5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0
1100 1130 1430 1800	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 5 6 7 8 9 10 13 14 15 16	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Log & Perf RU RunCsg, 7 Cementing NU,Test BOF	Tub PCsg ;	9. <b>3.</b> (	30.5 27.5 30.5 5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0 1.5
1100 1130 1430	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER CONTINUED RIH. 0.5 BROKE CIRCULATION.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 4 5 5 6 6 7 7 8 8 9 10 11 11 11 11 11 11 11 11 11 11 11 11	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Clog & Perf RU RunCsg,1 Cementing NU,Test BOR LPU/LD,DP/DO DST LOSS Circ Remed.Cmt'c RFishing	Tub PCsg ;	9. <b>3.</b> (	30.5 27.5 30.5 5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0 1.5
1100 1130 1430 1800	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER CONTINUED RIH. 0.5 BROKE CIRCULATION.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 4 5 5 6 6 7 7 8 8 9 10 11 11 11 11 11 11 11 11 11 11 11 11	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Clog & Perf RU RunCsg,1 Cementing NU,Test BOF LPU/LD,DP/DO DST LOSS Circ V.Remed.Cmt'c RFishing	Tub PCsg ;	9. <b>3.</b> (	30.5 27.5 30.5 5 30.5 5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0 1.5 19.0
1100 1130 1430 1800	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER CONTINUED RIH. 0.5 BROKE CIRCULATION.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 4 5 5 6 6 7 7 8 8 9 10 11 11 11 11 11 11 11 11 11 11 11 11	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Clog & Perf RU RunCsg,1 Cementing NU,Test BOR LPU/LD,DP/DO DST LOSS Circ Remed.Cmt'c RFishing	Tub PCsg ;	9. <b>3.</b> (	30.5 27.5 30.5 5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0 1.5
1100 1130 1430 1800	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER CONTINUED RIH. 0.5 BROKE CIRCULATION.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 4 5 5 6 6 7 7 8 8 9 9 10 11 12 12 12 12 12 12 12 12 12 12 12 12	Reaming Coring Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Clog & Perf RU RunCsg,1 Comenting NU,Test BOF LOSS Circ Remed.Cmt'co Charles Completion Completion	Tub PCsg ;	9. <b>3.</b> (	30.5 27.5 30.5 5.0 14.0 13.0 25.0 7.0 36.0 1.5 19.0
1100 1130 1430 1800	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER CONTINUED RIH. 0.5 BROKE CIRCULATION.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 4 5 5 6 6 7 7 8 8 9 10 11 11 11 11 11 11 11 11 11 11 11 11	Reaming Coring Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Clog & Perf RU RunCsg,1 Comenting NU,Test BOF CONTO Core Core Core Core Core Core Core Core	Tub PCsg ;	9. <b>3.</b> (	30.5 27.5 30.5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0 1.5 19.0
1100 1130 1430 1800	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER CONTINUED RIH. 0.5 BROKE CIRCULATION.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 4 5 5 6 6 7 7 8 8 9 9 10 11 11 11 11 11 11 11 11 11 11 11 11	Reaming Coring Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Clog & Perf RU RunCsg,1 Comenting NU,Test BOF LOSS Circ Remed.Cmt'co Charles Completion Completion	Csg ; ; ; ; ; ;	9. <b>3.</b> (	30.5 27.5 30.5 5.0 14.0 13.0 25.0 7.0 36.0 1.5 19.0
1100 1130 1430 1800	EQUIPMENT.POH LOOKI FOUND WASHOUT IN BI BETWEEN NO 1 AND 3  0.5 BROKE OF BIT. LAID & REPLACED PINS AND 3.0 PULLED WEAR BUSHING PRESSURE TESTED PIP RAMS, CHOKE LINES & 4000PSI. HYDRIL TO DOWN TEST PLUG & IN BUSHING. 3.5 RIH, REPLACED LOWER CONTINUED RIH. 0.5 BROKE CIRCULATION.	NG FOR WASHO T AT WELD CONES. DOWN REAMER CUTTERSRAN TEST PL E RAMS, BLIN VALVES TO 1500PSI. LAI STALLED WEAR STABILISER.	JUG. ID ID I	3 4 4 5 5 6 6 7 7 8 8 9 9 10 11 11 11 11 11 11 11 11 11 11 11 11	Reaming Coring Circ.& Cond Trips Repair Rig Rig Maint. Dev.Survey Clog & Perf RU RunCsg,1 Comenting NU,Test BOF LOSS Circ Remed.Cmt's Control Pre NHOW/WOC Completion P& A FIT	Csg Css Sess	9. <b>3.</b> (	30.5 27.5 30.5 86.5 31.0 5.0 14.0 13.0 25.0 7.0 36.0 1.5 19.0 4.5 9.5

4	H-11 EITHTOTTOMIDE NO. 0	NO. /NO	200	0.44.40
1	Well WINDERMERE NO.2	<u>DOL/DSS</u> 32/28	Report No. 29 Date	6/4/89
2	Total Depth 3182m Progress	140m <u>Last csg</u>	9 5/8" @ 1867m. Logge	ed to 1860 m
3	Current Activity DRILLING 8 1/2	2'' ОН		
4	<u>Dev/Depth</u> 4 º@ 3045m; °	@ m; - ° @	m. LA	ST BOP TEST 5/4/89
6	BitMakeTypeSizeRR4REEDHP51A8 1/2		oz <u>M/Out Metres</u> O.13 - 177 2	<u>Hrs</u> <u>M/Hr</u> <u>T.8.G</u> . 8.5 6.2
7 8	RR4 40 75 8 1/2" 6	SPM GPM PSI 100 300 2350	AV         NV         SHP         BHP           141         466         410         305	74 - Tor HP/in 5.38
9	BHA Description: BIT-JUN DC'S-DAILEY DRILLING JARS		ONEL-STAB-2X6 1/2" DC'S- HWDP-242E-REST G PIPE(33	
10	WELL COSTS: Daily\$ 17,177	Cum\$ 1,186,265	MUD: Daily\$ 978	<u>Cum\$</u> 30,210
11	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C HT/HP Ph Pf/M - 9.0 .2/.	f Pm Ca Cl MBT SC 5 - 100 1.5K 10.0 5.4	<u>Sand NO3 KCL NaCl</u> Γr 100
12	Mud Matl's Used: 6 NITRATE, 1	4 POLYSAL, 3 SODA	ASH,1 CAUSTIC,3 NH4 NITR	ATE
13		RITE (1001b) sed Bal 432		EL (litres) sed Bal 18700
14	POB: Oper 2 Contr 15 Servi	ce GEOD 2; IDFS	1; JVP 1;HALL 1;EAST 1	Total 23
FROM 0000 0300 0400	HRS DETAILS OF PAST 24 HOURS OPER 3.0 DRILLED TO 3064M 1.0 CIRCULATED & RAN SURV 20.0 DRILLED TO 3182M		OPERATION  1. Rig Up/Down  2. Drilling  3. Reaming  4. Coring  5. Circ.& Cond.  6. Trips  7. Repair Rig  8. Rig Maint.	DAY CUM  3.5 23.0 301.0 30.5 27.5 30.5 86.5 31.0 5.0
			9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g	1.0 15.0 13.0 25.0 7.0 36.0 1.5
			18.Fishing 19.Control Press 20.W00/Tools,etc 21.W0W/W0C 22.Completion 23.P & A 24.FIT 25.D/H Trouble 27.CUM TOTAL	4.5 9.5 3.0 24.0 1.5 24.0 674.5

-1	Mall Manufacture NO 0 - not then 0	) (80	7/1/00
1	Well WINDERMERE NO.2 <u>DOL/DSS</u> 3	3/29 <u>Report No</u> . 30	<u>Date</u> 7/4/89
2	Total Depth 3230.7m Progress 48.7m La	st csg 9 5/8" @ 1867m.	Logged to 1860 m
3	Current Activity MAKE UP TEST TOOLS FOR DS	T NO.2	
4	<u>Dev/Depth</u> 5 °@ 3169m; ° @ m; -	° @ m.	LAST BOP TEST 5/4/89
6	8itMakeTypeSizeS/NoRR4REEDHP51A8 1/2"BT4862		
7 8	Bit         WOB         RPM         STK         LNR         SPM         GPM           RR4         40         75         8         1/2"         6         100         300         2	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	HP \$HP Tor HP/in 19 75 - 5.44
9	BHA Description: TEST STRING FOR STR		3182-3198M S ON JARS)
10	WELL COSTS: Daily\$ 17,203 Cum\$ 1,20	03,468 <u>MUD</u> : <u>Daily</u> \$ 639	<u>Cum\$</u> 30,849
11	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Pf/Mf Pm Ca C1 MBT SC .2/.4 - 120 1.5K 12.0 6	Sand NO3 KCL NaC1 1 Tr 150
12	Mud Matl's Used: 18 BARITE, 9 POLYSAL, 1 - 5 MAGCOGEL (PREVIOUSLY CHA		
13	FOR WATER CUSHION WATER (bbls) BARITE (1001b)	CEMENT (941b)	FUEL (litres)
	<u>Used Bal Used Bal</u> 18 414	Used 8al 400 42	Used <u>Bal</u> 00 14500
14	POB: Oper 2 Contr 15 Service GEOD 2;	IDFS 1; JVP 1;HALL 1;EAST	
FROM OOOO		<u>OPERATION</u> 1. Rig Up/Down	<u>DAY CUM</u> 3.5
0100	0.5 CIRCULATED & RAN SURVEY	2. Drilling	8.5 309.5
0130		3. Reaming	30.5
0200 0330		4. Coring 5. Circ.& Cond.	27.5 6.0 36.5
1030		6. Trips	8.5 95.0
1200	4.0 MADE WIPER TRIP TO SHOE	7. Repair Rig	31.0
1600		8. Rig Maint.	0.5 5.0
1830 2030		E 9. Dev.Survey 10.Log & Perf	15.0
2100		11.RU RunCsg,Tub	13.0 <b>25.</b> 0
2330		12.Cementing	7.0
		13.NU,Test BOPCsg	36.0
		14.PU/LD,DP/DC	1.5
		15.DST 16.Loss Circ	0.5 19.5
		17.Remed.Cmt'g	
		18.Fishing	
		19.Control Press	
		20.W00/Tools,etc	4.5
		21.WOW/WOC 22.Completion	9.5
		23.P & A	
		24.FIT	3.0
			0.4.0
		25.D/H Trouble	24.0
		25.D/H Trouble 26.Surf.Trouble 27.CUM TOTAL	24.0 1.5 24.0 698.5

	1	Well WINDERMERE NO.2	DOL/DSS 34/3	O Report No.	31	Date	8/4,	/89
	2							
	۷	Total Depth 3230.7m Progress	NIL <u>Last</u>		186/m.	Logged to	1860	) m
	3	Current Activity RIH WITH TEST TO	OLS FOR DST	#2A				
	4	<pre>Dev/Depth</pre>	m; -	o @ m.		LAST BOP	TEST	5/4/89
		<u>Bit</u> <u>Make</u> <u>Type</u> <u>Size</u>	S/No	Noz M/O	<u>ut Meti</u>	res Hrs	M/H	<u>r T.B.G</u> .
	6		_				-	_
	7 8	Bit WOB RPM STK LNR SF	<u>PM GPM P</u> 	<u>si av nv</u> 	<u>SHP</u> 	<u>BHP</u> <u>%HP</u>	-	Tor HP/in 
	9	BHA Description: DST #2A T	EST STRING (	CONVENTIONAL T	EST/3 PA	CKERS)		
	10	WELL COSTS: Daily\$ 22,973	Cum\$ 1,226,	441 <u>MUD</u> : <u>Dai</u>	y\$	Cums	<u>3</u>	30,849
	11	WT VIS PV YP Gels WL FC	HT/HP Ph	Pf/Mf Pm Ca C	MBT	SC Sand	N03	KCL NaCl
		9.1 32 5 5 $\frac{2}{8}$ 7.4 1	$\overline{}$ 9. $\overline{0}$ .	2/.4 - 120 1.	5K 12.0	6.1 Tr	150	
	12	•		1/.4 140 1.5 TRACER IN WATE	5K 12.0 R CUSHIO		150	
-		( 9						
	13		E (1001b)	CEMENT (941b)	l	FUEL (lit	res)	_
		Used Bal Used	8al 414	Used Ba		Used	Bal	<u> </u>
			414	; 400	,	2400	12100	,
	14	POB: Oper 2 Contr 15 Service	GEOD 2; ID	FS 1; JVP 1;HAI	LL 1;EAS	r 1;ditr 1	Total	23
	FROM	HRS DETAILS OF PAST 24 HOURS OPERATE		<u>OPERAT 1</u>			DAY	CUM
	0000	2.5 MADE UP TEST TOOLS FOR CONVENTIONAL STRADDLE/D		1. Rig Up 2. Drilli				3.5
		3182M-3198M	UALI PACKERS.	<ol> <li>Driff</li> <li>Reaming</li> </ol>	•			309.5 30.5
	0230	2.0 RIH WITH TOOLS, BHA & 3	9 STANDS DP	4. Coring	-			27.5
	0430	1.0 RAN WATER CUSHION (1315		5. Circ.8				36.5
		HYDROSPRING)		6. Trips				95.0
	0530	2.5 FINISHED RIH		7. Repair	Rig			31.0
	0800	1.0 HEADED UP. SET PACKERS.	OPENED	8. Rig Ma				5.5
	0000	TOOL. LOST PACKER SEAT.		9. Dev.Su	•			15.0
	0900	5.5 POH		10.Log &				13.0
	1430 2100	1.0 LAID DOWN TEST TOOLS 2.5 FINISHED POH		11.RU Run				25.0
	1530	6.0 LAID DOWN 21 JTS E PIPE	SITODED &	12.Cement 13.NU,Tes	=			7.0 36.0
	1000	CUT DRILL LINE. BROKE I		14.PU/LD,	•			1.5
		G PIPE. (FILLING IN TIM		15.DST	,		24.0	43.5
		DAYLIGHT DST 2A).		16.Loss C	irc			
	2130	2.0 MADE UP TEST TOOLS FOR I		17.Remed.	Cmt'g			
		CONVENTIONAL TEST WITH	3 PACKERS.	18.Fishin	g ·			
	0000	3174-3230.7(TD).		19.Contro				
	2330	0.5 RIH	•	20.W00/To	•			4.5
				21.WOW/WO				9.5
				22.Comple 23.P & A	P1011			
				24.FIT				3.0
				25.D/H Tr	ouble			24.0
				26.Surf.T				1.5
				27.CUM TO	TAL		24.0	722.5

## DAILY DRILLING REPORT (ONSHORE)

	DAIL! DRILLING KLFC	THE CONSTIONE)	
1	Well WINDERMERE NO.2 DOL/DSS 35/31	Report No. 32 Date	9/4/89
2	<u>Total Depth</u> 3230.7m <u>Progress</u> NIL <u>Last csg</u>	9 5/8" @ 1867m. Logged	<u>to</u> 1860 m
3	Current Activity WASHING TO BOTTOM WITH BIT #11		
4	<u>Dev/Depth</u>	m. LAST	BOP TEST 5/4/89
6		oz <u>M/Out Metres Hr</u> O 13	s <u>M/Hr T.B.</u>
7 8	<u>Bit WOB RPM STK LNR SPM GPM PSI</u>	<u>AV NV SHP BHP</u>	<u>≹HP Tor HF</u> 
9	BHA Description: BIT-NB REAMER -MONEL-STAB- 1 X 6 1/2" DC- 6 HWDP-221 E Grade DP -	2 X 6 1/2" DC'S-DAILY DRILI REST G (341.5 HRS ON JARS)	LING JARS
10	WELL COSTS: <u>Daily\$</u> 22,663 <u>Cum\$</u> 1,249,104	MUD: Daily\$ 278	Cum\$ 31,128
11	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>f Pm Ca Cl MBI SC San</u> 3 - 180 1.5K 15.0 5.4 Tr	nd <u>N03 KCL Na</u> 250 – –
Mud Mai	tl's Used: 2 NH4 NITRATE, 5 POLYSAL, 1 CAUST	IC ,	·á
13	WATER (bbls) BARITE (1001b)	CEMENT (941b) FUEL (	litres)
	Used Bal Used Bal	Used Bal Used	Bal
14	·	1; JVP 1;HALL 1;EAST 1;DITE	1 <u>Total</u> 24
FROM OOOO	HRS DETAILS OF PAST 24 HOURS OPERATIONS  1.0 RIH WITH TOOLS, BHA & 39 STANDS	<u>OPERATION</u> 1. Rig Up/Down	DAY CUM 3.5
	DP.	2. Drilling	309.5
0100	1.0 RAN WATER CUSHION (1306M ABOVE	3. Reaming	30.5
200	HYDROSPRING) 4.5 RIH. PICKED UP 21JTS G PIPE.	<ol> <li>Coring</li> <li>Circ.&amp; Cond.</li> </ol>	27.5 1.0 37.5
200	HEADED UP.	6. Trips	1.0 37.5 4.5 99.0
630	4.5 RAN DST 2A (3174-3230.7M, 3	7. Repair Rig	31.0
	PACKER CONVENTIONAL TEST)	8. Rig Maint.	0.5 6.0
	OPEN AT 0651HRS (6MIN.PREFLOW)	9. Dev.Survey	15.0
	CLOSED AT 0657HRS (30MIN.SHUTIN) REOPEN AT 0727HRS (71MIN.FLOW)	10.Log & Perf	13.0
	CLOSED AT 0838HRS (142MIN.SHUTIN)	11.RU RunCsg,Tub 12.Cementing	25.0 7.0
	BUBBLE IN BUCKET FOR FIRST 1-2	13.NU,Test BOPCsg	36.0
	SECONDS OF PREFLOW. DEAD THROUGHOUT	14.PU/LD, DP/DC	1.5
		15.DST	18.0 61.5
465	REMAINDER OF TEST.		10.0 01.3
100	5.0 POH. (FOUND TOP OF FLUID AT 1211M	16.Loss Circ	10.0 01.5
.100	5.0 POH. (FOUND TOP OF FLUID AT 1211M ABOVE HYDROSPRING-EXPECT WATER	16.Loss Circ 17.Remed.Cmt'g	10.0 01.3
100	5.0 POH. (FOUND TOP OF FLUID AT 1211M ABOVE HYDROSPRING-EXPECT WATER CUSHION AERATED WHEN RUN.RECOVERED	16.Loss Circ 17.Remed.Cmt'g 18.Fishing	10.0 01.3
.100	5.0 POH. (FOUND TOP OF FLUID AT 1211M ABOVE HYDROSPRING-EXPECT WATER CUSHION AERATED WHEN RUN.RECOVERED WATER CUSHION-SL GAS CUT WITH	16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press	
	5.0 POH. (FOUND TOP OF FLUID AT 1211M ABOVE HYDROSPRING-EXPECT WATER CUSHION AERATED WHEN RUN.RECOVERED	16.Loss Circ 17.Remed.Cmt'g 18.Fishing	4.5 9.5
600	5.0 POH. (FOUND TOP OF FLUID AT 1211M ABOVE HYDROSPRING-EXPECT WATER CUSHION AERATED WHEN RUN.RECOVERED WATER CUSHION-SL GAS CUT WITH TRACE OIL.SAMPLE CHAMBER CONTAINED OIL CUT MUD.) 2.0 LAID DOWN TEST TOOLS	16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.WOW/WOC 22.Completion	4.5
1100 1600 1800 2100	5.0 POH. (FOUND TOP OF FLUID AT 1211M ABOVE HYDROSPRING-EXPECT WATER CUSHION AERATED WHEN RUN.RECOVERED WATER CUSHION-SL GAS CUT WITH TRACE OIL.SAMPLE CHAMBER CONTAINED OIL CUT MUD.)	16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.WOW/WOC	4.5

24.FIT

25.D/H Trouble

26.Surf.Trouble

27.CUM TOTAL

3.0

24.0

1.5

746.5

24.0

2100

2130

2300

0.5 SLIPPED DRILLING LINE

1.0 WASHED 17M TO BOTTOM

1.5 FINISHED RIH

	1	Well WINDERMERE NO.2 DOL/DSS 36/3	2 <u>Report No</u> . 33 <u>D</u>	ate 10/4/89
	2	Total Depth 3341 m Progress 110.3m Last of	osg 9 5/8" @ 1867m.	Logged to 1860 m
	3	Current Activity RUNNING SURVEY		
	4	<u>Dev/Depth</u> 6 °@ 3342m; ° @ m; -	P @ m.	LAST BOP TEST 5/4/89
	6	BitMakeTypeSizeS/No11REEDHP51A8 1/2"BT7166	Noz M/Out Metres 110.3	Hrs M/Hr T.8.G. 3 22.5 4.9 -
	7 8	Bit         WOB         RPM         STK         LNR         SPM         GPM         PS           11         40         70         8 1/2"         6         95         285         2250           43	<u>BI AV NV SHP BH</u> D 134 442 373 268 252	
	9	BHA Description: BIT-NB REAMER -MONEL-STAI 1 X 6 1/2" DC- 6 HWDP-221 E Grade DI	3- 2 X 6 1/2" DC'S-DAILY P - REST G (364.5 HRS ON	DRILLING JARS JARS)
	10	WELL COSTS: Daily\$ 15,869 Cum\$ 1,264,9	973 <u>MUD</u> : <u>Daily\$</u> 621	<u>Cum\$</u> 31,749
	11	<u>WT VIS PV YP Gels WL FC HT/HP Ph P</u> 9.2 34 6 6 3/10 7.5 1 - 9.0 -	Pf/Mf Pm Ca C1 MBT SC - 100 1.4K 15.0 6.	<u>Sand NO3 KCL NaCl</u> .5 Tr 300
	Mud Mat	l's Used: 1 SODA ASH, 12 POLYSAL, 3 CAUST		
	10			
_	13	WATER (bbls) BARITE (1001b) Used Bal Used Bal	CEMENT (941b) Used Bal	FUEL (litres) Used Bal
		414	400	21600
	14	POB: Oper 2 Contr 15 Service GEOD 2; IDE	S 1; JVP 1;HALL 1;	Total 22
	FROM	HRS DETAILS OF PAST 24 HOURS OPERATIONS	<u>OPERATION</u>	DAY CUM
	0000 0100	1.0 DRILLED TO 3236M 0.5 REAMED & WORKED PIPE DUE TO HIGH	1. Rig Up/Down	3.5
	0130	21.5 DRILLED TO 3341M	<ol> <li>Drilling</li> <li>Reaming</li> </ol>	22.5 332.0 30.5
	2300	1.0 CIRCULATED & RAN SURVEY	4. Coring	27.5
			≈ 5. Circ.& Cond.	37.5
			6. Trips	99.0
			7. Repair Rig	31.0
			8. Rig Maint. 9. Dev.Survey	6.0 1.0 16.0
			10.Log & Perf	13.0
			11.RU RunCsg,Tub	25.0
			12.Cementing	7.0
		·	13.NU,Test 80PCsg 14.PU/LD,DP/DC	<b>36.0</b> 1.5
•			15.DST	61.5
			16.Loss Circ	5210
		•	17.Remed.Cmt'g	
•			18.Fishing	
			19.Control Press 20.WOO/Tools,etc	4.5
			E01800/10013,660	4.J
			21.WOW/WOC	
			22.Completion	9.5
			22.Completion 23.P & A	9.5
			22.Completion 23.P & A 24.FIT	9.5 3.0
			22.Completion 23.P & A	9.5

# DAILY DRILLING REPORT (ONSHORE)

	1	Well WINDERMERE NO.2	DOL/DSS	37/33 <u>Repor</u>	<u>t No</u> . 34	<u>Date</u>	11/4/	′89
	2	Total Depth 3438 m Progress	97m	Last csg	9 5/8" @ 18	867m. Logs	ged to 1860	) m
	3	Current Activity DRILLING 8 1/2	" HOLE					
	4	<u>Dev/Depth</u> 6 º@ 3324m; º	@ m;	- 0 @	m.	LAS	ST BOP TEST	5/4/89
	6	BitMakeTypeSize11REEDHP51A8 1/		6 0 Noz 1.	<u>M/Out</u> 3 -		Hrs M/Hr 16.0 4.5	
	7 8	Bit WOB RPM STK LNR 70 8 1/2" 6 43	<u>spm</u> <u>gpm</u> 95 285	PSI A 2275 13	4 442 3	<u>SHP</u> <u>ВНР</u> 77 268		or HP/in 50 4.71
	9	BHA Description: BIT-NB REA 1 X 6 1/2" DC- 6 HWDP	MER -MONEL -221 E Gra	-STAB- 2 X de DP - RES	6 1/2" DC' ST G (388	S-DAILY DRI HRS ON JAR	LLING JAR (S)	S
	10	WELL COSTS: Daily\$ 16,901	<u>Cum\$</u> 1,	281,874 <u>MUD</u>	: <u>Daily\$</u>	883	Cum\$	32,632
	11	<u>WT VIS PV YP Gels WL F</u> 9.2 34 6 7 3/10 8.2 1	<u>C HT/HP</u> - 9.	<u>Ph</u>	<u>m Ca Cl</u> 5 80 1.5K	MBT SC 14.0 6.9 T	<u>Sand N03</u> 'r 300	KCL NaCl
	Mud Mat	l's Used: 10 POLYSAL, 3 CA	USTIC, 4 P	AC				
	13		RITE (1001b)		EMENT (941b) Used Bal	Us	L (litres) ed 8al	- 
			414		400	4200	1740	0
	1/	DOR: Oner 2 Centr 15 Corvie		9.TDEC 1.		1.		
	14		ce GEOD	2;IDFS 1; .	JVP 1;HALL	1;	<u>Total</u>	22
	FROM 0000	HRS DETAILS OF PAST 24 HOURS OPERA	CE GEOD		JVP 1;HALL  OPERATION  1. Rig Up/Dow	•	<u>Total</u> <u>DAY</u>	22 <u>cum</u> 3.5
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD		OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming	•	<u>Total</u>	22 <u>CUM</u> 3.5 355.5 30.5
	FROM 0000	HRS DETAILS OF PAST 24 HOURS OPERA 6.0 DRILLED TO 3368M 0.5 REAMED & WORKED PIPE 1	CE GEOD		OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con	in	<u>Total</u> <u>DAY</u>	22 <u>CUM</u> 3.5 355.5 30.5 27.5 37.5
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips	in	<u>Total</u> <u>DAY</u>	22 <u>CUM</u> 3.5 355.5 30.5 27.5 37.5 99.0
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint.	in d.	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey	in d.	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf	d.	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing	d. Tub	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test 80	d. Tub PCsg	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0 25.0 7.0 36.0
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test 80 14.PU/LD,DP/D	d. Tub PCsg	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0 25.0 7.0 36.0 1.5
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test 80	d. Tub PCsg	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0 25.0 7.0 36.0
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test B0 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt'	d. Tub PCsg C	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0 25.0 7.0 36.0 1.5
•	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing	on d. Tub PCsg C	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0 25.0 7.0 36.0 1.5
•	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pr	on  d.  Tub  PCsg C	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0 25.0 7.0 36.0 1.5 61.5
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test 80 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pr 20.W00/Tools, 21.WOW/WOC 22.Completion	on  d.  Tub  PCsg C  g  ess etc	<u>Total</u> <u>DAY</u>	22 CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 16.0 13.0 25.0 7.0 36.0 1.5
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pr 20.W00/Tools, 21.WOW/WOC 22.Completion 23.P & A	on  d.  Tub  PCsg C  g  ess etc	<u>Total</u> <u>DAY</u>	22  CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 13.0 25.0 7.0 36.0 1.5 61.5
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test 80 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pr 20.W00/Tools, 21.WOW/WOC 22.Completion 23.P & A 24.FIT	nd. Tub PCsg C	Total  DAY  23.5	22  CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 13.0 25.0 7.0 36.0 1.5 61.5
	FROM 0000 0600	HRS DETAILS OF PAST 24 HOURS OPERA  6.0 DRILLED TO 3368M  0.5 REAMED & WORKED PIPE I  TORQUE	CE GEOD	Н	OPERATION  1. Rig Up/Dow 2. Drilling 3. Reaming 4. Coring 5. Circ.& Con 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, 12.Cementing 13.NU,Test BO 14.PU/LD,DP/D 15.DST 16.Loss Circ 17.Remed.Cmt' 18.Fishing 19.Control Pr 20.W00/Tools, 21.WOW/WOC 22.Completion 23.P & A	Tub PCsg C g ess etc	<u>Total</u> <u>DAY</u>	22  CUM 3.5 355.5 30.5 27.5 37.5 99.0 31.0 6.0 13.0 25.0 7.0 36.0 1.5 61.5

# DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2	DOL/DSS	38/34 Report	: No. 35	Date	12/4/89
2	Total Depth 3514 m Progress	76m	Last csg S	5/8" @ 1867m	n. Logged to	1860 m
3	Current Activity DRILLING 8 1/3	2" HOLE				
4	<pre>Dev/Depth</pre>	@ m;	° @	m.	LAST BOP	TEST 5/4/89
6	Bit Make Type Siz 11 REED HP51A 8 1.				Metres <u>Hrs</u> 283.3 69.0	M/Hr 1.8.G. 4.1 -
7 8	Bit         WOB         RPM         STK         LNR           11         43         70         8 1/2"         6	<u>SPM</u> <u>GPM</u> 95 285	PSI AV 2275 134		8HP %HP 270 72	Tor HP/in 425 4.77
9 DAILY	BHA Description: BIT-NB READRILLING JARS-1 X 6 1/2" DO	AMER -MONEL C- 6 HWDP-2	-STAB- 2 X 21 E Grade	6 1/2" DC'S-S DP - REST G (	TAB-19 x 6 1 411 HRS ON	/2" DC's JARS)
10	WELL COSTS: Daily\$ 15,837	Cum\$ 1,	297,711 MUD:	Daily\$	973 <u>Cum</u> \$	33,605
11	WT VIS PV YP Gels WL 9.3 35 8 7 4/14 8.8	<u>гс нт/нр</u> L – 9.	<u>Ph</u>	Ca Cl MBT 100 1.4K 16.	$0  \frac{\underline{\texttt{SC}}}{7.6}  \underline{\underline{\texttt{Sand}}}$	NO3 KCL NaC1
Mud Mat	l's Used: 5 POLYSAL, 4 CA	AUSTIC, 7 P	AC			
13		ARITE (1001b) Used Bal 414		MENT (941b) sed Bal 400	FUEL (lit Used 4700	Res)
14 .	POB: Oper 2 Contr 15 Serv	ice GEOD	2;IDFS 1; J	VP 1;		Total 21
FROM 0000 1630 1730	HRS DETAILS OF PAST 24 HOURS OPEN 16.5 DRILLED TO 3494M 1.0 ATTEMPTED TO RUN SURVINSUFFICIENT WIRELING 6.5 DRILLED TO 3514M	EY - FOUND		OPERATION  1. Rig Up/Down 2. Drilling 3. Reaming 4. Coring 5. Circ.& Cond. 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, Tub 12. Cementing 13.NU, Test BOPCsg 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17. Remed. Cmt'g 18. Fishing 19. Control Press 20. WOO/Tools, etc 21. WOW/WOC 22. Completion 23. P. & A 24. FIT 25. D/H Trouble 26. Surf. Trouble 27. CUM TOTAL		DAY CUM  3.5  23.0 378.5  30.5  27.5  37.5  99.5  31.0  6.0  16.0  13.0  25.0  7.0  36.0  1.5  61.5  4.5  9.5  3.0  25.0  25.0  4.5  9.5

### DAILY DRILLING REPORT (ONSHORE)

	DAILT	DRILLING REP	URI (UNSHURE)	
1	Well WINDERMERE NO.2	<u>DOL/DSS</u> 39/35	Report No. 36	<u>Date</u> 13/4/89
2	Total Depth 3595 m Progres	s 81m Last csg	9 5/8" @ 1867m.	Logged to 1860 m
3	Current Activity DRILLING 8 1	/2" HOLE		
4	Dev/Depth º@ m;	o @ m; - o	@ m.	LAST BOP TEST 5/4/89
6		<u>ize</u> <u>\$/No</u> 1/2" BT7166 0		tres <u>Hrs</u> <u>M/Hr</u> <u>I.B.G</u> . 54.0 93.0 3.9 -
7 8	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	<u>SPM GPM PSI</u> 96 288 2300	AV NV SHP 136 447 386 235	8HP 279 72 10r HP/1 450 4.92
9 DAILY	BHA Description: BIT-NB R Y DRILLING JARS-1 X 6 1/2"			
10	WELL COSTS: Daily\$ 16,414	<u>Cum\$</u> 1,314,12	5 MUD: Daily\$ 15	550 <u>Cum\$</u> 35,154
11	WT         VIS         PV         YP         Gels         WL           9.3         37         9         8         5/16         7.5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1f Pm Ca Cl MBT .8 - 100 1.4K 17.5	SC         Sand         NO3         KCL         Nacl           7.6         Tr         300         -         -
Mud Mai	tl's Used: 10 POLYSAL, 7	CAUSTIC, 10 PAC		
10				·
13		BARITE (1001b)	CEMENT (941b)	FUEL (litres)
	Used Bal	Used 8al 414	Used Bal 400	Used 8al 4955 7745
14	POB: Oper 2 Contr 15 Ser		1; JVP 1; GEARHART 4	
FROM	HRS DETAILS OF PAST 24 HOURS OF	ERATIONS	OPERATION	DAY CUM
0000	24.0 DRILLED 8 1/2" HOL		1. Rig Up/Down	3.5
	(BIT TORQUED UP,		2. Drilling	24.0 402.5
	OF FAILURE)		3. Reaming	30.5
			4. Coring	27.5
			5. Circ.& Cond.	37.5
			6. Trips	99.5
			7. Repair Rig	31.0
			<ol><li>Rig Maint.</li></ol>	6.0
			9. Dev.Survey	16.0
			10.Log & Perf	13.0
			11.RU RunCsg,Tub	25.0
			12.Cementing	7.0
	•		13.NU,Test 80PCsg	36.0
	•		14.PU/LD,DP/DC	1.5
			15.DST 16.Loss Circ	61.5
			17.Remed.Cmt'g	
	•		18.Fishing	
			19.Control Press	
			20.W00/Tools,etc	4.5
			21.WOW/WOC	9.5

22.Completion 23.P & A 24.FIT

25.D/H Trouble

26.Surf.Trouble

27.CUM TOTAL

3.0

25.0

2.5

842.5

### DAILY DRILLING REPORT (ONSHORE)

	DAILY DRILLING REPU	JRI (UNSHURE)	
1	Well WINDERMERE NO.2 DOL/DSS 40/36	Report No. 37 Date	14/4/89
2	Total Depth 3595 m Progress - Last csg	9 5/8" @ 1867m. Logg	<u>ed to</u> 1860 m
3	Current Activity LOGGING. RUNNING IN WITH DENSIT	Y NEUTRON TOOL (RUN 3)	
4	Dev/Depth MR º@ TD m; º @ m; - º @	e m. LAS	T 80P TEST 5/4/89
	<u>Bit Make Type Size S/No N</u>	oz M/Out Metres	Hrs M/Hr T.B.G.
6			3.0 3.9 8.8. LOST COM
7 8	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	AV         NV         SHP         BHP           136         447         386         279           235	*HP <u>Tor HP/i</u> 72 450 4.92
9	BHA Description:		
10	WELL COSTS: Daily\$ 51,397 Cum\$ 1,365,522	MUD: Daily\$ 173	<u>Cum\$</u> 35,327
11	WT VIS PV YP Gels WL FC HT/HP Ph Pf/M 9.3 38 10 8 4/16 7.5 1 - 9.5 .2/.	<u>f Pm Ca Cl M8T SC S</u> 8 - 100 1.4K 17.5 7.6 T	<u>Sand NO3 KCL NaCl</u> r 300 – –
Mud Mat	l's Used: 18 BARITE (3SX LIME USED IN SEWER	AGE PITS)	
	( હ		
13	WATER (bbls) BARITE (1001b) Used Bal Used Bal		(litres)
	396	Used Bal Use 400 -	ed Bal 10370
14 -	POB: Oper 2 Contr 15 Service GEOD 2; IDFS	1; JVP 1;GEARHART 4	Total 25
FROM 0000	HRS DETAILS OF PAST 24 HOURS OPERATIONS 3.0 PUMPED HI VIS PILL.CIRCULATED	OPERATION	DAY CUM
0000	CLEAN.	<ol> <li>Rig Up/Down</li> <li>Drilling</li> </ol>	3.5 402.5
0300	0.5 DROPPED SURVEY. SLUGGED PIPE.	3. Reaming	30.5
0330	5.5 POH. STRAPPED OUT. LAID DOWN MONEL.	4. Coring	27.5
	(STRAP 1.35M SHORTER-NO CORRECTION.	5. Circ.& Cond.	3.0 40.5
0000	BIT HAD LOST ONE CONE.)	6. Trips	5.5 105.0
0900	15.0 RIGGED UP GEARHART RAN DLL/MSFL (LOGGERS DEPTH	7. Repair Rig	31.0
	3596M)	<ol> <li>Rig Maint.</li> <li>Dev.Survey</li> </ol>	6.0 0.5 16.5
	RAN BCS/MEL (LOGGED FROM 3565M	10.Log & Perf	15.0 28.0
	HUD)	11.RU RunCsg, Tub	25.0
	RUN IN WITH DENSITY NEUTRON	12.Cementing	7.0
	TOOL	13.NU,Test BOPCsg	36.0
	•	14.PU/LD,DP/DC	1.5
		15.DST	61.5
		16.Loss Circ	•
	•	17.Remed.Cmt'g 18.Fishing	
		19.Control Press	
	•	20.W00/Tools,etc	4.5
	·	21.WOW/WOC	9.5
	-	22.Completion	
		23.P & A	
		OA ETT	7 0

24.FIT

25.D/H Trouble

26.Surf.Trouble

27.CUM TOTAL

3.0

25.0

2.5

866.5

### DAILY DRILLING REPORT (ONSHORE)

	DAILY DI	RILLING REP	ORT (ONSHORE)	
1	Well WINDERMERE NO.2	<u>DOL/DSS</u> 41/37	Report No. 38	<u>Date</u> 15/4/89
2	Total Depth 3595 m Progress	- Last csg	9 5/8" @ 1867m.	Logged to 3595m m
3	Current Activity POH TO LOG.			
4	Dev/Depth º@ m; º@	m; - • •	@ m.	LAST BOP TEST 5/4/89
6	BitMakeTypeSizeRR4REEDHP51A8 1/2		Noz <u>M/Out</u> <u>Met</u> 13 13 35,95 -	res Hrs M/Hr 1.8 10.0 - 4. REAMING
7 8	$\frac{81t}{RR4}$ $\frac{WO8}{10}$ $\frac{RPM}{70}$ $\frac{STK}{8}$ $\frac{LNR}{6}$ $\frac{S}{9}$	<u>PM GPM PSI</u> 5 285 1200	AV NV SHP 134 235 199 232	BHP %HP Tor H 76 38 450 1.3
9	BHA Description: BIT-BIT SUB-2 DO	C'S-STAB-19 DC'S	S-DAILY DRILLING JAR	2- 1 DC-6 HWDP
10	HELL 00010. Dailub 15 797	Λ <b>.</b> 1 201 2 <i>5</i> (	) MUD. Dailud 57	1 0uzh 25 000
		Cum\$ 1,381,259	<del></del>	· ·
11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	HT/HP Ph Pf/M - 9.0 .2/.	$\frac{15}{1.5} - \frac{p_m}{120} \frac{c_a}{1.4} \frac{mBT}{17.5}$	<u>SC Sand NO3 KCL N</u> 8.0 Tr 300
Mud Mat	18 BARITE, 1 CAUST	TIC, 6 POLYSAL,	6 MAGCOGEL	
13		TE (1001b)	CEMENT (941b)	FUEL (litres)
	Used Bal Use		Used 8al	Used Bal
		378	400	1420 8950
14	POB: Oper 2 Contr 15 Service	GEOD 2; IDFS	1; JVP 1; GEARHART 5	; VELDATA 1 <u>Iotal</u> 27
FROM	HRS DETAILS OF PAST 24 HOURS OPERAT	IONS	OPERATION	DAY CUM
0000	4.0 RAN IN WITH DENSITY NEU		1. Rig Up/Down	3.:
	ATTEMPTED TO WORK PAST		2. Drilling	402.
	3005M WITHOUT SUCCESS.		3. Reaming	10.0 40.
	GEARHART.	TUIGGED DOWN	4. Coring	27.5
0400	3.5 RIH TO SHOE. (REPLACED 4	שמום עו פיויו	5. Circ.& Cond.	2.0 42.5
0100	WITH WASHED CONNECTIONS		6. Trips	7.0 112.0
0730	1.0 SLIPPED & CUT DRILLING	•	7. Repair Rig	7.0 112.0 31.0
0830	1.5 RIH TO 2987M	TITINE	8. Rig Maint.	1.0 7.0
1000	1.5 REAMED 2987M-3041M		9. Dev.Survey	
1130	0.5 RIH TO 3162M		The state of the s	16.5
1200	5.5 REAMED 3162M-3243M		10.Log & Perf	4.0 32.0
1730	0.5 RIH TO 3545M		11.RU RunCsg,Tub	25.0
1800	3.0 REAMED 3545M-3595M		12.Cementing	7.0
			13.NU, Test BOPCsg	36.0
2100	2.0 PUMPED HI VIS PILL & CI	RCULATED .	14.PU/LD,DP/DC	1.5
0000	CLEAN		15.DST	61.5
2300	1.0 SLUGGED PIPE & POH		16.Loss Circ 17.Remed.Cmt'g	•
		•	18.Fishing	
			19.Control Press	
			20.W00/Tools,etc	4.5
			21.WOW/WOC	9.5
			22.Completion	<i>,</i>
	·		23.P & A	
			24 ETT	

24.FIT

25.D/H Trouble

26.Surf.Trouble

27.CUM TOTAL

3.0

25.0

2.5

890.5

# DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2	<u>DOL/DSS</u> 42/3	38 <u>Report No</u> . 39	<u>Date</u> 16/4/	89
2	Total Depth 3595 m Pro	gress - Last	<u>csg</u> 9 5/8" @ 186	7m. <u>Logged to</u> 3595	m
3	Current Activity REAMING/C	ONDITIONING TRIP FO	OR LOGS		
4	Dev/Depth º@ m;	o @ m; -	o @ m.	LAST BOP TEST	5/4/8
	Bit Make Type	Size S/No	No M/O4	Makasa II M/II.	<b>.</b>
6	<u>Bit</u> <u>Make</u> <u>Type</u> RR6 REED HP43A		Noz M/Out 12 13 13 -	Metres Hrs M/Hr - 2.0 - REAMING	<u>T.8</u>
7 8		<u>NR SPM GPM F</u> 6 116 347 170	PSI <u>AV NV ŞH</u> 00 164 302 34 284		or 1
9	BHA Description: BIT-BIT SU	JB-2 DC'S-STAB-19 D	X'S-DAILY DRILLING	JAR- 1 DC-6 HWDP	
10	WELL COSTS: Daily\$ 21,8	338 Cum\$ 1,403,	.097 MUD: Daily\$	93 Cum\$	25 00:
				<del></del>	<b>35,</b> 991
11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	.2 $\frac{\text{FC}}{1} - \frac{\text{HT/HP}}{9.0}$ .	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8T SC Sand NO3 O.O 8.4 Tr 300	KCL N
Mud Ma	tl's Used: 5 MAGCOGEL (	(PREVIOUSLY USED IN	HV PILL)		
		· _	····,	( u	
13	WATER (bbls)	BARITE (1001b)	CEMENT (941b)	FUEL (litres)	
	Used Bal	Used Bal	Used Bal	Used Bal	
		378	400	1990 69	60
14	PO8: Oper 2 Contr 15	Service GEOD 2; ID	OFS 1; JVP 1;GEARHAI	RT 5; VELDATA 1 Total	27
FROM	HRS DETAILS OF PAST 24 HOUR	S OPERATIONS	OPERATION	DAY	CUM
0000	3.5 POH.		1. Rig Up/Down		
0330	14.0 RIGGED UP GEARHAF	<b>Υ</b> Τ.			3.
			<ol><li>Drilling</li></ol>		3. 402.
		JTRON (LD 3595M)	<ul><li>2. Drilling</li><li>3. Reaming</li></ul>	2.0	
	ATTEMPTED TO RU	JTRON (LD 3595M) JN DIPMETER	<ol> <li>Reaming</li> <li>Coring</li> </ol>	2.0	402.
	ATTEMPTED TO RU (HUD 3184M)/ATT	JTRON (LD 3595M) IN DIPMETER TEMPTED TO RUN	<ul><li>3. Reaming</li><li>4. Coring</li><li>5. Circ.&amp; Cond</li></ul>	2.0	402. 42. 27. 42.
	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3	JTRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M)	<ul><li>3. Reaming</li><li>4. Coring</li><li>5. Circ.&amp; Cond</li><li>6. Trips</li></ul>	2.0	402. 42. 27. 42. 119.
1.700	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA	JTRON (LD 3595M) JN DIPMETER TEMPTED TO RUN B184M) ARHART	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig	7.5	402. 42. 27. 42. 119. 31.
	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE.	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint.		402. 42. 27. 42. 119. 31.
2000	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI	TTRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ELLING LINE	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey	7.5 0.5	402. 42. 27. 42. 119. 31. 7.
2000	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF	TTRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ELLING LINE EKED PIPE AT	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46.
2000	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE	TTRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ELLING LINE	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Tu	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46. 25.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM)	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Ta	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46. 25.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN B184M) ARHART TO SHOE. LLING LINE EKED PIPE AT EL - 2958 TO 3015M II (CLEAR TO 3180M	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Tomes 12.Cementing 13.NU,Test BOPG	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Ta	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,To 12.Cementing 13.NU,Test BOPO 14.PU/LD,DP/DC	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,To 12.Cementing 13.NU,Test BOPO 14.PU/LD,DP/DC	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, To 12.Cementing 13.NU, Test BOPO 14.PU/LD, DP/DC 15.DST 16.Loss Circ	7.5 0.5 14.0	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, To 12.Cementing 13.NU, Test BOP/ 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Pres	7.5 0.5 14.0 ub	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7. 36. 1.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg, To 12.Cementing 13.NU, Test BOPP 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Pres 20.W00/Tools, eigen	7.5 0.5 14.0 ub	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7. 36. 1. 61.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,To 12.Cementing 13.NU,Test BOPO 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Pres 20.WOO/Tools,ei 21.WOW/WOC	7.5 0.5 14.0 ub	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7. 36. 1.
2000 2030	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,Ti 12.Cementing 13.NU,Test BOPI 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Pres 20.WOO/Tools,et 21.WOW/WOC 22.Completion	7.5 0.5 14.0 ub	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7. 36. 1. 61.
1730 2000 2030 2200	ATTEMPTED TO RU (HUD 3184M)/ATT VELOCITY (HUD 3 RIGGED DOWN GEA 2.5 MADE UP BIT. RIH 0.5 SLIPPED & CUT DRI 1.5 RIH TO 3163M (WOF PREVIOUS HUD LEVE NO PROBLEM) 2.0 REAMED 3163-3185M TAKING WEIGHT & T	TRON (LD 3595M) IN DIPMETER TEMPTED TO RUN 3184M) ARHART TO SHOE. ILLING LINE EKED PIPE AT EL - 2958 TO 3015M TO CLEAR TO 3180M TORQUE HIGH/	3. Reaming 4. Coring 5. Circ.& Cond 6. Trips 7. Repair Rig 8. Rig Maint. 9. Dev.Survey 10.Log & Perf 11.RU RunCsg,To 12.Cementing 13.NU,Test BOPO 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Pres 20.WOO/Tools,ei 21.WOW/WOC	7.5 0.5 14.0 ub	402. 42. 27. 42. 119. 31. 7. 16. 46. 25. 7. 36. 1. 61.

24.FIT

25.D/H Trouble

26.Surf.Trouble 27.CUM TOTAL 3.0 25.0

2.5

914.5

# DAILY DRILLING REPORT (ONSHORE)

	- 1 do no. 1			
1	Well WINDERMERE NO.2 DOL/DSS 43/39	Report No. 40	ate 17/4/	89
2	Total Depth 3595 m Progress - Last csc	9 5/8" @ 1867m.	Logged to 3595	m
3	Current Activity LOGGING - RUNNING DIPMETER			
4	Dev/Depth º@ m; - º	@ m.	LAST BOP TEST	5/4/89
	<u>Bit</u> <u>Make</u> Type Size S/No	Noz M/Out Metres	<u>Hrs</u> M/Hr	T.B.G
6		13 13	Hrs M/Hr 7.0 - REAMING	1.0.0
7 8	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	AV NV SHP BH6 164 302 344 15 284		or <u>HP/</u> 00 2.73
9	BHA Description: BIT-BIT SUB-2 DC'S-STAB-19 DC'	S-DAILY DRILLING JAR- 1	DC-6 HWDP	
10	WELL COSTS: Daily\$ 18,141 Cum\$ 1,421,23		Cum\$	36,436
11	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\frac{Mf}{6} - \frac{Pm}{120} \cdot \frac{Ca}{1.4K} \cdot \frac{MBT}{20.0} \cdot \frac{SC}{8}$ .	Sand N03 4 Tr 300	KCL NaC
Mud Ma	tl's Used: 5 POLYSAL, 2 CAUSTIC, 18 BARITE	,		
		€ હ		
13	WATER (bbls) BARITE (1001b)	CEMENT (941b)	FUEL (litres)	
	Used Bal Used Bal 360	Used Bal 400 2	Used Bal	
			574 438	
14	POB: Oper 2 Contr 15 Service GEOD 2; IDFS	1; JVP 1; GEARHART 5; VE	LDATA 1 Total	27
FROM	HRS DETAILS OF PAST 24 HOURS OPERATIONS	<u>OPERATION</u>	DAY	CUM
0000	2.0 REAMED 3185M-3205M	1. Rig Up/Down		3.5
0200	1.5 PULLED BACK & REAMED 3163-3205M	2. Drilling		402.5
0330	AGAIN 0.5 LAID DOWN WORK SINGLES & RIH.HELD	3. Reaming	5.0	47.5
0330	UP AT 3216M	4. Coring	0.0	27.5
0400	0.5 REAMED 3216M-3253M	5. Circ.& Cond 6. Trips	2.0 5.5	44.5 125.0
0430	0.5 RIH TO 3546M	7. Repair Rig	1.1	31.0
0500	1.0 REAMED & WASHED 3546-3595M TD	8. Rig Maint.		7.5
				16.5
	(10M FILL)	7. DEV. DULVEY		
0600	(10M FILL) 2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE	9. Dev.Survey 10.Log & Perf	11.5	
0080	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH	· · · · · · · · · · · · · · · · · · ·	11.5	57.5 <b>25.</b> 0
0080	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART	10.Log & Perf	11.5	57.5
0080	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg,Tub	11.5	57.5 <b>25.</b> 0
0080	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART	10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC	11.5	57.5 25.0 7.0 36.0 1.5
0800	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST	11.5	57.5 25.0 7.0 36.0
0800	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ	11.5	57.5 25.0 7.0 36.0
	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g	11.5	57.5 25.0 7.0 36.0
0800	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing	11.5	57.5 25.0 7.0 36.0
0800	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press	11.5	57.5 25.0 7.0 36.0 1.5 61.5
0800	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg, Tub 12.Cementing 13.NU, Test BOPCsg 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools, etc	11.5	57.5 25.0 7.0 36.0 1.5 61.5
0080	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg, Tub 12.Cementing 13.NU, Test BOPCsg 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools, etc 21.WOW/WOC	11.5	57.5 25.0 7.0 36.0 1.5 61.5
0600 0800 1230	2.0 CIRCULATED BOTTOMS UP. SLUGGED PIPE 4.5 POH 11.5 RIGGED UP GEARHART RAN VELOCITY SURVEY (LD 3589M)	10.Log & Perf 11.RU RunCsg, Tub 12.Cementing 13.NU, Test BOPCsg 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools, etc	11.5	57.5 25.0 7.0 36.0 1.5 61.5

24.FIT

25.D/H Trouble

26.Surf.Trouble

27.CUM TOTAL

3.0

25.0

2.5

938.5

# DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2 DOL/DSS 44/4	O Report No. 41 Da	ate 18/4/89
2	Total Depth 3595 m Progress - Last o	csg 9 5/8" @ 1867m.	Logged to 3595 m
3	Current Activity LAYING DOWN PIPE		
4	Dev/Depth º@ m; º @ m; -	o @ m.	LAST BOP TEST 5/4/89
	<u>Bit</u> <u>Make</u> <u>Type</u> <u>Size</u> <u>S/No</u>	Noz M/Out Metres	Hrs M/Hr T.B.G.
6			· ·
7 8	<u>Bit WOB RPM STK LNR SPM GPM PS</u>	<u>SI AV NV SHP BHF</u> 	O %HP Tor HP/in :
9	BHA Description:		•
10	WELL COSTS: Daily\$ 114,655 Cum\$ 1,535,8	893 <u>MUD</u> : <u>Daily\$</u> 20	<u>Cum\$</u> 36,456
11	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\frac{Pf/Mf}{2/.6} - \frac{Pm}{120} \frac{Ca}{1.4K} \frac{Cl}{20.0} \frac{MBT}{8}.$	Sand NO3 KCL NaCl 4 Tr 300
Mud Mat	STOCK ADJUSTMENT 1 BICARB (USEI		
	2	SALT (BROKEN SACKS)	
13	WATER (bbls) BARITE (1001b) Used Bal Used Bal	CEMENT (941b) Used Bal	FUEL (litres)
	360	240	Used Bal 3400
14	POB: Oper 2 Contr 15 Service GEOD 2; IDE	FS 1;HALL 2;GEARHART 5;	Total 27
FROM	HRS DETAILS OF PAST 24 HOURS OPERATIONS	OPERATION	DAY CUM
0000	11.5 GEARHART RAN LOGS CONTINUED DIPMETER (HUD 3200M)	<ol> <li>Rig Up/Down</li> <li>Drilling</li> </ol>	3.5 402.5
	RAN ROTARY CORING TOOL (ELECT.	3. Reaming	47.5
	MOTOR SEIZED)	4. Coring	27.5
	RAN SIDEWALL CORE GUN (SHOT	5. Circ.& Cond	1.0 45.5
	24, REC 22)	6. Trips	2.5 127.5
1130	RIGGED DOWN GEARHART  1.0 LAID DOWN CORE BARREL	7. Repair Rig 8. Rig Maint.	31.0 0.5 8.0
1230	1.0 LAID DOWN DRILLING JARS, STABS	9. Dev.Survey	16.5
	& 4 DC'S	10.Log & Perf	11.5 69.0
1330	2.0 RIH OEDP TO SHOE	11.RU RunCsg,Tub	25.0
1530	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE	11.RU RunCsg,Tub 12.Cementing	25.0 2.0 9.0
1530 1600	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg	25.0 2.0 9.0 36.0
1530	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE	11.RU RunCsg,Tub 12.Cementing	25.0 2.0 9.0 36.0 6.5 8.0
1530 1600 1800 1830	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ	25.0 2.0 9.0 36.0
1530 1600 1800 1830 2030	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g	25.0 2.0 9.0 36.0 6.5 8.0
1530 1600 1800 1830 2030 2100	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing	25.0 2.0 9.0 36.0 6.5 8.0
1530 1600 1800 1830 2030 2100 2130	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS 1.5 LAID DOWN KELLY	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press	25.0 2.0 9.0 36.0 6.5 8.0 61.5
1530 1600 1800 1830 2030 2100	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing	25.0 2.0 9.0 36.0 6.5 8.0 61.5
1530 1600 1800 1830 2030 2100 2130	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS 1.5 LAID DOWN KELLY	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.WOW/WOC 22.Completion	25.0 2.0 9.0 36.0 6.5 8.0 61.5
1530 1600 1800 1830 2030 2100 2130	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS 1.5 LAID DOWN KELLY	11.RU RunCsg, Tub 12.Cementing 13.NU, Test BOPCsg 14.PU/LD, DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools, etc 21.WOW/WOC 22.Completion 23.P & A	25.0 2.0 9.0 36.0 6.5 8.0 61.5
1530 1600 1800 1830 2030 2100 2130	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS 1.5 LAID DOWN KELLY	11.RU RunCsg, Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools, etc 21.WOW/WOC 22.Completion 23.P & A 24.FIT	25.0 9.0 36.0 6.5 8.0 61.5 4.5 9.5
1530 1600 1800 1830 2030 2100 2130	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS 1.5 LAID DOWN KELLY	11.RU RunCsg,Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools,etc 21.WOW/WOC 22.Completion 23.P & A 24.FII 25.D/H Trouble	25.0 9.0 36.0 6.5 8.0 61.5 4.5 9.5
1530 1600 1800 1830 2030 2100 2130	2.0 RIH OEDP TO SHOE 0.5 SLIPPED DRILLING LINE 2.0 LAID DOWN REMAINING DC'S & HWDP 0.5 CIRCULATED 2.0 SET PLUG NO.1 FROM 1902 TO 1817M 167 SX NEAT CLASS G CEMENT 15.8PPG 0.5 PULLED BACK & REVERSE CIRCULATED 0.5 POH 13 STANDS 1.5 LAID DOWN KELLY	11.RU RunCsg, Tub 12.Cementing 13.NU,Test BOPCsg 14.PU/LD,DP/DC 15.DST 16.Loss Circ 17.Remed.Cmt'g 18.Fishing 19.Control Press 20.WOO/Tools, etc 21.WOW/WOC 22.Completion 23.P & A 24.FIT	25.0 9.0 36.0 6.5 8.0 61.5 4.5 9.5

RIG NAME: ATCO A2

DRILLING SUPERVISOR: J E OZOLINS

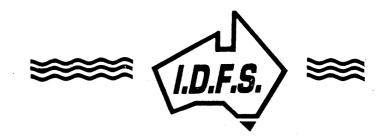
# DAILY DRILLING REPORT (ONSHORE)

1	Well WINDERMERE NO.2 DOL/DSS 45/4	Report No. 42	<u>Date</u> 19/4/89
2	Total Depth 3595 m Progress - Last o	sg 9 5/8" @ 1867m.	Logged to 3595 m
3	Current Activity PLUGGED & ABANDONED - RIG REI	ÆASED	
4	Dev/Depth °@ m; ° @ m; - °	@ m.	LAST BOP TEST 5/4/89
	8it Make Type Size S/No	Noz M/Out Metr	es <u>Hrs M/Hr T.B.G</u> .
6	∢		
7 8	<u>Bit WOB RPM STK LNR SPM GPM PS</u>	<u>I AV NV SHP</u> 	<u>8HP                                    </u>
9	BHA Description:		
10	WELL COSTS: <u>Daily\$</u> 131,107 <u>Cum\$</u> 1,667,0	OO MUD: Daily\$	<u>Cum\$</u> 36,456
11	WT VIS PV YP Gels WL FC HT/HP Ph P	f/ <u>Mf Pm Ca C1 MBT</u> S	SC Sand NO3 KCL NaCl
Mud Mat	l's Used:		_
13	WATER (bbls) BARITE (1001b) Used Bal Used Bal	CEMENT (941b) Used Bal	FUEL (litres) Used Bal
	360	35 198	USEU DAI
14	POB: Oper 1 Contr 15 Service HALLIB 2	;	<u>Total</u> 18
FROM OOOO	HRS DETAILS OF PAST 24 HOURS OPERATIONS 2.5 LAID DOWN PIPE	OPERATION	DAY CUM
0230	0.5 PRESSURE TESTED PLUG NO 1 WITH	<ol> <li>Rig Up/Down</li> <li>Drilling</li> </ol>	3.5 402.5
0300	2500 PSI. OK. 7.5 LAID DOWN PIPE	<ol> <li>Reaming</li> <li>Coring</li> </ol>	47.5
1030	1.0 SET PLUG NO.2 FROM 60M TO 30M	5. Circ.& Cond	27.5 45.5
1100	35 SX NEAT CLASS G 15.8PPG	6. Trips	127.5
1130	0.5 FINISHED LAYING DOWN PIPE. FLUSHED BOP'S & SURFACE LINES WITH WATER	7. Repair Rig 8. Rig Maint.	31.0 8.0
1200	3.0 NIPPLED DOWN BOP'S. CLEANED MUD TANKS.	9. Dev.Survey 10.Log & Perf	16.5 69.0
1500	0.5 REMOVED CASING SPOOL.	11.RV RunCsg,Tub 12.Cementing	25.0 1.5 10.5
1530	1.0 CUT 9 5/8" CASING. REMOVED	13.NU,Test BOPCsg	5.0 41.0
1630	BRADENHEAD  0.5 LAID DOWN SWIVEL/KELLY ASSEMBLY	14.PU/LD,DP/DC	10.5 18.5
1030	INSTALLED CAP.	15.DST 16.Loss Circ	61.5
		17.Remed.Cmt'g	
	RELEASED RIG AT 1700 HOURS	18.Fishing 19.Control Press	
	19/4/89	20.W00/Tools,etc	4.5
		21.WOW/WOC	9.5
		22.Completion 23.P & A	
		24.FIT	3.0
		25.D/H Trouble	25.0
		•	
		26.Surf.Trouble 27.CUM TOTAL	2.5 17.0 979.5

RIG NAME: ATOO A2

DRILLING SUPERVISOR: J E OZOLINS

APPENDIX B
DRILLING FLUID SUMMARY



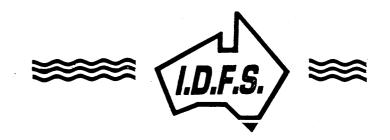
DRILLING FLUID SUMMARY

WELL: WINDERMERE # 2

OTWAY BASIN

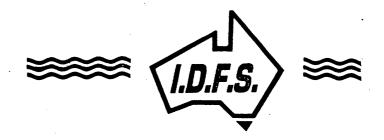
VICTORIA

Prepared by : Andre Skujins Date : April 1989



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  Discussion by Interval
- 2. OBSERVATIONS AND RECOMMENDATIONS
- 3. MATERIAL COSTS AND CONSUMPTION ANALYSIS Discussion by Interval
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WELL: WINDERMERE # 2 RIG: ATCO APM # A2 SPUD: 9th MARCH 1989

#### 1. SUMMARY OF OPERATIONS

HOLE SIZE : 17 1/2"

MUD TYPE : WATER-HIGH VISCOSITY SWEEPS / KC1 NATIVE CLAYS

INTERVAL: 0 - 341 Metres

CASING SIZE : 13 3/8"

Windermere # 2 was spudded in on the 9th March 1989 utilizing ATCO APM # A2, and reached a total depth of 3595 metres on the 13th April 1989.

The 17 1/2 "surface hole was initially drilled with a 40 viscosity spud mud with a low active volume. Water was then added and high viscosity sweeps (comprising Kwik Thik, Caustic Soda and Lime) were used to ensure that the hole was being cleaned. Downhole losses of up to 40 bbls per connection were noted while drilling the Port Campbell Limestone.

When the Gellibrand Marl was intersected, the drilling fluid was allowed to mud up naturally due to the mud making character of the formation. The viscosity was kept relatively low due to the possibility of mud rings forming. High viscosity mud was occasionally pumped to verify hole cleaning. 280 bbls of 8% w/v KCl brine was added to the mud to further reduce the chance of mud ring formation and resulted in a 2% KCl system.

The solids control equipment was run continuously throughout this interval of hole to maintain a reasonable mud weight and to minimize a build up of fine solids in the mud system.

Drilling continued to a depth of 341 metres. The 13 3/8" casing was run to 314 metres and cemented. The cement was displaced with mud. Although 140 barrels of cement returns came to surface, a top up job was required after the annulus dropped while waiting on cement.

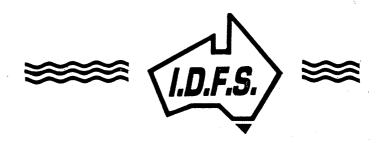
HOLE SIZE : 12 1/4"

MUD TYPE : NaCl POLYMER - KCl POLYMER

INTERVAL: 341 - 1869 Metres

CASING SIZE : 9 5/8"

While nippling up the blow out preventers, the sand trap and shaker tank were dumped and cleaned. Approximately 380 bbls of mud from



the previous hole section was kept. The shale shaker screens were changed from B40/B60 to B80/B100.

A 12 1/4" bit was run in the hole and the cement, float and shoe were drilled out using the mud from the previous section of hole. Any cement contamination was treated out with Soda Ash. The hole was drilled to 344 metres where a leak off test was conducted. An equivalent mud weight of 19.0 ppg was achieved.

Drilling then continued using the mud from the previous section of hole. All solids control equipment was utilized (including the centrifuge) to maintain the lowest possible mud weight. Sodium chloride was added to provide inhibition (instead of potassium chloride due to cost considerations) and a chlorides concentration of between 20,000 to 34,000 mg/lt was maintained.

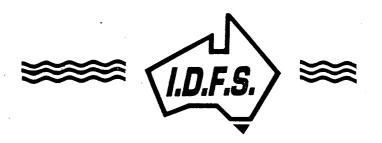
Due to the relatively high mud weight resulting from both a solids build up and the high chlorides (25,000 mg/lt chlorides increases the mud weight 0.2 ppg), large volumes of mud were dumped to allow heavy dilution. After consideration of the effects of large volumes of salty fluid on the farmer's property, the salt additions were substituted with potassium chloride for its usefulness as a fertilizer.

Drilling continued and at 898 metres a wiper trip to the shoe was conducted. The hole was found to be sticky in parts. The bit was then tripped at 1197 metres. The hole was tight and the kelly was picked up to work the hole from 905 to 885 metres. The pipe was then pulled through tight hole from 885 to 800 metres. No problems were encountered running back in the hole.

During this interval of hole, the mud properties were slowly refined. The fluid loss was lowered, although heavy dilution initially proved a problem. It was eventually lowered to approximately 8 - 10 mls/30 minutes by 800 metres and maintained at that level until 1400 metres. Polysal and Pac were used to lower the fluid loss, with the PAC also increasing the viscosity and yield point.

The mud weight gradually increased to approximately 9.5 ppg due to a build up of dispersive clays from the Eumeralla Formation. This was evidenced by the fact that the MBT increased by 7.5 lb/bbl despite water dilution. The viscosity was maintained at between 41 to 45 sec/qt, with good PV:YP ratios ensuring good hole cleaning and laminar flow. The gel strengths were maintained at reasonable levels with the 10 minute gel strength below 20. A KCl concentration of 1.5% to 3% w/v was maintained to ensure good hole stability.

At 1400 metres the fluid loss was allowed to increase naturally due to cost considerations. The mud weight was also diluted back from



9.5 ppg to 9.35 ppg. The fluid loss was then lowered to approximately 6.5 mls prior to entering the Heathfield Member at 1722 metres.

The bit was tripped at 1743 metres and tight hole was reamed at 1561 metres. The trip continued and the hole was tight from 1561 to 1017 metres. When out of the hole a core barrel was made up and run in. After washing and reaming from 1700 to 1743 metres, Core # 1 was cut to 1748 metres, with a 78% recovery.

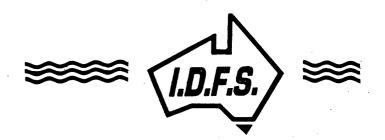
An 8 1/2" bit was then run back in the hole and drilling continued to 1771 metres where Core # 2 was cut. No problems were encountered during the trips. Core # 2 was cut to 1793 metres and a 99.4% recovery was made. Drilling then continued to 1803 metres where DST # 1 was conducted. Again no hole problems were experienced.

Throughout this period the solids control equipment was run almost continuously and also while tripping.

After DST # 1 was completed, drilling resumed and the 8 1/2" hole was deepened to 1869 metres. Bottoms up was circulated and a KCl heavy weight slug was pumped prior to pulling out of the hole. The electric logs were then run and no problems were experienced with the hole.

When the logs had been completed, a Pressure Integrity Test was conducted with a view to continue the hole to Total Depth. Poor results led to a decision to run 9 5/8" casing. A 12 1/4" bit was then made up and run in the hole. The hole had to be washed and reamed from 1063 to 1086 metres, 1140 to 1172 metres, 1245 to 1254 metres and 1731 to 1744 metres. The 8 1/2" hole was then opened with the 12 1/4" bit from 1744 to 1869 metres. Bottoms up was circulated and the bit was tripped out of the hole.

The 9 5/8" casing was then run in the hole and after the hole was circulated clean, the casing was cemented. Prior to cementing, the sand trap and shaker tank were dumped and cleaned, and the mud from suction tank # 1 was transferred to them. The suction tank was then used to mix up Wyoming bentonite in fresh water for use in the cement job. The cement was displaced with mud. It was at this stage of the hole that the I.D.F.S. Drilling Fluid Engineer arrived on location.



HOLE SIZE: 8 1/2"

INTERVAL: 1869 m - 3595 m

MUD TYPE : KC1 POLYMER - WATER - F.W. POLYMER

CASING : P&A

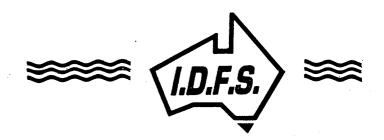
While nippling up the blow out preventers, the centrifuge was run to reduce the mud weight in the pits as much as possible. The shaker and desander tanks were dumped due to cement contamination. The shale shaker screens were changed to B80/S100 and B40/B120. After the surface equipment had been pressure tested, an 8 1/2" bit was run in the hole. Cement was tagged at 1037 metres and the cement, plug and stage collar were drilled out. Simultaneously, the mud was treated with bicarb soda to treat out any cement contamination. Bicarb was used in preference to soda ash due to its lower pH.

The pipe was then run further in the hole. The blow out preventers were then further pressure tested but due to a failure, the pipe was pulled from the hole. The problem was rectified and the bit was run back in the hole. The cement and shoe were then drilled out and a further 3 metres of open hole was drilled. A Pressure Integrity Test was then conducted with a leak off at an equivalent mud weight of 12.65 ppg.

Drilling then continued with the existing KCl polymer mud from the previous hole section. All solids control equipment was run continuously. Sodium sulphite was added at a concentration of approximately 100 mg/lt for corosion control. Sodium nitrate was added to maintain a concentration of 150 to 200 mg/lt for use as a tracer. No other chemicals were added since all the other mud properties were adequate for this section of hole. The fluid loss was allowed to increase naturally since the formation being drilled was not very porous and relatively inert.

Due to the high pH of the mud resulting from drilling out the cement, the polymers responsible for the viscosity and yield point were adversely affected to some degree. The viscosity dropped to 32 to 33 sec/qt and the yield point to 3 to 5 lb/100ft^2. Although the annular flow properties were in turbulent flow, hole cleaning was not adversely affected.

No water or fresh mud was being added and the mud weight began to rise slowly. Due to the slow rate of penetration caused somewhat by the mud weight, it was decided that the hole should be displaced with water. This was commenced at 2079 metres and as much mud as possible from the hole was stored in the mud tanks. When the tanks were full, approximately 200 barrels of mud had to be dumped. The water was pumped from the sump via the mud mixing hopper into the pill tank and all fluid returns were diverted to the sump where solids had time to settle out. The penetration rate doubled and no



hole problems were experienced while making connections. No hole cleaning problems were experienced.

The water being circulated through the sump had a chlorides level of approximately 9000 mg/lt and a KCl concentration of approximately 0.8% w/v. The nitrate level was approximately 100 mg/lt.

Drilling continued to 2261 metres where the bit was tripped. No hole problems were experienced. A PDC bit was then run in the hole and 4 metres of fill were found. Drilling continued and no problems were noticed keeping the water relatively clean. The PDC bit was tripped out due to a disappointing rate of penetration.

Drilling continued and at approximately 2400 metres the water system was "closed" in. The water was circulated from the shale shakers down the trough into the pill tank and skimmed into the suction tank. Therefore the suction tank, which was monitored for pit level changes, was the only active tank with variable volume. Consequently any gain or loss could be quantified to aid in possible kick detection.

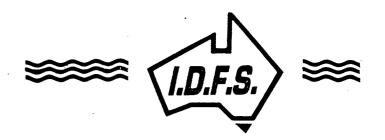
The weight of the water slowly increased due to the limited settling area in use. Consequently, the fluid was dumped and completely displaced with water from the sump from time to time. A noticable increase in the rate of penetration occured each time the hole was displaced.

At 2403 metres the pipe was pulled wet for a suspected washout. No tight hole was observed. Drilling continued and the bit was tripped at 2603 metres, again with no hole problems.

Drilling resumed and at approximately 2700 metres the hole was displaced with fresh water from the day tank. This was done because the sump water had become irretrievably dirty. It had become impossible to maintain low to no solids in the water. One sack of sodium nitrate was added to the water as a tracer.

At this stage, it was noticed that the mud being stored in the spare mud pits had become diluted back to the stage that it was not economical to use when the hole was again mudded up. i.e. The solids content of the mud was still too high to justify its future use. It was therefore dumped and the tanks were completely cleaned out and filled with fresh water.

At 2775 and 2882 metres the hole was very tight on connections. Pump # 1 was being repaired at the time and Pump # 2 was in use. (Pump # 2 does not have the same output as Pump # 1. i.e. Lower annular velocities were not adequate for hole cleaning.) A high viscosity pill (approximately 35 barrels of stored mud and 2 sacks of PAC) was pumped after the first tight connection and seemed to



alleviate the problem. Each time Pump # 1 was put back on line, subsequent connections experienced no problems.

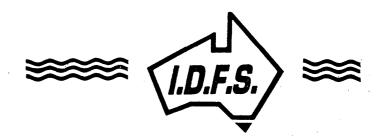
At 2833 metres mudding up commenced. The tanks that had been in use with the water drilling were dumped and cleaned. The entire "water" drilling system was dumped at the shale shakers as the weight had increased to 8.9 ppg and the hole was displaced with fresh water. The shale shaker screens were changed to B100/S100. Although the screens had to be scrubbed occasionally to reduce blinding, no mud losses occured.

Chemicals were then added to the water to achieve the desired mud specifications. PAC was added initially to achieve both a lowered fluid loss and to increase the rheological values to ensure reasonable hole cleaning. Approximately 1.5 lb/bbl of PAC was added and the fluid loss was reduced to approximately 11 mls/30 minutes. The viscosity and yield point, however, failed to increase as expected with this concentration of PAC. A viscosity of 31 sec/qt and a yield point of 4 lb/100 ft^2 were achieved. It was decided though that these rheological levels were adequate for hole cleaning, so no further additions of PAC were made. Instead, the fluid loss was further lowered to approximately 8 mls/30 minutes with Polysal.

After the addition of the first 0.8 lb/bbl of PAC, Caustic Soda additions were made to increase the pH to between 9.0 to 9.5. The caustic additions were held off until this stage due to the fact that polymers (e.g. PAC) diperse best at a neutral pH (7.0 - 8.0).

Simultaneous to the additions of the above chemicals were the additions of Sodium Nitrate as a tracer, and Sodium Sulphite as an oxygen scavenger for corrosion control. Although the addition of a given amount of Sodium Nitrate in a given volume of mud should yield fairly accurately a certain expected concentration of nitrate within the filtrate, these results appeared to be much lower than expected. It appeared that when Sodium Sulphite was introduced to the mud system, that the nitrates started to deplete. In fact, for the mud check conducted at 3004 metres, the nitrates had depleted to almost nothing. A pilot test was then conducted with both chemicals and it was found that the addition of Sodium Sulphite to a Sodium Nitrate solution reduced the nitrate concentration to zero mg/lt. It was therefore decided that since the nitrate tracer was more important than the need for an oxygen scavenger in a fresh water mud with adequate pH control, that additions of Sodium Sulphite would stop. Increased amounts of Sodium Nitrate, and then Ammonium Nitrate, were used in an effort to increase the nitrate concentration to approximately 200 mg/lt. However it was only when the sulphite concentration was almost negligible that the nitrate concentration started to increase appreciably.

At 3005 metres the pipe was again pulled for a suspected washout.



The bit was found to be washed and a new bit was run in the hole. Drilling continued and from approximately 3040 metres the increasing amount of coal had a thinning effect on the mud. The viscosity dropped from 30 to 28 sec/qt and the yield point dropped from 2 to 1 lb/100 ft^2. The pH also dropped considerably and required further additions of Caustic Soda.

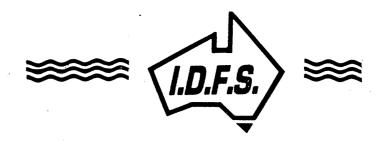
From approximately 3170 metres to 3231 metres, the mud properties changed dramatically. The viscosity increased from 28 to 32 sec/qt and the yield point increased from 1 to 5 lb/100 ft^2. The mud weight increased at a more rapid rate than expected due to the more dispersive clays being drilled through and this was evidenced by the increase in the MBT value from 6 to 12 lb/bbl equivalent. The fluid loss did not seem to be effected by the increase in fine solids.

Drilling continued to 3231 metres where bottoms up was circulated. A wiper trip to the shoe was conducted and when back on bottom 2 metres of fill was recorded. A high viscosity pill was circulated and showed the hole to be clean. The pipe was then pulled from the hole and DST # 2 was conducted. Due to the packer seat not holding, the test tool was pulled from the hole. DST # 2A was then conducted. The test was a mechanical success. A bottom hole temperature of 275° F was recorded.

Drilling then resumed and because all the solids control equipment had been running continuously, the mud weight in the pits had dropped from 9.15 to 9.05 ppg. When back on bottom the mud was conditioned with Polysal to ensure that the fluid loss would remain under 8 mls/30 minutes. Caustic Soda was added to keep the pH at 9.0 to 9.5 and more Ammoniun Nitrate was added to ensure the nitrate values would remain at approximately 200 mg/lt. Of interest was the fact that since there was no discernable sulphite left in the mud, only two sacks of Ammonium Nitrate increased the nitrate value to approximately 300 mg/l, and it remained at this level until total depth.

Drilling continued to a total depth of 3595 metres. Chemical usage increased due to the increasing bottom hole temperature as TD was being approached. Polysal was still the most cost effective additive to maintain the fluid loss, but PAC was also being added due to the Polysal stock running low. When no more Polysal was available, PAC was used exclusively to maintain the fluid loss at approximately 8 mls/30 minutes. This proved to be unsuccessful with the fluid loss actually increasing slowly despite the PAC additions.

A new pallet of Polysal arrived on location 4 hours prior to reaching total depth. The fluid loss at this time was 11.5 mls/30 minutes. 10 sacks of Polysal were added and the fluid loss was reduced to 7.5 mls/30 minutes.



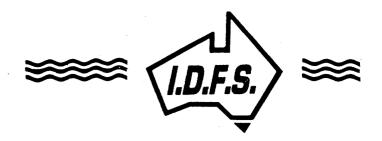
Total depth was reached 5 metres earlier than planned when the bit torqued up at 3595 metres. A high viscosity pill was pumped through the hole and the pipe was then pulled.

Electric logs were then run. During the third run the tool hung up at 3005 metres, presumably on a ledge. A bit was run in and the hole was reamed from 2987 to 3041 metres, 3162 to 3243 metres and 50 metres to bottom. A high viscosity pill was circulated through the hole and the mud in the open hole was treated with Caustic Soda and Polysal to lower the fluid loss. The pipe was then pulled.

Logging continued, but on run # 4 the tool hung up on a ledge at 3184 metres. Another conditioning trip was made with the pipe being worked from 2958 to 3015 metres, and reamed from 3163 to 3205 metres. The pipe was then pulled back to 3163 metres and the hole was reamed again to 3205 metres. The pipe was then run to 3546 metres can reamed to bottom. Bottoms up was circulated and the pipe was pulled.

Electric logging continued and the Velocity Shoot was run without problems. However, on the next logging run, the tool again hung up on a ledge. No further wiper trips were conducted though since subsequent runs were completed from this point up.

The hole was subsequently plugged and abandoned.



#### 2. OBSERVATIONS AND RECOMMENDATIONS

Windermere # 2 was drilled to a total depth of 3595 metres for a total mud cost of \$36,456.07 or \$10.14 per metre. It was generally a trouble free hole although there were problems associated with electric logging.

The I.D.F.S. Drilling Fluid Engineer did not arrive on location until the 9 5/8" had been run and cemented. All information previous to this is based on the previous mud reports and the Operator's reports. Consequently any conclusions or recommendations are also based on these reports.

A detailed analysis by hole section follows.

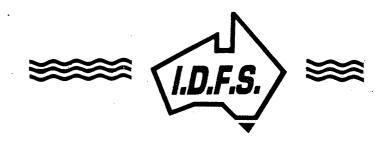
#### 17 1/2" SURFACE HOLE

This section of hole was drilled for a mud cost of \$1929.60 or \$5.66 per metre. No problems were experienced during this section of hole.

Of particular interest in the breakdown of mud usage for this interval is the cost of the KCl used. (i.e. \$1420.00 or 74% of the mud cost.) The KCl was added as a precaution against mud ring formation in the Gellibrand Marl. The maintenance of a low viscosity mud, (e.g. 30-32 viscosity would more than likely provide a yield point for sufficient hole cleaning) using water dilution as necessary to control viscosity, solids build up and the liklihood of mud rings forming would be the most cost effective. Consideration should only be given to using KCl if the water supply is limited or the sump is too small.

Another modification to the program, and certainly where a "one off well" is being drilled, is to use Wyoming Bentonite (or an equivalent) in conjunction with a clay extender such as Benex. The advantages to this would be two-fold:

- i) A Benificiated Bentonite (i.e. Kwik-thik) would not be required. Therefore, if it was not required or used on Surface hole, it would not sit on the lease waiting to be sent back to stores or the next lease.
- ii) Bentonite additions could still be made to the active mud system. Where lime is added to the spud mud as a flocculent, future bentonite additions are not as effective due to the Calcium ions present in the mud. Where Benex is used, the order of addition is not important. Since Benex is added in the ratio of one 2 lb bag to every five 100 lb sacks of bentonite, transportation costs are



negligible for Benex. Further, any un-used gel for this section of hole can still be used.

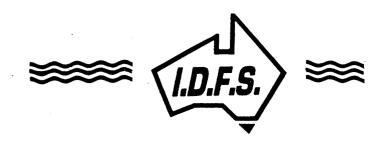
While drilling the top part of the surface hole through the Port Campbell Limestone, high viscosity sweeps were used to aid and check hole cleaning and/or add extra viscosity to the mud. Some mud losses were experienced while drilling the limestone. Since gauge hole is not critical in this section of hole (a top up cement job is still likely if for no other reason that the cement will drop in the limestone), water will be more than adequate for hole cleaning due to the relatively low specific gravity of the limestone. A viscous spud mud is only required while drilling the 8" collars past the conductor barrel. Therefore we suggest that approximately 150 barrels of viscous spud mud be mixed and used to drill with the 8" collars past the conductor barrel and then be watered back to maintain a minimum mud weight for optimum rates of penetration. Then as the Gellibrand Marl is drilled, a low viscosity mud (due to the native clays drilled) should be maintained. If bit balling, mud ring formation, or tight and sticky hole started to become a problem, a viscosity cup full of SAPP in the drill pipe during connections will drastically reduce any stickiness at a reasonably low cost.

#### 12 1/4" INTERMEDIATE HOLE

This section of hole was drilled for a mud cost of \$22,075.25 or \$14.45 per metre. No major hole problems occurred apart from minor tight hole on some trips. Often, as probably was the case here, this is just an indication that the hole is close to gauge. Any tight hole encountered was not evident in future trips. Also, none of the tight hole problems occurred in either of the Pember Mudstone, Pebble Point, or Belfast Mudstone formations.

### MUDDING UP

The hole was initially drilled with mud from the previous hole interval. Apart from a minimal amount of KCl and some viscosity, this mud had no other positive properties. Because it had an initial mud weight of 9.05 ppg, whereas a minimum mud weight was desirable for drilling this section of hole, it would have been more cost effective to build a new mud. It is therefore recommended that unless the high weight is required, that the spud mud be dumped in future. A fresh mud can be mixed if drilling is to continue with mud. Alternatively, drilling could continue with clear water. We believe this would be desirable in the interests of cost effective drilling due to increased rates of penetration, better bit life, and lowered mud costs. A flocculant would be added under the shale



shakers to maintain the clear water system. If sticky hole is envisaged or becomes a problem, KCl could be added. 2% should be sufficient and will in fact aid in maintaining the clear water system. Mudding up could commence prior 'to any possible targets being drilled.

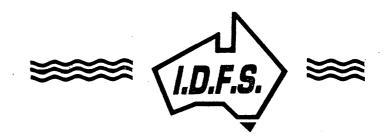
#### NACL VS KCL POLYMER FLUIDS

During the initial stages of this interval, NaCl was added to increase the fluids inhibition. This was preferred to KCl due to it being half the price per sack. This is false economics for two reasons. Firstly, since NaCl only provides inhibition through the chloride ion, the chloride concentration has to be significantly higher than if KCl were used. This more than likely results in a higher chemical cost for NaCl than for KCl at the same level of inhibition. Secondly, since probably twice the concentration of NaCl is required for similar inhibition, (and we strongly suspect that more than twice the concentration is required), the resulting increase in mud weight from salt results in either or both decreased rates of penetration and an increase in other chemical usage due to dumping and diluting. We therefore suggest that only KCl be used if inhibition is required.

#### FLUID LOSS AND POTASSIUM ION PARAMETERS

A minor, but perhaps in the long term an important criticism of the mud program was in the assertion that while drilling certain formations higher in the hole, the fluid loss and KCl concentrations should be more inhibitive, and then relaxed after the formations had been drilled through. For instance, Potassium is added to mud due to its capacity for base exchange with the Sodium ion within swelling clays. This chemical reaction is dependent on both the concentration of Potassium and Sodium within the mud filtrate. It is not an irreversable equation, and if an inhibitive equilibrium is reached with a certain Potassium concentration, then lowering this level will result in some of the Potassium providing the inhibition moving back into the mud. Consequently, these formations may destabilize. Conversely, if these formations do not destabilize, it can be inferred that the original Potassium concentration need not have been as high.

The same theory may be applied to fluid loss control, assuming that the fluid loss control applies to inhibition rather than protection of formations. Since down-hole fluid loss is generally in a dynamic situation, (i.e. the filter cake is continually being eroded and rebuilt by the circulating fluid), relaxing fluid loss parameters after certain formations have been drilled will result in that formation being affected by the higher level of fluid loss.



#### CORROSION CONTROL

Since this section of hole was drilled with a NaCl, and then a KCl Polymer fluid, we believe that a corrosion program should have been followed. More will be said about this in the 8 1/2" hole recommendations section.

#### CHEMICAL CONSUMPTION

The chemical consumption for this interval can not be commented on since the I.D.F.S. Engineer was not present and first hand experience is necessary for such comments. However, in hindsight and due to problems experienced with the PAC product in the 8 1/2" hole, it seems that a surprisingly high concentration of PAC was used. Again, further comments will be made in the 8 1/2" hole summary.

#### HOLE GAUGE

The hole gauge in this section of hole was generally very good. We do not consider it cost effective or a worthwhile exercise to try to improve this aspect of the hole.

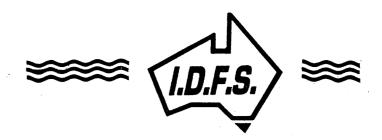
#### 8 1/2" PRODUCTION HOLE

This section of hole was drilled for a total mud cost of \$12,451.22 or \$7.21 per foot. No problems were experienced drilling this section, but there were problems associated with getting the electric logging tools to bottom. These problems were not thought to be mud related.

#### INITIAL MUD UP

Drilling of this section of hole commenced with the KCl Polymer mud from the previous section of hole. For the same reasons as outlined in the 12 1/4" hole recommendations, we believe it would be more economical to dump this mud completely and start with fresh mud, or preferably use clear water.

When drilling commenced, the mud had a low viscosity (approx 33 sec/qt) and high mud weight (approx 9.2 ppg). The KCl concentration was 2.8%. The total mud volume was 800 barrels. The only positive aspect of this mud was the KCl content, but this only represented the equivalent of approximately 75 sacks of KCl. It would definately have been more cost effective to build a new mud with consequently a



lower weight and solids content.

#### WATER DRILLING

The hole was displaced with water at 2079 metres because the rate of penetration was slow. It appeared that the formation being drilled through (the Lower Eumeralla) was stable, especially since the potassium in the mud was not being depleted. The rate of penetration increased immediately when the hole was displaced with water. The fluid was circulated through the sump for maximum settling and because the mud tanks were storing the KCl Polymer mud. It was anticipated that the mud would be used in deeper in the hole. This mud was however eventually dumped since it got contaminated with water.

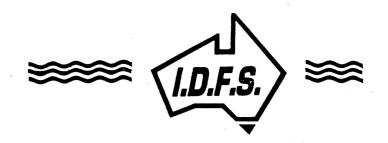
Due to the success of the water drilling as evidenced by the rate of penetration increasing proportionally to the lowered weight of the drilling fluid, it is recommended that it commence from drill out on future wells. Mudding up should commence and be completed prior to any primary targets being drilled through.

Since it is anticipated that the mud from the previous hole section has been dumped, the mud tanks can be used as settling tanks. A flocculant (a liquid polyacrylamide is the most cost effective) should be added under the shale shakers to facilitate settling. The sand trap and settling tanks should be dumped as required. Any fluid dumped can be reclaimed after solids have dropped out. The advantage to using the mud pits for settling would be that the fluid levels could be monitored for kick control.

Any particular level of nitrates, chlorides, or potassium can still be maintained. When using a floc-water system, a high hardness level (minimum of 400-500 mg/l) and a pH of approximately 8.5 is desirable for maximum flocculation. This could be achieved with the additions of lime for pH and calcium, and calcium chloride for extra calcium levels. Also, if KCl is to be used, this would also facilitate the flocculation process.

If required, some old (viscous) mud can be stored in the pill tank for future use as high viscosity slugs to aid in or to check on hole cleaning. It appeared on this hole that the only time hole cleaning was a problem was when the pump rate, and consequently the annular velocities, were too low. This occured when the lower capacity duplex pump was in use while the triplex was being repaired.

Perhaps the only disadvantage to using water is that the hole will wash out to a greater degree. However, from the point of view of drilling the hole, this is not seen as a problem. In fact, the larger hole gauge did not seem to pose any problem to electric log interpretation since the hole was generally uniformly over-gauge.



#### MUDDING UP

Mudding up after the water drilling commenced at 2833 metres. This was achieved by displacing the hole with fresh water and then adding the required chemicals. PAC was used initially to provide both a lowered fluid loss and an increased viscosity. Approximately 1.5 lb/bbl was added was added over a period of 15 hours. The viscosity only increased to 31 sec/qt (and a yield point of 2-3) and the fluid loss was lowered to 11 mls. This seems to be an unacceptable performance for any type of PAC product in a fresh water environment. Consequently, Polysal was used for fluid loss control and performed well. Since hole cleaning was adequate, extra viscosity was not required.

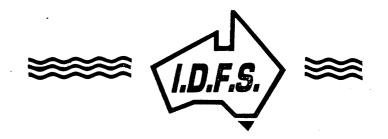
#### NITRATE TRACERS

Nitrates were used as a tracer on this well. Seemingly, no problems were encountered with their use on the previous hole section. However, when sodium sulphite was introduced as an oxygen scavenger after mudding up during this section of hole, problems in maintaining the required nitrate concentration were noticed. A pilot test was conducted on the effect of sodium sulphite on a given concentration of nitrates within a water solution. It was found that the addition of sulphites resulted in no nitrates being left in solution. Therefore, since a fresh water mud was in use, it was decided that an adequate pH should be maintained for corrosion control.

Therefore it is suggested that if a nitrate tracer is required, that another form of corrosion control be used. Alternatively, a different tracer (e.g. a radioactive isotope) could be used.

#### CORROSION CONTROL

Corrosion control is in the best interests of both the Operator and the Drilling Contractor. Corrosion due to soluble oxygen is thought to be worst at a concentration of approximately 18,000 mg/lt. This is approximately the level that most KCl muds run at in the Otway Basin. If an oxygen scavenger is not to be used due to nitrates present in the mud, a film forming amine could be used. It can be dosed down the drill pipe and around the pipe in the annulus while tripping.

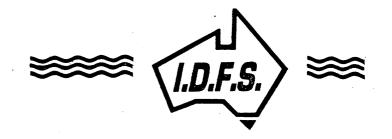


#### GENERAL COMMENTS

#### SUMP SIZE

The size of the sump for this well was too small. This did not give rise to any problems since fluid was pumped out periodically onto the farmer's adjoining paddock. It is not an isolated problem and often fluid, as was done on this well also, is pumped back to make extra mud volume. If water drilling is to be utilized in the future, this procedure is even more important due to the frequent dumping of settling tanks. Since a flocculant would be in use, the sump should be designed to provide a maximum settling effect.

We suggest that the sump be as deep as possible on the side where fluid is reclaimed from. A wall or barrier should remain down the middle and when the rig is on location, a trench can be dug at the far end. An old piece of casing (or similar) should be placed there and fluid can be skimmed off the top. This type of sump design would greatly enhance the retieval of clear fluid with no extra costs involved with sump construction.

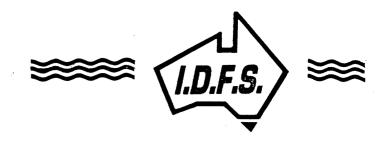


# 3. INTERVAL COSTS

MUD TYPE : WATER-HI VIS SWEEPS / KC1-NATIVE SOLIDS HOLE SIZE : 17 1/2"
INTERVAL : O m - 341 m 3.1

PRODUCT	SIZE	UNIT COST	USED	\$COST	%COST
divide spilled states states explice service.					
Caustic Soda	25 kg	\$28.88	1	\$28.88	1.5
KC1	50 kg	\$17.75	. 80	\$1,420.00	73.6
Kwik Thik	25 kg	\$11.18	<b>' 4</b> 0	\$447.20	23.2
Lime	25 kg	\$8.38	4	\$33.52	1.7
	1		Total =	\$1,929.60	100.0

Cost per Metre = \$5.66

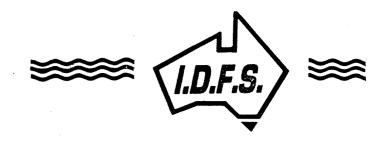


# 3. INTERVAL COSTS

MUD TYPE : NaCl-POLYMER / KCl-POLYMER HOLE SIZE : 12 1/4" INTERVAL : 341 m - 1869 m 3.2

PRODUCT	SIZE	UNIT COST	USED	\$COST	%COST
On which of the	OF 1	#20.00	40	#1 313 06	
Caustic Soda	25 kg	\$28.88	42	\$1,212.96	5.5
D.I.Cide	25 lt	\$108.88	1	\$108.88	0.5
KC1	50 kg	\$17.75	<b>'320</b>	\$5,680.00	25.7
NaCl	50 kg	\$8.75	200	\$1,750.00	7.9
PAC	25 kg	\$91.88	98	\$9,004.24	40.8
Polysal	25 kg	\$42.88	79	\$3,387.52	15.3
Soda Ash	40 kg	\$19.40	7	\$135.80	0.6
Sodium Nitrate	50 kg	\$39.75	7	\$278.25	1.3
Spersene	25 kg	\$25.88	20	\$517.60	2.3
		<del>.</del>	Total =	\$22,075.25	100.0
		•			

Cost per Metre = \$14.45

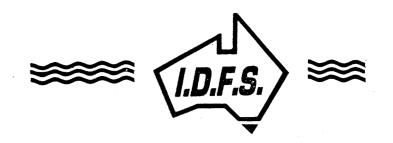


# 3. INTERVAL COSTS

MUD TYPE : KCl-POLYMER / WATER / F.W. POLYMER HOLE SIZE : 8 1/2"
INTERVAL : 1869 m - 3595 m 3.3

PRODUCT	SIZE	UNIT COST	USED	\$COST	%COST
				<del></del>	
~=					
Ammonium Nitrate	50 kg	\$17.51	8	\$140.08	1.1
Barytes	50 kg	\$9.60	. 72	\$691.20	5.6
Bicarb Soda	40 kg	\$20.40	<b>' 7</b>	\$142.80	1.1
Caustic Soda	25 kg	\$28.88	29	\$837.52	6.7
MagcoGel	100 lb	\$18.60	11	\$204.60	1.6
PAC	25 kg	\$91.88	55	\$5,053.40	40.6
Polysal	25 kg	\$42.88	104	\$4,459.52	35.8
Soda Ash	40 kg	\$19.40	4	\$77.60	0.6
Sodium Nitrate	50 kg	\$39.75	16	\$636.00	5.1
Sodium Sulphite	50 kg	\$29.75	6	\$178.50	1.4
Sodium Sulphite	25 kg	\$15.00	<del>-</del> 2	\$30.00	0.2
		•		·	
			Total =	\$12,451.22	100.0

Cost per Metre = \$7.21



# 3.4 TOTAL MATERIALS CONSUMPTION

WELL : WINDERMERE # 2 INTERVAL : 0 m - 3595 m

PRODUCT	SIZE	UNIT COST	USED	\$COST	%COST
Ammonium Nitrate Barytes Bicarb Soda Caustic Soda D.I.Cide KCl Kwik Thik Lime MagcoGel NaCl PAC Polysal Soda Ash Sodium Nitrate Sodium Sulphite Sodium Sulphite Spersene	50 kg 50 kg 40 kg 25 kg 25 lt 50 kg 25 kg 100 lb 50 kg 25 kg 40 kg 50 kg 50 kg 25 kg	\$17.51 \$9.60 \$20.40 \$28.88 \$108.88 \$17.75 \$11.18 \$8.38 \$18.60 \$8.75 \$91.88 \$42.88 \$19.40 \$39.75 \$29.75 \$15.00 \$25.88	8 72 7 72 1 400 40 4 11 200 153 183 11 23 6 2 20	\$140.08 \$691.20 \$142.80 \$2,079.36 \$108.88 \$7,100.00 \$447.20 \$33.52 \$204.60 \$1,750.00 \$14,057.64 \$7,847.04 \$213.40 \$914.25 \$178.50 \$30.00 \$517.60	0.4 1.9 0.4 5.7 0.3 19.5 1.2 0.1 0.6 4.8 38.6 21.5 0.6 2.5 0.1
	Tota	l Cost for V	Vell =	\$36,456.07 	100.0

Cost per Metre for Well = \$10.14



: 4. FLUID PROPERTIES SUMMARY :

DATE								GELS.	!W.L.!	SOLIDS	MBC.	PH !	Pm	l Pf/Mf	KC1	C1- :			
		(Metre)				!					 			¦ +	1 % 1	+	i +		! 
0-Mar-89				8.4			1		! !					! !	:	700¦	1201		! \$269.2
0-Mar-89				9.15		!	:		: :					!					i i
1-Mar-89				9.15		101		14/24		5.5	17.5			0.1/0.2	1.5	90001	5601		\$1,921.
2-Mar-89				9.05		81		7/13						0.1/0.3	1 1.2	70001	4801		\$1,921.
2-Mar-89				91				10/22			1	9.5		0.1/0.2	1 0.8	255001	8001		i i
3-Mar-89				8.75		91	151	4/7	116.41	2.5	7.5	9.51		0.1/0.3	0.5	19500:	2401		\$3,457.
3-Mar-89				9.15		10:					17.5			0.1/0.3	1 0.2	320001	2001		f f
4-Mar-89				9.3		10!			: 8.8:					0.1/0.3	1 0.2	280001	2401		\$7,029.
4-Mar-89				9.45	451	111	191	4/16	1 9.61	7	20	8.71		0.1/0.2	1.5	340001	3201		i i
5-Mar-89				9.45	451	111	14:	4/14	: 8:	7 1	20	8.8		0.1/0.2	1.5	270001	2801		\$8,201.
5-Mar-89				9.5		10:	171	6/24	1 9.81	7.5	25	8.6		: 0.1/0.3					!
6-Mar-89				9.4	44:	9:	161	8/18	112.41	7 :	25	8.8		0.1/0.4	1 2.3	240001			\$10,829.
6-Mar-89				9.35		9:	131	3/11	1 6.41	6.8	22.5	9.31		0.1/0.4					:
7-Mar-89				9.35	411	9;	12:	2/7	1 6.41	6.8	22.5	9.31		0.1/0.4		185001			<b>:\$13,977.</b>
7-Mar-89	7 :	1748	1 1	9.4	40:	9:	12!	2/6	1 6.6!	6.9	22.5	9.31		0.1/0.4					ę į
8-Mar-89	7 :	1748	; ;	9.451	391	9:	121	2/7	1 6.81	7.3	25	9.31		0.1/0.4	1 3.2	250001	300:		\$16,420.
8-Mar-89	7 :	1777	! !	9.4	41:	91	13:	2/6	1 6.41			9.7		0.2/0.5		240001			:
9-Mar-89	1	1788	! !	9.3	431	81	15!	3/7	1 6.81	6.3	17.5	9.91		0.2/0.6					\$19,481.
9-Mar-89	? :	1803	! !	9.3	411	101	15:	2/6	1 6.81	6.4	17.5	9.9		0.2/0.6					<b>!</b>
0-Mar-89	? :	1803	: :	9.25	42:	10!	151	2/7	: 6.6	6 1	17.5	101		0.2/0.7					<b>:\$21,05</b> 3.
1-Mar-89	7 :	1805	: :	9.2	421	11:	16:	2/5	1 6.81	5.5	17.5	10:		0.2/0.6					<b>:\$</b> 21,237.
1-Mar-89	1	1869	: :	9.21	44:	121			1 6.5		17.5			0.2/0.5					!
2-Mar-89	7 :	1869	: :	9.2	431	121	171		1 6.5		17.5			0.2/0.5					1\$22,625
2-Mar-89	? :	1764	; ;	9.31	441	121	201		1 6.21		17.5			0.1/0.5					1
3-Mar-89	7 :	1816	: :	9.2	411	111	14:		1 6.41		17.5			0.1/0.4					1\$22,683
3-Mar-89	1	1869	: :	9.31	391	131	121	2/5	1 6.81		17.5			1 0.1/0.4					\$24,097
4-Mar-89	} :	1869	! !	9.5	401	1	1			7.9		91		0.1/0.3		220001			1\$24,097
6-Mar-89						8:				6.4		11.5		0.7/1.1					\$24,097
7-Mar-89						71				5.6		10.5		1 0.4/0.9					1\$24,220
7-Mar-89						51					17.5			0.4/0.7					
8-Mar-89	7 :	2036	1 49 1	9.4		5!				7.3				0.2/0.5					1\$24,359
9-Mar-89	1	2215	: 31 :	8.45	1	1	:		! !			8.5		Tr/0.5					1\$24,428
0-Mar-89	7 :			8.45		1	. !		1 1			7.5		0/0.2					\$24,520
1-Mar-89	1			8.45		i	1		1 !			7.5		0/0.2					1\$24,520
1-Apr-89				8.4		1	;		1 1		•	7.5		: 0/0.3					\$24,520
2-Apr-89						1	;					7.5				8500			\$24,520
3-Apr-85						!	!		! !			71		0/0.3		1200			1\$24,560
4-Apr-89						51					2.5			0.1/0.3		1400			\$26,411 
4-Apr-89						51					2.5			0.1/0.3		1400			
5-Apr-89						4!				2.4				1 0.4/0.9		1500			:\$28,569.
5-Apr-89						4 !				3.1				1 0.3/0.8		1500			
6-Apr-89						4!				3.5				1 0.2/0.6		1400			:\$29,232.
6-Apr-89	7 :	3144	1.52	8.9	281	3!	11	1/1	1 8	4.2	1 6	91		1 0.2/0.5	i	1500	401	0	I

**t**:...



1 DATE	: DEPTH	  F.L.	MUD	:VIS.:	 P.V.:	Y.P.!	GELS.				 ! pH	l Pm	Pf/Mf			: Ca++:	S03: COST \$
	(Metre)				!	1		•	1 %		•			1 %	•		1
: 7-Apr-89									5.4				0.2/0.5		1500		0:\$30,210.64
1 7 Apr 07					5:	51			6.1				0.2/0.4		1500		•
1 8-Apr-89			9.05			4 !			5.4				0.1/0.4		1500	140	•
110-Apr-89						71	3/9	1 8.3	5.4	15	9	0.8	0.1/0.3	: !	1500	180	1\$31,127.95
110-Apr-89					4!	51	2/8	1 8	6.1	16	9	0.8	0.2/0.6	i	1500	80	i i
:11-Apr-89					61	61	3/10	1 7.5	6.5	15	9	0.7	0.1/0.5	1	1400	100	1\$31,748.55
111-Apr-89		1 56 1	9.25	331	51	61	2/8	1 8.3	6.9	14	9.5	0.8	0.2/0.6	!	1500	801	!
112-Apr-89	3450	1 57, 1	9.25	341	6!	71	3/10	1 8.2	6.9	14	1 9	0.5	0.1/0.4	;	1500	80	:\$32,631 <b>.</b> 51
112-Apr-89	3494	1 59 1	9.3	331	61	61	3/11	1 8.6	7.2	15	! 9	0.6	0.1/0.5	1	1400	801	;
113-Apr-89	3530	: 58 :	9.35	351	81	71	4/14	1 8.8	7.6	16	! 9	0.7	0.2/0.6	1	1400		
113-Apr-89	1 3560	60 1	9.35	371	9:	71	3/12	111.4	7.6	17.5	9	0.6	0.1/0.5	1	1400	100	
:14-Apr-89	3595	60 1	9.35	371	91	81	5/16	1 7.5	7.6	17.5	9.5	0.8	0.2/0.8	1	1400	100	
114-Apr-89	!	1 1	9.35	381	101	8:	4/16	1 7.5	7.6	17.5	9.5	0.8	0.2/0.8	i :	1400	1001	
115-Apr-89	1 3595	: 58 :	9.4	34:	91	71	3/13	1 7.8	8 1	17.5	1 9	!!	0.2/0.5	1	1400	120	•
117-Apr-89	1 3595	52 1	9.45	331	71	61	3/9	110.21	8.4	20	9	: ;	0.1/0.5	!	1400	120	1\$35,990.71
117-Apr-89	3595	1 56 1	9.45	341	8:	71	3/11	1 7.6	8.4	20	! 9 -	! !	0.2/0.6	i	1400	1201	<b>:</b> \$36,456.07

1.1

.

.



5.1 MUD VOLUME ANALYSIS : 1 12 1/4" HOLE :

ţ		+		+		+		+		-+		+		+		;
13-Mar-89	770	! !	280	:	70	1	50	!	60	!		i	110	<b>!</b>	1010	į
114-Mar-891	1010	i i	70	<u>:</u> :	56	;	66	1	40	ì		1	106	;	1030	1
115-Mar-891	1030	1	140	!	384	<u>.</u>	84	i	95	1		ŀ	179	:	1375	i
116-Mar-891	1375	1	210	1	90	1	47	!	258	i i		i	305	1	1370	i
117-Mar-891	1370	í i	140	!	30	1	12	i	78	!	30	ŧ	120	!	1420	<u> </u>
118-Mar-891	1420	1 1	280	1	20	:	12	ť	341	:	27	;	380	i	1340	1
119-Mar-891	1340	1		t i	89	1	22	Į.	55	:		!	77	1	1352	!
120-Mar-891	1352	!		1	51	i i	10	:		1		i	10	!	1393	! 1
121-Mar-891	1393	:		:	31	:	14	;	10	1		ł	24	1	1400	1
122-Mar-89!	1400	1		ł	54	i	11	1		į		į	11	;	1443	i
123-Mar-891	1443	!		:		:		1	120	1		!	120	!	1323	- !

TOTAL MUD VOLUME MIXED : 1995 bbls /

MUD LOST THROUGH DESANDER & DESILTER : 328 bbls

MUD DUMPED : 1057 bbls

MUD LOST TO HOLE : 57 bbls

TOTAL MUD DISPOSED : 1442 bbls

NOTE : All Mud Volumes calculated from Drill Out on 12 1/4" hole.



1 5.2 MUD VOLUME ANALYSIS 1 8 1/2" HOLE

3-Apr-89!	0	ŧ	0	1	1075	į	15	i i	!		l i	15	i	1060	1
4-Apr-89!	1060	į	70	i	25	i	30	i	1		i i	30	1	1125	i
5-Apr-89!	1125	i		!	40	1 .	15	1	i		:	15	!	1150	1
6-Apr-89:	1150	1		:	40	i	50	1	;		! 1	50	;	1140	i
7-Apr-89:	1140	i	75	1 1		i i	45	1	I i	25	i i	70	:	1145	i
8-Apr-89!	1145	1		ł		i		i	1		1	0	;	1145	;
9-Apr-89:	1145	:		;		1		;	;		!	0	1	1145	;
10-Apr-89:	1145	1	20	;	80	1.	75	i	i		i	75	1	1170	i
11-Apr-89!	1170	! !	25	;	95	1	60	į	1		1	60	;	1230	;
12-Apr-89!	1230	1		;	90	;	75	i	;		1	75	!	1245	;
13-Apr-891	1245	<b>!</b>	20	1		i	40 -	;	• }		ł	40	( 4	1225	;
14-Apr-891	1225	!		1		;		ł	;		:	0	;	1225	1
15-Apr-89!	1225	;		!		1		ł	!		!	0	1	1225	1

TOTAL MUD VOLUME MIXED : 1655 bbls

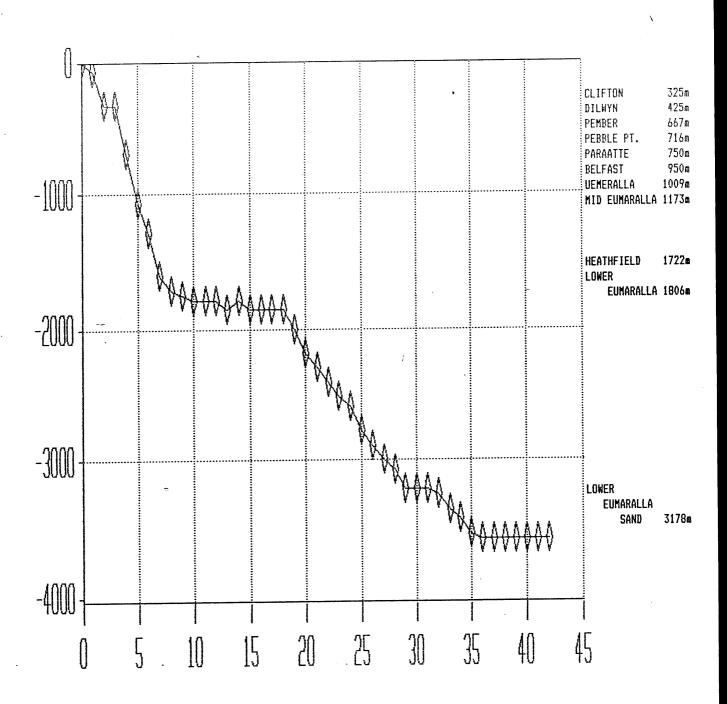
MUD LOST THROUGH DESANDER & DESILTER : 405 bbls

MUD DUMPED : 661

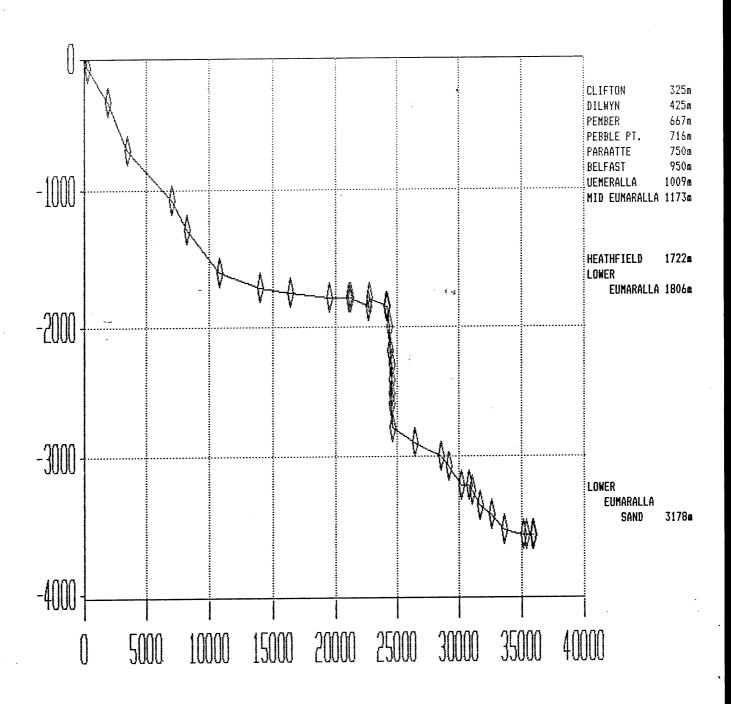
MUD LOST TO HOLE : 25 bbls

TOTAL MUD DISPOSED : 430 bbls

NOTE : All Mud Volumes calculated from Mudding up on 8 1/2" hole.

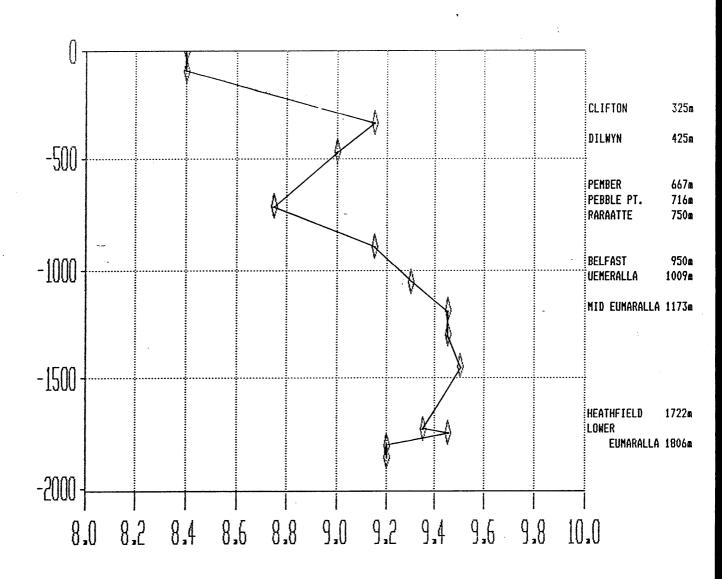








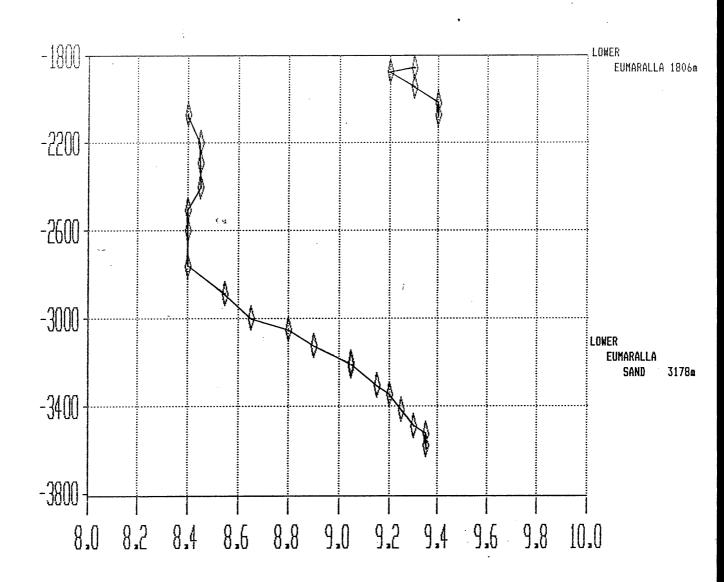
# 



NUD WEIGHT ppg

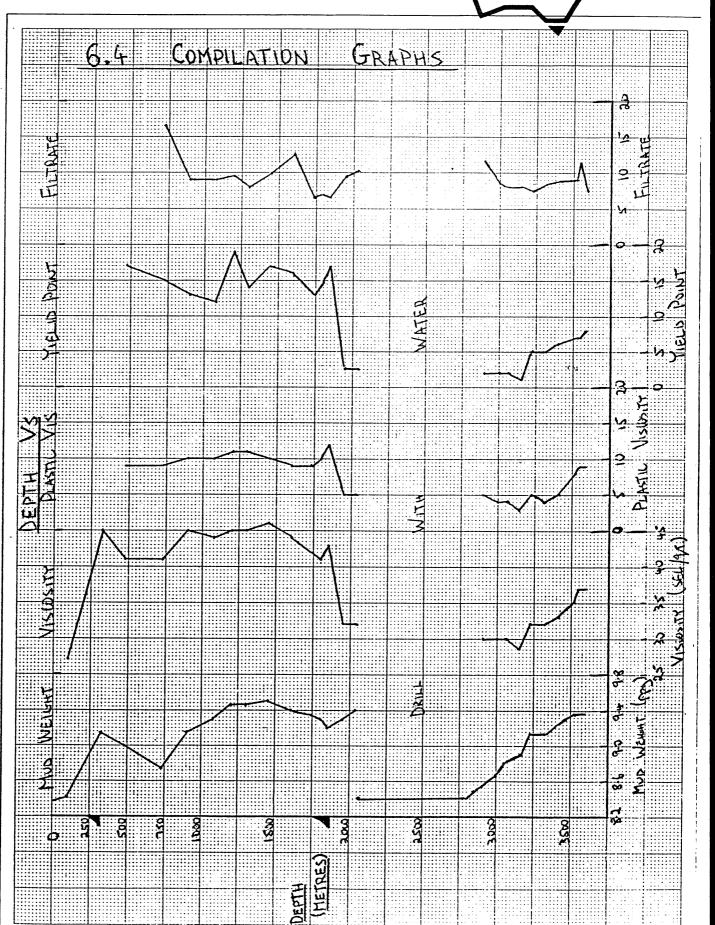


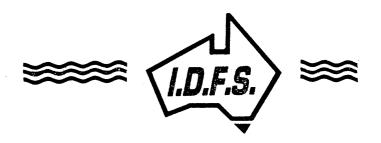
# 6332 DEPTH VS MUD WEIGHT - 8 1/2" HOLE



MD WEIGHT PP9







7. BIT RECORD

									<b>-</b>															
  OPERATOR :MINORA   																								
  SPUD DATE :9-Mar-  !	89 1	T.D. DATE	:13-Ap	pr-89	l SU	URFA	CE CS6	:1	3 3/	/8" 	@ 31	13m		INTE	er CSG	:9 5/	8" @	1867	7m i f 	PROD 	USE	: : P	& A 	: 
Bit!    No.  Size   Make	!       Туре!	Jets i	Depth    Out	Depth Drilled	1 11 Ho	ours	Cum  Hours	: ::₩	10B :	! : RP	1 : 1 : M°	Max Dev 	:	1P 6PM1P	oump! Press!	 VEI i	#t.	iV15i	iW.L. 	i li 				
1  17 1/2 Varel	L114	3 x 22 1	3411	331	1 14	4.5	114.5	12-	-20	1120	)   			7151	12001	61 i 					-			
   2   12   1/4   Varel				856	1 36	6.5	1 51	120	-30	1120	0   :	1/2	2	5711	15501	1031	9.3	1 44	8.8	: 7:	51:	1/8 	Hour	's
3 112 1/41 Reed	19136	14.14.221	1744	547	1 41	1.5	192.5	135	5-40	:110	0	0	: 	4821	16001	87¦ 	9.3 	1 41	6.4	1 71 	81	1/8 		# 1 :
  CH1 8 1/2" Chris																								
! 4  8 1/2"  Reed	:HP51A	11.12.12	1777	28	1 3	.5	1106.5	51 3	10	1 60	)		!	3671	1600:	1731	9.3	1 41	: 6.4	1 1	11	I	: Core	# 2
  CH1 8 1/2* Chris	19C47A!	! TFA !	17941	17	1	12	1118.5	51 1	10	: 80	0 :		1	2571	5001	1211	9.3	1 41	1 6.8	125	1 71	Worn	1	:
!4RR!8 1/2"! Reed	:HP51A:	11.12.12	1802;	8	1	1	1119.5	51 3	30	1 60	0 !		:	3671	16001	1731	9.2	: 42	1 6.6	1 1	1  	I 	: DST +	# 1 
  4RR 8 1/2"  Reed	HIDETAL	. 7 11 !									0 :	1	;	3061	14251	144:	9.2	: 43	6.5	1 2	1 21	I	! Lo	gs 
1 5 112 1/41 Reed	(FP316	14.14.22	: :	1	1 1	5.5	i	115	5-25	51 85	5 1		!	5761	23001	1091	9.3 	1 39	7: 6.8					
6   8 1/2"   Reed							1400 0		4.0	1 7/	A 11	1 1	121	7001	1775!	1774	Q 4	1 26	1	1 2	2  	1/16	l New !	Bit 
   7  8 1/2" L'Year	-:DP13	16 x 9	23171	. C/		n	1101	5: 1	15	. 0	n !1	1 1 1	/A:	317:	1175:	144;	H.4	i 20	) i	1 3	1 41	WULL	1Uneco	HAMIF
   8  8 1/2" Varel				86	1 1	1.5	1 203	; ; 4	40 	: 7	0 12	2 1/	/21	3001	18001	1411	8.4	1 26	5: 	1	111	I	:Washe	d Jet
1 9 18 1/2"1 Reed	<b>:</b> \$316	10.14.B	1 26031	200	ŧ	32	235	1 4	40	1 7	0 :	2		3171	20751	1491	8.4	1 26 	61 	: 5 	i /i	i 1 	i HOU 	
! !10	   HP43A	110.13.B	3005	1 402	!	60	1 295		40	! 7	0 !	2	1	3001	22501	1411	8.5	1 30	)! 1:	21 6	: 8:	1/1	6¦Washe 	d Bit
! !RR4!8 1/2"! Reed	 1HP51A	110.13.B	; 3231	1 226	!	 37	1 332	1 1	40	1 7	<b>75</b> 1	5		300:	23501	1411	9	: 30	0; {	B! 2	1 3	I	! DST	# 2
144 40 44081 01			. 7505		·	 9र	. 425	· · ·	43	 : 7	70 :			2851	22501	1341	9.2	; 3,	41 1	B: 8	: 8	LC	Torqu	ie/Log
IRR418 1/2"   Reed	:HP51A	1: 3 x 13	1 3595																					
! !RR6!8 1/2"! Reed									i-15	: 8	RO :		:	3471	1700	1641	9.4	1 33	3:10.	21 4	11 2	11/8	:Clean	out out
I																								

#### DRILLING MUD RE

FIELD OR BLOCK NO.

80

TOTAL CIRCULATING VOLUME 520

MUD VOLUME (BBL)

PEP 111

IN STORAGE

140

MUD TYPE

WATER

☐ F.L. ☐ PIT

MUD PROPERTIES

□ F.L. PIT

05:30

100

27

8.4

P.O. BOX 42842 HOUSTON, TEXAS 77242 USA

U. OZOLINS

DRILLING ASSEMBLY

VAREL

*▲//华* 

WINDERMERE

JET SIZE

3×22

LENGTH

LENGTH

LENGTH

101

(lb/cu ft)

MINORA RESOURCES NL

CASING SURFACE

in. @

INTERMEDIATE

INTERMEDIATE

PRODUCTION OR LINER

ft)

(sp gr)

PERATOR

WELL NAME AND NO

EPORT FOR

DRILL PIPE

DRILL PIPE

DRILL COLLAR SIZE

Sample From

F١

Time Sample Taken

Depth (N), (TVD

Weight ₩ (ppg)

Plastic Viscosity cp @

Yield Point (lb/100 ft²)

Filtrate API (cm3/30 min)

Temperature (°F)

Funnel Viscosity (sec/qt) API @

Gel Strength (lb/100 ft²) 10 sec/10 min

MADE UP

MUD REF	1	NG MUD REI	PORT NO.	<b>.</b>	
$ \langle \mathbf{P} \rangle $		10 MAR	PRESE	NT ACTIVITY	01
	SPUD D	DATE 9-3-	<b>6</b> 9	DRILL AH	rad.
CONTRACTO	DR ATCE	DRILLI	VG.	A2 RI	IG NO.
REPORT FOR				SECTION, TO	OWNSHIP, RANGE
CK NO.	COUNTY, P	NURPHY ARISH OR OFFS TWAY RA	SHORE	STATE/PROVINC	E
LUME (BBL)			CIRCULATIO	N DATA	
PITS	PUMP SIZE	•	× タを IN. × バー	ANNULAR VEL	(ft/min) 1/62 8 "/6 DC8"/6
440 TING VOLUME			ASSUMED EFF 97	CIRCULATION PRESSURE (psi	. /
WEIGHT 6% KUL ARINE	bbl/stk	,	stk/min	BOTTOMS UP (min) (strk)	5- 800
H, VIS SWEERS	16 bbl/min		672 gal/min	TOTAL CIRC TIME (min) (strk)	32.5
	MUE	PROPERTY	SPECIFICA		
WEIGHT HOD		VISCOSITY		FILTRATE	
	RECO	OMMENDED	TOUR TREA	TMENT	
DRILL WA	TER :	160 p.	em CAL	CIUM	
-	-	700 p	pm CH	CORIDES.	

6/ KCE BRINE

MUD ENGR ON LOCATION 9 MAR 189

REMARKS

140 BALS

@ 23:00 HRS HTHP Filtrate (cm3/30 min) @ ON 9 MAR 89. Cake Thickness (32nd in. API/HTHP) Solids Content (% by Vol) ☐ calculated ☐ retort DRILL AWEAD WITH HIO USING HIVIS SWEEPS Liquid Content (% by Vol) Oil/Water AS REQUIRED. LOSSES POWNHOLK UP TO 40 BALS PER CONNECTIO Sand Content (% by Vol) Methylene Blue Capacity Capaci DOWN TO 50m. PASS. JUST MINDA LOSSES Strip 8.0 ρН ☐ Meter @ AT PRESENT DEPTH\_ 10/m Alkalinity Mud (P<sub>m</sub>) y Filtrate (P<sub>f</sub>/M<sub>f</sub>) 1 Chloride (mg/L) 700 Total Hardness as Calcium (mg/L) 120

			_		- 1	-	1		1						
PRODUCT INVENTORY	Lait.	AIR CHIST	Link	<u>/</u> .	$\overline{/}$	1/1				$\overline{/}$	$\overline{}$		. /		SOLIDS EQUIPMENT
STARTING INVENTORY															SHAKER #1
RECEIVED						٠.									SHAKER #2 R40 860 me
USED LAST 24 hr	20	į	2										ļ	<u> </u>	MUD CLEANER me
CLOSING INVENTORY											<u> </u>				CENTRIFUGE ho
ST LAST W	223	2888	1676											ļ	DESANDER ho
1202 (2011 man)	18	1888	838												DESILTERho
M-I REPRESEN	TATIVE			-	PH	ONE	07	WARE	HOUSE	PHONE	DAIL	COST			CUMULATIVE COST
Jim	TIM KELLEHER				3		805					\$ 2	69-2	14	\$ 269-24.

		DF	RILLING	MUD R	<b>EPORT</b>			
					1	NG MUD REF	PORT NO.	2
Drillin Magcobar/IMCO	IG Flo	uids (	CO.		DATE_	II MAR		DЕРТН
					J	DATE <b>9-3-8</b>		ENT ACTIVITY  W CA4T.
P.O. BOX 42842 ■ HOUS	ON, TEX	AS 77242	USA	CONTRA	CTOB	_		RIG NO.
OPERATOR MINLORA	RESOURCE	SNL			ATC	O DRILLI	NG	SECTION, TOWNSHIP, RANGE
REPORT FOR U. OZOL				REPORT FO	K. $K$	AURPHY		
MELL MAME AND NO			FIELD OR BLO	CK NO.	COUNTY, I	OTWAY	SHORE Pacin	STATE/PROVINCE
WINDEN			1	DLUME (BBL)		,	CIRCULATI	
DRILLING ASSEMBLY BIT SIZE TYPE JET SIZE		ASING	HOLE	PITS	PUMP SIZ			N. ANNULAR VEL (ft/min)
BIT SIZE TYPE JET SIZE	13 % "		300	0 220		6		DPDC
DRILL PIPE TYPE LENGTH		RMEDIATE		ATING VOLUME	PUMP MAI	KE, MODEL	ASSUMED EFF 97	CIRCULATION PRESSURE (osi)
SIZE		n. @ ft		720	NAT	K500 A	stk/m	% BOTTOMS
DRILL PIPE TYPE LENGTH	INTE	RMEDIATE	IN STORAGE	WEIGHT	bbl/stk	•	SIR/III	UP (min) (strk)
		n. @ ft TON OR LINER	MUD TYPE					TOTAL CIRC
DRILL COLLAR SIZE LENGTH			11 .	ATIVE CLAY	bbl/min		gal/m	in (strk)
	11		DPERTIES	ATION CXINY.	MU!	D PROPERTY		
On the Francisco		☐ F.L. 😿 PIT	□ F.L. ® PIT	WEIGHT		VISCOSITY		FILTRATE
Sample From			05:30					
Time Sample Taken		18:00	<i>03.30</i>		REC	OMMENDED	TOUR TRE	ATMENT
Penth (%) 24. (TVD /	ft)	341	34/	- ADDED	180	AALS 8	KO	RRINE.
Dopan (14 44 (1 1 1	□ (sp gr)		9.1+	- ADDED	4.1/15	Sugar of	As RI	OVIRED.
Weight □ (ppg) □ (lb/cu ft)	•F		46	- May	MIVIS	- WEG/-	713	
Funnel Viscosity (sec/qt) API @		46	10					
Tradic viscosity op &		<u> </u>	27					
Yield Point (lb/100 ft²)		<del>                                     </del>	1					
Gel Strength (lb/100 ft²) 10 sec/10 min		'	14/24			REN	MARKS	
Filtrate API (cm³/30 min)	•È		N.C.	70	175 "	TO 34		
HTHP Filtrate (cm³/30 min) @	<u>-r</u>	<del> </del>	7	- TRILL	HOLE C		/_m	
Cake Thickness (32nd in. API/HTHP)  Solids Content (% by Vol) Calculate		<del>                                     </del>	5.5	- RUN	~ "		······································	
	a Li retort	<del>                                     </del>		.1	PRICK	TO RUN		AT
Liquid Content (% by Vol) Oil/Water			0 194.5	- CIRE	PRICK	TO NOW	MING C	- <del></del>
Sand Content (% by Vol)			0.25					<u> </u>
Methylene Blue Capacity of to/bbl equiv			17.5					
pH Strip ☐ Meter @	<u>°F</u>	<del> </del>	8.0					
Alkalinity Mud (P <sub>m</sub> )		ļ <i>,</i>	1000	=				
y Filtrate (P <sub>f</sub> /M <sub>f</sub> )		<del>                                     </del>	.051.2					
Chloride (mg/L)		<del> </del>	9,000	<del> </del>	,,_,			
Total Hardness as Calcium (mg/L)		<del>                                      </del>	560 <del>20</del>					
/ KCL BY WT		1.5	70.00					
		<u> </u>						
		-		<del> </del>				
/* '\*\\	· /	<del> </del>	///	1//	77		//	/
PRODUCT NVENTORY THE TANK TO	** /		/_/_					SOLIDS EQUIPMENT
STARTING NVENTORY 160 450 4	.8	.						SHAKER #1 840   860
RECEIVED								SHAKER #2 240 , 860
USED LAST								MUD CLEANER
	, , ,	4 4	1	1 1	1	1 1		MION OFFURED

USED LAST 24 hr CLOSING INVENTORY 140 370 47 9 £ ho: ST LAST DESANDER\_ 9 1 ho CHANTE CONT DESILTER DAILY COST \$ 1657-98 CUMULATIVE COST PHONE 07 WAREHOUSE PHONE M-I REPRESENTATIVE \$ 1921-22 JIM KELLEHER 3555 805

**9**\_\_ ho

CENTRIFUGE

80

								7	DRILLI	NG MUD	REPO	RT NO.	3	
Magcoba	<b>lling</b>	A Dress	UICS er/Halliburto	G Comp	<b>D</b>		A		DATE_	I2 MA	<b>1</b> 9_	89	DEPTH	34/m
			40.770		⇉			ال		0-	7_ 00		NT ACTIVIT	Υ
P.O. BOX 42842 H	008101	N, IEX	AS / /24	12 US	Α		CONTE	ACTO		DATE <b>9</b> -	3-01		1	RIG NO.
MINOR	A RE.	SOURC	es N	۷					"ATC	O DA	212211	VG		A2.
REPORT FOR	ZOLIN.	c					REPORT	FOR	K. 1	MURPI PARISH OR	<b>4</b> √		SECTIO	N, TOWNSHIP, RANG
WELL NAME AND NO	EMERE	u			LD OR BL				COUNTY, AREA		OFFSHO	re Sin/	STATE/PRO	•
DRILLING ASSEMB			ASING	$\dashv$			E (BBL)			OTWA	,	RCULATIO		lic
	ET SIZE /		JRFACE	НО			TS		PUMP SIZ	E a		85 IN.		VEL (ft/min)
		2	n. @	ft.	18	e	380	,		•		15	DP	DC
DRILL PIPE TYPE SIZE	ENGTH	INTE	RMEDIATE	TOT	AL CIRCU	LATING V		-	NAT E	KE, MODEL 3-19-80 X500	EF	SUMED F 97	CIRCULATION PRESSURE	
DRILL PIPE TYPE L	ENGTH	INTE	RMEDIATE	IN S	STORAGE		EIGHT		MAT bbl/stk	,		stk/min	BOTTOMS UP (min)	
DRILL COLLAR SIZE L	ENGTH		n. @ TON OR LINE	ft.  R MU	D TYPE								(strk) TOTAL CIRC	
			n. @	- 11	Q/NA	a <i>tiur</i>	CLA	15	bbl/min			gal/min	TIME (min)	
/			MUD F			17-6	~~r)			D PROPE	RTY SI	PECIFICA		
Sample From			□ F.L. □ P	PIT   TI	EL. 🗷 PIT	WEIGH	нт			VISCOSIT			FILTRATE	
Time Sample Taken				0	5:30		<u> </u>					****		
Flo [emperature (°F)						1			REC	OMMEND	DED TO	UR TREA	TMENT	
Depth (t) (TVD	1	ft)			341		Durant	250	* (1	FANSI	) (	MANER	TANK	
Weight ☑ (ppg) ☐ (lb/e	cu ft)	(sp gr)			7.0+	1	<u>por</u>	E U	1	L PLINE (	, ,,,	men	,,,,,	
Funnel Viscosity (sec/qt) API @	°F				34									
Plastic Viscosity cp @	۰F				8	1								
Yield Point (lb/100 ft²)					11					·				
Gel Strength (lb/100 ft²) 10 sec/	10 min		,	7	7/13				· · · · · · · · ·					
Filtrate API (cm³/30 min)					N.C.						REMAR	KS	· <u>, - † / </u>	
PI HTHP Filtrate (cm³/30 min)	@ °	F			-	_	RUN	7	OP U	P CF	MENT	TOR		
Cake Thickness (32nd in. API/H	ITHP)		,		+	-		٠,	on B					
Solids Content (% by Vol)	alculated [	] retort		S	· 0	1_			: <i>T6</i>					-
Liquid Content (% by Vol) Oil/W	ater		1	0	195					•				
Sand Content (% by Vol)					LACE									
Methylene Blue Capacity Com 1/6	equiv m³ mud				5.0									
pH 12 Strip ☐ Mete		°F			8.0									
Alkalinity Mud (P <sub>m</sub> )					_									
Al / Filtrate (P <sub>f</sub> /M <sub>f</sub> )			1	.05	1.25								<del>7.</del>	
Chloride (mg/L)					000									
Total Hardness as Calcium (mg/	L)				480									
1 KC					1.2									
						<u> </u>								
		-		l		<u></u>								
PRODUCT INVENTORY		/ ./	/ /	CV.	Ø.	٧/						/ /	/ SOLIDS	EQUIPMENT
STARTING INVENTORY	( (		-	436	1 1	/			<b>1</b> .			SH	AKER #1	
RECEIVED		<u> </u>			"				1					
INCO LAST				*27	*2	*	()			<b> </b>			AKER #2	m
CLOSING	IN MI	v.					USEL	1.11	CEA	MENT.	. +	—  <sup>MU</sup>	D CLEANER_	m
INVENTORY		-		409	66				<del> </del>			c	ENTRIFUGE	h
DST LAST		1	1				1		1			0	ESANDER	h

07

3555 805

WAREHOUSE PHONE

DAILY COST

NIL

DESILTER\_\_\_\_\_CUMULATIVE COST

\$ 1921-22.

USED (from IADC)
M-I REPRESENTATIVE

JIAN KELLEHER

JIM KELLEHER

DRILLING MUD REPORT NO.

-	DATE 13 MAR 19 89	DEPTH 725 m
ĭ	DDECEN	IT ACTIVITY

P.O. BOX 42842 <b>H</b> HOUSTON, TEXA	15/1242	JOA		SFOD DAI		3733
OPERATOR MINORA RESOURCE	· NA		CONTRACT	TOR ATCO	DRILLING	RIG NO.
REPORT FOR U. OZOLINS			REPORT FOR		VHPHY	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.		FIELD OR BLOCK		COUNTY, PAR	SH OR OFFSHORE	STATE/PROVINCE
WINDEMERE #2	0110		IIVE (BBL)	ANEX O	TWAY BASIN	TION DATA
	SING RFACE	HOLE	UME (BBL)	PUMP SIZE	6 ×85	IN. ANNULAR VEL (ft/min)
VAREL	@ 3/3 T	430	340		6 x 15	DP 126 DC 152
DRILL PIPE TYPE LENGTH INTERN	MEDIÂTE	TOTAL CIRCULATI		PUMP MAKE,		CIRCULATION  PRESSURE (osi)
SIZE 42 16.6 557 in.	@ ft.	7	70	NAT K	500 A 90	% 73.3.0
DRILL PIPE TYPE LENGTH INTER	MEDIATE	IN STORAGE	WEIGHT	bbl/stk-072	' 10	
42 17 6V 58 in.	@ ft. ON OR LINER	MUD TYPE		153		7 (strk) 3900 7 TOTAL CIRC 48
8 1/62 42/132. in.		Nace	Poilage	15.89	66	TIME (min) /min (strk) 7500
0/02 111/132.	MUD PRO		C LY TOIL K		ROPERTY SPECIF	
Sample From	□ F.L. D PIT		VEIGHT	1	SCOSITY	FILTRATE
Time Sample Taken	07:30		8.6 - 9.	.2	38-45	8-12 cc
Flo [emperature (°F)	-			RECOM	MENDED TOUR TE	REATMENT
Depth (h) ~ (TVD / ft)	470	725 -1	Nutto in	CC _571/4	Wen DUF TO	Excessive Diaution with
Weight (ppg) □ (lb/cu ft) □ (sp gr)	9.0	8-7+			YEU DILWYN	
Funnel Viscosity (sec/qt) API @ °F	41					ERS THE SCREENS WER
Plastic Viscosity cp @ °F	9	9			880 / 8100 TO	_
Yield Point (lb/100 ft²)	17				_	- 15 TRUS /HR.
Gel Strength (lb/100 ft²) 10 sec/10 min	10/22					O/GAUGE HOLE.
Filtrate API (cm³/30 min)	N.C.	16.4	111001000	, <b>,</b> , , , , , , , , , , , , , , , , ,	REMARKS	7
HTHP Filtrate (cm³/30 min) @ °F	·		RIVW	1122 AS	CEM PLY	
Cake Thickness (32nd in. API/HTHP)	+	4 -	•	CAT @	•	
Solids Content (% by Vol) ( Calculated □ retort	4.0	2.5			RAMS HYDA	TIL ETC
Liquid Content (% by Vol) Oil/Water	0 196	0 1975-			FLOAT + S	
Sand Content (% by Vol)	0.25	0.25			11-344m	
Methylene Blue Capacity ☐ cm <sup>3</sup> /cm <sup>3</sup> mud	_	7.5 -	•	. /		ppg MUD WEIGHT
pH	9.5	9.5 -			344-725.	
Alkalinity Mud (P <sub>m</sub> )		-		4		
Al' / Filtrate (P <sub>f</sub> /M <sub>f</sub> )	1/1-2	1 1.3				
Chloride (mg/L)	25,500	19500				
Total Hardness as Calcium (mg/L)	800	240				
1. KQ	0.8	0.5				
		3.0				
Y Na Cl A NITRATE ppm		50.				
PRODUCT NVENTORY ZO RELET PO RELET PO PO	SAL SO HIRATE				/ / /	SOLIDS EQUIPMENT
STARTING 420 68 57 69 162	2 20		_			SHAKER #1 820 1840 me
RECEIVED	70					SHAKER #2 #20 7 40 me
USED LAST 20 10 5 2 8	8 2					MUD CLEANER
CLUSING						•
INVENTORY 340 58 32 67 734						CENTRIFUGEho
700 258 97 57 343	7950					DESANDERho
WORD UNIT 875 258 1940 2888 42	8 3975					DESILTERho
M-I REPRESENTATIVE PH	HONE 07	WAREHOU	USE PHONE [	DAILY COST		CUMULATIVE COST
JIM KELLEHER 3	2555 80	25		\$ 153	6-10	\$ 3457-32.

## DRILLING MUD REPORT DRILLING MUD REPORT NO. 5

102	D_:	:===	1	<b>-</b> 5_	-:-1-	Λ.					DRILL	ING MOD	REPUH	II NO.	5		
	UTI		<i>19 1</i>	-IU	<i>IIOS</i>	U	).				DATE	14 MAA	? 10	89	DEPTH	1068 m	
	Magcoba	MINICO	AU	resser	/Haillourto	n Comp	any		-		<b> </b>			PRESE	NT ACTIVITY		
P.O. BOX 42842	2 <b>H</b>	OUS	TON, T	EXA	S 7724	2 US/	4					DATE <u>9-3</u>	-89	_ DR	IKK 12 1/2		
OPERATOR //	MINOR	a Ri	SOURC	:ES	NL				CONT	RACTO	OR <i>ATC</i>	DRIA	LING			RIG NO.	2.
OPT COP	T. Oz	-							REPORT	FOR		NURPHY			11 .	, TOWNSHIP, RA	
MELL BLANCE AND NO	WIN DE				·		D OR BI		).		COUNTY,	Parish of c	FFSHOR		STATE/PROV		
DRILLING A			₹ -		CINC		EP 1		4E (00)	$\overline{}$	AREA	DTWAY				<u>VIC</u>	
SIT SIZE TYPE		T SIZE			FACE	HOL	E F/CO		ME (BBL	-)	PUMP SIZ			BE IN.		=1 (ft/min)	, #
124" VAR		14.22	13	7 in.	@ 313	24	560	- 1	450	,		_	6 x .	_	DP_105	=L (NTMIN) &	
ORILL PIPE TYPE		NGTH			MEDIATE				VOLUME		PUMP MAI	KE, MODEL	ASSI	UMED 98	CIRCULATION PRESSURE (	V	<del></del>
75 16.6  ORILL PIPE TYPE		33 NGTH		in.	@ MEDIATE	ft.	TODACE	1010	UE IOUT		NAT	KSOCA		95 %		155	0
SIZE 41 HW	1	56				_   IN 5	TORAGE	_   .	VEIGHT		bbl/stk *0728	•		stk/min	BOTTOMS UP (min)	40	
PRILL COLLAR SIZE		NGTH	PRO	in. DUCTIO	W ON OR LINE	R MUC	TYPE				13.29		<del></del>	40	(strk) TOTAL CIRC	560c	
8"/65"	42/	132		in.	@	ti No	r ll	Port	MER		bbl/min			558 gal/min	TIME (min) (strk)	1060	
					MUD P	ROPEF	RTIES				MUI	PROPER	TY SPI	ECIFICAT			
Sample From					□ F.L. D PI	IT DF.	L. 🗆 PIT	WEIG				VISCOSITY	,	_	FILTRATE		
ime Sample Taken					15:30		5:00		8.0	- 9.			- 45			8-12 cc	<u>-</u>
Temperature (	°F)			_			-	-			RECO	OMMENDE	D TOU	R TREAT	MENT		
Pepth (ft) 7 (TVD			·	ft)	893		68	-6				MP AS			·		
Veight □ (ppg)	☐ (lb/c	u ft)	□ (sp	gr)	9.1 +		7.3	-	TEST	ON	SUMA	120	200	o ppm	CHLORID	ES	
Funnel Viscosity (sec/qt	t) API @		°F		45		÷4	<del> </del>							CALCIU	<u>m</u>	
*lastic Viscosity cp @		°F			10		10	+						b <i>ii 8</i>			
'ield Point (lb/100 ft²)  Jel Strength (lb/100 ft²)	10 sociii	) min			13		12	- R	EQUES	TED	BY	MINDRA	TO V	SE KO	l NOT	Nacl.	
Filtrate API (cm³/30 min	<del></del>	~		$\dashv$	3116		119	<del> </del>				DI	MARK				
HTHP Filtrate (cm³/	·		۰F	+	<u>8·8</u> -	+-	8·8 -	+	7	111	# _	/725-					
ake Thickness (32nd i				$\neg \vdash$	11	1,	7	1		•					TICKY IN	4	
Solids Content (% by V	ol) 12 ca	lculated	☐ retor	,	4.5		5.0	1	RIN .	<b>/</b> .	FILL	0 3m0E 1	·	OCE 37	ricky II	L PARTS	
iquid Content (% by Vo	ol) Oil/Wa	ter		٦,	0 195.5		194	1	PRICE	121		1898-	1068	•	· · · · · · · · · · · · · · · · · · ·		
and Content (% by Vo					0.25		.25	1			ec sa	WALE Q	101	7 m)			
lethylene Blue Capacit	y ⊡ cm³/cm	quiv Mud			17.5	- 1	0			<u>C</u>				<del></del>			
H & Strip	Meter Meter	@	۰F		9.0		7.0									***************************************	-
Nkalinity Mud (Pm)					-		_										
Vir Filtrate (P <sub>f</sub> /M <sub>f</sub> )		,		.6	05 12.5	05-	12.5	WA	TER I	4DDE	0 - '	70 REL	5				
hlorue (mg/L)				_ :	12,000	ي لا	000	MOU	D Re	NAT	,	180					
otal Hardness as Calci	um (mg/L)	)		_	200		£40	MU	D 21	SPOSE	70 ~	60					
1 KC		·			0.2		0.2				~ -					•	
/ Nace			···		5.0		4.0	NEW	HOLE	Von		130					
NITERTE PAN	<u>~</u>	•			50		00	╂			<u>-</u>						
/۵.	/,	, / .5	, /	-/4	¥ /,¥	-1	7	<del>ل</del>		7			7	/ /	,		<del></del>
RODUCT KENTORY	GRA CEP	k/"k,	Pho .	MARI	Re-Sal							/ /			001100		
TARTING	<del>رد بر/</del>	<u>'</u>	<del>/ \\ /</del>		160.	<del>'</del>	<u>,                                    </u>		$\overline{}$		<del>/                                    </del>		{-	-	SOLIDS E	QUIPMENT	
IVENTORY 340	58	67	168	18	154	<u> </u>								SHAK	CER #1_ <i>B2</i> (	1840	_ mesh
ECEIVED														SHAK	ER #2 BL	0 , 8 40	_ mesh
SED LAST	2	4	15	3	20			-									
LOSING 220	56					1											
CAST 00		52	153		134						1			— CE	NTRIFUGE		
UNIT 75	51 00	115	1378	119	85-7									DES	SANDER	24	, hours
COLOCIE 8.	25-88	188	9/88	1975												24	. hours
H REPRESENTATIVE				PHO	0		WAREH	HOUSE F	HONE	11 .	COST			- 11	LATIVE COST		
I the Kenn				12			I			H 🗶	3579	7_ 77		11 X *	70 90 -		

## DRILLING MUD REPORT DRILLING MUD REPORT NO.

		<b>n</b>			T 5	'-II- 4	<b>n</b> _										) 		
		Jacobar			ser/Ha	<b>OS</b> C	<b>50</b> ompan	#		A		DATE_	15 MA	R	19 <b>_8</b> 9	<u> </u>	DEPTH	304	i m
		agocoa					1.	Í		<b>\                                    </b>	. /					RESE	NT ACTIVITY	,,	
O. BOX	42842	■ HC	DUST	ON, TE	XAS	77242	USA					<u> </u>	DATE_9	-3-8	9-	VA	114 12 tu		
PERATOR	MAIN	ODA	050	OURCES	ni.	,			C	CONTRA	ACTOF	ATO	O DR	ILLIA	vG.			RIG NO	). A.2
EPORT FOR									F	REPORT F	OR						11 -		HIP, RANGE
/ELL NAME A	NO NO		OLIA				FIELD	OR BLO	CK NO.		10	COUNTY,	PARISH O	N OFFS			STATE/PROVI	NCE	<b>~</b>
		VINI	ERML	PE #			P	EP 1	//			AREA (	OTWA					10	
DRIL	LLING AS				CASIN		f1			(BBL)							N DATA		- , , , ,
IT SIZE	REED		T SIZE		SURFAC	-	HOLE	F/1060	ier Pit		'	PUMP SIZ	E	6	× 8	-	ANNULAR VE		110
RILL PIPE	<b>5/36</b> TYPE		14.22 NGTH	133	in. @		TOTAL	630 CIRCUL	ATING V	400 OLUME	-    F	PUMP MA	KE, MODE		ASSUM		DP_9/		
IZE 4 2"	16.6	1	074		in. @	····-			1030		11 -	NAT	8-P-8 K500		EFF 9	<u>*</u> %	PRESSURE (	osi)	550
RILL PIPE	TYPE		NGTH	INI	ERMED	DIATE	IN STO	ORAGE		IGHT	t	obl/stk		•		stk/min	BOTTOMS UP (min)		52
IZE 4生"	HW		56		in. @	ft.		-		•	11	0728 1502				28	(strk)	(	6700
RILL COLLAR		1	NGTH	PRODU	CTION	OR LINER	MUD.	,	_		.	11.49	•		ij	82	TOTAL CIRC TIME (min)	_	90
8"/0	62"	42	1132		in. @	ft.	Nac	R/KC	if Po.	YMEI	2 1	obl/min		SEDT.		gal/min	(strk)		520
						MUD PRO			WEIGH	ıT		MU	D PROF		SPEC	JIFICA	FILTRATE		
ample From						F.L. BYPIT		. 🗆 PIT		8-6-	. 9.4	,		38-4	-ی			-12	
ime Sample					12	3:30		5:00	<del> </del>	- 0-	7.0		OMMEN			TREA		-~	
los Temp	perature (	7 0						47	<u> </u>										
epth (4) -				1		1197		104	-Us.								PPING		
Veight De (p	ppg)	□ (lb/c	u ft)	☐ (sp g	r) 4	7.4+	9.	4+	<u> </u>		•						USUPL		
unnel Viscos	sity (sec/qt)	API @		°F		45	4	5	ļ	p#.	- (	MAY	INI	ICAT	<u> </u>	TART	OF 8AC	TERIA	L ACTIO
lastic Viscos	sity cp @		۰F			//		<u>'/</u>	ļ										
ield Point (lb	o/100 ft²)					19	1	4	<u> </u>										
Sel Strength	(lb/100 ft²)	10 sec/1	0 min		14	1116	4	114					····						
iltrate API (c	:m3/30 min)	)				9.6	8	.0					···	REM	ARKS			·	
HTHP Fil	trate (cm³/:	30 min)	@	°F					- 2	RILL	124	TE	119	7 m					
Cake Thickne	ess (32nd ir	n. API/H	THP)							P.001									
Solids Conten	nt (% by Vo	l) De Ca	alculated	□ retort	1_	7.0		.0	-	Plu	KE	4	WORK	117	E HO	LE	F/905-	885	<del>~</del> -
iquid Conten	nt (% by Vo	ol) Oil/Wa	ater		0	193	0	193	- /	Pure	THK	717	E HO	<b>بد</b>	F/ 8	85-	800 m		
Sand Content					7	KACE	TRA	*CE	- 1										
Methylene Blu	ue Capacity	D cm³/cn	u <sub>2</sub> wnq ednin		17	-5-20	2	0	;	PRILL	12	<u> </u>	-/ 119	7-1	304	· 70.			
H DS	Strip	Mete	er @	•F.		8.7	8	.8											
Alkalinity Mud	d (P <sub>m</sub> )					_		-	ļ										
Alk · Filtra	ate (P <sub>f</sub> /M <sub>f</sub> )				.0	512.0	.05	12.0	<u> </u>										
Chloride (mg/	L)				3	4,000	27	000	WA	TER	ADDA	D -	56						
Total Hardnes	s as Calciu	ım (mg/l	L)			320	<u>د</u>	280	M	10 8	WT	<u> </u>	70						
KU					_	1.5		1.5		DD									
No CL NITRATE						3.5	_2	.5		ios Go									
NITRATE	ppm					100+	10	0	NE	w How	e Vo	<u> </u>	70		<del></del>				
				-/-6			<u> </u>		<u></u>			<del>,</del>		<del></del>		,	<del>,                                     </del>		
RODUCT EVENTORY	Ju.	8/28 <sup>2</sup> 4	The Charle	MARTO	ري م. ري	<b>š</b> y/ /	/	/									SOLIDS	EQUIPA	MENT
TARTING	210			1 1			$\neg f$	1				1			T	CI.	AKER #1_B	20 , 1	?40
IVENTORY	360	56	63	15	25							+	1	1	+	_			
ECEIVED	-											<del> </del>		-	+	SH	AKER #2	<u>w 18</u>	me me
ISED LAST 4 hr	50	3	2	1	1											ми	D CLEANER_		me
LOSING NVENTORY	310	53	61	14	24										1	,	ENTRIFUGE_		<b>22</b> hor
LAST	370	64	76	75	88		_					1	1						
HED UNIT	887	77	576	39 11	28						·	<del> </del>	+	<del> </del>	+	<b>⊣</b> ՝	DESANDER		
MATTER COTA	- 173	25-88	2888	39 10							.,	1	<u> </u>				DESILTER		22 hou
1-1 REPRESEN	ITATIVE				PHON	IE 07		WARE	HOUSE F	PHONE	11 .	Y COST		_		111	MULATIVE COS		:
Jim A	KELLER	LEP.			35	55 80	5				\$	11	71-5	3		<u> </u>	\$ 8201-	-18.	

	_ 1000			_			_				7	DRILL	ING MU	UD RE	POR	T NO.	7		
	M	<b>Dri</b> agcobar		$oldsymbol{g}_{_{ADi}}$	resser	Ids (Halliburton G	<b>CO</b> Compar	<b>■</b> ny		A		DATE_	16 M	PAR	_ 19_2		DEPTH		5/2 m
P.O. BOX 4	2842	<b>=</b> H(	TOLIC	ON T	FΥΔ	S 77242	LISA	7		<u>_</u>	ر.	SPUD	DATE_	7-3-	89		ENT ACTIVITY		
FRATOR			_						c	ONTE	ACTO	11 R				L		RIG	NO.
REPORT FOR	MING			OURCE	5	NZ			R	EPORT	FOR	#70	co Da	ILLI	WG_		SECTIO	N, TOV	A2 VNSHIP, RANGE
	J.	Ozo.	LINS				II ever e				11	COUNTY.	MURI	PHY	CHOB		STATE/PRO	AMA	?UK
WELL NAME AND	NO.		MERE	· #2			FIELD	PEP				AREA	OTH				SIAIEFRO	VIC	
DRILL	ING AS				CAS	SING			OLUME	(BBL)							ION DATA		
SIT SIZE	TYPE		T SIZE	-	SUR	FACE	HOLE	F/4060	PITS	S		PUMP SIZ	ZE	6	_	-	N. ANNULAR I	/EL (ft	/min) 63
	REED 13G		4,22			@ 313 7		855		520						15	DP 9/		DC 109
ORILL PIPE SIZE	TYPE	Į.	ŃGTH	1	INTERN	MEDIATE	TOTAL		ATING VC	DLUME		PUMP MA <i>Nat</i>				98	CIRCULATION PRESSURE		1600
ORILL PIPE	TYPE		82 NGTH		in.	@ f MEDIATE	IN ST	ORAGE	775 WE	IGHT		##T bbl/stk	KSOC	o A		95 stk/m	% BOTTOMS		68
SIZE	HW.	1	56		in.			77	1	8.44	·	1072	-			75			7900
DRILL COLLAR SI			NGTH	PROI		N OR LINER	MUD	TYPE				11.47				482	TOTAL CIRC	;	120
8 /6	2 *	42/	132		in.	@ f	K	Cl P	DLYM	ER	- 11	bbl/min				gal/m	nin (strk)		13800
						MUD PR	OPER	TIES				MU			Y SP	ECIFIC	CATIONS FILTRATE		
Sample From						🗆 F.L. 🗗 PIT	□ F.L	. 🗹 PIT	WEIGH				VISCO				ļ	- 12	
Time Sample Ta	iken					14:30	04	.:30	8.0	6-9	•2		<del></del>	78-4					•
Flor Temper	ature (%	) <b>°</b> C				-	4	5				REC	OMME	NDEC	TOU	IR TRE	EATMENT		
Depth (K) (T	<b>V</b> D		1		ft)	1446	16	12	WEI	647	RI.	SING	FROM	ws 4	EUM	ERAL	LA CLA	y.s	- DUMPINO
Weight № (ppg	1)	□ (lb/c	u ft)	☐ (sp	gr)	9.5	9	7.4	9-	DILU	719G	TO	LOWE	R	v£ 16	#7.			
Funnel Viscosity	(sec/qt)	API @		۰F		46	4	4	- Ju	ST A	DDE	0 1/20	) FOR	8 4	05T	12 H	RS. WI	м_	ADD
Plastic Viscosity	ср @		٥F			10		7		140	BRL	1 11	EMIX	( ]	U57	REF	ORE HEA	THE	ELD MER
Yield Point (lb/10	00 ft²)					17		16	- WA	TER	عمد	RISI	VG A	15 1	10	STAR	CH OR F	OLY	WERS
Gel Strength (lb.	/100 ft²) 1	10 sec/10	0 min			6 124	8	118	/	4 DDE	2 /1	LAS	7 12	HRS	7	<u> 54</u>	VE COSTS	•	
Filtrate API (cm <sup>3</sup>	<sup>3</sup> /30 min)					9.8	12	2-4						RE	MAR	(S			
ATHP Filtra	te (cm³/3	10 min) (	@	۰F			•	-	- 7	PRILL	. 12	7"	To	161	12 +	<b>~</b>			
Cake Thickness	(32nd in	. API/H	THP)			21	2	1											
Solids Content (	% by Vol	) 🖫 ca	alculated	☐ reto	rt	7.5		r.o											
Liquid Content (	% by Vol	) Oil/Wa	iter			0 192.5	1 -	193											
Sand Content (9	% by Vol)					TRACE	TR	ACE											
Methylene Blue	Capacity	□ cm³/cn	nud n³ mud			25	<u> </u>	15	ļ										
pH ☐ Str	ip	Mete	r @	۰F		8.6	8	·8	<u> </u>										
Alkalinity Mud (F	P <sub>m</sub> )						<u> </u>	-	ļ										
Alk • Filtrate	(P <sub>f</sub> /M <sub>f</sub> )					.051.3	105	1.35	ļ		-								
Chlorue (mg/L)						28,000	24	000	WA	TEK	ADI	ED			52	<del>* 3</del>	84		
Total Hardness	as Calciu	m (mg/l	L)			460	4	80	M	UD	Buis	7	<del></del>		14				
1 KCL						2.8	1 2	2.3				SED				5			
1 Nacle						2.0		.5	5	021	rs G	MTRA	4			34			
/ Na CR	ppn					200	20	0	N	Em,	HOLE	VOL	Kocci	ers)	;	75			
PRODUCT	E.	13 to 5	i Carti	Parts	QR.	ر /					/				/	/	SOLIDS	S EQI	JIPMENT
STARTING INVENTORY	310	53	61	134	1	1 1							1			Γ,	SHAKER #1_	40	1 8100 mes
RECEIVED	3,0			"	-0-2	1	$\neg \uparrow$					1							/ <b>8100</b> me:
USED LAST			-		<b>-</b>	.  -					<del>                                     </del>	+	1-	+-	$\dashv$				
24 hr	50	_5	7	20	6						├—		-	+-	-+		MUD CLEANER		
CLOSING	260	48	54	114	147	7					<u> </u>				$\perp$		CENTRIFUGE		<del>24</del> hou
LAST 2+ IV	887 75	129	162	857	551	<b>3</b>											DESANDER		24 hou
4000 V -111		88	88	. 88	G. 8	3											DESILTER		24_ hou
MH REPRESENTA	IIVE	25	148	172	<b>7/</b>	IONE O	7	WARE	HOUSE P	HONE	DAII	Y COST				- II'c	CUMULATIVE CO	OST	1100
	· · · · <del>· ·</del>				1	J	•	1			11					- 11	4	5/7	

\$ 2627-94

JIM KELLEHER

3555 805

24 hour

\$ 10,829-12.

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

DRILLING MUD REPORT NO. 8

DATE 17 MAR 19 89 DEPTH 1743 2

S. Country office

PRESENT ACTIVITY
PRODUCT P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA SPUD DATE 9-3-89

PERATOR	MAL	Inea	Asi	OURCE		M.2			CONTE	RACTO		CO DR	12/11/6			A. A.
REPORT FOR	_				<u> </u>	<i></i>			REPORT						SECTION, TO	WNSHIP, RANGE
WELL NAME A			ZLINS				FIELD OR		10. 	- 11	COUNTY, I	NOURF PARISH OR C	FFSHORE		STATE/PROVINCE	
	W	INDER	CANERA	+ 2			PEP				AREA	OTWAY			VI	<u>C</u>
	LING AS			_		ING	11		ME (BBL		S. I. 45. 617			,	ON DATA	
BIT SIZE	REED 5136	1	ET SIZE ル, ここ	13	7	FACE @ <b>3</b> /3	HOLE #/		PITS 44	_	PUMP SIZI	E	6 × 8 6 × 1	之 IN.	ANNULAR VEL (fi	/min) . DC
DRILL PIPE	TYPE		ENGTH			IEDIATE	TOTAL CIR		G VOLUME		PUMP MAI	KE, MODEL 3-12-80	ASSUI EFF		CIRCULATION PRESSURE (psi)	
SIZE 4 E	15.6				in.				70		NAT	K500 A	- 3	<u>» ځ</u>		<b></b>
DRILL PIPE	TYPE # W		ENGTH		INTERM		IN STORAC	GE •	WEIGHT		bbl/stk ・C <b>ア</b> ス&			stk/min	UP (min)	
DRILL COLLAR		-	ENGTH	PRO	in. o	Ø f N OR LINER	MUD TYPE	 E			1503	2	·		(strk) TOTAL CIRC	- +
8" /6-	<u> </u>				in. e	a f	KCE	POL	YMER		bbl/min			gal/min	TIME (min) (strk)	
<del></del>							OPERTIES	$\overline{}$			MUI	D PROPE	RTY SPE	CIFICA		
Sample From						□ F.L. 🖬 PIT	□ F.L. □	PIT	IGHT			VISCOSITY			FILTRATE	
Time Sample	Taken					20: 70	05:00	, 3	-6-9.2			38	45		< 8	
Flov emp	perature (°	F)					-				REC	OMMEND	ED TOUR	TREA	TMENT	
Depth (h)	(TVD		1		ft)	1743	1743	_	REQUE	STED	BY	MINOR	A TO	BRIN	6 / KR	DOWN TO
Weight (p	pg)		cu ft)	☐ (s	gr)	9.3+	9.3+								M.W.	
Funnel Viscos	sity (sec/qt)	API @		۰F		42	41								Deuline	
Plastic Viscos	ity cp @		۰F			9	9						•			
Yield Point (lb	/100 ft²)					13	12				(	덬				
Gel Strength	(lb/100 ft²)	10 sec/1	IO min			3111	2 17	7								
Filtrate API (c	m³/30 min	)				6.4	6.4					R	EMARKS			
HTHP Fil	trate (cm³/	30 min)	@	۰F			-	-	DRICE	12 %		1743	<b>~~</b>			
Cake Thickne	ss (32nd i	n. API/H	THP)			1 /	11	_				VG 4				
Solids Conten	it (% by V	ol) Bac	alculated	☐ reto	ort	6.8	6.8							ا تبد	F/1561 m	
Liquid Conten	t (% by V	ol) Oil/W	ater			0 193.2	0 193	.2 -	CONT	PO	. או פ	TITE	F/ 15	61-	F/1561m	
Sand Content	(% by Vol	1)				TRACE	TRACE						/			
Methylene Blu	e Capacit	y ∰ lb/bbi y □ cm³/ci	equiv m³ mud			22.5	22.5									
рН □ 5	Strip	<b>Mete</b> Mete	er @	٩F		9-3	9.3									
Alkalinity Mud	(P <sub>m</sub> )					_	_									**
Alk <sup>,</sup> Filtra	ate (P <sub>f</sub> /M <sub>f</sub> )					1 1.4	1 1.4	4								
Chloriue (mg/	L)					17,500	18500	0								****
Total Hardnes	s as Calci	um (mg/	L)			280	280		WATER	ADI	DED.		_ 9	10		
1. KLR						1-8	2.0		MUD	Buil	<u> </u>	· ·	- 2	.10		
1 Na Cl	,					0.5	0.4		MUD	Dis Po	SED		<u> </u>	48		
NITRAT	Epp	74				200	200		SOLIBS				4			
					[_		<u> </u>		IEW HE	DLE !	You (.	LOGGER.	<u>s) - '</u>	75		
PRODUCT INVENTORY	To.	RO RUS	Qai-3	N. S.			/ /						//		SOLIDS EQU	JIPMENT
STARTING INVENTORY	260	54		147										SH	AKER #1 840	, 8100 me
RECEIVED	1													SH	AKER #2 740	, 8100 me
USED LAST 24 hr	40	7	20	15											ID CLEANER	
CLOSING INVENTORY	220	47	94	132											CENTRIFUGE	<b></b>
T LAST	00	16	60	20				1					<u> </u>		DESANDER	
USED UNIT	710 202 857 1378 DUNIT 75 88 88 88					1-1-		+		1	†	.  -   -				
	17 12 KL 91						   WA	REHOUS	E PHONE	DAIL	Y COST	1	1		DESILTER MULATIVE COST	24- hou
Jim		د مديوم	•		1	ONE 07	1		_	-		7-96		11 .	13,977-	08
J111	ハヒムム	HER	<b>7</b>		153	555 80	د			11-75	J/ 7	, 16			, ///	, - 5

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P

DRILLING MUD REPORT NO. 9

DATE 18 MAR 19 8	9	DEPTH	1748m.
/\ <b>4 a a</b>	PRESEN	T ACTIVIT	Υ

P.O. BOX 42842 $\blacksquare$ HOUSION, IEX	AS //242	USA	1	SPUD DATE 7 3 0 /	N/// •					
PERATOR MINORA RESOURCES			CONTRACTOR ATCO DRIKLING RIG NO							
REPORT FOR			REPORT FOR	K. MURPHY	SECTION, TOWNSHIP, RANGE					
WELL NAME AND NO.		FIELD OR BLO	LL CK NO.	COUNTY, PARISH OR OFFSHORE	STATE/PROVINCE					
WINDERMERE #2		PEF	)	AREA OTWAY RASIN	VIC					
	SING	II	DLUME (BBL)	<u> </u>	ILATION DATA					
I A REED 1	RFACE	HOLE F/LOG		PUMP SIZE 6 x 8 3						
82 HP-SI-A 11,12,12 138 in	n. @ <b>3/3</b> ft. RMEDIATE	TOTAL CIRCULA	490							
SIZE UL		<b>!</b> !	421	PUMP MAKE, MODEL ASSUM NAT 8-D-80 EFF 9						
	i. @ ft. RMEDIATE	IN STORAGE	WEIGHT	NAT K500 H 95 bbl/stk '0728	% stk/min BOTTOMS					
SIZE ,	ı. @ ft.	_	-	1502	UP (min) : (strk)					
DRILL COLLAR SIZE LENGTH PRODUCT	ION OR LINER	MUD TYPE			TOTAL CIRC TIME (min)					
8 / 8 2 in	. @ ft.	KCL PO	LYMER	bbl/min	gal/min (strk)					
	MUD PRO	OPERTIES	WEIGHT	MUD PROPERTY SPEC	CIFICATIONS FILTRATE					
Sample From	☐ F.L. 🗹 PIT	☐ F.L. ☐ PIT	WEIGHT 8.6 - 9.	4	<8					
Time Sample Taken	18:00	05.00	B. 6 - 7.							
Flow emperature (°F)		••		RECOMMENDED TOUR	TREATMENT					
Depth (ft) (TVD / ft)	1748	1748	- REQUEST	ED TO BRING / KI	IL FROM 2/ TO 3/6.					
Weight 🗹 (ppg) □ (lb/cu ft) □ (sp gr)	9.4	9.4+			THRU CLAYS DESPITE					
Funnel Viscosity (sec/qt) API @ °F	40	39	show c	CORING RATE AND	170 BARREL HO DIKUTE					
Plastic Viscosity cp @ °F	9	9	(VERY	SLIGHT RISE IN MIN	FROM INCREMSED KOLL)					
Yield Point (lb/100 ft²)	12	12	<u> </u>		( 4					
Gel Strength (lb/100 ft²) 10 sec/10 min	216	217								
Filtrate API (cm³/30 min)	6.6	6.8		REMARKS						
HTHP Filtrate (cm³/30 min) @ °F		-	- RIH W	CORE RHRREL						
Cake Thickness (32nd in. API/HTHP)	11	11	•	REAM TITE HOLE F	11700 - 1743 m					
Solids Content (% by Vol)   ☐ calculated ☐ retort	6.4	7.3		E# 1 (5.5m) TO						
Liquid Content (% by Vol) Oil/Water	0 193.1	1		w/corE#1 (78%						
Sand Content (% by Vol)	TRACE	TRACE	- RIH mil	84" REED HP-S	·I-A.					
Methylene Blue Capacity ☐ cm³cm³ mud	20-22.5	25	7							
pH ☐ Strip 192 Meter @ °F	9.3	9.3								
Alkalinity Mud (P <sub>m</sub> )		-								
Alk Filtrate (P <sub>t</sub> /M <sub>t</sub> )	.1 1.35	1 1.35								
Chloride (mg/L)	25,000	25,000	WATER ADI	DED - 30						
Total Hardness as Calcium (mg/L)	280	300	MUD BU	· •						
	3.2	3.2	MUD DIS							
/ KU			SOLIDS G							
/ Nacl	250	250	NEW HOLE							
NITRATE ppm	230	230		ON TRIP - 30						
/ / / / / / / / / / / / / / / / / / / /	<del>/ / ·</del>	<del>'/ / '</del>	/ / /	/ / / / /	,					
PRODUCT HIP ROS PATITORY HAVE			/ / /		SOLIDS EQUIPMENT					
STARTING INVENTORY 220 47 /32 /4					SHAKER #1 740 , 8100 me					
RECEIVED					SHAKER #2 840 , 2100 m					
USED LAST										
24 hr 60 3 /3 /					MUD CLEANER mk					
CLOSING INVENTORY 160 42 119 13					CENTRIFUGE 24 hc					
TI LAST 00 40 44 75 1065 44 194 79					DESANDER					
USED WAIT 75 288 9,88 395					10					
	PHONE 07	WAREU	OUSE PHONE DA	AILY COST	DESILTER // hc					
	THONE 07		11	\$ 2443-59	\$ 16 420-67					
LIAA KELLEHEN	< 4 C C C D	05-1	11 -	ル メ アサンニジ /	11 <i>W 10 T</i> AV-01					

## DRILLING MUD REPORT DRILLING MUD REPORT NO. 10

Ball Drilling	CI.		Co	/ <b>*</b>	1			, 0	
Drilling Magcobar/IMCO		IIUS er/Halliburton (		A	DATE	19 MAR	. 19 <u></u>	DEPTH	788 m
P.O. BOX 42842 ■ HOUSTON,			<i>_</i>		. J	DATE 9-3-	89 PRESEN	T ACTIVITY	
OPERATOR			<u> </u>	CONTRA	ACTOR			m	IG NO.
MINORA RESOURCE	ES	NL			A7	TCO DRIL	LING		A2
J. OZOLINS				REPORT F		MURPHY			OWNSHIP, RANGE MBUK .
	ويو		FIELD OR BLO		COUNTY,	PARISH OR OFF	SHORE	STATE/PROVINC	Œ
DRILLING ASSEMBLY		ASING	1	OLUME (BBL)		OTWAY B		V/	<u> </u>
BIT SIZE TYPE JET SIZE		RFACE	HOLE F/LOG		PUMP SIZ	Œ <b>6</b>	CIRCULATIO		(ft/min) For 12
82 RC 476 - 1	3 d in	. @ 313 🕏	89			6	× 15	DP 49	65 DC
DRILL PIPE TYPE LENGTH		RMEDIATE		LATING VOLUME	PUMP MA	KE, MODEL	ASSUMED	CIRCULATION	_ 50
SIZE 4½ 16.6 1561		. @ ft		1340	INAT	K500 A	EFF 98 95 %	PRESSURE (psi	500
DRILL PIPE TYPE LENGTH SIZE 41	INTER	RMEDIATE	IN STORAGE	WEIGHT	bbl/stk - C	728 .	stk/min	BOTTOMS UP (min)	134
		@ ft	MUD TYPE			502		(strk)	11254
6 2 171			11	DLYMER	6.12		257	TOTAL CIRC TIME (min)	219
82 111	in	. @ ft	OPERTIES	ULY MAIER	bbl/min	D PROPERTY	gal/min	(strk)	18400
Sample From		□ F.L. PPIT	D F.L. D PIT	WEIGHT	IVIO	VISCOSITY	SELCIFICAL	FILTRATE	
Time Sample Taken			<del> </del>	8.6-9	7.2	38-4	5	< 8	
-		15:00	05:00		REC	OMMENDED	TOUR TREAT	MENT	
Flo: Temperature (°F)  Depth (**) (TVD /									
	ft)	1777	1788	- ANALYS	15 SUMP	#20: W	7 8.4	OH 8.3;	bt/m, of
	(sp gr)	9.4	9.3	Car	+ 200 pt	bm; Cl	6500	ppn.	
		41	43				ZKO T	O BE AL	LOWED TO
		9	8	FA	LL 70	2.5/		-	
Yield Point (lb/100 ft²)		13	75				· · · · · · · · · · · · · · · · · · ·	·	
Gel Strength (lb/100 ft²) 10 sec/10 min		216	3 17		W-01-17-16-11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		11.0		
Filtrate API (cm³/30 min)		6.4	6.8				ARKS		
HTHP Filtrate (cm³/30 min) @ °F			-	- RIH	w/ Bir	4 82	" REED	HP-51-A	
Cake Thickness (32nd in. API/HTHP)			11			Vi	TH 13 1	2 11 JE	<b>7</b> \$.
Solids Content (% by Vol) (5) calculated	tort	7.0	6.3	- PRILL		1777*	•		
Liquid Content (% by Vol) Oil/Water		0 193	0 193.7	- 1.0.0. N	To CO.	RE			
Sand Content (% by Vol)		TRACE	TRACE	- RIH w	CORE A	LEAD. W	ASH + REA	in F/17	71-1777~
metryletie blue Capacity content mud		20	17.5	- CORE	F/ 1777	- 1788+	·		
pH ☐ Strip 🗹 Meter @ °F		9.7	9.9		· · · · · · · · · · · · · · · · · · ·				
Alkalinity Mud (P <sub>m</sub> )		-	-		· · · · · · · · · · · · · · · · · · ·				
All Filtrate (P <sub>f</sub> /M <sub>f</sub> )		15 1.45	سيء اسحاد						
Chloride (mg/L)		24,000	21,000	WATER	ADDED -	. 20			
Total Hardness as Calcium (mg/L)		140	120	MUD	BUILT .	. 280			
j. Ka		3.0	2.6	MUD	DISPOSED	- 34/			***************************************
NATRATE ppm		250	250	SOLIDS	GNTROL	- 12			
				NEW H	GLE VOL	8 (	FROM LOGG.	ers ing.	LOST 40 B
<del>, , , , , , , , , , , , , , , , , , , </del>	— ,	l		L,,		<del></del>	· · · · · · · · · · · · · · · · · · ·	,	
PRODUCT TO THE PROTUCT TO THE PROTUC			///	///	/ /	//	/./	SOLIDS EQU	UIPMENT
STARTING		1 1					<del>1 – [ –</del>	9	2100
100 /2 ///	+	+ +				<del></del>			
RECEIVED	<del> </del>						, SHAK	ER #2 740	18100 mes
JSED LAST 30 8 25							MUD	CLEANER	mes
CLOSING NVENTORY 130 4 94									
T LAST 50 04 00	1	1-1-							hour
532 231 2257 ISED VAIT 75 58 88	<del> </del>					-	DES	ANDER	
17 28 91	<u></u>							SILTER	24 hour
A-I REPRESENTATIVE	PH	ONE 07	WAREH	OUSE PHONE '	DAILY COST	+	- 11 .	LATIVE COST	
JIAN KELLEHER	35	555 805	5		\$ 306	0-5 kg	\$	19,481_	21

DRILLING MUD REPORT NO. 11 1 Drilling Fluids Co.
Magcobar/IMCO A Dresser/Halliburton Company DATE 20 MAR 19 89 DEPTH 1803 ₩ PRESENT ACTIVITY RIH W/ TEST TOOKS. P.O. BOX 42842 HOUSTON, TEXAS 77242 USA CONTRACTOR PERATOR MINORA RESOURCES NL ATCO DRILLING SECTION, TOWNSHIP, RANGE EPORT FOR STATE/PROVINCE COUNTY, PARISH OR OFFSHORE AREA OT WAY BASIN J. OZOLINS FIELD OR BLOCK NO. WELL NAME AND NO VIC PEP WINDERMERE CIRCULATION DATA MUD VOLUME (BBL) **DRILLING ASSEMBLY CASING** X 8 2 IN. ANNULAR VEL (ft/min) PITS JET SIZE SUBFACE BIT SIZE 6× 15 942 in. @ 31.7 PUMP MAKE, MODEL ASSUMED REF 98 TOTAL CIRCULATING VOLUME LENGTH INTERMEDIATE PRESSURE Vosi) 1352 K50CA NAT stk/min LENGTH INTERMEDIATE IN STORAGE WEIGHT bbl/stk • 0 7 1 8 1502 TOTAL CIRC PRODUCTION OR LINER MUD TYPE LENGTH KCL POLYMER gal/min MUD PROPERTY SPECIFICATIONS MUD PROPERTIES WEIGHT VISCOSITY □ E.L. PIT □ E.L. PIT Sample From 38-45 8.6 - 9.2 Time Sample Taken 22:00 00:30 RECOMMENDED TOUR TREATMENT Temperature (°F) Flo Depth (TVD) - DUE TO CENTRIFUGE TREATMENT WHILE TRIPPING 1803 1803 Weight (ppg) ☐ (fb/cu ft) (sp gr) PLUS SLIGHT HOD FLOW THRU CENTRIFUGE, AN W 9.3 9.2+ Funnel Viscosity (sec/qt) API @ 42 4 VIS IN SUCTION PITS LOWERED TO 9.2 b/g 4 40 SECS. Plastic Viscosity cp @ 10 10 Yield Point (lb/100 ft²) 15 15 217 Gel Strength (lb/100 ft²) 10 sec/10 min 216 REMARKS 6.6 Filtrate API (cm3/30 min) 6.8 #2 70 1793 m HTHP Filtrate (cm3/30 min) @ - CUT CORE POOH w/ CORE #2 Cake Thickness (32nd in. API/HTHP) RIH W BIT # 4 RR 6.4 6.0 Liquid Content (% by Vol) Oil/Water 8 2 TO 1803 m. 0 193.6 0 194 CIRC SAMPLES @ 1797 4 1803 -Sand Content (% by Vol) TRACE TRACE Methylene Blue Capacity | Ib/bbl equiv PUMP KCE SAUG & POOH 17.5 17.5 M/U TEST TOOMS 4 RIH. ☐ Strip Meter @ 10.0 Alkalinity Mud (Pm) All · Filtrate (P<sub>f</sub>/M<sub>f</sub>) 15 1.6 .2 1.65 WATER ADDED 89 20,000 Chloride (mg/L) 20000 MUD BUILT Total Hardness as Calcium (mg/L) 0 100 100 95 1 KCL MUD DUMPED 2.5 2.5 SOLIDS GONTROL 250 250 NITRATE ppm NEW HOLE VOLUME. -40% SOLIDS EQUIPMENT STARTING INVENTORY SHAKER #1 840 , 8 100 me SHAKER #2 740 / 8100 me RECEIVED USED LAST 11 30 MUD CLEANER\_\_\_ CLOSING INVENTORY 24 hou CENTRIFUGE... 100 T LAST 24 hou DESANDER\_ 75 DESILTER\_

DAILY COST

\$1572-06

WAREHOUSE PHONE

CUMULATIVE COST

\$21,053-27

JADO KOJT

JIM KELLEHER

PHONE

3555 805

07

<b>Drilling</b> Magcobar/IMCO	Fluids Co. A Dresser/Halliburton Company

DRILLING MUD REPORT NO. /2

DEPTH\_\_\_\_ DATE 21 MAR 19 89

SPUD DATE 9-3-89 PRESENT ACTIVITY

P.O. BOX	(42842	HOUST	ON, TEX	AS 77242	USA		SPUD	DATE <b>9-3-</b> 8	89 <i>I</i>	RILL 83	<del></del>		
PERATOR	<b>1</b>		· · · · · · · · · · · · · · · · · · ·			CONTRACT	OR			RIG NO.			
REPORT FOR		ORA RE		NL		REPORT FOR		DRILL			WNSHIP, RANGE		
WELL NAME A	J. 6	PZOLINS			FIELD OR BLO	DCK NO	K. A	NURPHY PARISH OR OFF	SHUDE	STATE/PROVINCE	BUK.		
WELL NAME A	WIND NO.	DERMEN	E # 2			) // /	11 400.		BASIN	VIC			
DRI	LLING AS		1	ASING	MUD V	OLUME (BBL)			CIRCULATIO	ON DATA			
BIT SIZE	TYPE REED HP-SIA	JET SIZE		JRFACE n. @ <b>3/3</b> ff	HOLE 943	PITS 450	PUMP SIZE	6	× 32 IN. × 15	124"04	min) 3 12 12 DC 249 / 6		
DRILL PIPE	TYPE	LENGTH		RMEDIATE	TOTAL CIRCUL	ATING VOLUME	PUMP MAI	KE, MODEL	ASSUMED EFF 98	CIRCULATION PRESSURE (psi)	•		
SIZE 45	16.6	1536	i	n. @ ff	1.	1393	NAT	KSOOA	95 %		1400		
DRILL PIPE SIZE	TYPE	LENGTH	INTE	RMEDIATE	IN STORAGE	WEIGHT	bbl/stk	8 '	stk/min	BOTTOMS UP (min)	122		
DRILL COLLAF	HW	56 LENGTH		n. @ ft	MUD TYPE	\$	.150	2		(strk) TOTAL CIRC	12,200		
6	,	213			KO	Parimona	7-28		306 gal/min	TIME (min)	19000		
	4			MUD PR	OPERTIES	POLYMER.		PROPERTY		<del></del>	• 1,000		
Sample From	· · · · · · · · · · · · · · · · · · ·		<del></del>	□ F.L. PIT	□ F.L. MPIT	WEIGHT		VISCOSITY		FILTRATE			
Time Sample				16:30	<del> </del>	8-6-9.2		38-45	<del>-</del>	< 8			
<del></del>	perature (°F	`		16.30	05100		RECO	OMMENDED	TOUR TREA	TMENT			
Depth (K)	`	, ,	ft)		.00.00	70	•						
Weight (K)	-i	(lb/cu ft)	(sp gr)	9.0	1805	- TREATME				ME GIVIA	<b>.</b>		
Funnel Visco	,		•E	<del> </del>	9.2	UNRX	LANCE.	D MUD	<u></u>				
Plastic Viscos		°F	•	37	42								
Yield Point (It		<u> </u>		1	16								
Gel Strength		O sec#O min		51	215								
Filtrate API (c	<u> </u>	O SCOTO TIME	<del></del>	<u> </u>	I .		<u> </u>	REM	IARKS				
<u> </u>	trate (cm³/3	0 min) @	•F	7	6.8	- RUN D	10-11						
Cake Thickne	<del>,</del>			,	11			. (7-2.	REC.)	10-1-5	2		
		■ calculated	. □ retort		5.5	- RIH 6/	BIT 4	KKA	KEED !	4P-51-17 (	X II TETS		
Liquid Conter			- Bictor	ļ,		- WASH 4			9-1802				
Sand Content		Olivitalei			0 194.5	- DRILL	82	F   1802 -	1803 -	•	<u> </u>		
Methylene Blo		(Plo/bbl equiv	<del></del>		TRACE								
		Meter @	•F		17.5				<del></del>	<del> </del>	<u>.</u>		
Alkalinity Muc		R MICKEL (M)	······································		10.0								
				,						= =====================================			
All : Filtr 	ate (P <sub>f</sub> /M <sub>f</sub> )				.2 1.6	A /A			····				
Total Hardnes		n (matt)			22,000	WATER AD		- 51					
	s as Calciui	n (mg/L)			80	MUD BU							
1 KU					2.6	MUO DU							
NITRATE	- pp m				250	SOLIDE GO					······································		
					,	NEW HOL	EVOL						
		/ /		<del>                                     </del>		L-,,	, ,	<del>. , ,</del>		<del>,                                      </del>			
PRODUCT INVENTORY	OR	/ /	//	<i>                                     </i>	/ / ,	/ / /		//		/ SOLIDS EQU	IPMENT		
STARTING INVENTORY	83								6	AKER #1 840	7/00		
RECEIVED	03												
								<b></b>	SH	AKER #2 240	/ #100 mes		
USED LAST 24 hr	2								МП	D CLEANER	me:		
CLOSING INVENTORY	81									ENTRIFUGE	27 hou		
ST LAST	183									ESANDER			
HOCO- UNIT	88									ESILTER			
M-I REPRESEN			1      -     P	PHONE 07	WAREH	OUSE PHONE DA	AILY COST	LL		ESILTER MULATIVE COST	nou		
Jim		UFA	1	7555 80		- 11	\$ 183	- 76		\$ 21,237-	03		

Drilling Fluids Co.  Magcobar/IMCO A Dresser/Halliburton Company
--

**P** 

DRILLING MUD REPORT NO. 13

DATE **22 MAR** 19 **89** DEPTH **1869**PRESENT ACTIVITY

SPUD DATE 9-3-89 RUN 4063.

P.O. DON 42042 M HOUSION, 1EXAS	) / /242 L	JSA	1	SPUD	DAIL		~003.								
PERATOR MINORA RESOURCES NA			CONTRACTO	OR ATO	O PRILLIA	VG	RIG NO.								
T. OZOLINS			REPORT FOR		AURPHY		SECTION, TOWNSHIP, RANGE								
APELL NIAMAT AND NO		FIELD OR BLOCK		COUNTY,	PARISH OR OFFSH		STATE/PROVINCE								
WINDERANERE #1		PEP 1		AREA	Drway BA		Que. VIC								
DRILLING ASSEMBLY CASIN	- 11	MUD VOLU		5,1145,01		XRCULATIOI × 8 ~ in.									
SUT SIZE TYPE JET SIZE SURFAC	***	HOLE 20/05		PUMP SIZ		× 02 IN.	ANNULAR VEL (ft/min)								
DRILL PIPE TYPE LENGTH INTERMED		1018 TOTAL CIRCULATIN	<i>382</i> G VOLUME	PUMP MA			DP DC								
SIZE in. @	ft	14	į.	NAT	8-P-80 K50EA	ASSUMED EFF 98 95 %	PRESSURE (psi)								
ORILL PIPE TYPE LENGTH INTERMED		IN STORAGE	WEIGHT	bbl/stk	•		BOTTOMS								
SIZE : in. @	ft.	***	· <b>-</b> -	.072			UP (min) (strk)								
DRILL COLLAR SIZE LENGTH PRODUCTION (	OR LINER	MUD TYPE					TOTAL CIRC TIME (min)								
in. @	ft.	KUL PUL	YMER	bbl/min		gal/min	(strk)								
	MUD PROI		IGHT	MU	D PROPERTY VISCOSITY	SPECIFICAT	IONS FILTRATE								
Sample From	EL. M. PIT	LJ F.L. WYPIT			1 -	Vala									
Time Sample Taken	17:00	05:00	8.6-9.2		38-45	YP 20	< 8								
Flox [emperature (°F)		·- <u> </u>		REC	OMMENDED T	OUR TREAT	MENT								
Depth (%) (TVD / ft)	869	1369			•										
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)	9.2	9.2													
Funnel Viscosity (sec/qt) API @ °F	44	43													
Plastic Viscosity cp @ °F	12	i2	•				,								
f 15	19	17													
	217	217													
	6.5	6.5			REMA	RKS									
HTHP Filtrate (cm³/30 min) @ °F	-		DRILL 8	" Te	1869										
Cake Thickness (32nd in. API/HTHP)	1	11				339 + 1	8.U. 2 1869 m								
Solids Content (% by Vol) Scalculated  retort	5.5	5.5 -			UG 4 POL										
		0 1945 -			-115FL-1										
1		TRACE	Run * 2		L-BCS-										
Michael aguire	17.5	17.5													
	9.7	9.7													
Alkalinity Mud (P <sub>m</sub> )	_		· · · · · · · · · · · · · · · · · · ·												
Alk Filtrate (P <sub>4</sub> /M <sub>4</sub> )	51.50	15 450			***										
	2000 2		VATER AL	2000	21										
fotal Hardness as Calcium (mg/L)	100	/ 1	MUD BU				· · · · · · · · · · · · · · · · · · ·								
	2.7		MUD DUM												
	200		SOLIDS COM	_											
ATTRAIS ppm	200	250		-											
			NEW HOLE	VOL											
	<del></del>	<del>/ /                                  </del>	<del></del>				· · · · · · · · · · · · · · · · · · ·								
RODUCT RASTING TO BE	/ /			•/	/ /	//	SOLIDS EQUIPMENT								
TARTING 33 81 100						[	KER #1								
ECEIVED 33 07 700				<del> </del> ,											
SEDIAGE						SHAF	KER #2 740 / 8180 mesh								
SED LAST / 9 30						мир	CLEANER mesh								
LOSING 32 72 70	_					CF	NTRIFUGE 24 hours								
1AST 00 09 50			-												
23°0 826 512 cco UNIT 88 88 75			+			DE	SANDER								
MADGICOST 28 91 17							SILTER								
H REPRESENTATIVE PHONE			- 11	LY COST		- 11	JLATIVE COST								
JIAN KELLEUEN 250	co on	<b></b> 1	0	1388	(- 21)	II . <b>C</b> *	32 635 23								

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

**P** 

DRILLING MUD REPORT NO. 14

DATE 23 MAR 19 89 DEPTH 1816 - (2

SPUD DATE 9-3-89 PRESENT ACTIVITY

OPEN 85 HOLE TO 124

 $C:\mathbb{C}^{n}\to\mathbb{C}^{n}$ 

P.O. BOX	<b>42842</b>	<b>■</b> HOUS	STON, TE	XAS 77242	USA		SPUD	DATE 9-3-89	OPEN	82 HOLE	TO 124		
PERATOR	Min	IORA K	ECAHAAS	· c N//		CONTRACTOR ATCO DRIMING RIG NO.							
REPORT FOR				3 //2		REPORT FO	7			SECTION, TOW	NSHIP, RANGE		
WELL NAME A	AND NO.	OZOLIN	<u>ک</u> ر		FIELD OR BL	DCK NO	K. /	<i>VIUR PH</i> PARISH OR OFFSHORI		STATE/PROVINCE			
	Wi	NDERME	RF #2		PER		AREA	OTWAY ZAS		1//C			
DRI	ILLING AS	SEMBLY		CASING	MUD V	OLUME (BBL)		CIR	CULATIO	n data			
BIT SIZE	REFO	JET SIZE	1 -	SURFACE	HOLE	PITS	PUMP SIZ	ZE 6 X	35 IN.	ANNULAR VEL (ft/s	nin) 6 5		
124"	HP 516	22141		in. @ 3/3 ~	~				15.		oc 133 / 1		
DRILL PIPE SIZE	TYPE	LENGTH		TERMEDIATE	H	LATING VOLUME	PUMP MA	AKE MODEL ASSI	UMED	CIRCULATION PRESSURE (psi)			
DRILL PIPE	TYPE	1558 LENGTH		in. @ TERMEDIATE	IN STORAGE	WEIGHT	hhl/ctk	KSUCA !	stk/min	воттомѕ	2300		
SIZE 45	HW	56.		in. @		-		4.0728	120	UP (min) (strk)	64 jv.800		
DRILL COLLAG	SIZE	LENGTH	PRODU	CTION OR LINER	MUD TYPE		8.736	7 . 70 4 3	50/	TOTAL CIRC	10,800		
62	18"	171/3	7	in. @	KCl.	POLYMER	bbl/min	} 13.451	5-86 gal/min	TIME (min) (strk)	17600		
/				MUD PF	OPERTIES	<b>'</b>		D PROPERTY SPI	ECIFICAT	IONS			
Sample From	1			☐ F.L. 🗗 PIT	☐ F.L. 🖼 PIT	WEIGHT		VISCOSITY		FILTRATE	•		
Time Sample	Taken			22:30	05:00	86-9	<u>メ</u>	38-45	······································	< 8			
Flox Temp	perature (°F)			-			REC	OMMENDED TOU	R TREAT	MENT			
Depth (tt) ኊ	(TVD	12	"HONE	1764	1816	- CHANGE	LINERS	on Pump 4	2 51	16"TO 5	11		
Weight 🗹 (p	ppg)	(lb/cu ft)	□ (sp g	r) 9-3	9.2					<u> </u>			
Funnel Visco:	sity (sec/qt) /	API@	۰F	44	41								
Plastic Viscos	sity cp @	۰F		12	11				······································				
Yield Point (Ib	o/100 ft²)			20	14								
Gel Strength	(lb/100 ft²) 10	0 sec/10 min		216	2 15								
Filtrate API (c	:m³/30 min)			6.2	6.4			REMARK	S				
HTHP Fil	trate (cm³/30	min) @	۰F	-	20	- FINISH	E'i Ance						
Cake Thickne	ess (32nd in.	API/HTHP)		11	, ,	- RUN P.I					*******		
Solids Conten	nt (% by Vol)	Calculate	ed 🗆 retort	6.2	5.6	- M/U 12							
Liquid Conten	it (% by Vol)	Oil/Water		0 193.8	<del> </del>			1063-1086,		2111			
Sand Content	(% by Vol)			TRACE	TRACE			1140 - 1172					
Methylene Blu	e Capacity	le lb/bbl equiv		17.5-20	17.5	l .		1245-1254					
		Meter @	۰F	8.8	8-8	1		1731-1744		14 10 11	317		
Alkalinity Mud	l (P <sub>m</sub> )		<u> </u>	-		- DRILL 12	4 44 .	1744 - 1816		OPEN 82	" HOLE)		
<del></del>	ate (P <sub>f</sub> /M <sub>f</sub> )			-051-75	.05 1.4		/-	11-4 1016	<del></del>	OFEN DE	HOLE		
Chloride (mg/l	L)	···		24,000	21000	WATER AD	DEO	<b>C</b> 44	•				
Total Hardness	s as Calcium	ı (mg/L)		180	180	MUD BUIL	-						
1 KQ				2.8	2.7	MUD DUM		· ·					
NITRA				200	100	SONIDS GO				···			
7					700	NEW HON				*****			
-						INEW ITON	. ,,,,	_ //					
RODUCT NVENTORY	Centri	//			77		///	///		SOLIDS EQUIF	PMENT		
TARTING		$\neg$	1 1	-	<del>- ( (</del>		$\neg$		+				
VVENTORY	32		+							(ER #1 <u><b>820</b></u> )			
ECEIVED									SHAP	KER #2 840	8120 mest		
ISED LAST 4 hr	2								WILL	CLEANER	mod		
LOSING LVENTORY	30												
LAST	76		<del>                                     </del>							NTRIFUGE			
ST 288 288									DE	SANDER			
060 0777 1000 COST	2858								DE	SILTER			
H REPRESENT	TATIVE			PHONE 07	WAREH	OUSE PHONE D	AILY COST	<del> </del>		ILATIVE COST			
11,00	Kense	150		ء سرسے و	00		£ 57	-76	l d	99 102	20		

FIELD OR BLOCK NO.

IN STORAGE

☐ F.L. ☐ PIT

MUD TYPE

**MUD PROPERTIES** 

☐ F.L. D PIT

11:00

1869

9:3

39

i3

儿

2 15 6.8

1

6.3

TRACE

17.5

9.1

11.4

21000

140

<u> 2.7</u> 200

30g er.

10

8

80

PHONE

409

DAMAGED

5

404

860

00

193:7

TOTAL CIRCULATING VOLUME

KCL PONYMER

DAILY COST

1414-76

WAREHOUSE PHONE

11

83

07

3 555 805

Drilling Magcobar/IMCO	Fluids Co. A Dresser/Halliburton Company
P.O. BOX 42842 ■ HOUSTO	

MINORA RESOURCES NL

JET SIZE

LENGTH

LENGTH

LENGTH

HONE

۰F

٥F

CASING

SURFACE

INTERMEDIATE

INTERMEDIATE

in. @ PRODUCTION OR LINER

ft)

(sp gr)

in. @

in. @ 313

REPORT FOR

BIT SIZE

DRILL PIPE

DRILL PIPE

DRILL COLLAR SIZE

Depth (N) 👡 (TVD

Plastic Viscosity cp @

Yield Point (lb/100 ft2)

Filtrate API (cm3/30 min)

Sand Content (% by Vol)

☐ Strip

Filtrate ( $P_f/M_f$ )

Total Hardness as Calcium (mg/L)

<u>e</u>pyrio

30

3

JIM KELLEHER

70

30

40

Alkalinity Mud (Pm)

Chloride (mg/L)

NITRATES

1. KCl

PRODUCT INVENTORY STARTING INVENTORY

RECEIVED

USED LAST 24 hr

CLOSING INVENTORY

MOCI COST 28

M-I REPRESENTATIVE

Weight (ppg)

Sample From Time Sample Taken

Flow

рΗ

Alk

WELL NAME AND NO

DRILLING ASSEMBLY

TYPE

TYPE

emperature (°F)

Funnel Viscosity (sec/qt) API @

Gel Strength (lb/100 ft²) 10 sec/10 min

HTHP Filtrate (cm³/30 min) @ Cake Thickness (32nd in. API/HTHP)

Liquid Content (% by Vol) Oil/Water

Methylene Blue Capacity Caratoria mud

124

Solids Content (% by Vol) S√calculated □ retort

Meter @

(lb/cu ft)

LINC	יוטו ג 	7	-7	DRILLI	NG MUD	REPO	RT NO.	15			
<b>"</b> ny		A		DATE_	24 M	<b>9</b> <i>R</i> 19	89			69m	
j			ال:	SBIID I	DATE <b>9-3</b>	-89	PRESE	NT ACTIVI	TY 5	"CSG.	
`		CONTR	ACTO	R					RIG	NO.	
		REPORT F	OR		CO DA		NG	SECTI	4 .	NSHIP, RANG	E
D OR BLO	OCK NO.		- 1	COUNTY, F	PARISH OR C	DFFSHO	RE	STATE/PR	OVINCE	PUK.	_
PEP				AREA (	DTWAY	1 8A.	SIN	1.5.5.	VIC		
MUD V		E (BBL)		PUMP SIZE		CIF	RCULATIO	N DATA	R VEL (ft/r	nin)	
_						5-x	· <b>-</b> _	DP		DC	
L CIRCUI	LATING V	/OLUME			(E. MODEL 8-17-8 K5001		SUMED F 93 %	CIRCULA PRESSUE			
TORAGE	W	EIGHT		bbl/stk -0728	,		stk/min	BOTTOMS UP (min) (strk)	6		
TYPE				1043				TOTAL CII			_
il Po	NYM	ĒR		bbl/min			gal/min	(stri			_
TIES	WEIG	нт		MUE	PROPE	RTY SI	PECIFICA	FILTRA	ΓE		—
L. 🗌 PIT	-										
	+			RECO	DMMEND!	ED TO	UR TREA	TMENT			
	- 7	24.00.	·~		RAP Y						==
	<del>                                     </del>				MUD				P17 #	1 70	_
		A	TIVE	< .5	TEM.						
		C	EAN	En Si	CTION	0,7 4	1 4 1	PILL TI	ANK.	PRIOR	_
		To	2 1	IXING	up G	EL/	420 FO	R CE	NEAT	ING.	
1											
						REMAR					
	_	-			0 18	69-	~				
	-	CIRC									
	<u> -</u>				v CAS	incl					
1	-			T 8				. ,,			<u> </u>
	-	RUN	9	3	ASIN'C						_
	-							<u>—</u> ——			
1								+	··		
											_
	l										
	PA	C_ 111	NUS ,	15 FRU	AN ORIG	INAL	COUNT				
Link	OR.						/ /	/ SOLII	DS EQU	IPMENT	
/ Y		$\overline{}$	$\overline{}$	1	f - f	$\neg \neg$				, 840	=
47	57			<u> </u>						, Bilo	
NTORY		VS7		-							
1	2	-		+				D CLEANE			m€
38	55	<b> </b>	<u> </u>	+		-+				24	
1 27	123	1			1			ESANDER			
378	9,88						1	ESILTER_		12	ho:

CUMULATIVE COST

24.097-85

REPORT No. 16

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***		\ <i>I.D.F.S.</i>	$\gg$	Drilli	ing	Mu	d F	Repo	or	t	RIG	No.	2		SPU	D DAT	EQTA	-Uso
		Ų	,					_			DEP	TH (	869 N					
OPERATOR	TINORA	RESO	10141	· · · · · · · · · · · · · · · · · · ·		CON	TRACTO	OR	A:	ωE		APM	110 C 1	·				
REPORT FOR		_				REPO	ORT FO	ıR			•							
WELL NAME AND NO	Sies	0301				EIELE	) OB		13	HL		ELW	AS					
WEEE WANTE AND THE	Will "	UDERMER	E #2			FIELD	K No.	PEP	W		CATI	BY P	ASIL		STATE	V,	<u> </u>	
DRILLING .	ASSEMBLY		CASING		MUE	VOLUM	IE (BBL	-)				C	IRCULAT	ION DA	TA			
BIT SIZE TYPE	JET SIZE	1277	SURFACE 313	A-A	HOLE	Ω	PIT	S	PUI	MP SIZE	6	× 8,3	.IN.	CIF	RCULAT	ION E (PSI)		
DRILL PIPE TYPE	LENGTH		NTERMEDIATE			ULATING	VOL		PUI	MP MAK	E-AND DE	<u> 1</u>	ASSUMED	— во	TTOMS (MIN)	<u> </u>		
DRILL PIPE TYPE	LENGTH		ET @ PRODUCTION OR	FT.	TORAGI	r 1,41	EIGHT		NB	4	75	2-1	EFFE	P6 TO	TAL CIF	₹C.		
SIZE		s	ET (į	FT.	IONAGI	- + <sup>vv</sup>	EIGHT		BBL	JSTK			STK/M			VEL (F	T/MIN)	
DRILL COLLAR SIZE	LENGTH	MUD TY	YPE K	' 6	الملكا	MED.			BBI	JMIN	•		GAL/N	1				
						PERTIES		T	1000					1.0.1				
SAMPLE FROM:					PIT		PIT	WEIGI	нт	v		VISCOSIT	RTY SPE		TRATE	<del>,</del>		
TIME SAMPLE TAKEN						10-	SO.	J	.,,			VISCOSII	T	FILI	HAIE			
FLOWLINE TEMPERATUR	RE		•C		i			PLAST VISCO	FIC DSITY	1		YIELD POINT						
WEIGHT E (ppg) [] (lb/	ou fix l Sp. C					1869		BY AU	JTHO	RITY:			WRITTEN			RILLING	CONTRA	CTOR
FU VISCOSITY (sec			°C			9-9		<del> </del>			1	PERATOR'S	REPRESEN	ITATIVE	1.0	THER		
PLA. VISCOSITY CP (			oC			به	0	1			1	RECON	MEND	ATION	IS			
YIELD POINT (lb/100ft²)								10.										
GEL STRENGTH (lb/100ft2)	) 10 sec./10 min.			1	7	1		140	Le	anet	ne.	sarthy	rope	atur	7			
FILTRATE API (cm³/30 min	<u> </u>					۲٠.	4	]			\		٦,					
API HTHP FILTRATE (cm³/			∘C		-	<u> </u>		<u> </u>							• • • • • • • • • • • • • • • • • • • •			
SOLIDS CONTENT (% BY		C perout	( .dm 1 . 1	/_		1/		<u> </u>	•••••		•••••							
LIQUID CONTENT (% BY	<del></del>		Corsul)			—— <del>—</del>	<u>1</u> 82-1	ł	•••••	•••••	•••••		•••••	•••••	•••••	•••••	••••••	• • • • • • • • • • • • • • • • • • • •
SAND CONTENT (% BY V	fol.)		W(SK)			- 5		1		••••••	•••••	••••••	•••••	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • •		••••••	
METHYLENE BLUE CAPA	CITY 🗌 Ib/bb	ol equiv. 🗔 cm	n³/cm³ mud					1										
PH STRIP	☐ MET	ER @	•c			9.	0	] <i>i</i>								•••••		
ALKALINITY MUD (Pm)	<b>44</b> )							-			OB	EDATI	ONS SI	18484 A	DV			
ALKALINITY FILTRATE (P. ALTERNATE ALKALINITY F					-	-1/	<u>-3</u>	Ren		Q5/2°	(40	LINAII	ONS SC	) IVIIVI P	NN I			
CHLORIDE (mg/L)					-	220	6.2	Č.	ک د			)	•••••	••••••			•••••	
TOTAL HARDNESS AS CA	LCIUM (mg/L)				_	130	00	Con		ر) ،	٠٠ ۲۹۱	••••••	••••••	••••••	•••••		•••••	
SULPHITE (mg/L)						10.00					·	••••••	·····				••••••	
K+ (mg/L)								ļ										
KCL (% BY Vol.)													•					
			-					ļ	•••••	•••••	•••••	••••••	•••••		••••••			
MUD ACCOUNTING (B	BLS.)			SUMMA	BY						SOL	IDS COL	NTROL E	OUIDM	ENT			
FLUID BUILT	<b></b>									Туре	Hr.	100 001	No. Cones	Hr.			Screen Sizes	Hr.
FLUID RECEIVED								Centrifu	ıge			Desilter	loxu		Shake	r No.		2
WATER ADDED								Degass	er			Desande	426		Shake	r No. 2	WBJ.	. 2
		<del></del>												L				
FLUID DISPOSED										<del>-</del>			PMENT E			<del></del>		
HOLE VOL. INCREASE								Desand	dor	1 0	verflow (p	opg)	Under	flow (ppg	2)	Outp	ut Gal/N	Ain.
1				· • · · · · · · · · · · · · · · · · · ·		····		Desilter									<del></del>	
			******															
Product ·	Starting Inventory	Received	Used Last 24 Hours	Closing Inventory		Unit Cost	1.	Cost			SOLIDS	ANALY	SIS	BI	T/HY	D. PRE	SS. DA	TA
			241100.0	inventory			+					lb/bbl	%	Jet Ve	locity			
		, , ,		***************************************						Barite		-	<u> </u>	Impact	Force			
	1	5 1 F								Benton Drill So		67	1-1	HHP				
	<b> </b>						-			LGS	HIGS	178	8.5	+	ss Loss			
							-			Salt		13	4	<del> </del>		c Press		
						·····	+		-	N =				ECD @	CSG	Seat		
							1		_	K =				<del></del>	Botto			
										DAILY	COST			CUMU	LATIVE	COST		
										\$	-			18	24	Oa	7.9	5
0.50 540005	<u> </u>		<u> </u>	<del></del>												( <sub>1</sub> 09		
D.F.S. ENGINEER	from	SKU?	ZINZ	HOME	ADDR	ESS	HOE	LAG	)F_				ELEPHO	AE C	18-	745	102	_

~~~		(Inca)	\ <b>~</b>	·					_	ļ	1161					OCOTA		* 8
$\approx \approx$		\I.U.F.S.	$\gg$	: Drill	ııng	Mu	d R	epo	ort	: [	RIG	No.	<u>a</u>		SPU	DATE	9/3	
*****	7										DEP	rн <b>(</b> '	869 M		то			
OPERATOR V	lwora	RESOURCE	ES			CONTRACTOR ATW APM												
REPORT FOR	JURIS	OFOLI				REPO	RT FOF	١ (	PH	L.	_	LINAS						
WELL NAME AND N	0 ,	DERMERE	4.4			FIELD	OR C	EP	_	١,	CATI	ON	LIBAC	s	TATE	VIL		
DRILLING	ASSEMBLY	KIPKIVUDKE	CASING		MUD			rur	W		OIN			1011 013		010		
BIT SIZE TYPE	JET SIZE	2 8				VOLUME			DUM	P SIZE	6	× 85	IRCULAT			ION	16.	
X / HP U	A 10-14.	B 1378 SI	ετ <i>@</i> 3ί		390		390°				Š	12			ESSUR TOMS	ION E (PSI)	Aco	
DRILL PIPE TYPE	6 ISQL	, 24 9578 SI	TERMEDIATE	<b>I</b>	HAL CIRCU	JLATING V	OL.				MODE		ASSUMED	)   1110	(MIN) AL CIR	·C	46	
DRILL PIPE TYPE	LENGTH	PI	RODUCTION OF	LINER	STORAGE		IGHT		BBL/S	STK 🖊		N D N J	_STK/N	MIT NIN	E (MIN	VEL. (FT/	<u> </u>	
DRILL COLLAR SIZE	LENGTH	MUD TY	PE .c	fi!					.07.		2995		95	D.C.		232		1
675	316	42	KU 0	OLY MED				,	вви	KIN X	356-	3 3	85 GALIN	MIN D.P.		134		_
SAMPLE FROM					UD PROF		7 507				MU	PROPE	RTY SPE	CIFICA	TIONS			
TIME SAMPLE TAKEN			·	FL.	, PII 1	FL. P		WEIGH	٩T			VISCOSIT	Y	FILT	RATE			
FLOWLINE TEMPERATURE			⊎C			06-3		PLAST VISCO	iC			YIELD					-	
DEPTH (NA		· · · · · · · · · · · · · · · · · · ·				1869		VISCO BY AU		UTV:		POINT						
WEIGHT (ppg) [] (lb.	cu.ft)   Sp. G					9-3		BI AU	Inon	и ( т.			S WRITTEN S REPRESEN	ITATIVE		RILLING CO	ONTRACT	DR
FUN" VISCOSITY (sec	:./qt.) API @		°C			35					1	RECON	MEND	ΔΤΙΩΝ	S			
PL VISCOSITY cP	@		ୟ				١ ،	(1 I	T.	. 1			, -	- 1				
YIELD POINT (Ib/100ft²)			<u> </u>	7 Dungal Shocker Kink +							<del>1</del> );	lesa	اسط	wak				
FILTRATE API (cm³/30 min	<del></del>					/	3	<i>b</i> -	ans	ملي	. <u>(</u>	mentl	hippiin	-ation	·······	7		
API HTHP FILTRATE (cm <sup>3</sup>	·		•C			<del>- 8</del> .0	`	Tro	کک انگ	M. J	المريطا	Q	wan	حد ک		למלהמא. מלה מצ	Cavi	(m
CAKE THICKNESS (32nd						17.	_	\:	<u>σ</u> ⁄⁄		<u></u> x}	13.00	wrg	<b>3000</b>	h.		.v.wc	<b>3</b>
SOLIDS CONTENT (% BY	( Vol.) CALCD	RETORT				6.4		(Ja			7 2	aker	Surve	Em	<b></b>	0/34	o t	
LIQUID CONTENT (% BY	Vol.) OIL/WATER			/		- 19	3-6		68	5. [S	. 601					7		
SAND CONTENT (% BY						_Ir						•••••				•••••		
METHYLENE BLUE CAPA			3/cm3 mud			-			•••••			•••••			•••••	•••••	•••••	
ALKALINITY MUD (Pm)		EH @	°C			-fr-	<b>S</b>	i	•••••	•••••	•••••	•••••	••••••	•••••	•••••	•••••		••••
ALKALINITY FILTRATE (P.	/M, )					3-6	1.1				OF	ERATI	ONS SI	UMMA	RY			
ALTERNATE ALKALINITY	<del> </del>			<del></del> /		+		Nio	ole	( 10	808	5						
CHLORIDE (mg/L)						22 60	0	Pres	re	ter	۲.							
TOTAL HARDNESS AS CA	LCIUM (mg/L)					100		MN		Sir 1 QU.								
SULPHITE (mg/L)								in	<i>L</i>	mt.	,@	(6})	<u>. N </u>	······		r.m		
KCL (% BY Vol.)								ENO.	·····•	<b></b>	<i>lener</i>	kP.1	بخيريا	<u>X</u> q	re!	idlar.		
NCL (46 BT VOI.)						2-8		••••••••••••••••••••••••••••••••••••••		• • • • • • • • • • • • • • • • • • • •	•••••	•••••			······	•••••	•••••	••••
							$\dashv$			• • • • • • • • • • • • • • • • • • • •	•••••	••••••						
MUD ACCOUNTING (E	BBLS.)			SUMM	IARY						SOL	IDS CO	NTROL E	QUIPME	ENT			
FLUID BUILT	_								_	Туре	Hr.		No. Cones	Hr.		S	reen izes	Hr.
FLUID RECEIVED WATER ADDED								Centrifu	-		6	Desitter	low	6	Shake		Sing	¥
WATER ADDED	·							Degass	er			Desande	الإبيال	6	Shake	r No. 2144	Bus	*
										1	SOL	DS FOU	IPMENT I	EEEICIE	NCV			
FLUID DISPOSED	45	ama	al Shake	٠ ـــ ١	Desando	r Tan	k.			0	verflow (			flow (ppg		Output	Gat/Min	
HOLE VOL. INCREASE			-V 013-41-2-		2-4444	12752		Desand	der									
• ,	•							Desilte										
	· · · · · · · · · · · · · · · · · · ·	1		,			,		_									
Product	Starting Inventory	Received	Used Last 24 Hours	Closing Inventor		Unit Cost		Cost	L	. :	SOLIDS	ANALY	SIS	BIT	T/HYC	). PRES	S. DATA	1
MANGGEL	400	*	52	352								lb/bbl	96	Jet Vel	<u>-</u>		M.	
	ļ								F	Barite Bentoni	<u> </u>	<del>49</del> ~	<del>  -</del>	Impact	Force		220	
ARTH							ļ		- 1	Drill Sol		54	1-0	HHP			224 203	<u> </u>
							<del> </del>		١.	LGS		10	2-0	Bit Pre	ss Loss	· · · · · · · · · · · · · · · · · · ·	135	5-
							<del> </del>			Salt		13	-1	CSG S	eat Fra	c Press		
							-		-[	N =				ECD @	CSG	Seat		
					_				L	K =		1		ECD @				
										DAILY C	COST			CUMUI	LATIVE	COST		
		,n_		95414			<u> </u>			<b>P</b>				1	24	09	1.85	<u> </u>
000 0000	<u> </u>	<u> </u>	<u>1750 an</u>	42.K			ob	·						41-		( 09°		_
.D.F.S. ENGINEER	ADDRE	SKUZ!	INS	HOM	E ADDRI	<b>4,</b> ≈≊	WEI.	AUE	_			1	ELEPHO	NE M	ζ –	745	121	
	Any opinion and/or	recommendation ev	pressod pratty or w	ritter here n h	136 2000 010	ared carefu	the and ma		4 .1 150		alacte ha		nrocontation	~	×		V - Q	

			<b>~</b> ]/								REPC	ORT No.	18		DATE ?	26Th MAP
<b>***</b>		$\langle I.D$	).F.S.	>≈	Dr	illind	g Muc	ı R	epor	t	RIG N	10. °	 \			DATE 9 3
							9			_	DEPT		9(0			
OPERATOR AL							CONTR	2ACTO	D 1		<u> </u>		869 W		<u> </u>	
146	mast 1	KE SO	WE:	S					7	WIF	A	&W				
REPORT FOR	JURIS		チロアリ				REPOR	RT FO	3 Oi	HL	•	LWA				
WELL NAME AND No.			MER				FIELD	OR			LOCATIO	N a		ST	ATE	Vu
DDI LING A		COSE	1 WEN			T					UTW		DE PETET			yu_
DRILLING A	1.55.0.55		101	JRFACE		ļ	ND NOTINE			MP SIZE	- 1	-457	RCULATI			
BIT SIZE TYPE	A CO.V	8.8	13718 SE	T@ 31	3 1%	39	4	390	_ 1				·IN.		CULATION SSURE ( FOMS	PSI) (90
SIZE 44 TYPE	LENCTH	1	9-18 SE	TECHACOLATE	7 m	1	RCULATING VO	OL.	PU	MP MAH	E. MODEL	L	ASSUMED	110 /	MIN)	५।
DRILL PIPE TYPE	LENGTH	1	PF	RODUCTION O		IN STORA		GHT	BBI	L/STK		K-200-1	FF <b>QQQ</b>	IN THE	L CIRC. (MIN)	<u> </u>
SIZE LLA PRIL	J 55.		SE MUD TY	T (PE	FT.	L			-0	7875	·0995		95	D.C.	ULAR VE	EL (FT/MIN)
DRILL COLLAR SIZE	216		IVIOD 111	" Ku	1 8	WYU	ER		вві	LMIN (	3-73	as	<b>3</b> SGAL/M			134
						MUD PF	ROPERTIES .	27/3			MUD	PROPE	RTY SPE	CIFICAT	IONS	
SAMPLE FROM					F	L. [ PIT		. PIT	WEIGHT			/ISCOSITY		FILTE		,
TIME SAMPLE TAKEN					<u> </u>		05.0				*	ur. D			8	-10
FLOWLINE TEMPERATURI DEPTH (N)	E			<b>«</b> С	<del> </del>		47		PLASTIC VISCOSIT	Υ	P	IELD POINT		610	, η.	5-10.0
WEIGHT LE (ppg) LE (lb/c	u (t)   ' So G						188		BY AUTHO	DRITY:		PERATOR'S	WRITTEN REPRESEN	TATU/C		LING CONTRACT
FUN VISCOSITY (sec./				•C	<del> </del>		34		<del> </del>						OTH	EH
PL VISCOSITY CP @				•c			7	•	1		F	RECOM	MENDA	MOITA	5	
YIELD POINT (Ib/100ft²)					<b> </b>		6		Haint	an-	Men	. ماره	Yidd.	Print	1	crebb
GEL STRENGTH (Ib/100ft²)	10 sec./10 min.				<b> </b>	7	<del></del>	3	reas	Drah			wwa	. 4		
FILTRATE API (cm³/30 min.	)						7.4	 ,	1 A	add	Sodin	- 54	phile )	Gr c	M (DSA)	· lated ·
API HTHP FILTRATE (cm³/3	30 min.) @			۰c			-		For 1	mpni	gel L	sled	caning	will.	l mi	e teli-
CAKE THICKNESS (32nd in						/	1/.		<i>P</i> (%)	mix	tack	and	Bleed		N N	youary.
SOLIDS CONTENT (% BY	·	. C RE	TORT	Corrected	ļ		5-1					•••••				
LIQUID CONTENT (% BY				tor Salt	<b> </b>			4-4						••••		
SAND CONTENT (% BY VO METHYLENE BLUE CAPAC			(7,	³/cm³ mud			TY					• • • • • • • • • • • • • • • • • • • •		•••••		
PH STRIP	[] MET		L. cm	³/cm³ mua °C	<b></b>		15.			• • • • • • • • • • • • • • • • • • • •		•••••		•••••		
ALKALINITY MUD (Pm)							10-3			••••••	••••••		•••••	•••••	•••••	••••••
ALKALINITY FILTRATE (P. //	M <sub>r</sub> )				ļ	7	1.8	9			OP	ERATIO	ons su	JMMAI	RY	
ALTERNATE ALKALINITY F	<del></del>					1	+ 4-	7	Drd u	<b>J</b>	Stane	Caller				
CHLORIDE (mg/L)							32.05	XO.	MH.		0					
TOTAL HARDNESS AS CAL	CIUM (mg/L)						80		Dival		eman	<del>* *</del>	Hoct	(ollow	<b>.</b>	
SULPHITE (mg/L)							_		Pressi	reT	est	Wo	ka	Bols		
(* (mg/L)							14,20	70	- Hot-	<i>W</i>	orkor	606	<u>አ</u>			
(CL (% BY Vol.)							7-8		RIH.		sure.	Test				
Dr-che (my)	TA)						180		RUH.	<b>r</b> 7.	osure?	1621			•••••	••••••••••
MUD ACCOUNTING (BI	BLS.)				SU	MMARY	<u>l</u>			····	SOL	IDS CON	ITROL E	JUDME	NT	
LUID BUILT										Туре	Hr.	103 001	No. Cones	Hr.		Screen Sizes
LUID RECEIVED									Centrifuge	<del>                                     </del>	ac	Desilter	io.4°		Shaker N	
WATER ADDED									Degasser			Desander			Shaker N	
																1
	1.										SOLI	DS EQUI	PMENT E	FFICIE	VCY	
LUID DISPOSED	Vegligib	e #	noral	Solids	rteres)	l				(	Overflow (p	pg)	Under	flow (ppg)	·	Output Gal/Mi
IOLE VOL. INCREASE									Desander	-					$\perp$	
									Desilter	+						
_	Starting	Τ	<del></del> 1	Head Last	T 61-	sino T	l loi		<del></del>	+	001:55			T	4077	
Product	Starting Inventory	Rec	eived	Used Last - 24 Hours	Inve	entory	Unit Cost		Cost		SOLIDS	ANALY	T	+		PRESS. DAT
BICARO SODA	ಖ	<u> </u>		6		$\perp$ $\perp$	20.40	13	2-40	Barite		fb/bbl	%	Jet Velo	<u>-</u> -	401
		<u> </u>			<b> </b>					Bento		10	1-1	Impact	· orce	391 240
	!	<del> </del>			1-					Drill S		47	7.5	HSI		3.0
		<b> </b>			1					LGS		1 2	12	Bit Pres	s Loss	12 f

Product	Starting Inventory	Received	Used Last -24 Hours	Closing Inventory	Unit Cost	Cost	SOLIDS ANALYSIS			BIT/HYD. PRESS. DATA		
BICARD SODA	<del></del>		L		20.40	122-40		fb/bbf	%	Jet Velocity	401	
1200			<b>-</b>		900,40	122.40	Barite	_	-	Impact Force	544	
			<b> </b>		<del> </del>	<del> </del>	Bentonite	10	1-1	HHP	221	
					<del> </del>	<del> </del>	Drill Solids	47	5.2	HSI	3-89	
					<del> </del>	<del> </del>	LGS	57	6-3	Bit Press Loss	1330	
							Saft	13	-1	CSG Seat Frac Pre		
							N =	-62		EMMO CSG Seat		
						<del> </del>	K =	-27		ECD @ Bottom		
					<del> </del>		DAILY COST			CUMULATIVE COS	ST .	
	·						\$ 15	2.40		\$24;	Do 92	
I.D.F.S. ENGINEER	Aune	SKUSI	NS	HOME A	DDRESS	ADELAME		TE	ELEPHON	NE 08-79	15102	
	Any opinion and/or	recommendation e	xpressed orally or w	ritten herein has be	een prepared caref	illy and may be used if the	ne user so elects hi	owever no rec	resentation (			

			\						REP	ORT No.	19	DA	ATE 27 HOR 8
		<i><b>√I.D.F.S.</b></i>	〉≋	Drillin	g Mud	d R	epo	rt	RIG	No.	2		PUD DATE Q 3
		\_\					•		DEP	гн \с	369 1	, TC	2008 m
OPERATOR M	WORA	RESOUR			CONT	RACTO	R I	470			20 ( 1	Λ	_ & & & & &
REPORT FOR	<u> </u>				REPO	RT FOR				Apm	_		
WELL NAME AND No	<u>Juris</u>	OFOL	3.		FIELD	OR 6	_	HIL	LOCATI	LINAS		STA	TF 4.
	MIN	DEBMER	E # 3	<u> </u>	BLOC	K No. Y		W	LOCATI	NKY	BASH	7	
DRILLING A			CASING		MUD VOLUME							ON DATA	
BIT SIZE TYPE	JET SIZE	B is is	URFACE ET @ 313	M Z	RO OTE	28	<b>X</b>	PUMP SI	<	× 83	·IN.	CIRCU	JLATION SURE (PSI) 1875
DRILL PIPE TYPE	LENGTH	١٢ يغ رسر سا	ITCOMEDIATE	TOTAL C	CIRCULATING V	OL	P		AKE, MODE	EL /	SSUMED	101 (141	in) 44
DRILL PIPE . TYPE	LENGTH	74 C 8 3	RODUCTION OF	R LINER IN STOP		IGHT	8	BUSTK,	-P-80/K	-300-11	STKIN	NN LIME	(MIN) (OO
DRILL COLLAR SIZE	LENGTH	MUD TY	PE 1	<u> </u>			1	7	-0995		<u> 96   -</u>	D.C.	340
<u> </u>	216.	.92	Ku	POLTME	R	27/2	В	вими	1.0	32	<b>G</b> AL/M	IN DP	138
SAMPLE FROM				EL P	ROPERTIES	PIT				PROPER	RTY SPE		
TIME SAMPLE TAKEN				16.00	05-0	$\alpha$	WEIGHT	0-0	1-3	VISCOSITY		FILTRA	X= & ~10
FLOWLINE TEMPERATUR	E		•c	48	49		PLASTIC	;		YIELD POINT		PH	9-5-10-0
WEIGHT (ppg) (lb/o	(n	1.112		1949	703	<b>b</b>	BY AUTI	HORITY:		OPERATOR'S	WRITTEN	1	DRILLING CONTRACTOR
FUN' VISCOSITY (sec.		<del></del>	<b>∞</b>	9.3	32					DPERATOR'S			OTHER
PLA VISCOSITY CP @			<b>°</b> C	35	5		1			RECOM	MEND	ATIONS	1.
YIELD POINT (Ib/100ft2)				3	3		Addi	ابكويا	lehite	to (	umsa	- lut	al Upproximan
GEL STRENGTH (Ib/100ft²)		TOTAL		1/2		<u> </u>	Addin	·5l	virrate.	O.S	Trave	× –	Appin 200 mg/
FILTRATE API (cm³/30 min. API HTHP FILTRATE (cm³/			•C	9.3	lo-	۷	Na=1	hai	Deck	٠	Access &	101 L	مر الم
CAKE THICKNESS (32nd i				1 /-	1/	_			e lob				- Harris town
SOLIDS CONTENT (% BY			corrected )	6.5	7.		]	<u>r</u>					
SAND CONTENT (% BY V			for Salk )	- 193.5	-/9	い	ļ		•••••	•••••	•••••		
METHYLENE BLUE CAPAC		l equiv. 🗀 cm	³/cm³ mud	17/2	20	•				•••••			•••••
PH Z STRIP	☐ METE		•C	10.5	10-	0	i	••••••		·····	······		
ALKALINITY MUD (Pm)				1.6	1.3				0.5	OCD ATIC	MC CI	1040445	
ALKALINITY FILTRATE (P, /				•4/.7	1.71.	٠5	Dirote	. L	(Physid	PERATIO	)NS SU	JWWAR	Υ
CHLORIDE (mg/L)	1011/11/2 (1 1 /1 2 /			<i>30500</i> <i>★</i>	1900		Dest	Q	3> L	6e. 3139	ر الا	) <u>)                                   </u>	
TOTAL HARDNESS AS CAL	LCIUM (mg/L)			200	360	~	and	nt	Teak	T 980	<i>st</i>		
SULPHITE (mg/L)				80	\$0		Drdl		dead :	W- 5	Mens.		
KCL (% BY Vol.)				13,500	15200			••••••					
1- ME (mg)	۲)			2.6	7.4			•••••		•••••	• • • • • • • • • • • • • • • • • • • •	•••••	
												•••••	
MUD ACCOUNTING (B	BLS.)			SUMMARY	***************************************					LIDS CON		1 11	
FLUID RECEIVED _		·					Centrifug	Тур	e Hr.	Desilter	No. Cones	14 SI	Screen Sizes Hr.
WATER ADDED -							Degasser		120	Desander	426		haker No. 1850 Sign 24
													1340
FLUID DISPOSED	+ 15		C 14. (	kal i N	4.1 C. 1			<del></del>		DS EQUI			<del></del>
OL	36	*	Source Con	trol + Dur	when sevy	Tab	Desande	r	Overflow (			flow (ppg)	Output Gal/Min.
	- 29						Desilter		9-3			0.7	1.0
				1		$\prod$						· · · · · ·	
Product	Starting Inventory	Received .	Used Last 24 Hours	Closing Inventory	Unit Cost		Cost		SOLID	S ANALYS	·	<del></del>	HYD. PRESS. DATA
SOO. NOTWIE	ΙŻ		_ ユ_	<u> </u>	39.15	7	150	Bari	ite	lb/bbi	%	Jet Veloci	
SOO. SULPHITE	6		<u> </u>	4	29.75	5	5.20	<b>—</b>	tonite	14	1.5	ННР	344
						130	00-F	Drill	Solids	57	6-3	HSI	4-36
								LGS		171	7.9	Bit Press	142
								Saft N =		-7	-1-	ENL® C	t Frac Press 100
						<del> </del>		K =		-1		ECD @ 8	122-1
	.				**	<u> </u>		- 1	Y COST			1	TIVE COST
								] {	B 139	00-		\$ >	4 359.25
IDEO ENONIES	<u> </u>			<u> </u>						<del></del>			14,359.25 8-795 102
I.D.F.S. ENGINEER	ALDRE	SKU	<u> </u>	HOME A	13		-ANDE			TE	ELEPHO	NE US	8-795 102
	Any opinion and/or i	recommendation e	coressed orally or v	written herein. has hei	en prepared carefi:	illy and m	iav he lised i	if the riser	r so alacts ho	wever no ren	resentation	or warranty	

-	4 N			•
<b>****</b>	(I.D.F.S.)	<b>≋</b> Drilling	Mud	Report
	~ Ų			

REPORT No. 20 DATE 25th Mrs. 80
RIG No. 2 SPUD DATE 9[3
DEPTH 2008M TO 2172

OPERATOR (	MINDER	RES	OURLES		CONT	RACTO	R N-	710	Aer	Α				•
REPORT FOR		0£0			REPO	RT FOF	- · · · ·		· ·					
WELL NAME AND N	JURIS		1.		FIELD	OR (	00- 11	<b>nu</b>	OCATIO	24UL		ST	ATE 1	<u>t.,                                     </u>
		NDEVIN	SIME	<del>d</del>	BLOCK		PER li	7	VID	JAY P	MEA(			hc.
	ASSEMBLY		CASING		NUD VOLUME						CULATION			
BIT SIZE TYPE	JET SIZE	8 1378°	ET@ 313	M 4	<b>18</b> 2	PITS	PU	MP SIZE	5	× 83 ।ऽ	IN.	CIRC	ULATION SSURE (PSI)	<u> 1750</u>
DRILL PIPE TYPE	.b 1899	24 95/8"s	NTERMEDIATE		RCULATING V	OL		MP MAKE	, MODE	_ IA	SSUMED	BOTT UP (	MIN)	57
DRILL PIPE . TYPE	LENGTH	24 7 18 S	ET @ (867	LINER IN STOR	RAGE IWE	IGHT		<u>₹5<b>8-</b>₽</u> ⊔STK1	ROK-	200-V	TARIAS .	6 TOTA	L CIRC. (MIN)	
Size Chi Hi	N 55.	<b>84</b> s	ET 🐔		20			728/-0	64<		96	ANN	JLAR VEL (	
DRILL COLLAR SIZE	LENGTH	MUD TY	re Ku p	OLYMER -	- WATE	= 6	1	UMIN 7		Ja	<b>G</b> AL/M	DC.	138	<u> </u>
	1 640.	14			ROPERTIES		T	J						<u>)</u>
SAMPLE FROM		<del></del>		FL PIT		PIT	WEIGHT			PROPER	ITY SPEC			
TIME SAMPLE TAKEN				wo w	04-3		WEIGHT			ISCOSITY	•	FILTE	AIE	
FLOWLINE TEMPERATUR	RE		%	PUTS	31		PLASTIC VISCOSIT	Υ	Y	TELD POINT				
DEPTH (ft)					1 311	<u> </u>	BY AUTHO			PERATOR'S V	WRITTEN		DRILLING	G CONTRACTOR
WEIGHT (ppg) (ib	<del></del>			9.3	8.0	<del>t</del> †				PERATOR'S F		TATIVE	OTHER	
FUN" VISCOSITY (sec			°C	<u> 33</u>	<u> </u>		4		F	RECOMI	MENDA	ATIONS	6	
PL VISCOSITY cP	@		۰C	<i>p</i>			N-1	. 1	t	~ A .	1		9226	
YIELD POINT (Ib/100ft²)	2) 10 110			<u> </u>	<del>- </del>		nicho	(d)!\	ماها ا	VX	Victor	at.	2079. FUI.	<i>y</i>
GEL STRENGTH (lb/100ft <sup>2</sup> FILTRATE API (cm <sup>3</sup> /30 mir	·						Tran	s pener	7 		F12	WW.	<i>tw.</i>	
API HTHP FILTRATE (cm <sup>3</sup>	<del></del>			<u>li-z</u> _			1790	67	omib.	dej_	15017 ···	•••••	•••••	
CAKE THICKNESS (32nd		<del></del>		1/-	+		It.	· · · · · · · · · · · · · · · · · · ·	3 ×	Ш.	may 1	54	at W	Hen
SOLIDS CONTENT (% B)		RETORT		6-6	+			Alex		time	Dawy			Bert
LIQUID CONTENT (% BY				- /934				shaken	MY:: 1					
SAND CONTENT (% BY	Vol.)			Tr	<del>                                     </del>		Circle	itina	was	en th	Loval	<b>کرہ</b>	~~····	
METHYLENE BLUE CAPA	CITY I Ib/bbi	equiv. 🏻 cm	n³/cm³ mud	અ				J			J		7	
PH Z STRIP	☐ METE	R @	•€	9.5	8-:	3	ii.					••••		
ALKALINITY MUD (Pm)														
ALKALINITY FILTRATE (P.				2.15	Tr/.	.5	<b>N</b>	A	OP	ERATIO	NS SU	JMMA	RY	-
ALTERNATE ALKALINITY	FILTRATE (P <sub>1</sub> /P <sub>2</sub> )			+	+		Didi	.1H.egd	ب					
CHLORIDE (mg/L)				13200	900		Disda	he th	sk1	J- M	idor (	<i>x</i> ₹9	079 N	Δ
TOTAL HARDNESS AS CA	LCIUM (mg/L)			<del>yw</del>	46	۱								
SULPHITE (mg/L)				60			W	W.	رمعر	ex	www	Qv.7	inght	- Wider.
K* (mg/L) KCL (% BY Vol.)				11200	450	0-		•••••				•••••		••••••••••
41	1, \			タンア	100	+	• • • • • • • • • • • • • • • • • • • •	•••••		••••••	••••••	•••••		
The star in	<del>~ 111</del>			lis	100			•••••	••••••			•••••	•••••	
MUD ACCOUNTING (E	BBLS.)	·····		SUMMARY					SOL	IDS CON	TROL EC	OUIPME	NT	
FLUID BUILT						-		Туре	Hr.		No. Cones	Hr.		Screen Hr.
FLUID RECEIVED			***************************************				Centrifuge		24	Desitter	10-45	14	Shaker No. 1	Baplam 23
WATER ADDED							Degasser			Desander	USE"		Shaker No. 2	1 6
									SOLI	DS EQUIF	MENT E	FFICIEN	ICY	
	96 + 30		Imped in	Simp &				0	verflow (p	pg)	Underf	low (ppg)	Ou	rtput Gal/Min.
HOLE VOL. INCREASE	20 PHP	<u> </u>	wholes the	Do Hy	OR tru	<b>x</b> .	Desander	ऻ						
						<b>-</b>	Desilter	-						
	Starting		Used Last	Closing	Unit			<del> </del>		4012112	40	T ===	(1)(5, 5=	
Product	Inventory	Received	24 Hours	Inventory	Cost		Cost		SOLIDS	ANALYS		+		ESS. DATA
SOO. NOTRATE	l l		1	10	<u> 39.75</u>		9.75	Barite		<b>+</b>	%	Jet Velo	<del></del>	44
Soo. SULPHITE	(50Kg) 4		1	3	29.75	3	१.75	Bentoni		by in	Pros	HHP	Gice	372
	1					-		Drill So			1-6	HSI		323 322
	<del> </del>					De	1.50	LGS		20	77	Bit Pres	s Loss	1300
	<del>  </del>		<b></b>					Salt		10	-1		at Frac Pres	
					***	<b></b>		N =				ECD @	CSG Seat	12.64
	1					-		K =				ECD @	Bottom	
	1					<del> </del>		DAILY C	COST			CUMUL	ATIVE COST	
	<del>                                     </del>				<del></del>			I A	69.	56		1	24,42	19.76
								1 40	> © ( '	3 0		dts,	~ (, 70	٠٥٠١٦
I.D.F.S. ENGINEER	N c -	Circ		HOME AD	DRESS 1			·*···		TE	LEPHON	VE ,		
	FLORE	SWIS	IN)			WART	MOE			1		7	5-745	, wil

~~~	~~~		\					RE	PORT No	· 21	DAT	FE 29TH MAR 8
		\ <i>I.D.F.S</i>	<b>∕</b> /≋	Drillin	ng Mu	ıd F	<i>lepo</i>	rt RIG	No.	$\overline{\mathfrak{I}}$		JD DATE Q 2
		<u> </u>	,				•		\ >TH	)177		
OPERATOR N	MINORA	Para			COL	VTRACTO	OR 1			2172	Μ	3272 M
REPORT FOR		RESOU			REF	PORT FO	R	, ,	16W			
WELL NAME AND	JURUS NO		MVZ.				13	1411 CX	LINAS	Ś	γ	
	W	NDERME	RE B ?	<u> </u>	BLO	D OR CK No.	DER 1	70 11	NAY P	NICAC	STATE	Ī \∫\∟
	G ASSEMBLY		CASING		MUD VOLU	ME (BBL	)	, `	_, c	IRCULAT	ION DATA	
BIT SIZE TYPE	PB SIZE	1 112.20	SURFACE		HOLE	PITS	S P	UMP SIZE	× 83	IN.	CIRCUL	ATION JRE (PSI) 1125
DRILL PIPE TYPE	LENGTH	7 - 056	NTERMEDIATE	TOTAL	CIRCULATING	VOL	PI	JMP MAKE, MOI	PEL (S	ASSUMED	BOTTOM	1S
DRILL PIPE TYPE		F	PRODUCTION OF	R LINER IN STO	DRAGE V	VEIGHT	N BE	<u>Mi: 8-P-40</u> BL/STK	K-210-4	EFFQ & G	% TOTAL C	
DRILL COLLAR SIZE	HW 55	MUD T	ET (		202			3713 -099	<u> </u>	10:	-   ^ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	IR VEL. (FT/MIN)
6%_	131			WATER			В	BLIMIN J.5	3	15 GALIA	1	148
SAMPLE FROM					PROPERTIE		_	M	JD PROPE	RTY SPE	CIFICATION	IS
TIME SAMPLE TAKEN		•		MUD		14 PIT 1-30	WEIGHT	41 <i>U</i>	VISCOSIT	Υ	FILTRATE	
FLOWLINE TEMPERAT	TURE		°C	1N	1	21 (-27	PLASTIC		YIELD			
DEPTH (194)				PITS	23		BY AUTH		POINT OPERATOR'S	WOITTEN	<u> </u>	20
WEIGHT (? (ppg) :				9.2+	3	۲۰۱۰		i.	OPERATOR'S		ITATIVE	DRILLING CONTRACTOR OTHER
PL VISCOSITY (	sec./qt.) API @		%C	33			-		RECON	MEND	ATIONS	
YIELD POINT (Ib/100ft2)				i	<del> </del>		Circul	lected "H	V	. D-1i	^ *	Inches .
GEL STRENGTH (Ib/10)	Oft <sup>2</sup> ) 10 sec./10 min.			171		,	Cr	12 d så	nagr.	71 J	ed 1	PAC 1
FILTRATE API (cm³/30 i	<del></del>			12-0			l					•
API HTHP FILTRATE (C			<u> </u>	<u> </u>		,	Conti	~ N.m 2	10 nx	<u>S</u> ~	p es	Settling area
SOLIDS CONTENT (%		RETORT		6-3	<del>                                     </del>		L	solys b	•			-
LIQUID CONTENT (%	BY Vol.) OIL/WATER			- /93.	1 /				X11.VQ	<b>k</b>		WINDOW.
SAND CONTENT (% B				Tr								
METHYLENE BLUE CA			n³/cm³ mud	17:5						•••••		
ALKALINITY MUD (Pm)	P [] MET	EH @	•€	9.5	1 - 7	<u>.2</u>			•••••	•••••	••••••	••••••
ALKALINITY FILTRATE	(P <sub>1</sub> /M <sub>1</sub> )		-	Tr/ -3	07			o	PERATI	ONS SI	JMMARY	
ALTERNATE ALKALINIT	Y FILTRATE (P1/P2)			7	+			to 221				
CHLORIDE (mg/L)	041.00.04.			12200	900	00	Trip.	Bir N od Dlocks	odraw	٠		
TOTAL HARDNESS AS ( SULPHITE (mg/L)	CALCIUM (mg/L)	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		440	23	a	RIM	ol Islanks	time.	810	b lin	<b>e</b> )
K* (mg/L)				40	45	90	Nush				4metes	Cm1
KCL (% BY Vol.)				1-9	- 43		Dal	Alead	· · · · · · · · · · · · · · · · · · ·	•	H.I.I. 9193	
V. SHE PW	wir)	***		igo	- 100	)						***************************************
MUD ACCOUNTING	(BBI S )			SUMMARY	,							
FLUID BUILT	(22.3.)			JONIMAN	·			Type Hr.	III COL	No. Cones	QUIPMENT Hr.	Screen Sizes Hr
FLUID RECEIVED							Centrifuge	Qi	Desilter	10x4°	<del>  _    -   </del>	sizes
WATER ADDED	· · · · · · · · · · · · · · · · · · ·						Degasser		Desande			ter No. 2 Bus Bus IC
			·					<u> </u>	<u> </u>			
FLUID DISPOSED								Overflow			FFICIENCY flow (ppg)	Output Gal/Min
HOLE VOL. INCREASE	<b>ఎ</b> వ						Desander		43/		топ (рруј	Colput Garvini.
							Desilter					
	Starting	<u> </u>	Used Last	Clasica	1			<u> </u>			<del>,                                      </del>	
Product	Inventory	Received	24 Hours	Closing Inventory	Unit Cost		Cost	SOLIC	S ANALY:	<del></del>	<del> </del>	D. PRESS. DATA
PAC	7>		1	54	91.88	<del>  °</del>	11-88	Barite	Mo	W Purs	Jet Velocity	<u>270</u> 409
								Bentonite	12	1-3	HHP	117
						<del> </del>		Drill Solids	49	5.5	HSI	1.97
								LGS	1 69	63	Bit Press Lo	
	+							Salt N =	19	+:/-	CSG Seat F	1100
						-	······································	K =		<u> </u>	ECD @ Botte	
					<del></del>	+	······································	DAILY COST			CUMULATIV	
								\$91.	88		<b>\$</b> 20	£9.CLZ,7
.D.F.S. ENGINEER				1				<u> </u>				,,,,,,,,
CINGINEEN	Any opinion andion	- SKUT II	Statement avails as a	HOME AI	DUHESS	ADE	LAWE		Т	ELEPHON	1E 08	795102

INDEPENDENT DRILLING FLUID SERVICES PTY. LTD.

REPORT No. 22 DA

RIG No. 2 SP

DATE 30 m MAR &

***		\ <i>I.D.F.S.</i>	/ <b>≈</b>	Drilling	, Mud	Repo	ort	RIG	No.	Į	s	PUD DA	TE 9
		V	•					DEP	гн Э	272	M TO	22	385
OPERATOR M	NORA	RESOUR	161		CONTRA	CTOR	ATU	A	ew.				
REPORT FOR		2			REPORT	FOR F			•				
WELL NAME AND NO	<u>Jours</u>	OFOL	<i>k</i>	``	FIELD O	_ ~	BHIL		ELINA		STA	NTE	· · ·
	MIN	DEUWER	E	7	BLOCK I	vo. PEP	111	1650r	JAY	BASIN			VIC
DRILLING A			CASING	MU	D VOLUME (				- T-	RCULATIO			
BIT SIZE N TYPE	JET SIZE	B 13/25	URFACE ET @ 31	13 W ZJ	E a	PITS	PUMP SI	ZE <b>b</b>	× 83	IN.	CIRC	JLATION SURE (PSI	0 180
DRILL PIPE TYPE	LENGTH'	22,01	NTERMEDIATE	TOTAL CIR	CULATING VOL			AKE, MODE		ASSUMED	BOTT UP (N	IIN)	58
DRILL PIPE , TYPE	LENGTH			R LINER IN STORAG	GE WEIGI	-IT	NAT: S BBL/STK	-6-20 K	4-02-	Elas of STRIM	IN TIME		
SIZE UP) I HW	7 22.		ET @	FT. 47			-0713	1.0445		coı	DC.	الAR VEL. کا	(FT/MIN)
DRILL COLLAR SIZE	LENGTH		,	WIATER		:	BBL/MIN	7.1	3	<b>30</b> GAL/M			41
	376	· d7			OPERTIES 3			MU	D PROPE	RTY SPE	CIFICATI	ONS	
SAMPLE FROM				E. EL ZPIT	FL 🚜	WEIGH	ır ,	L 0.2 0	VISCOSIT	·	FILTR	ATE	
FLOWLINE TEMPERATUR			°C	Nivo	03.00	PLASTI	IC		YIELD		-		
DEPTH (N)				PITS	31 2403	PLASTI VISCOS			POINT				
WEIGHT 12 (ppg) [] (lb/c	cu.ft) [.] Sp. G			9-2+	8-44		THORITY	7	OPERATOR'S OPERATOR'S	REPRESENT	TATIVE	DRILLIN	G CONTRACT
FUr VISCOSITY (sec.	/qt.) API @		%	3 ių	1 8-4					IMENDA			
PLA. VISCOSITY cP (	î		oC.	7									
YIELD POINT (Ib/100ft2)				3			بنساو	<b>U</b>	رحک	mp.W	Wer c	o D.	Alvan F
GEL STRENGTH (Ib/100ft²)					/				J				
FILTRATE API (cm³/30 min		<del> </del>		13.0			•••••			•••••			
CAKE THICKNESS (32nd i			<u> </u>	1/-	ļ	<del></del>			•••••	••••••			
SOLIDS CONTENT (% BY		- □ BETORT		6:3		(	••••••		••••••	•••••			•••••
LIQUID CONTENT (% BY				- A3-1	<del>                                     </del>					• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •		•••••
SAND CONTENT (% BY V	ol.)			0						• • • • • • • • • • • • • • • • • • • •		••••••	
METHYLENE BLUE CAPA	CITY 2 16/66	ol equiv.	13/cm3 mud	15+									
PH 🗹 STRIP	☐ MET	ER @	۰c	9.0	٦٠<	<i>i</i>							
ALKALINITY MUD (Pm)				-	<b>–</b> .			0.	SED ATI	2410 01			
ALKALINITY FILTRATE (P.				75/-3	Ð / -à					ONS SU	JMMAF	RY	
ALTERNATE ALKALINITY F	ILTRATE (P1/P2)			+	4	- 1.12	<i>to</i>	9317			··········	•••••	•••••
TOTAL HARDNESS AS CA	CIIIM (mall.)			15500	200 8200	- 18 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Now (		Problem	rs	•••••	
SULPHITE (mg/L)	Ciow (ng/c)			(نېزه	200	- Pru		238			••••••	•••••••	•••••
K* (mg/L)				10000	<u> </u>		17	) <i>9</i> >.0		••••••		••••••	•••••
KCL (% BY Vol.)				1-9	.8	_	•••••	••••••	•••••		••••••		
1 PARE (my)	L)			loo	100-		••••••	•••••				•••••	
							••••••	•••••		••••••		••••••	
MUD ACCOUNTING (B	BLS.)			SUMMARY				so	LIDS COI	ITROL EC	QUIPMEN	IT.	
FLUID BUILT							Тур			No. Cones	Hr.		Screen Sizes
FLUID RECEIVED						Centrifu	<del></del>	10	Desitter	10×in		Shaker No.	1 1
WATER ADDED						Degasse	er		Desande	1 pro	0	Shaker No. 2	2840000
									IDS FOU	PMENT E	EEICIEN	~	11_
FLUID DISPOSED	·····					<del>-  </del> -		Overflow			low (ppg)		utput Gal/Min
HOLE VOL. INCREASE	15					Desand	ler		FF3/		TPP9/	<del> </del>	
						Desitter							•
Product	Starting Inventory	Received	Used Last 24 Hours	Closing Inventory	Unit Cost	Cost		SOLID	S ANALY	SIS	BIT	HYD. PR	ESS. DATA
									fb/bbl	%	Jet Veloc	ity	422
N N	111						Bar		Mio 1	T .	Impact F	orce	606
1 \	D \							ntonite	2	1-0	HHP	*******	254
							LGS	Solids	25	2-3	HSI Bit Press	1 000	ارتوا
				<b> </b>  -			Saft		9	1	<del> </del>	at Frac Pre	. પિંપુ જ ] જિ
· · · · · · · · · · · · · · · · · · ·	<b></b>	<u> </u>		ļ			N =		+	<del>  ``</del>		CSG Seat	17.1 22 110
	ļ	-		-		<del></del>	- K =		1	1	ECD @		<b>,</b> (
	<b> </b>	<del> </del>		1				LY COST				TIVE COS	г
	· · ·	-					4	K _			1	ېلىد د	20.0
		<del> </del>					┤ '	1			40.	~ '( 3	30·6
.D.F.S. ENGINEER	۸			HOME ADD	RESS N				Т	ELEPHON			
	HUDRE	>K~	121M2		14	DELAID	E				- US	5-74	12109

<b>=</b>	. N	_	-	`
<b>****</b>	I.D.F.S.	<b>S</b> Drilling	Mud	Report
	· •			

REPORT No. 23 DATE 3151 MARCH 8C RIG No. 2 SPUD DATE 93 DEPTH 2385 M TO 2482 M

OPERATOR M	1 ASOU	RESOURCE	<b>*</b> <		· · · · · · · · · · · · · · · · · · ·	CONTR	ACTOF	3 1	Win	1	PM.				
REPORT FOR	~					REPOR	T FOR				LINAS		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
WELL NAME AND No.	JUNIS	MOED	L.			FIELD C	DR 6		<u>ا</u> ل	CATIC			STATE	Vı	1
		ERMERE		<del></del>		-		<u> 60 III</u>		IMIE		SASIN		νι	<u>.c</u>
DRILLING AS			CASING			VOLUME		DUM	P SIZE	6	< 81 I	CULATIO		TION	
BIT SIZE TO TYPE	JET SIZE	3 1318 SE	RFACE 313	144	HOLE		150	)		~	ンバ		CIRCULA PRESSUI	RE (PSI)	2075
DRILL PIPE TYPE	LENGTH	95/2 -INT	ERMEDIATE	TOTAL	L CIRCU	LATING VO	L	1.	_	, MODE	AS EF	SUMED <sup>F</sup> ๆฝุ่ง⁄%	LLID (BAIRI)		58_
DRILL PIPE TYPE	LENGTH	PR	T @ 136	R LINER IN ST	ORAGE	WEIC	SHT	BBL/S	STK ;	80 K- 3	,00,-14	STK/MIN	1 11015 /1011	N) R VEL. (F	92
SIZE UT IN	55.4	MUD TYP		FT. (	400		d.T.	<u> </u>	u3/-c	squs		105	D.C.	22.	
DRILL COLLAR SIZE	LENGTH		E	IN ATT	ER.			881/1	MIN 7.	<u>≤`</u>	31	5 GAL/MIN	D.P.	14	r8
- X				<del></del>		ERTIES	1/4		•	MUD	PROPER	TY SPEC	IFICATION	s	
SAMPLE FROM				C FL Z	PIT		PIT	WEIGHT	١,	۷ ۵	ISCOSITY		FILTRATE	,	
TIME SAMPLE TAKEN				mio		<u>05-1</u>	<u> </u>	PLASTIC	$\overline{h}$	VAI	TELD		<del> </del>		
FLOWLINE TEMPERATURE			<u> </u>	<u> </u>		<u> </u>		VISCOSITY		F	OINT				
DEPTH (N)				9,7		721		BY AUTHOR	RITY:		PERATOR'S V			DRILLING OTHER	CONTRACTOR
WEIGHT (ppg) (lb/cu			°C	9.2+	-	8.4								0111211	
PLASTIC VISCOSITY cP @	(.) API @		•C	33							RECOM				
YIELD POINT (Ib/100ft²)				3				Woder	Dra	انسر	Switer	_ ~(	losed	- (	vicileti
GEL STRENGTH (lb/100ft²) 1	0 sec./10 min.			1/1		1		dus	· tu	14. 14	ints 6	is tar	k, sl	(in m)	ç.~
FILTRATE API (cm³/30 min.)				13.8				into		(XIVV	JOK.				
API HTHP FILTRATE (cm3/30	) min.) @		<b>°</b> C					->>	Syc	ther.	Tack	has !	variuble		ne whi
CAKE THICKNESS (32nd in.	. API/HTHP)			1/-		/					t koncr		ik w		
SOLIDS CONTENT (% BY V	(OI.) ( CALCD.	RETORT		6-3				When				nter in	charies	to !	othox
LIQUID CONTENT (% BY V				(P)	<u>ا</u> لت				- 8		<i>````</i> . €	own b	IN THE		m and
SAND CONTENT (% BY Vol				0				Let		<b>₩</b> [	12.30	Water	* tron	יי נט היינט	£ (1/2.1)
METHYLENE BLUE CAPACI 'H Z STRIP	ТҮ □Уюы □ мете		/cm³ mud •C	72	— <u> </u>	7.5			VI 190	911			). P T. W.		W. 24.47
H STRIP ALKALINITY MUD (Pm)	Ų MC1C	n @		9.0		1.2			•••••	•••••		••••••		••••••	•••••
ALKALINITY FILTRATE (P <sub>1</sub> /N	/ <sub>4</sub> , )			77/1	1	0/.	2			OF	ERATIO	NS SU	MMARY		
ALTERNATE ALKALINITY FIL		.,		+	<u> </u>	+	_	Drdl 1	6	1403	h				
CHLORIDE (mg/L)				15000	)	900	0	Uerk	Pr	m +	Sc. Pre	some	DHI.		
TOTAL HARDNESS AS CALC	CIUM (mg/L)			440		689		Trip	Bir	, Mi	<i>e</i> ft		k for	Mary	ex
SULPHITE (mg/L)				ಖ		_		J	Mus	led	Ze})				
K+ (mg/L)				d200		4000		BM !	Xt	New.	דוכו.				
KCL (% BY Vol.)				1-8		<u> J</u>		Dal	HYVO.	<i>/w</i>	• • • • • • • • • • • • • • • • • • • •				•••••
N Elmy/L	.)			100		50									•••••
	NO.			SUMMA	NOV.					SO	IDS CON	TROL FO	UIPMENT		<del></del>
MUD ACCOUNTING (BE	SLS.)			SUMMA	An I				Туре	Hr.	lb3 CON	No. Cones	Hr.		Screen Hr.
FLUID RECEIVED								Centrifuge		0	Desitter	10,44	O Sha	ker No. 1	Byolano C
WATER ADDED								Degasser			Desander			ker No. 2	F - C
										SOL	DS EQUI	PMENT E	FFICIENC	γ	
FLUID DISPOSED									<u> </u>	verflow (	ppg)	Underf	low (ppg)	Ou	tput Gal/Min.
HOLE VOL. INCREASE	<u>30</u>							Desander	ļ					<del> </del>	
								Desilter	ļ						
			T	1					<del> </del>				517.0	WD 85	FOC DATA
Product	Starting Inventory	Received	Used Last 24 Hours	Closing Inventory		Unit Cost		Cost	<u> </u>	SOLID	S ANALYS	%   %	Jet Velocit		ESS. DATA لزلزع
									Barite		Map	m Pa			607
					_ _		ļ		Bento	nite	a	1-0	ННР		278
									Drill S		52	5-8	HSI		4.8
				<del> </del>			-		LGS		62	6.8	Bit Press I	.oss	1200
				-	+-				Salt		٩	-1	CSG Seat	Frac Pres	s 1100
				+	<del>-   -</del>		<del>                                     </del>		N =			<u> </u>	ECD @ C	SG Seat	A15-
				<b></b>	$\top$				K =		1	<u> </u>	ECD @ Bo		
				1		-			DAILY	COST			CUMULAT		
									] 3	D-			12	رنم ج	290.63
							1			·				- (, -	
D.F.S. ENGINEER ANDRE SKUZINS			HOM	E ADDI	RESS	ADI	EL AID!	ê.		T	ELEPHO	<u>80 = </u>	-79	zwz.	

			\	_					ĺ	REPC	PRT No.	24		DATE	157	frau	189
<b>***</b>		<i><b>√I.D.F.S.</b></i>	<b>〉≈</b>	Drillir	ng I	Mud F	Repo	ort	:	RIG N	lo.	ລັ້			DATE		
		~		•			•		f	DEPT	H 71	282 r			260	Ц	
OPERATOR N	LINDAR	RESOURC				CONTRACT	OR	Δ×	$\omega$	Δ	>W ≪,	t NOL P	`		<u> </u>	) <u>) M</u>	<b></b>
REPORT FOR	_					REPORT FO	OR (			7							
WELL NAME AND N	JURIS	OFOR		·		FIELD OR		1914	11	CATIC	LINA		10	TATE			
· ·	" WIN	JOERMER	E # 2	<u> </u>		BLOCK No.	PEP	<u> 111</u>	1	OCATIC WTC	<u> </u>	<u>U1246</u>		IAIL	N	U	
DRILLING	ASSEMBLY		CASING		MUD V	OLUME (BB				,	CIF	RCULATIO	on dat	Ά			
BIT SIZE TYPE	JET SIZE		URFACE ET @ 31	) ! •	HOLE	Pi	رق	PUM	P SIZE	6	× 87	IN.	CIR	CULAT	ON E (PSI)	210	S
DRILL PIPE TYPE	LENGTH	251-411	TERMEDIATE	TOTAL		ATING VOL		PUMI	P MAKE	. MODE	r (2	SSUMED	BOT	TOMS (MIN)	V: /	61	
DRILL PIPE TYPE		O Malk e		T HA	22465	73≤ WEIGHT		<u> </u>	· 8-P-	80 K-	Z00-4 E	96/45 %	o TOTA	AL CIR E (MIN		Oi	2
SIZE UZ H	N SS	-84 s	ET @	FT.	370		.a	BBUS	11/-0	1995		102 RIKIMI	ANN		VEL (E		
DRILL COLLAR SIZE	LENGTH 216	MUD TY	PE <b>j</b> /	VATER				BBL/	7	- <del></del>	۷,	5 GAL/MI	D.C.		77 77	7	···· /
0.1			<u>\</u>		PROPE	RTIES 2 4			1					IONG		<u>s</u>	<del></del>
SAMPLE FROM				EFL /F		FL ! PIT	WEIGH				ISCOSITY	RTY SPEC		RATE	···		
TIME SAMPLE TAKEN				Mus		75-30				CA	TE	R					
FLOWLINE TEMPERATU	IRE		<u> </u>	IN		_33_	PLAST VISCO	IC SITY		P	VIELD POINT						
DEPTH (IN)				PITS	<b>&gt;</b>	2604	BY AU	THOR	RITY:		PERATOR'S				RILLING (	CONTRA	CTOR
WEIGHT (ppg) [] (It				9.2		8.4				<b>!!</b> OI	PERATOR'S	REPRESENT	ATIVE	L.i O	THER		
FU /ISCOSITY (se			%	37	-					F	RECOM	MENDA	TION	S			
YIELD POINT (Ib/100ft²)	w.			7			$\neg \mathcal{N}$		L.a. 1.	رد میثا	برطان	c. Ao.	· +		λ.		
GEL STRENGTH (Ib/100ft	(²) 10 sec./10 min.			1/1		<del></del> /	ر د د د	7	اد	0~1	J	syster Vt.)		ומוטב המל	0!	D1?	*
FILTRATE API (cm³/30 m				14-5				- CHU	٠٠ر					1 M 34 K .			
API HTHP FILTRATE (cm	13/30 min.) @		°C	13-5													
CAKE THICKNESS (32nd	in. <u>A</u> PI/HTHP)			1/-		. /	]										
SOLIDS CONTENT (% E	Y Vol.) Z CALCD	. C RETORT		6.0	``	9	<u>_</u> ]										
LIQUID CONTENT (% B				<u> </u>	-0	/	<u> </u>	•••••									
SAND CONTENT (% BY			24 - 2 - 4	ō			-∤		•••••	•••••	•••••						
METHYLENE BLUE CAP	ACITY Ib/bb		13/cm³ mud	15 9.0		<del></del>	<del></del>	•••••	•••••				•••••••	•••••			•••••
ALKALINITY MUD (Pm)	U MCI	Ln w		9.0	$\dashv$		- <del> </del> t	•••••		•••••	••••••		••••••		•••••	•••••	•••••
ALKALINITY FILTRATE (F	P <sub>t</sub> /M <sub>t</sub> )			n +	1	0/-2	-			OP	ERATIC	NS SU	MMA	RY			
ALTERNATE ALKALINITY	FILTRATE (P1/P2)			1.1/.3		+	Drd	11	0 2	603	<u>^</u>						
CHLORIDE (mg/L)				14500	(	8200	Try	<u>)</u>	λī.								
TOTAL HARDNESS AS C	ALCIUM (mg/L)			4,80		680	_l`	•••••									
SULPHITE (mg/L)				Tr			<u> </u>		•••••				•••••			•••••	
KCL (% BY Vol.)				8200		3500	<u> </u>		•••••	•••••	•••••		•••••				
	1.5			1.6	<del></del>	MANA 1				•••••		••••••	•••••				
_ ide long	(ما(			100		20	<del></del>		••••••	•••••	•••••		•••••	•••••	•••••	•••••	
MUD ACCOUNTING (	(BBLS.)			SUMMAF	RY		<del> </del>			SOL	IDS CON	TROL EC	QUIPME	ENT		<del></del>	
FLUID BUILT									Туре	Hr.		No. Cones	, Hr.			Screen Sizes	Hr.
FLUID RECEIVED							Centrifu	uge		0	Desilter		آ0يدنيه	Shake	r No. 18	80824	Q
WATER ADDED							Degass	er			Desander	0	4×5°	Shake	r No. 20	10/200	, २०५
							<b> </b>			ا				<u> </u>			
FLUID DISPOSED							+					PMENT E					
HOLE VOL. INCREASE	30						Desand	der	0	erflow (p	4 <b>2</b> 9)	Underf	iow (bbc	"	Outp	ut Gal/N	лιп.
							Desilte			<u> </u>			•	$\dashv$			
		<del></del>					200				-		•	-			
Product	Starting	Received	Used Last	Closing		Init	Cost		,	SOLIDS	ANALYS	SIS	BI	r/HYI	D. PRE	SS. DA	ATA
	Inventory		24 Hours	Inventory	<del>  °</del>	Cost	JU31	$\dashv$	-		lb/bbl	%	Jet Ve			43	
	<del></del>	<del> </del>	<del> </del>	<del> </del>	+-				Barite		Muo	w Poss	Impaci	Force		607	
	1111.		<del>                                     </del>	<del> </del>	+			$\dashv$	Bentoni	te	w	1-1	HHP			178	
	101-								Drill So	lids	49	5.4	HSI			<u>lų , 8</u>	
									LGS		59	6.5	Bit Pre			ISON	
				<u> </u>					Salt N =		3	-1	ECD @		Seat	110	10 Ps
		ļ	ļ	<b></b>	<del> </del>		••		K =_ ·		<del> </del>	<b></b>	ECD @			14	.0
				1		3						4	~				

HOME ADDRESS

I.D.F.S. ENGINEER

\$24,520.63

			\	_				REP	ORT No.	25	DATE	3,5	Acou 'S
		<i><b>√I.D.F.S.</b></i>	<i>〉</i> ≋	Drilli	ng Mud	Rep	ort	RIG	No.	2	SPU	D DATE	9/2
		<u></u>				-		DEP	TH _)	6031	, TO	273	H2
OPERATOR M	11/200	D. 50			CONTR	RACTOR	N 1 -	<u> </u>		<u> </u>	^	00 1	3  W
REPORT FOR	INORA	RE SO			REPOR	T EOD	47W			~			
WELL NAME AND NO	JURIS	() Fol			EIEI D	OB .	PHIL		LINA	<u>r</u>	STATE		
	MIM	DERMER	E H S	L	ВЬОСК	OR P60	111	LOCATION	IRY (	MICAC	SIAIE	SA	
DRILLING A			CASING		MUD VOLUME	(BBL)		1	, mg (m	RCULATION			
BIT SIZE TYPE	3 JET SIZE	B 1378	SURFACE SET @ 31	M E	HOLE 700	PITS	PUMP S	SIZE 6	× 82	-IN.	CIRCULAT PRESSUR	TION RE (PSI)	9900
DRILL PIPE TYPE	LENGTH.	Whit 93/2	NTERMEDIATE	TOTAL	. CIRCULATING VO	DL. DL.		MAKE, MODE	L (2	ASSUMED	UP (MIN)		81
DRILL PIPE TYPE	LENGTH	1	BET @ 181	R LINER IN ST	ORAGE WEI	GHT	BBL/ST		(-500-A	EFELJAS O	IN THATE GAME	1)	125
DRILL COLLAR SIZE	LENGTH	MUD T	YPE 3. A	FT.			10.	-445		100	D.C.	۱۲۹۲ (ET/ 	
612	216	.42	TAW			1	B8L/MIN	17.1	3	00 GAL/M	IN D.P.	lin	
SAMPLE FROM				MUD	PROPERTIES	PIT		MUE	PROPE	RTY SPE	CIFICATIONS	3	
TIME SAMPLE TAKEN				1.1.2.3.1	06-0	——— WEIG	HT	·	VISCOSITY	<b>′</b>	FILTRATE		
FLOWLINE TEMPERATUR	E		%		40	PLAST VISCO	TIC		YIELD				
DEPTH (N)			**********		ลาา		JTHORITY		PERATOR'S	WRITTEN	i. ; c	ORILLING CO	ONTRACTOR
WEIGHT (ppg) [ (lb/c) FU /ISCOSITY (sec.					8-6	<u>e                                      </u>		[] c	PERATOR'S	REPRESEN	TATIVE ( . C	THER	
PLASTIC VISCOSITY CP @	·		<u> </u>						RECOM	IMENDA	TIONS		
YIELD POINT (Ib/100ft²)	· · · · · · · · · · · · · · · · · · ·					ىك 🗀	ma 1	Nater	station	na to	s irretri	evalin	"ditio
GEL STRENGTH (Ib/100ft²)	10 sec./10 min.			/	1		r D	ffindt	to n	motour	internal	ס אס	Solids
FILTRATE API (cm³/30 min							Ž~	Water.			γ	·ł	
API HTHP FILTRATE (cm³//			<b></b>	····	<del></del>	⊦∂`	·2#		gring"		rest W	iter —	1 saut
SOLIDS CONTENT (% BY		☐ RETORT						1000 THE	y049	WO		•••••	••••••
LIQUID CONTENT (% BY	Vol.) OIL/WATER			1	7	Din	~o0	ld med	· ·	Pits d	he to	who	rétision
SAND CONTENT (% BY V													
METHYLENE BLUE CAPAC	Odval 🖸 YTIC	<del>~</del>	n³/cm³ mud °C			Hol	ا ۱۰۰۰	รก ใชย	Y Ch	er town	y C	3637	<i>⊳</i>
ALKALINITY MUD (Pm)	L. MEII	EH @	٠		+-3-		C.LO	oyyes	Carbu	( <b>e</b> )			
ALKALINITY FILTRATE (P.	M.)			1	0/.	2			ERATIO	ONS SU	MMARY		
ALTERNATE ALKALINITY F	ILTRATE (P1/P2)			/	+	Tri	B B	ù·			••••••	••••	
CHLORIDE (mg/L)					1300	ISW	<u>, , , , , , , , , , , , , , , , , , , </u>	·····				••••	•
TOTAL HARDNESS AS CAL SULPHITE (mg/L)	.CIUM (mg/L)			······································	- Digo		47B	(foort)	•••••		•••••	•••••	·····
K+ (mg/L)							••••••	•••••	•••••	•••••••	• • • • • • • • • • • • • • • • • • • •	••••••	
KCL (% BY Vol.)									· · · · · · · · · · · · · · · · · · ·			·····	
Total (true)	<u>L)</u>				[60]		•••••	•••••		•••••	••••		
MUD ACCOUNTING (B	BLS.)			SUMMAR	RY	_		SOL	IDS CON	ITROL EC	UIPMENT		
FLUID BUILT					-		Тур		100 00.	No. Cones	Hr.	So	reen Hr.
FLUID RECEIVED						Centrife	uge	O	Desilter	104	() Shake		C autho
WATER ADDED						Degass	ser		Desander	426	O Shake	r No. 2134	2/200 CST
							L	SOLI	DS FOUI	PMENT E	FFICIENCY		
FLUID DISPOSED							$\Box$	Overflow (p			ow (ppg)	Output	Gal/Min.
HOLE VOL. INCREASE	30	· · · · · · · · · · · · · · · · · · ·				Desan	der	,					
			•			Desilte	*	***					
	Starting	S	Used Last	Closing	Unit		_	SOLIDS	S ANALY	210	DIT (UV	D DDEC	- DATA
Product	Inventory	Received	24 Hours	Inventory	Cost	Cost	$\dashv$	3000	Ib/bbl	515   %	Jet Velocity	D. PRESS ابل	
LANSTIC SOUSA			<del>                                     </del>	<del>                                     </del>			Ba	rite			Impact Force	é	06
SOON AUG							-	ntonite			HHP		35
POLYSAL							Dri	II Solids	-	<u> </u>	HSI Bit Press Los	2	2-0
PAL	1.0		1	9	26 ==	34.6			<del> </del>		CSG Seat Fra		100 b
SOOWN NITENTE SOOWN SULPHITE	10	*	<u> </u>	<del>  ~</del> _	39.75	39-7:	2 N	=			ECD @ CSG		12-6+1-
NATURA DE CALCALLA							К:				ECD @ Botto		
		-					- 1	ILY COST	7		CUMULATIVE		\ )=
							ㅢ `	\$39.	12		\$24	,260	1.28
I DEC ENCINEED A	]		l	1,,0,,5					<del> </del>				

I.D.F.S. ENGINEER

SWINS

HOME ADDRESS

ADEL AIDE

TELEPHONE 07-795102

## INDEPENDENT DRILLING FLUID SERVICES PTY. LTD. REPORT No. 26 DA

									REPO	RT No.	26	DATE	300 APRIL	ZC,
<b>***</b>	<b>≋≋</b>	<i>√I.D.F.S.</i>	〉≋	Drillin	ng Mud	d Re	oge	t	RIG N		)		D DATE 9 3	
		~		•	•		•		DEPTH	<u>≪</u> ₁ フ	737m		2882m	
OPERATOR MIN	50x 0c	<>>>0 + C +	<del></del>		CONTI	RACTOR	1 N	T10			. 1 O / M	<b>\</b>	0-100m	—
REPORT FOR		SOURCE:			REPOR	RT FOR	_	W	,					
WELL NAME AND No.		0 FOLING			FIFLD	OR a		<del>11</del>	LOCATION	IMAS		STATE		
4-7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	MIN	derever				OR ( No. <b>P</b>	£ 11	1	LOCATION OTWIN	<u>i 130</u>	45 in		VIL	
DRILLING A			CASING		MUD VOLUME				- 6	77	RCULATIO			
BIT SIZE TYPE IN	3 10-13.	A #33/7	URFACE 313	M	POLE	30°	2	JMP SIZ	5	ιŚ	IN.	CIRCULA PRESSUR BOTTOMS	IE (PSI) 220	J
DRILL PIPE TYPE	LENGTH)	604 95/8" si	ET @ \$15 ITERMEDIATE ET @ \86		CIRCULATING VI	OL			P-SOK	A cue	SSUMED FULLY	TO AMEN	<u>88</u>	
DRILL PIPE TYPE	LENGTH	ŽÝ SI	RODUCTION OF	FT. IN STO	RAGE WEI	GHT	i ge	D).			STRIMIT	1 THATE CIVILI	N VEL (FT/MIN)	<u> </u>
DRILL COLLAR SIZE	LENGTH .	MUD TY		1	J POLY	۸.۵۵		ILMIN	٦ ،'			D.C	- 245 141	,
0 &	1 - ~10	762	- 6040		PROPERTIES	· VEXIC	100		[,]		O'WALMIN	IFICATION:		
SAMPLE FROM				□ EL. □ PI			WEIGHT			SCOSITY		FILTRATE		
FLOWLINE TEMPERATURE			°C		0 Ly.		PLASTIC PLASTIC	/N		ELD	32	- 11	8-10	
DEPTH (N)			٠		290		VISCOSIT		PC	TAIC		<del>-1</del>	7-9.5	
WEIGHT [ (ppg) [ (lb/ci	u.ft) 📑 Sp. G				8.5		BY AUTH			ERATOR'S ERATOR'S	WRITTEN REPRESENTA		DRILLING CONTRACT	OR
FU /ISCOSITY (sec./			∘c		30				R	ЕСОМ	MENDA	TIONS		
PLASTIC VISCOSITY CP ((1) YIELD POINT (Ib/100ft²)	· · · · · · · · · · · · · · · · · · ·		•C		2		Charl	١,٥٠	Disduc	1		Food	- Water to	
GEL STRENGTH (Ib/100ft2)	10 sec./10 min.			7	17	<del>,                                    </del>					733 N	i.		
FILTRATE API (cm3/30 min	)				11.5		Adu	ina.	PAL	1, 01	1 Vu-	1 Y.P.	AND Pho Bloo/Sig	مله
API HTHP FILTRATE (cm³/3 CAKE THICKNESS (32nd in			<b>°C</b>	· · · · · · · · · · · · · · · · · · ·	<del>  -</del>		Chang	M	hoth bbls	Shak	er sun	uns to	13100/216	)0.
SOLIDS CONTENT (% BY	<del>-</del>	RETORT		· /	1,76		t10/10	ا			James	- (ex	2.08.	
LIQUID CONTENT (% BY V	Vol.) OIL/WATER			1		8-4	Costi.		<i>t</i> ∞ ↑	Vis	and !	U F.L	isi alter	•••••
SAND CONTENT (% BY Vo	<del></del>				Tr		t		رجيب	P.A	<u>.</u>		•••••	
METHYLENE BLUE CAPAC	HETE COMMETS		³/cm³ mud °C		2.5 9.0					•••••				· <b>···</b>
ALKALINITY MUD (Pm)		69		·	1 - 1	<b>'</b>		•••••		•••••	••••••		•••••	••••
ALKALINITY FILTRATE (P. //	M, )			1	1/.	3	K			RATIC	DNS SU	MMARY		
ALTERNATE ALKALINITY F	ILTRATE (P, /P2)	<del></del>		!	+		Dryl	A.	eed /	15		0005		·····
CHLORIDE (mg/L) TOTAL HARDNESS AS CAL	.CIUM (mg/L)				200			115Q		Bruey Suranta		1110 m	Agno 12	(g
SULPHITE (mg/L)					60		null	!XIve	<u> </u>					
K* (mg/L)						<u> </u> .	<u>ligh</u>	x/	de Prió		g~478~~(	9 3887	m (Hd p	w
KCL (% BY VOI.)	1				250	$\overline{}$	••••••		•••••		•••••			
	<b></b>							•••••	•	••••••			•••••	
MUD ACCOUNTING (BI	BLS.)			SUMMAR	Υ			Time	1	OS CON	No. Cones		Screen	
FLUID RECEIVED						$\dashv$	Centrifuge	Туре	<del>                                     </del>	Desilter	Cones	Hr. Shak	- Joines	Hr. 2L
WATER ADDED 107	5		Displaced	hale + Y	L Fill the		Degasser			Desander	14	7	er No. 2843 833	Ĩ
								<u> </u>						
FLUID DISPOSED ;	<		Desander.	- Dealton	<del></del>			1	SOLID Overflow (pp		PMENT EF	FICIENCY	Output Gal/Mi	
HOLE VOL. INCREASE	30						Desander		8.2	3/			• • 5	<u>-</u>
							Desilter	$\perp$	8-5		- 11	٠3	1.52	
B. J.	Starting	T	Used Last	Closing	Unit			+	SOLIDS	ANALVO	eie T	DIT (UV	D. PRESS. DATA	
Product	Inventory	Received	24 Hours	Inventory 36	Unit Cost		Cost	+	JOLIDS	(b/bb)	%	Jet Velocity	U. FRESS. DAI	<u>-</u>
PAL NITRATE	54 9		3	6	39.75		1.22 1.32	Barit	е		-	Impact Force		
SOO on SULPHITE	3	(soky)	3	Ŏ	29.75		8-88	-	onite C-5-1-	1	<del>  . '.  </del>	HHP	29.0	_
CAVATIC SOOA	27		1	26	78.88	2	8-88	LGS	Solids	<u> 14</u> 15	1-6	HSI Bit Press Los	5-1 1948 3 1660	
						189	1.32	Salt		ī	1 1	CSG Seat Fr		0.
								N =		. 78	<del></del>	ECD @ CSG		*L
								K =	Y COST	-06	<u> </u>	ECD @ Botto CUMULATIV		
					-			1 4	1891.	22			.6,411.85	•
						<del> </del>		۱ ا	Dio II.	~~	ļ	もく	0,711.8>	
I.D.F.S. ENGINEER	<u> </u>			HOME A	DDRESS	<u> </u>				70	TI FRUON	E 404		

	٠.٨			•
<b>****</b>	(I.D.F.S.)	<b>≋</b> Drilling	Mud	Report

REPORT No. 2) DATE LYTH ARRUS
RIG No. 2 SPUD DATE 9 3
DEPTH 2882 TO 2981

OPERATOR N	WORK R	CONTR	CONTRACTOR ATW APM												
REPORT FOR		REPOR	RT FOR			INAS									
WELL NAME AND No.		Samofo	4 -	FIELD	OR O		LOCATIC	IN RY	<b>6</b>	STATE	VIC				
DRILLING ASSEMBLY  CASING  MINDERWERE  A HELD OR BLOCK NO. PEP III DITURY BASIL STATE VIL  CIRCULATION DATA															
BIT SIZE & TYPE	JET SIZE	2 50				PITS	PUM	MP SIZE 6	-dh-	IN.		ON			
Z-V). 1 (\_\_\_)	<b>.</b>	B By SE	T@ 313		3	340	)	5	_15		CIRCULATION PRESSURE		<del>7300</del>		
DRILL PIPE TYPE  DRILL PIPE TYPE	SJOB.	14 95/2" IN	TERMEDIATE	TOTAL CI	IRCULATING VI 人んン			IP MAKE, MODEL	E E	SSUMED	BOTTOMS UP (MIN) TOTAL CIRC		<u>90</u>		
DRILL PIPE TYPE SIZE LYN HW	LENGTH	PF	RODUCTION OF	R LINER IN STOR		GHT	BBL/STK STK/MIN TIME (MIN)								
SIZE LYN HW	55		T Ç	FT			.0.			cOI	ANNOLAR	VEL. (FT) ZitS			
DRILL COLLAR SIZE	LENGTH	MUD TYP	F.1	11 Px22	(MED		BBL	MIN 7 1	30	<b>)</b> GAL/MII	D.C	141			
	1 00/0	<u></u>		MUD P	ROPERTIES	<u>~1.</u>	1	<del>-</del>			. 1200				
SAMPLE FROM				EL PIT	[ FL :			MUD.			FICATIONS				
TIME SAMPLE TAKEN				15.30	O(4.3	Ю	WEIGHT NI	KI I	ISCOSITY	EAN	FILTRATE	8-11	0		
FLOWLINE TEMPERATURE	<u> </u>		°C	49	51		PLASTIC VISCOSITY	NALL Y	ייכות .	NLE		9-9			
DEPTH (NV)		······································		2927	3006		BY AUTHO					<u> </u>	<u></u>		
WEIGHT (ppg) [] (lb/cu	u.ft) [] Sp. G			8-57	8-6		DI AGINO		PERATOR'S ( PERATOR'S F			HER	ONTRACTOR		
FU VISCOSITY (sec./e	qt.) API @		•€	31	30				RECOMI	MENDA	TIONS				
PLAS VISCOSITY cP @			<b>°</b> C	Š'	ių		_								
YIELD POINT (Ib/100ft²)				2	2		Since	Hole clean	my w	- pres	ent Vist	۲۸.	ú ΟK		
GEL STRENGTH (lb/100ft²)	10 sec./10 min.			1/1	11/	1	adding	o Polysul	to b	wer F	his Los	teni.	end of		
FILTRATE API (cm³/30 min.)				9.0	8-5	7	PXL.	Ata	PAL	uniontr	atam of	Oppor	ex 1.5		
API HTHP FILTRATE (cm3/3	10 min.) @		∞	_			10 bb	i, better	pertorn	ance &	ins orner	ted t	- a		
CAKE THICKNESS (32nd in	n. API/HTHP)			1/-	1/	_	Fresh	water e	diron	rus. Fr	A obstante	alasal i	Nockion W		
SOLIDS CONTENT (% BY	Vol.) Z CALCD.	RETORT		1-6	2.1	بد	2) High	- PH &	Mkalin	ites	due to	3× 5	oda Ash		
LIQUID CONTENT (% BY V	61.) OILWATER			- /984	/0	17-6		ded sicle	Michin	<b>√</b> †∙					
SAND CONTENT (% BY Vo	ol.)	· · · · · · · · · · · · · · · · · · ·		てと	Tr		3) Reduc	tion in Wi	ixates c	we to	additions	and	i-wasin		
METHYLENE BLUE CAPAC	ITY 🗹 Ib/bb	l equiv. 📋 cm	³/cm³ mud	2.5	6		(a)	custations	of So	dim '	Suffire.	See	attackel		
PH 🗹 STRIP	☐ METI	ER @	°C	9-0	10.0	,	1,9	lot test.			, , , ,				
ALKALINITY MUD (Pm)					1.6										
ALKALINITY FILTRATE (P. //	M <sub>r</sub> )			.1 / .3	<del></del>	.9		OPERATIONS SUMMARY							
ALTERNATE ALKALINITY F	ILTRATE (P1/P2)			+	1 4		Dial	Uril to 2003 r							
CHLORIDE (mg/L)				1400	150	6	130H -	9H tor Washout.							
TOTAL HARDNESS AS CAL	CIUM (mg/L)			OBI	20		Low	us out Washed Drill Pipe.							
SULPHITE (mg/L)				(40	130		BUK.	NK.							
K* (mg/L)							Drdl	Alaad.							
KCL (% BY Vol.)							-								
I ate Cons	L)			ISO	Tr			÷							
		· · · · · · · · · · · · · · · · · · ·		-					<del></del>						
MUD ACCOUNTING (BI	BLS.)	- 61	· · · ·	SUMMARY			SOLIDS CONTROL EQUIPMENT						creen I		
FLUID BUILT 70		Pten	<u>odrated</u>	PAC		Type Hr. No. Cones Hr.							Sizes Hr.		
FLUID RECEIVED 10	)			<u> </u>		$\dashv$	Centrifuge								
WATER ADDED							Degasser		Desander	4×6*	Shaker	No. 2	Sioo 18		
									De E0!"	1 1					
FLUID DISPOSED 3	<u> </u>		aca: 1	· N.Stin -				Overflow (p			FFICIENCY low (ppg)	0.4	ut Gal/Min.		
	05		EXTRA	4 Desitter	•		Desander	10.P			ow (ppg)	Оиф			
- Iou voi monifol	772			· · · · · · · · · · · · · · · · · · ·			Desilter	10.0			27		<u>·S</u> ·TS		
	-	····					Dogmer	1070	<del>'+</del>		~~	<b>.</b>	₽		
	Starting		Used Last	Closing	Unit	Т	0	SUITE	ANALYS		BIT/HYD	PPES	S DATA		
Product	Inventory	Received	24 Hours	Inventory	`Cost	<u>                                     </u>	Cost	300.00	Ib/bbl	%	Jet Velocity		HS		
PAC	. 36	ļ,	<u>K</u> ÷	37	91-88		86-32	Barite			Impact Force		105 124		
SOAM SULAHITE	w	(25kg)	<u> 2</u>	38	12.00		<u>30-02</u>	Bentonite	4	· is	HHP		294		
CANTIL SOOA	26		ių .	22	98-88		12.23	Drill Solids	18	20	HSI		5.2		
barroom	83		16	67	lia-88	b	86.08	LGS	22	2.4	Bit Press Loss	 S	1680		
				1		1=		Salt	1	77	CSG Seat Fra		1100 ps;		
						13/1	17.92	N =	-74	,,,	EQUA © CSG		D.M.		
				1				K =	-06	<del>                                     </del>	ECD @ Botton		- <del></del>		
				1		-		DAILY COST	, 00	1	CUMULATIVE				
101:	<del>                                     </del>		100 1 8-		1	<del> </del>		1	7 00		620	رزے			
	st lonat		elitoral Si			D81.		\$211	1.92	_	Mars	(260	1.25		
	sune \$	12.00 PM	25 kg	sucks of	Mr Sulp	ME					<u> </u>	-			
I.D.F.S. ENGINEER	JUDGE	JKU:	SINS	HOME AD	JUHESS	H	ELAND	<u>e</u>	TE	ELEPHON	" US-	795	2 105 J·25		

## INDEPENDENT DRILLING FLUID SERVICES PTY. LTD. REPORT No. 28 DA

		1						REPORT	No. 28	DATE STU ARRY 80			
		(I.D.F.S.	>≋	Drillin	g Mud	d Rep	ort	RIG No.	<u> </u>	SPUD DATE Q 2			
		~	, , ,	`	J	•		DEPTH	<u>~</u>	10 3042m			
OPERATOR \		0.55			CONT	RACTOR	Λ_		29.81m	10 DOGATA			
REPORT FOR		RESOURI				27. 500	ATW	Hem					
	JURUS	030rin.					PHIL	GELINA	5				
WELL NAME AND NO	WIN	DERMERE	<b>B</b> 2		FIELD BLOCK	OR (No. PEP	<i>III</i>	LOCATION OTW/PY	BASIN	STATE VU			
DRILLING A	ASSEMBLY		CASING	1	NUD VOLUME				CIRCULATION				
BIT SIZE " TYPEN	- · · ·	B 133/8's	URFACE ET @ 3\3	H	OLE	PITS	PUMP SIZE						
DRILL PIPE TYPE SIZE LYT  DRILL PIPE TYPE	LENGTH	4 -24978"s	NTERMEDIATE	TOTAL C	IRCULATING V	OL	PUMP MAR	MAKE, MODEL ASSUMED BOTTOMS					
DRILL PIPE TYPE	LENGTH	9 241118 s	ET @ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		1160	GHT	N47: 8-	1: 8-9-60 K-500 EAL 45% TOTAL CIRC. 1/0					
SIZE 42" HW	55	<b>.8</b> 4 s	ET 🖅	FT			-OIL -OUS 100 ANNULAR VEL. (FT/MIN)						
DRILL COLLAR, SIZE	LENGTH	MUD TY	PE FW	1 Poly1	ላዩጽ		BBL/MIN	7.1	300gal/m	DC Sies /			
				1	ROPERTIES	धिप	<u> </u>	MUD PPO		CIFICATIONS			
SAMPLE FROM				FL Z PI	FL /	PIT WEIG	MIN			FILTRATE			
TIME SAMPLE TAKEN				93.00	02.0	0	MIN_		TEAN	7-8			
DEPTH (N)	ic .		<u> </u>	50	3003	visco	OSITY M	W YIELD POINT	HOLE	ph 9-9-5			
WEIGHT (ppg) [] (lb/c	cu.ft) : Sp. G			8-74	3073		UTHORITY:		OR'S WRITTEN OR'S REPRESEN	DRILLING CONTRACTOR			
FU VISCOSITY (sec.	/qt.) API @		°C	35	30								
PLA VISCOSITY cP @	î		«C	Ü	Ü	ı.	- 4		, MMENDA				
YIELD POINT (Ib/100ft²)				<b>a</b> .	ک ک	)Ma	untamin	y Plyw	Loss	at approx 7-5 us.			
GEL STRENGTH (Ib/100ft²) FILTRATE API (cm³/30 min.				1/1		2 31	140 5-	٠		11 D			
API HTHP FILTRATE (cm³/s	<del> </del>	<del></del>	•C	<u> </u>	7.8		سلومرسوان	hithing to increase Nitrodes at expose of highites. Presently adding 3 tirtler sucks.					
CAKE THICKNESS (32nd in	·			1 1 - 1 7		_	Orbanz	Y111Y2	arradiikana	men 2 101 145 20143 .			
SOLIDS CONTENT (% BY	Vol.) Z CALCD.	[] RETORT		3.1 3.5		5		***************************************	•••••				
LIQUID CONTENT (% BY				- 1969 1965				•••••	•••••				
SAND CONTENT (% BY V		Lamin Clar	³/cm³ mud	<u>Tr</u>	Tr		•••••		•••••				
PH STRIP	MET ☐		•CIII• MOG	9.5	9.5 9.5			••••••	••••••				
ALKALINITY MUD (Pm)				1.3									
ALKALINITY FILTRATE (P, /	M <sub>r</sub> )			-3/.8	1.2/.		OPERATIONS SUMMARY						
ALTERNATE ALKALINITY F	ILTRATE (P1/P2)						hall to 300 km						
CHLORIDE (mg/L) TOTAL HARDNESS AS CAL	CILINA (			reost	- 10 m	Don for Suspected Washort (Newton Bir)							
SULPHITE (mg/L)	.CiUM (mg/L)			<u> </u>	90 60 Mar			int nam ar.					
K+ (mg/L)							Oral Alead.						
KCL (% BY Vol.)													
1. K				92	50	50							
MUD ACCOUNTING (BI	DI C V			CUMMADY									
FLUID BUILT	oco.j			SUMMARY			Туре	SOLIDS C	No. Cones	Hr. Screen Hr			
FLUID RECEIVED						Centrif	<del>+</del>	રૂપ Desilt		18 Shaker No. 1 8,000 11			
WATER ADDED	)		topox) i	While Jetting letter. Degasser				Desar		18 Shaker No. 2 (100 1)			
FLUID DISPOSED	215		Desarder 4	Doci lea -					RUIPMENT E				
HOLE VOL. INCREASE	10		e apour 4	<del>Les</del> tHer		Desan		Overflow (ppg)		Output Gal/Min.			
	**				•	Desilte		10.74	1	3 1 14			
Product	Starting Inventory	Received	Used Last 24 Hours	Closing Inventory	Unit Cost	Cost		SOLIDS ANA	LYSIS	BIT/HYD. PRESS. DATA			
POLYSAL	67		12_	SS	42.88	<u> 514.56</u>		lb/b		Jet Velocity 465			
Soon Notable	6		3	3	39-25	_ 119.25	Barite Bentor	nite >		Impact Force 635			
SOIDUM SULPHITE	38	11.01	-	38	12-00	_	Drill S		3.3	HHP <b>299</b>			
1002 ASOS 1002 AUSTU SOOR	- b	(40kg)	=	90	19-40			33		Bit Press Loss (700			
CHUSTIC SOUR	97	•		97	3-8-88	_ <del>28.88</del> _ 662.69	<u> </u>		Tr	CSG Seat Frac Press UNDS			
						- Down	-   14 =			EPRI@ CSG Seat 12-65			
							K =	COST		ECD @ Bottom			
							DAILY			CUMULATIVE COST			
							<i>lt</i>	> 665-60	۱ ا	\$ 29,232.21			
I.D.F.S. ENGINEER	<u> </u>			HOME AD	DRESS •			· · ·	TELEPHON				

									REPOR	Γ No.	29	DATI	E Good America	
		<i>√I.D.F.S.</i>	〉≋	Drillin	g Mud	d R	epor	t T	RIG No.	a	1	SPU	D DATE Q	
		~~			<b>J</b>			<u> </u>	DEPTH		· · ·	TO	713	
OPERATOR 1				· · · · · · · · · · · · · · · · · · ·	CONT	RACTO	R N			_2/	JAJ V	<u>~</u>	2/89/10	
REPORT FOR	MOBY 6				BEPO	RT FOF		W	APM					
	JURIS	-OFOr	WZ			PHIL GELINAS								
WELL NAME AND No	M	NOCRME	be BJ	FIELD OR PER IN					CATION TWNY	BA	かん	STATE	/ric	
DRILLING A	SSEMBLY		CASING	, n	NUD VOLUME	E (BBL)					RCULATIO	ON DATA		
BIT SIZE TYPE	JET SIZE	B BKS	URFACE 313		DLE	315	PUI	MP SIZE			IN.	CIRCULA	TION RE (PSI) 2350	
DRILL PIPE TYPE		TOTAL C	BCULATING V	NG VOL PUMP M			MAKE, MODEL ASSUMED BOTTOMS							
DRILL PIPE TYPE	LENGTH C	ET @ 186 RODUCTION OR		RAGE WE										
SIZE LYX HA	7 22-	ET/	R LINER IN STORAGE WEIGHT BBLISTK					ANNULAR VEL. (FT/MIN)						
DRILL COLLAR SIZE	PENGTH	-43 MUD TY	Ph		NER		881	L/MIN ]-1	•	3	<b>∭</b> GAL/MI	D.C	_245	
				MUD P	ROPERTIES			•	MUD P	ROPER	RTY SPEC	CIFICATION	S	
SAMPLE FROM				FL. / PIT		PIT	WEIGHT		VISC	PSITY	^ • • •	FILTRATE	7 1	
FLOWLINE TEMPERATUR	F		°C	77-30 11-30	05-0		PLASTIC		YIEL		EAN_	+	1-8	
DEPTH (N)				3144	320		VISCOSITY BY AUTHO		POI	VT P	ME	1 BH	4-4-5	
WEIGHT (ppg) [] (lb/c	u.ft) 🛄 Sp. G			8-9	9.0		BI ADIRC	JAHT.	OPER	ATOR'S	WRITTEN REPRESENT	ATIVE	DRILLING CONTRACTOR OTHER	
Ft' VISCOSITY (sec.	· · · · · · · · · · · · · · · · · · ·		₀C	58	30				RE	СОМ	MENDA	TIONS		
YIELD POINT (Ib/100ft²)	<u> </u>		oC.		4		1	ا ۱۰۰	4. J. V.J		1. 1	1	. Maria	
GEL STRENGTH (lb/100ft²)	10 sec./10 min.			· / 1	2 /	_	shave 1		Values	da	www.	1012 SM	le rungh.	
FILTRATE API (cm³/30 min.				8.0	8.2					To M	thinnin	wisher	of coals	
API HTHP FILTRATE (cm³/3	30 min.) @		۰C				dr	tled				.)		
CAKE THICKNESS (32nd in		f =		1 /-					•••••			•••••	•••••	
SOLIDS CONTENT (% BY		1 2 RETORT		42	51						••••••		••••••	
SAND CONTENT (% BY V				- 195-8 - 194-6 Tr Tr				•••••	•••••	••••••		••••••	•••••••••••••••••••••••••••••••••••••••	
METHYLENE BLUE CAPAC		l equiv. 🚨 cm	<sup>3</sup> /cm³ mud	6	10						·····		•••••••••••	
PH STRIP	☐ MET	ER @	•c	9-5	9-0	9-0								
ALKALINITY MUD (Pm)							OPERATIONS SUMMARY							
ALTERNATE ALKALINITY F				·2/·5 -2/-3		ح-	Dyn Alad.							
CHLORIDE (mg/L)	TETTALE (11/12)			1500	1200		V.NL	17/3/00/74	••••••	••••••		•••••••	•••••	
TOTAL HARDNESS AS CAL	.CIUM (mg/L)			40 100								•••••••		
SULPHITE (mg/L)				Tr	0									
K* (mg/L)								•••••						
KCL (% BY VOL.)				<u></u>	In				•••••				·····	
he k (mg/1	J			20	100				•••••	••••••	•••••	•••••	••••••	
MUD ACCOUNTING (B	BLS.)			SUMMARY		SOLIDS CONTROL EQUIPMENT								
FLUID BUILT					···			Туре	Hr.		No. Cones	Hr.	Screen Hr.	
WATER ADDED 3.							Centrifuge		-4.1	sitter	1045	<del></del>	er No. 1 BtD3 24	
WATER ADDED	<u> </u>						Degasser		De	sander	4×6	JS+ Shak	er No. 2 5100 24	
								·	SOLIDS	EQUI	PMENT E	FFICIENCY		
	<u>50</u>	De	souler & D	ss Her					erllow (ppg)			ow (ppg)	Output Gal/Min.	
HOLE VOL. INCREASE	30			*			Desander		<u>8.9</u>	$\dashv$		<u>ه. د</u>	.6	
							Desitter		8-9	-		.0	1.0	
Product	Starting	Received	Used Last	Closing Inventory	Unit	T -	Cost	s	OLIDS A	NALYS	SIS	BIT/HY	'D. PRESS. DATA	
SODIUM NITRATE	Inventory 3		3 +3 X	Inventory	39·75	92	8,50	1		lb/bbl	%	Jet Velocity	465	
SORDIAM AMOLIUM LITER		w	2 2	7	13.21		) 120 2153	Barite				Impact Force	623	
POLKSAL	722		14	ننا	42.88	60	6-32	Bentonite		5	·6	ННР	307	
AUCA ACIOS	<u> </u>		3	3	19,40	2	a6-8	Drill Soli		<u>tyly</u> 50	54	HSI Bit Press Lo	<u>5.4</u> = 1750	
CAUSTIL	31			మ	80-86	⊢ ə	18-89	Salt		<u>یر</u> آ	77	CSG Seat F		
<u> </u>		!				07	8.43	N =		54		ECD @ CSG		
						7 +8.		K = 1		31				
						1		DAILY C				CUMULATIV	E COST	
\$ 3 BM	ien Skulks p	reviousiyu	us	r				\$	978,	43		\$3	0,210.64 745,04	
I.D.F.S. ENGINEER	Annae	SKUJU	\sqrt{S}	HOME AD	DRESS	HOC	LAIDE			TE	ELEPHON	E 198-	745122	

								RI	EPORT No	- 30	DATE	TTA APRIL 89	
<b>***</b>	≋≋ ¹	(I.D.F.S.	$\gg$	Drillin	g Mud	d Re	epor	t RI	G No.	<u> </u>		DATE 9/2	
		$\smile \downarrow$		•	•		•				TO		
OPERATOR 1.		<del></del>			CONT	RACTOR	· .			3182m		3231m	
REPORT FOR	UDRA RY			14/00 APM									
	JURUS	DFOLIN	Š			REPORT FOR PITIL GELINAS KEVIN HURPHY							
WELL NAME AND No.	Wind	ERMERE	: # 2		FIELD	FIELD OR PEP III LOCATION BASIN STATE VIL							
DRILLING A			CASING		MUD VOLUME			·		IRCULATION	ON DATA		
BIT SIZE TYPE	PLE PLE	PITS	_ PU	JMP SIZE 6	× 84	· IN.	CIRCULAT	10N E (PSI) 2350					
DRILL PIPE TYPE		CIRCULATING V	<b>うど</b>	BOTTOMS					Q(_				
SIZE 45 /b.	LENGTH	74 75/8" s	ET @ 196	9 m	<u> </u>	<u> </u>	N	H= 8-P-80	K-501-A	EF66/95%	UP (MIN) TOTAL CIF	160	
DRILL PIPE TYPE	RAGE WE	IGHT	TIME (MIN)  - TIT - GAS  STRAMIN  STRAM					VEL (FT/MIN)					
DRILL COLLAR SIZE	165		DC Dies										
67x*	31F-6	17	FW.	POLCE	ROPERTIES		88	1-C NIMU		SGOGALIM		141	
SAMPLE FROM			*	C EL Z PI		/ PIT					CIFICATIONS	· · · · · · · · · · · · · · · · · · ·	
TIME SAMPLE TAKEN				00-81			WEIGHT	.IN	VISCOSIT	EAN	FILTRATE	1-8	
FLOWLINE TEMPERATUR	E		۰c	$\mathcal{Z}$				Y MIN	YIELD POINT	HOLE	49	9-9-5	
DEPTH (N)				3531			BY AUTHO	ORITY:	X OPERATOR:	WRITTEN		PRILLING CONTRACTOR	
WEIGHT (Z (ppg) (1b/c			200	9.14				[	Y OPERATOR'S	REPRESEN	TATIVE C	THER	
PLA: VISCOSITY (sec //			°C	37	1	-			RECOM	MENDA	TIONS		
YIELD POINT (Ib/100ft²)				2	+-t		lhyrea	so in 1	Noish	whythe	die to	more diversi	
GEL STRENGTH (Ib/100ft²)	10 sec./10 min.			2/8	1	[	den	S dryle	T C. L	(i) is	Eviloneel	mure dispositive	
FILTRATE API (cm³/30 min.	)			7.4	(		in	Rhewla	grich Vul	ves a	Mr.	π.	
API HTHP FILTRATE (cm3/3			•C										
CAKE THICKNESS (32nd in		(4		1,/-		ŀ					•••••		
SOLIDS CONTENT (% BY		I HE IOHI		- /q3.a	+	·	•••••	•••••	•••••	•••••	•••••		
SAND CONTENT (% BY V				- 193.4 Tr	1		••••••	•••••	•••••	•••••	• • • • • • • • • • • • • • • • • • • •		
METHYLENE BLUE CAPAC		equiv. [] cm	³/cm³ mud	12							••••••		
PH STRIP	□ мете	R @	<b>°</b> C	9.0			i					***************************************	
ALKALINITY MUD (Pm)				1.0						ONG GI	13.43.4 A DV		
ALKALINITY FILTRATE (P. /				·2/·4			1		OPERATI				
ALTERNATE ALKALINITY F CHLORIDE (mg/L)	ILIHAIE (P1/P2)		·	<u>+</u>			CXC.		SCOLW.	•••••			
TOTAL HARDNESS AS CAL	.CIUM (ma/L)	····		130			DOH Wiper tin to Show						
SULPHITE (mg/L)				0			DOH Niper trip to Shoe RM, 2 12 m fall.						
K* (mg/L)				-			Circ Hi Vis Por though hole.						
KCL (% BY Vol.)				-			Pomp Bungle Heavy W. P. P.						
riste (my	レ)			120			FAH.	••••••	······	•••••			
MUD ACCOUNTING (B	RI S )			SUMMARY	,				SOLIDS CO	NTDOL C	NUMBER		
FLUID BUILT 75			remixed	Skyl.				Туре Н	1	No. Cones	Hr.	Screen Hr	
FLUID RECEIVED 75	<del>,</del>	······································			***************************************		Centrifuge		Desilter	10×4°	2.	er No. 1 8100 16	
WATER ADDED -							Degasser		Desande	4. ( %	A	er No. 2 5100 16	
				****									
FLUID DISPOSED	<del></del>	Dage	1					<del></del>	OLIDS EQU		<del></del>		
HOLE VOL. INCREASE		pa-CO	der 4 Desil	1484	·		Desander		ow (ppg)		low (ppg)	Output Gal/Min	
Lost Down tole	, <u>১</u> ১১						Desilter		11+		0.9	1.0	
7.500111100		·····					******		` `		, ,		
Product	Starting Inventory	Received	Used Last 24 Hours	Closing Inventory	Unit Cost		Cost	SO	LIDS ANALY	SIS	BIT/HY	D. PRESS. DATA	
AMMONUM NIRATE	1	<del></del>	3	بن	17.51	152	123		lp/ppl	%	Jet Velocity	465	
POLYSAL	4		9	32	42.88		.92	Barite	<del>  =</del>	ļ- <u></u>	Impact Force	660	
CAUSTA SODA	90		1 .	19	98-88	28	-88	Bentonite	7	17	HHP	311	
PAC	32		1	21	91.88		- 83	Drill Solids	<u>49</u> 56	16-3 2-3	HSI Bit Press Los	5.5	
					9.60	1(0,8)				CSG Seat Fra			
CALLIN CHLONDE	66		来了	62		73				ECD @ CSG			
						+		K =	-26		ECD @ Botto	m	
Note: Lost 1	mentil	to Cum	. (65) -	- S N	ا.ت. لتعا	on 1	Mich	DAILY COS	т		CUMULATIVE		
CANT & 1		d in Mid		in Coment		493		1927	32.01		1 \$ 3	0,849.65	
of Used	in He							1 * '			4	(	
I.D.F.S. ENGINEER	HORE	SKUSI	r.	HOME A	DDRESS	ADE	-ADE			TELEPHON		795102	



REPORT No. 31 DATE 8TH ARRIL'89
RIG No. 2 SPUD DATE 9/3
DEPTH 3231 TO

OPERATOR M	A AGON	) E CONO	· v (			CONT	RACTO	R	T to	Nos	Λ						
REPORT FOR				REPO	RT FO	<u> </u>		POI									
WELL NAME AND NO	JURIS		" -			FIELD	OR (		FAIN	OCATION OF THE POST OF THE POS	ON O		s	TATE	3.1.		
DRILLING A		nderwe	CASING		MUC	AOTHWE				Olmi		PSIN RCULATI	ION DAT		Vic		
BIT SIZE, W TYPE	JET SIZE	\							IMP SIZE	-1-	سامرت						
8%	32. 3122	13.18	SURFACE SET @ 31		18 <sup>H</sup>	6	305		IMP SIZE	3	× 95	-IN.	PRE	CULATI SSURE	E (PSI)		
DRILL PIPE TYPE	LENGTH	2 6522	INTERMEDIATE SET @ 186		TOTAL CIRC	ULATING V	ΩL.	PU	IMP MAKE	•	L	ASSUMED	סוו (	TOMS (MIN)			
DRILL PIPE TYPE	LENGTH	·44 113	SET @ 1867		IN CTODACC	114	S IGHT	N	1:8-9.	-80 K	200	<sup>हर्ष</sup> । १९	% TOT/	AL CIRO	5.		
SIZE LYT IN		Rie	SET @	FT.	IN STORAGE		IGHT		USTK DV-99	ς .		STK/			VEL. (FT/N	MIN)	
DRILL COLLAR SIZE	LENGTH	MUD 1	TVDE -		6				HAZ	•							
<u> </u>	1216	42	FV	<del>,</del>	BOLYI			BBI	L/MIN			GALA	MIN D.P				
					MUD PROI	PERTIES				MUC	PROPE	RTY SPE	CIFICAT	TIONS			
SAMPLE FROM				. F.L	IJ PIT	FL !	PIT	WEIGHT			VISCOSITY			RATE			
TIME SAMPLE TAKEN				23	-3o				IN		u	EAN			·8 1	u	
FLOWLINE TEMPERATUR	ΙE		•€	PI	$\tau$			PLASTIC VISCOSIT	Y MA	. 12	VIELD Y	to LE	-	4	نه د	<	
DEPTH (ft)				(1)	YEUK			BY AUTHO			PERATOR'S	WOITTEN	1		1 1	٠	
WEIGHT (ppg) (lb/c	cu.ft) . Sp. G				+0.			]	511111	70	PERATOR'S	REPRESEN	ITATIVE		RILLING CO THER	NTRAC	/OR
FU /ISCOSITY (sec.	/qt.) API (ii		°C		0								.=	_			
PLASIIC VISCOSITY CP @	'n		°C		5			1_		1	RECON	IMEND	AHON	S			
YIELD POINT (Ib/100ft²)					با	······································		Redic	tion	·	1 4.6	·A. "		Fite	Alea.	42	
GEL STRENGTH (lb/100ft²)	10 sec./10 min.			7	7 <			Lana)	ふんない	12	e cot	- 'A	(L.)	د.)	Jrd.	201	امدما
FILTRATE API (cm³/30 min				7	7			COIN	(4.400	3Q	KA CANA	<del>-</del> •\N	. ADMUI	90	~!!!!	calividi	BAX A
API HTHP FILTRATE (cm³/			°C	1	$\leftarrow$	~~~			• • • • • • • • • • • • • • • • • • • •		•••••		••••••	• • • • • • • • • • • • • • • • • • • •	•••••		• • • • • • • • • • • • • • • • • • • •
CAKE THICKNESS (32nd i		**			<i>i</i> –				•••••		•••••		•••••	• • • • • • • • • • • • • • • • • • • •	••••••		•••••
SOLIDS CONTENT (% BY		L' PETOPT		- 1		/_				••••••	•••••	•••••	•••••	•••••		•••••	• • • • • • • • • • • • • • • • • • • •
LIQUID CONTENT (% BY		I . NEIONI			4						••••		• • • • • • • • • • • • • • • • • • • •		•••••		• • • • • • • • • • • • • • • • • • • •
				<u>/</u>	94-6	/			•••••				•••••				
SAND CONTENT (% BY V				j						•••••	•••••						
METHYLENE BLUE CAPAC			m³/cm³ mud	jd	<u> </u>						••••••						
PH ☑ STRIP	☐ MET	ER @	°C	<u>q.</u>	0			i			•••••					•••••	
ALKALINITY MUD (Pm)				بـ													
ALKALINITY FILTRATE (P. /				-1 /	.4	/_		<b>5</b> . 1	_			ONS SI					
ALTERNATE ALKALINITY F	ILTRATE (P, /P2)				-	/		Nake u	p Tes	т[ж	S						
CHLORIDE (mg/L)				150	G			RVA.	•	•••••							
TOTAL HARDNESS AS CAL	_CIUM (mg/L)			14	Co			Attemp	et DS	547							
SULPHITE (mg/L)								in Do	arker	Seul							•••••
K · (mg/L)				_				DO A			*************	•••••	•••••	•••••	••••••		•••••
KCL (% BY Vol.)								Lan du	un te	4.		••••••					•••••
ak	****			12	^	<del>-</del>		1 :/ 1	MDL	Maria	~	Date (	1.44		•••••	•••••	•••••
					<u> </u>		一寸	Mark	•		î. N	A. Q	1.5 p	• • • • • • • • • • • • • • • • • • • •		•••••	•••••
MUD ACCOUNTING (B	BLS.)			SUM	IMARY			- AWAIT	<del>align*</del>	501	DS COV	ITROL E	A	MT			
FLUID BUILT									Туре	Hr.	103 001	No. Cones		141	Scr	reen zes	
FLUID RECEIVED							-	Contribute	19PC	<del></del>	D 14 -	. A		a			Hr.
WATER ADDED		*******						Centrifuge	<del> </del>	n	Desilter	1074	1 - , 1	1	No. 1 Bi		0
***************************************								Degasser			Desande	"undo"	34	Shaker	No. 2 S	w	U
									1				Ll				
FILED DISCOURS									-,			PMENT !	EFFICIE	NCY			
FLUID DISPOSED						·			0	rerflow (p	pg)	Under	flow (ppg)	)	Output	Gal/Mi	n.
HOLE VOL. INCREASE		•						Desander				···					
								Desilter									
	<b>,</b>	,							<u>.L.</u>								
Product	Starting Inventory	Received	Used Last 24 Hours	Closi Invent	ng	Unit Cost		Cost		SOLIDS	ANALY	SIS	BIT	'/HYD	. PRESS	. DAT	<u> </u>
Calcium Chloride	65		18			CUSI	-		-		lb/bbl	96	Jet Velo	ocity			
Conductions	62		1 1/20	(ح)	Ψ				Barite		_	_	Impact	Force			
			<del></del>						Bentonit	te	7	.8	ННР				
			<del></del>	<u></u>					Drill Sol	lids	<u> </u>	4,6	HSI				
				ļ			ļ		LGS		177	54	Bit Pres	e Loss			
·											20	<del> </del>					
									Salt		1	Tr	CSG Se			· · · · · · · · · · · · · · · · · · ·	
									N =		<del> </del>	<del> </del>	ECD @				
									K =	×00~	L	L	ECD @				
									DAILY C	UST			CUMUL				
at Itself	C DST	<i>ک</i> خ							19				1 1	15,	) Siic	٦. ١	~
	•	**************************************							1 4				4	) ر	), 8૫૯	-( * 0	>
D.F.S. ENGINEER	<u>,                                     </u>	7	_	но	ME ADDRI	ESS N			1		7	ELEPHO					
	FLOORE	- DKM	21/75			<u> </u>	XJET	ADE					<u>" 0"</u>	8	7451	10)	

		REPORT No. 32
<b>&gt;&gt;&gt;&gt; (I.D.F.S.) ≈</b> Drilling	ig Mud Report	RIG No.
r Ų		DEPTH 3731

DATE 9THA APRIL 89 SPUD DATE 9/3 SOLSI M OPERATOR CONTRACTOR MINDRA RESOURCES WTFI Acm REPORT FOR REPORT FOR JURUS OŁOLINS KEVIN MRRHY WELL NAME AND No. FIFLD OR STATE Windermere #2 DOCATION BASIN BLOCK No. PER Vιc DRILLING ASSEMBLY CASING MUD VOLUME (BBL) CIRCULATION DATA \*SUBFACE JET SIZE CIRCULATION PRESSURE (PSI) BIN SET @ 9320 10-13.B BOTTOMS UP (MIN) TOTAL CIRC TIME (MIN) 2957. 94 978 SET @ NAT: 8-P40/ K-500 WEIGHT IN STORAGE PRODUCTION OR LINER ·071/·995 SET (i POLYMER 285 GAL/MIN MUD PROPERTIES 10 4 MUD PROPERTY SPECIFICATIONS WEIGHT MIN SAMPLE FROM VISCOSITY CLEAN TIME SAMPLE TAKEN 7-8 00.20 PLASTIC VISCOSITY MIL FLOWLINE TEMPERATURE POINT HOLK SI WEIGHT (ppg) [] (lb/cu.ft) [] Sp. G 32.55 OPERATOR'S WRITTEN
OPERATOR'S REPRESENTATIVE BY AUTHORITY DRILLING CONTRACTOR VISCOSITY (sec./qt.) API @ ٩C RECOMMENDATIONS J VISCOSITY CP. @ °C though at Testing Period. YIELD POINT (Ib/100ft²) GEL STRENGTH (lb/100ft²) 10 sec./10 min. FILTRATE API (cm3/30 min.) 8.3 API HTHP FILTRATE (cm³/30 min.) @ CAKE THICKNESS (32nd in. API/HTHP) SOLIDS CONTENT (% BY Vol.) Z CALCD. E RETORT 54 1946 LIQUID CONTENT (% BY Vol.) OIL/WATER SAND CONTENT (% BY Vol.) Īr METHYLENE BLUE CAPACITY #b/bbl equiv. cm³/cm³ mud 12 STRIP ☐ METER @ 9-0 ALKALINITY MUD (Pm) -8 **OPERATIONS SUMMARY** ALKALINITY FILTRATE (P./M.) ALTERNATE ALKALINITY FILTRATE (P. IP2) Test Tools CHLORIDE (mg/L) wZj TOTAL HARDNESS AS CALCIUM (mg/L) 180 SULPHITE (mg/L) K\* (mg/L) Wax 1 ream 3213m -KCL (% BY Vol.) 250+ my /2) MUD ACCOUNTING (BBLS.) SUMMARY SOLIDS CONTROL EQUIPMENT FLUID BUILT No. Cones Ηr Hr FLUID RECEIVED -Shaker No. 1 Bup Centrifuge 10,44 WATER ADDED -Shaker No. 2 Degasser 4x6 CON SOLIDS EQUIPMENT EFFICIENCY Negligible through Desarder & Desitter until Midnight. Underflow (ppg) Overflow (ppg) Output Gal/Min HOLE VOL. INCREASE Desander <u>17.0</u> 0.7 ALYSIS BIT/HYD. PRESS. DATA Starting Used Last 24 Hours Closing SOLIDS ANALYSIS Product Received Cost (b/bb) Jet Velocity (jų AMMOHUM NITTERS 17-21 35-02 Barite Impact Force BUXSH 314.40 42-88 Bentonite il ННР CAUSTIL SOON 263 18 28.88 28-88 Drill Solids 38 لئ-} <u>ix-b</u> LGS 50 Bit Press Loss 278-30 Saft CSG Seat Frac Press i 1100 pzi N = END CSG Seat کک K = -ننوع ECD @ Bottom CUMULATIVE COST \$278.30 \$ 31127.95

HOME ADDRESS

HURLAIDE

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TELEPHONE

I.D.F.S. ENGINEER

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<b>****</b>	(I.D.F.S.)	age 📚 Drilling	Mud Repo	ort

REPORT No. 33 DATE OTH ARRULE

RIG No. 2 SPUD DATE 9/3

DEPTH 323/M TO 334/1

OPERATOR MIL	D AROL	ESOURCE	<		CONTR	RACTO	AT:	w An	٨			
REPORT FOR	SOUT A	MICEG			REPOR	RT FOF			URPHY			
WELL NAME AND No		FUNERE OFDERA	¥ 7		FIELD BLOCK	OR	GEP I	LOCAT		ASIN	STATE	Vic
DRILLING A	•	CILVENE	CASING	м	ND AOMWE				. CIF	RCULATIO	N DATA	νω
BIT SIZE _ TYPE	JET SIZE	3, 9SU	RFACE -	HŌI	LE	PITS	PU	MP SIZE 6	× 83	·IN.	CIRCULATI	ION 2250
BILL PIPE TYPE	N W.13.	B 1318 SE	τ@ <b>ડા</b> 3		RCULATING VO	310	PU	MP MAKE, MOD	IS 15	ASSUMED	BOTTOMS UP (MIN)	104
SIZE UX \	6 3068	14 Q18 SE	TERMEDIATE		1120			7 - 8 - P-80 1	K200	FF4645%	TOTAL CIR	C. 100
DRILL PIPE TYPE	LENGTH	PR	ODUCTIONOR	FT. IN STORA	AGE WEI	GHT	BBL	IJSTK .		SKIMIN	ANNULAR	VEL. (FT/MIN)
DRILL COLLAR SIZE	LENGTH	MUD TYP	T @ P.				10	, ,		<u>~~</u>	D.C	232
62	216-	93	F		MER	<del></del>	BBL	TMIN F-8	<u></u>	& GAL/MIN	D.P.	134 ~
SAMPLE FROM				MUD PR	ROPERTIES !	<u> </u>		MU	D PROPER	RTY SPEC	IFICATIONS	
TIME SAMPLE TAKEN				18-00	05-0		WEIGHT	MIN	VISCOSITY	EAU	FILTRATE	1-4
FLOWLINE TEMPERATUR	E		°C	54	55		I DI ACTIC		YIELD		112	095
DEPTH (M)				3320	335		VISCOSITY BY AUTHO		POINT OPERATOR'S	HOLE	154	RILLING CONTRACTOR
WEIGHT ☑ (ppg) 🖂 (lb/d	cu.ft) 🗀 Sp. G			9.1+	q.,				OPERATOR'S			THER
FU VISCOSITY (sec.	/qt.) API @		٥C	3,7	34	۲			RECOM	MENDAT	TIONS	
PLA. J VISCOSITY CP (	?		oC.	4	6	•	No.	Δ.				, <i>i</i>
YIELD POINT (Ib/100ft²)					<u> </u>		Hadin	balysel e	tor V	lund Fes	es LANTA	ol. Since PAC for PU
GEL STRENGTH (lb/100ft²)				2/8		10	mu	yang ting	ar alm	addd	J>x!	ppe for Hu
FILTRATE API (cm³/30 min				8.0	<u> </u>	٢						
API HTHP FILTRATE (cm³/			°C		1 -			01-1-63	Dido	30367(	are.jt	iv slight ware
CAKE THICKNESS (32nd i SOLIDS CONTENT (% BY		[ DETORT		1/-	<del>                                     </del>	<del>`</del>	V~	Khedogin	wbzsb	ATA 40	•••••	
LIQUID CONTENT (% BY	<del> </del>	t . NEIOIII		- /93·9	- /9	3 -S				••••••	••••••	•••••
SAND CONTENT (% BY V				TC	Tr				• • • • • • • • • • • • • • • • • • • •	•••••	•••••	
METHYLENE BLUE CAPAC	CITY E Ib/bbi	equiv. $\Box$ cm <sup>3</sup>	/cm³ mud	16	1S							
PH Z STRIP	☐ METI	ER @	•€	9.0	9.0		. <i>i</i>	•••••		•••••		•••••
ALKALINITY MUD (Pm)				· 8	.7			_				
ALKALINITY FILTRATE (P.	·				+		N		PERATIO		MMARY	<del>-</del> .
ALTERNATE ALKALINITY F	FILTRATE (P1/P2)			-2/-6	-1 /-:	_	Chal -	10 2572P	<u></u>	11-1 -	~	
CHLORIDE (mg/L)				1200	1400		Nac	K Fipe	due to	troj	.lorgue.	•••••
TOTAL HARDNESS AS CAL	LCIUM (mg/L)			<b>₹</b> 5	100		Deal	PINONA				
SULPHITE (mg/L)  K* (mg/L)					-							•••••
KCL (% BY Vol.)	·						• • • • • • • • • • • • • • • • • • • •	•••••	••••••			
15	(L)			300	300	5						
<b>T</b>												
MUD ACCOUNTING (B	BLS.)	1161	. 44 1	SUMMARY				1 1	DLIDS CON			I Screen I
FLUID BUILT 25		Winter	- 4 Mad	4 Palasisis			Contritues	Type Hr.	Desitter	No. Cones	Hr. Shake	Screen Hr.
WATER ADDED (%)			+ Slak	n/s			Centrifuge Degasser	- and	Desitter Desander	426	344 Shake	er No. 1 (Siss 24)
3	<b>y</b>	f	7 -304	M > .		$\dashv$	Degasser	<del>                                     </del>	Desarroci	400	SCE Onanc	Silvo
			<del></del>					SOI	LIDS EQUI	PMENT EF	FICIENCY	1.00.0
FLUID DISPOSED	15	<i>D</i>	eschder 4	Desilter				Overflow	(ppg)		ow (ppg)	Output Gal/Min.
HOLE VOL. INCREASE	<u>20</u>						Desander	9.3			٠٦	1.5
***************************************			<del></del>				Desilter	<u>  9.</u>	14		8	i
	Starting		Used Last	Closina	Unit	$\frac{1}{1}$		60/1	OS ANALY	- T	DIT (1)	D DDECK DATA
Product	Starting Inventory	Section 1	24 Hours	Closing	Cost	<u> </u>	Cost	SOLI	DS ANALY:	SIS	Jet Velocity	D. PRESS. DATA
Parsh	ລາ	Adelaide	$\overline{D}$	12	A9-28		14-2P	Barite	10/001	-	Impact Force	<u>441</u> 599
CAVITY SOOA	ig	W-	3	اکا	28-88		76-64	Bentonite	a	1-1	HHP	264
SONA ASH	3	120		7	P-40		19.40	Drill Solids	62	5-5	HSI	4.7
KWIK THIK	139	139		0		1	03-66	LGS	60	6-6	Bit Press Los	14
MICA	108 ius	108		0	·····	~		Salt	1	TY	CSG Seat Fra	21.40
Kwik sex	90	30		a		t		N =	-58		e <b>pp</b> y@csg	
SACC	20	20		8				K =	1.31		ECD @ Botto	
								DAILY COST			CUMULATIVE	5
								1 \$ 60	છે. છે		<b>\$</b> \$ 3	51,748.55
IDEO ENOMISES A		L	-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DDECC K	<u></u>		1 '			- N	
I.D.F.S. ENGINEER	More	SKUJII	<u>v</u>	HOME AD	UHESS	4DET	-ADE			ELEPHON	E 08-	742 103

		<b>/</b> □\	\	_					REPO	ORT No	34	1	DATE	ITH A	AUL'8
	$\approx$	(I.D.F.S.	$\gg$	Drilli	ng Mu	d Rep	or	t	RIG I	No.	2		SPUD		9/3
		$\smile \downarrow$		•	Ū	•		Ì	DEPT	н Э	200		го	Dis No	7
OPERATOR 1					CONT	RACTOR	Α	1	<u> </u>		<u>341M</u>	<u> </u>		3431	6m
MIN	ORA K	ESOURLE	:5				14	TW	146	M					
REPORT FOR	SURIS F	DEDLING	5		REPO	RT FOR	K	EVIL	1 N	res	WY.				
WELL NAME AND No.		ERMERY	14 -		FIELD	OR PER	1/1	1 1	OCATIO	י מכ	なと	S	TATE	VIL	
DRILLING A		Day los	CASING		MUD VOLUME		T	<u> </u>	VIVI		IRCULATION	ON DAT	Δ	<u> </u>	
BIT SIZE V TYPE	JET SIZE	234160		_		PITS	PUN	MP SIZE	-6-	× 83	- IN.		CULATIO SSURE	N 1	225
DRILL PIPE TYPE		B B R SE	ET @ 31	13 KM	HOLE SSO L CIRCULATING V	350	DIII	40 4441/	S E, MODE	ِ لح	ACCUMED	— BOT	TOMS		275
SIZE	LENGTH	24 477 SE	T @ 21	of m	1831					k-≤∞	ASSUMED EFFOLIS	6 TOTA	(MIN) AL CIRC.		<del>U</del>
DRILL PIPE A TYPE	LENGTH	PF	RODUCTION OF	R LINER   IN ST		IGHT	BBL	/STK	•		STKIM	IN TIME	E (MIN) IULAR V	EL. (FT/M	KU (AII)
DRILL COLLAR SIZE	LENGTH	MUD TY	PE T	FT.	· · · · · ·	<del></del>	i	71 100	• .			D.C.		939	
<u> </u>	216-6	197	th	) <b>k</b> 0	LYMER		BBL	MIN6-	8	9	85 GALIM	IN D.P.		134	
SAMPLE FROM				iii FL 🔏	PIT   FL .	DIG PIT			MUE	PROPE	RTY SPE				
TIME SAMPLE TAKEN				23.43		WEIG	$q^{TH}$	hΝ	'	VISCOSIT	LEAN	FILTI	RATE	1-8	
FLOWLINE TEMPERATURE	E .		°C	.56	S7	I PLAS	TIC OSITY		. :	YIELD			il c	1-9.5	,
DEPTH (A)				3436			UTHO	1		POINT	HOLE- S WRITTEN	1	T DBI	Tring con	
WEIGHT (ppg) (lb/c	u.ft) 🔯 Sp. G			9.24					K o	PERATOR'	REPRESEN	TATIVE	l Î oτ⊦		
Ft' VISCOSITY (sec./			•C	33	34				F	RECOM	/MEND/	NOITA	s		
PL. VISCOSITY CP (II			°C	5	6	— \\.d.	i -	6	LG	۱	O.	v	C	-\ i	
YIELD POINT (Ib/100ft²)  GEL STRENGTH (Ib/100ft²)	10 sec/10 min			2/8		10	والما	1 4	r.ongsa	<i></i>	PAL	70	rT.l	بثيا أر	<b>φ</b> .
FILTRATE API (cm³/30 min.				4.3	8.	<del></del>	<b></b>	lxñ	•••••	•••••	••••••	•••••	• • • • • • • • • • • • • • • • • • • •	•••••	**********
API HTHP FILTRATE (cm3/3			°C	- 2.3	-										***************************************
CAKE THICKNESS (32nd in	a. API/HTHP)			1/-	. 1/	-									·····-
SOLIDS CONTENT (% BY	Vol.) Z CALCD.	RETORT		69	60		· · · · · · · ·		•••••						
LIQUID CONTENT (% BY )				- /93		3.1			•••••			•••••			••••••
SAND CONTENT (% BY VO	<del></del>		3/cm3 mud	<u></u>	Tr		•••••	•••••	••••••	•••••••			•••••		•••••
PH Z STRIP	☐ METE	<del></del>	•/cm• mud	14 9-S	14		••••••		•••••			•••••			•••••
ALKALINITY MUD (Pm)				·8	- 5	<b></b>	•••••	••••••	••••••		••••••	•••••	••••••	•••••	••••••
ALKALINITY FILTRATE (P. //	M, )			-2/-1		-4			OP	ERATI	ONS SU	AMML	RY		
ALTERNATE ALKALINITY F	ILTRATE (P1/P2)			+	+		λ <b>/</b>								
CHLORIDE (mg/L)				1220	iso		••••								
TOTAL HARDNESS AS CAL	CIUM (mg/L)			80	- %৩		•••••	•••••		•••••	•••••			•••••	
SULPHITE (mg/L)  K* (mg/L)							•••••			••••••		•••••	•••••	• • • • • • • • • • • • • • • • • • • •	
KCL (% BY Vol.)	· · · · · · · · · · · · · · · · · · ·									••••••	••••••	••••••	•••••	•••••	•••••
_ ste long!	r)			300	- 300	,									
MUD ACCOUNTING (BI		We i		SUMMA				<b>.</b>		LIDS CO	NTROL E		NT	LScre	een I
	<u> </u>	Wester	c + Mud .	t Pace	Palyxu	Centri	fuco	Туре	24	Desilter	No. Cones	Hr.	Shaker I	Scre Siz	in St
WATER ADDED Q		Woter		e6.		Degas			24	Desande		314	Shaker I		بنه مد
		- Albaca		***			-			0000.0	720		G.I.G.I.C.		
									SOLI	DS EQU	IPMENT E	FFICIE	NCY		
FLUID DISPOSED	<u>60</u>	De	sander 4	Desilter				°	verflow (			flow (ppg	)	Output	Gal/Min.
HOLE VOL. INCREASE	<u>کن</u>	•				Desar		ļ	9.5			4.0	_		<u>.3</u>
						Desilte	er	<b> </b>	9.2		(-)	C-0		•	2
	Starting		Used Last	Closing	Unit	<del></del>		-	SOLIDS	S ANALY	veie	00	- /UVD	PRESS	DATA
Product	Inventory	Received ·	24 Hours	Inventory	Cost	Cost		<del> </del>	SOLIDA	Ib/bbi	%	Jet Vel		4	
YOLKSAL	is		10	13	42-88	738-8		Barite		-	<del>  _</del>	Impact			07
CAUSTIL SOON	ा <u>र</u>		43	12	918-88	367-5		Benton	ite	8	.9	ННР			US
THE	-00		7		11.00		<u>~</u>	Drill Sc	olids	SS	6-1	HSI			4.7
			***************************************	<b>†</b>	1	885	4 <del>0</del>	LGS		63	69	+	ss Loss		<u>ibas</u>
								Salt	· · ·	1	Tr	+	eat Frac		100th
								N = K =		· 55	<del> </del>	<del> </del>	CSG S Bottom		mak
				1	1	1		!`` <del>-</del>		1 - 42		LOD @	, POROU		
		· · · · · · · · · · · · · · · · · · ·		<b> </b>		<del> </del>		DAILY	COST			CUMUI	LATIVE C	COST	
	·							DAILY	<b>7</b>	٥. د۲	7 L	CUMU	LATIVE C	COST	1 ~
								DAILY	<b>7</b>	32.0	16	CUMPU	LATIVE C	C,63	12.1.
I.D.F.S. ENGINEER	Ana	C.,	ノゴルシ	HOME	ADDRESS	ADELA		9	<b>7</b>		TELEPHON	\$	LATIVE C	L,63	12·18

Drilling Mud Report

REPORT No. 35 DATE 12 TO 3 CHIL

		.5./ ≈				1	DEPTH 3	438m	TO	25	4
		▼		T	CONTRACTOR	ATCO	POIN				
PERATOR MINDRA	RESOUR	LES		1	REPORT FOR		MERK	٠			
EPORT FOR TIME	103001			1_		KENIN	TION!	ASIN	ST	TATE Viu	,
JUICO		17	2		FIELD OR BLOCK No. PE	P 111 9	JUMIN C	CIRCULATI	ON DAT		
	MDERM	CASING			OLUME (BBL)		6 × 83		CIR	CULATION ESSURE (PSI)	2275
DRILLING ASSEMBL						PUMP SIZE	2 15		ВОТ	TOMS	108
SIZE Z HYPE ST N K	SIZE 6 13	NI CET A	sis m	HOLE SUS TOTAL CIRCUL	ATING VOL	PUMP MAKE	υ- 80 K-25	ASSUMED EFF QUAS	0 1707	(MIN) FAL CIRC.	180
02 11 31 150	IGTH n	INTERMEDIA SET @	SE N	N	1442	BBL/STK	12.84 (15.34	STAN	MIN TIN	NULAR VEL.	FT/MIN)
1EN	JGTH	PRODUCTION	4 OH FINE	IN STORAGE	WEIGHT	BBUSTK .971	445		DC	7.	<u>}</u>
SIZE 1574 FAN	27-84	SET @	F	<u>T.  </u>	. Q.	BBL/MIN L	- D	JKS GAL		<u> </u>	<u> </u>
DRILL COLLAR SIZE	276-92		FW_	POLYME	ERTIES 13 4	¥	MUD PRO	PERTY SP	ECIFIC/	ATIONS	
<u> </u>				FL. PIT	ERTIES (S) L	WEIGHT MIN		ELEM	FIL	TRATE 7-	8
SAMPLE FROM				7-30	04.45	MIM	MELD			PH 9-	-9.5
TIME SAMPLE TAKEN			∞c l	59	58	PLASTIC VISCOSITY W	C 24	WOLLEN S. B.C.	N	DRILLIN	IG CONTRACTOR
FLOWLINE TEMPERATURE				3494	3530	BY AUTHORITY:	C 24	OR'S WRITTE OR'S REPRES	ENTATIVE		
DEPTH MA	en C			9.3	9.34			OMMEN			
WEIGHT (ppg) (b/cu.ft)	эр. U		∘C	33	35	1	HEU	- 141141 L. I	(	ζ.,	- moder
FL VISCOSITY (sec./qt.) API			oC:	_b	<del>- 3</del>	More Pol	ysal fix	<b></b>	Caroki	לי אויירי	HONNA HONTA
PLr. J VISCOSITY CP @  YIELD POINT (Ib/100ft²)				3 / 11	4/14	1		-1	, G	برتيا لمده	mahin
GEL STRENGTH (Ib/100ft²) 10 sec	:/10 min.			3/11	8-8	Diffichtion Specs	is in the	raz-I hirtoria	\$	-iron	Button
FILTRATE API (cm3/30 min.)			⊸c	3.0	-	specs	due I	7 p.c 7 xxxxxxxx	.pv11		
API HTHP FILTRATE (cm3/30 min	.) @			1/-	11-	his le	(empara)	×3.5c			
THICKNESS (320d in, API	(HTHP)	ETORT		7.2	7.6	-}					
SOLIDS CONTENT (% BY Vol.)	CALCD. L.: H	EION		- A9.8	- 400.4	4					
LIQUID CONTENT (% BY Vol.) C	VITANVICU			TY	1X	+					
SAND CONTENT (% BY Vol.) METHYLENE BLUE CAPACITY	I lb/bbl equi	iv. 🗌 cm³/cm³ n		15	9.0	1					
	☐ METER @		•c	9.0	1.7	]	ODE	RATION	s suN	MARY	
ALKALINITY MUD (Pm)				-1/-5	.21.6	$\exists \kappa$ .	OPE				
ALKALINITY FILTRATE (P./M.)			+	<del>-\ /-\ +</del>	+	] DM					
ALTERNATE ALKALINITY FILTR	ATE (P1/P2)			1400	1400	<b></b>					
CHI ORIDE (mg/L)				80	100	_					
TOTAL HARDNESS AS CALCIU	IM (mg/L)					-					
SULPHITE (mg/L)					-	-					
K+ (mg/L)				- 200	300						
KCL (% BY VOL.)	)			300	700			ine cont	BOL FO	UIPMENT	
The may !				SUMMAR	Υ			ואט כטוו	No. Cones	Hr.	Screen Sizes
MUD ACCOUNTING (BBL	.S.)						Type Hr.	Desilter	10,4	24 Shake	er No. 1 Rup
FLUID BUILT						Centrifuge	ant	Desander	46	کنو Shak	er No. 2 Bux
		<u>Δ</u> *	Stake	٨		Degasser			1		
FLUID RECEIVED	2~						SOL	DS EQUIF	MENT	EFFICIENCY	Output Gal/M
	90						Overflow (			rflow (ppg)	1.52
FLUID RECEIVED	90			N	<b>i</b>	i				3.6	1-0
FLUID RECEIVED WATER ADDED			Desind	er & Desil	ter	Desander	9:3	57			1~0
FLUID RECEIVED WATER ADDED FLUID DISPOSED	\$		Desiral	er & Desil	ter	Desander Desilter	9:3	3+		11.8	
FLUID RECEIVED WATER ADDED FLUID DISPOSED	\$		Desind	er & Desil	ter		9.3	3+		11.8	IYD. PRESS. DA
FLUID RECEIVED WATER ADDED FLUID DISPOSED	\$ \$		Used Las	t Closing			9.3	S ANALY		BIT/H  Jet Velocity	YD. PRESS. DA
FLUID RECEIVED WATER ADDED FLUID DISPOSED	\$	Received .	Used Las 24 Hours	t Closing Inventory	Unit Cost	Desilter	9.3	3 to S ANALY	sis	BIT/H  Jet Velocity Impact For	IYD. PRESS. DA
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product	Starting Inventory	Received .	Used Las 24 Hours	t Closing towentory		Cost  214-40 115-52	SOLID	S ANALY	SIS %	BIT/H  Jet Velocity Impact For	IYD. PRESS. DA
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product	Starting Inventory S	Received .	Used Las 24 Hours	Closing Inventory	Unit Cost	Cost 214-40	SOLID Barite	DS ANALY	SIS	BIT/H  Jet Velocity Impact For HHP  HSI	IYD. PRESS. DA
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product POLICS AL  (AT SILL SION	Starting Inventory	Received .	Used Las 24 Hours	t Closing towentory	Unit Cost U_158	Cost 214-40 115-52 643-16	SOLID  Barite  Bentonite  Drill Solids	DS ANALY	SIS	BIT/H  Jet Velocity Impact For HHP HSI Bit Press	IYD. PRESS. DA
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product	Starting Inventory S	Received .	Used Las 24 Hours	Closing Inventory	Unit Cost U_158	Cost  214-40 115-52	SOLID  Barite  Bentonite  Drill Solids	DS ANALY  ID/DDI  -  Q  -  -  -  -  -  -  -  -  -  -  -	SIS	BIT/H  Jet Velocity Impact For HHP HSI Bit Press CSG Sea	IYD. PRESS. DA  Y LYCY  Tree  LYCY
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product POLICIAL CATARL SON	Starting Inventory S	Received .	Used Las 24 Hours	Closing Inventory	Unit Cost U_158	Cost 214-40 115-52 643-16	SOLIC Barite Bentonite Drill Solids LGS	S ANALY  DS ANALY  TO/DOI  TO/	SIS %	BIT/H  Jet Velocity Impact For HHP HSI Bit Press CSG Sea	LOSS Seat L
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product POLICS AL  (AT SILL SION	Starting Inventory S	Received .	Used Las 24 Hours	Closing Inventory	Unit Cost U_158	Cost 214-40 115-52 643-16	SOLID  Barite  Bentonite  Drill Solids  LGS  Salt  N =  K =	S ANALY:  OS ANALY:  OS OF THE PROPERTY OF THE	SIS %	BIT/H  Jet Velocity Impact For HHP  HSI Bit Press C CSG Sea ENAG C ECD @ E	LOSS Seat L
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product POLICS AL  (AT SILL SION	Starting Inventory S	Received	Used Las 24 Hours	Closing Inventory	Unit Cost U_158	Cost 214-40 115-52 643-16	SOLID  Barite  Bentonite  Dritt Solids  LGS  Salt  N =  K =  DAILY COST	S ANALY:  India	SIS	BIT/H  Jet Velocity Impact For HHP HSI Bit Press CSG Sea EPING ECD @ E CUMULA	LOSS 16 SOST STATE OF THE STATE
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product POLICIAL CATISTIL SON	Starting Inventory S	Received .	Used Las 24 Hours	Closing Inventory	Unit Cost U_158	Cost 214-40 115-52 643-16	SOLID  Barite  Bentonite  Dritt Solids  LGS  Salt  N =  K =  DAILY COST	S ANALY:  India	SIS	BIT/H  Jet Velocity Impact For HHP HSI Bit Press CSG Sea EPING ECD @ E CUMULA	LOSS 16 SOST STATE OF THE STATE
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product POLICIAL CATISTIL SON	Starting Inventory S	Received .	Used Las 24 Hours	Closing Inventory	Unit Cost U_158	Cost 214-40 115-52 643-16	SOLID  Barite  Bentonite  Dritt Solids  LGS  Salt  N =  K =  DAILY COST	S ANALY:  OS ANALY:  OS OF THE PROPERTY OF THE	SIS %	BIT/H  Jet Velocity Impact For HHP HSI Bit Press CSG Sea EPING ECD @ E CUMULA	LOSS 16 SOST STATE OF THE STATE
FLUID RECEIVED WATER ADDED FLUID DISPOSED HOLE VOL. INCREASE Product Product AUSAL AUSTL SOA	Starting Inventory S	Received .	Used Las 24 Hours	Closing Inventory  S  IO	Unit Cost U_158	Cost 214-40 115-52 643-16	SOLIC  Barite  Bentonite  Dritt Solids  LGS  Salt  N =  K =  DAILY COST	S ANALY:  India	SIS	BIT/H  Jet Velocity Impact For HHP HSI Bit Press CSG Sea EPING ECD @ E CUMULA	LOSS LECTOR LECT

~~~	~~		\ ~~							REP	ORT No	36		DATE	137	n Ag	ell'S
***		\ <i>I.D.F.S.</i>	〉≋	Dril	ling	j Mud	d Re	epor	t	RIG	No.	Q.		SPUE	D DAT	ΕQ	12
		V	•					_		DEP	TH 3	3514		TO		95,	•
OPERATOR N.		7.0.0				CONTI	RACTOR	٨-		N -		2014	w		هنچر	101	Δ
DEDODT EOD		RESOURU				BEPOI	RT FOR		wī	Ag							
	JURIS	NTOEO						_KE	كانك		WRPI	44					
WELL NAME AND No.	Wix	DERMER	E # 5	۲		FIELD BLOCK	OR C	EC 11		LOCATI	ON NY	BASIN	5	STATE	7	iL.	
DRILLING A			CASING			ID VOLUME	(BBL)			,	~	IRCULATI	ON DA	TA			
BIT SIZE TYPE	A 10.13		URFACE ET @ 31	3 pm	dη.	E C	PITS	PUI	MP SIZE	6	× 82 15	·IN.	CIF	CULAT ESSURI	ION E (PSI)	ವಿತೀ	 50
DRILL PIPE _ TYPE .	LENGTH	31. GS(7"1N	TERMEDIATE	π	OTAL CIR	ICULATING V	OL.	PU		E. MODE	EL	ASSUMED	— BO	TTOMS (MIN)		lic	
DRILL PIPE TYPE	LENGTH	-04 7 16 SI	RODUCTION OF	T INER IN	STORAG	GE WE	S IGHT	BBL	<u>₹7- <b>%</b></u> ⊔STK	P-30/	K-500	EFF 96 OF	% TO	AL CIR IE (MIN	IC.	17	$\overline{o}$
DRILL COLLAR SIZE		MUD TY	ET @	FT.		<u> </u>		,		2995		95	AN D.C	NULAR	VEL. (1	T/MIN)	1
DAILE COLLAR SIZE	LENGTH	92	F	.W.	B	LTMER		вви	DMIN &	-Z'	2	<b>S</b> GAL/N			13		
		· · · · · · · · · · · · · · · · · · ·				OPERTIES				MUI	PROPE	RTY SPE	CIFICA	TIONS			
TIME SAMPLE TAKEN				19 t		<del></del>	PIT	WEIGHT	T.A.1.		VISCOSIT			RATE	~	(7	
FLOWLINE TEMPERATURE			•C	197		60	<b>X</b>	PLASTIC VISCOSIT	MIL	- 1	YIELD	CLEAU				-8	
DEPTH (IM)				356		3200		VISCOSITY BY AUTHO			POINT	HOUSE	1	40		9-5	
WEIGHT (ppg) [] (lb/c	u.ft) 🗀 Sp. G			q.		93		or Autho	<i></i>		OPERATOR'S	S WRITTEN S REPRESEN	TATIVE		RILLING THER	CONTR	ACTOR
Ft' VISCOSITY (sec./	<del></del>		<b>∘</b> C	3~	1	37				ļ	RECON	MEND	ATION	IS			
PL VISCOSITY cP @			•€	9		9		l 1 1	1								
YIELD POINT (Ib/100ft²) GEL STRENGTH (Ib/100ft²)	10 sec /10 min			3/	11	5/		Mido	n th				·30	•			······
FILTRATE API (cm³/30 min.)				11-	<u>162</u>	7.3	16		lone.		in g	ין נגם	PAL				11.2).
API HTHP FILTRATE (cm3/3			°C	112	٩		<b>-</b>	Then	ionin	~ G	greel	adulat .	M&/ 812:2"	.13.94A. • 3%().	Jar	ገርት.	₩.
CAKE THICKNESS (32nd in	n. API/HTHP)			1 /		1/	-			·········	y						
SOLIDS CONTENT (% BY					b	7-6			•••••								
LIQUID CONTENT (% BY \				<u> </u>	424		24										
SAND CONTENT (% BY VO		d equiv [] cm	³/cm³ mud	12,	٧.	174			•••••		······				••••••	••••••	
PH Z STRIP	☐ MET		•c• mad	17		<u>17%</u>	<del>  </del>	 1		•••••	•••••••		•••••		••••••	•••••	
ALKALINITY MUD (Pm)				-6		. 8	<u> </u>	************	•••••••	•••••	••••••	••••••	••••••	•••••	•••••	•••••	
ALKALINITY FILTRATE (P./I	M <sub>t</sub> )				· S	نم	8.					ons śr	JMMA	RY		-	
ALTERNATE ALKALINITY F	ILTRATE (P, /P2)	·			•	+		クベル	<u>.to</u>	35	12 W	Carl					
CHLORIDE (mg/L) TOTAL HARDNESS AS CAL	On 104 / # >			140		1400		•••••		•••••							
SULPHITE (mg/L)	CIUM (mg/L)			100	_	100	<u> </u>	••••••		•••••			•••••••			• • • • • • • • • • • • • • • • • • • •	
K* (mg/L)								••••••	••••••			••••••	•••••		•••••		•••••
KCL (% BY Vol.)				_				·····		·····							
rite	*			30	O	305											
MUD ACCOUNTING (BE	21 (2 )			SUMA	AADV						100.001	UTDO: 5					
FLUID BUILT 20	JL3.j	Part of	Henix	SUMM	MART	-			Туре	Hr.	LIDS COL	NTROL E	Hr.	ENT		Screen Sizes	Hr.
FLUID RECEIVED 20		W W	4				(	Centrifuge	,	24	Desilter	Cones	<del> </del>	Shake	r No. 1		24
WATER ADDED							C	Degasser			Desande	- 1		Shake	r No. 2		र्ग
LUID DISPOSED	l: A	N	1	-14-					1 -			IPMENT E					
OLE VOL. INCREASE	15 15	Uesa	war + De	sulter			<del>-   ,</del>	Desander	°	verflow (			flow (ppg	2)		put Gal	/Min.
	سي		······································				<del></del>	Desitter	1-	9.3			<u> </u>	$\dashv$		<u>. प</u> ,२ऽ	
										<del>```</del>		•		$\dashv$		. <del></del> -	
Product	Starting Inventory	Received	Used Last 24 Hours	Closing	9	Unit Cost	С	ost		SOLID	S ANALY	SIS	BI	T/HYC	). PRE		
PAC	lo	W	10	40		91.88		1-80			lb/bbl	%	Jet Ve	locity		446	
CANSTIL SOOA	8	37060		33		28-88	20		Barite	•		+=	+	Force		683	
POLYSAL	0	40	O	30		42-88	دين	8-80	Benton Drill Sc		111	1.5	HHP		····	38	7
		<b> </b>		<del>                                     </del>			150	1 =-	LGS	лus	70	10-5	HSI Bit Pre	es Loss		<u>. بنا</u> ماا	<del>"</del> —
				<del>                                     </del>			12ių	4.16	Salt	<del></del>	1	Tr	+	eat Fra		11	<i>(k) ~</i>
				<del>                                     </del>	_	-			N =		-64	1.		CSG		1.7	00 F2
					-				K =		-37	_	ECD @	Bottor	m		
									DAILY				1	LATIVE			
									1	120	19.71	o	E	35	31,2	آنو-؟	35

I.D.F.S. ENGINEER

ANORE Any opinion and/o

ZKUZINZ

HOME ADDRESS

TELEPHONE

<b>***</b>	<b>&gt;&gt;&gt;</b>	(Ince	\ <b>~</b> =	: n.	:::::	. Ал	_1 _5	<b>3</b>		HE	PORIN	<u>°. 57</u>		DATI	-	A At	
		\1,D,F,3	∕∕≋	; טו	mind	j Mu	a r	терс	oπ	RIG	No.	<u> </u>		SPU	D DA	TE 9	13
		▼								DE	PTH 3	595,	~ Cro	<b>)</b> TO			•
OPERATOR M	AZOUI	KK 50 URL	ES			CONT	TRACTO	OR	ATO	ت	Apm						
REPORT FOR	JURY	Ofor				REPO	ORT FO	)R	KEV		MURP	ملا					
WELL NAME AND N	_	DERMER	•			FIELD	OR	$\sim$		LOCA	TION			STATE	١.		
DDILLING	ASSEMBLY	MAN TER			1			YEP	111	$\perp O_{LA}$		112AC			V	IL	
BIT SIZEY > TYPE		.7. %	CASING SURFACE			TD NOMW		<u> </u>	D. 11 10 C	(s		CIRCULAT					
X A DAGE	A WIS	B 1348	SET a 31	3 pr	الم الم	5	- プF. PIT	5	PUMP S	_	× 85		0.0	RESSUE OTTOMS	TION RE (PSI	, ૧	300
DRILL PIPE TYPE		24 97/8°	NTERMEDIATE	) 10	TOTAL CIF	RCULATING Y	VOL S			AKE, MO	K-2008	ASSUMED OF	) 1110	(MIN)		11	<u>U_</u>
DRILL PIPE TYPE	LENGTH	<b>7</b> 11.	PRODUCTION OF	LINER	IN STORA		EIGHT		BBL/STK	•	V DWIN	9 k	MIN LIN	TAL CIF	۷)		<b>3</b> 0
DRILL COLLAR, SIZE	LENGTH .		YPE C	FT.	L					13415		76	D.C		J.	(FT/MIN	) ;
<u> </u>	<u> حکاله،</u>	42	Fin	1 1	W KMEN				BBL/MIN	6-8		- SX GALI	MIN D.F		<u> </u>	Ь	
SAMPLE FROM				L. E.		OPERTIES FL	PIT	-		M		ERTY SPI	ECIFICA	TIONS	S .		
TIME SAMPLE TAKEN				1 .	-00	<del> </del>		_ WEIGH	" MI	k)	VISCOSI	ČLEAL		TRATE	4-	₹	
FLOWLINE TEMPERATUR	RE		<b>°</b> C	61				PLAST VISCO	IC .	4IN	YIELD . POINT	4)		əH	a	-9-5	
DEPTH (ft)					HELK				THORITY		<del></del>	S WRITTEN				CONTE	RACTOR
WEIGHT (ppg) (lb/l/Ft' VISCOSITY (sec			°C		1.34	<del> </del>				<u> </u>		S REPRESE	NTATIVE		THER		
PL VISCOSITY CP (			•C		38 10	-		-			RECO	MMEND	MOITA	NS			
YIELD POINT (Ib/100ft²)					\$			1									
GEL STRENGTH (Ib/100ft²)				4	16				· · · · · · · · · · · · · · · · · · ·	·····		• • • • • • • • • • • • • • • • • • • •	••••••				
FILTRATE API (cm³/30 min	<del></del>				<u> </u>			]									
API HTHP FILTRATE (cm <sup>3</sup> / CAKE THICKNESS (32nd i			•C		7	, , , , , , , , , , , , , , , , , , ,		ļ			•••••					•••••	
SOLIDS CONTENT (% BY		RETORT			1-6	/		······			•••••	••••••	•••••	•••••	•••••	•••••	••••••
LIQUID CONTENT (% BY					1924	<del>                                     </del>		1		•••••••••	• • • • • • • • • • • • • • • • • • • •	••••••	•••••	•••••	• • • • • • • • • • • • • • • • • • • •	••••••	••••••
SAND CONTENT (% BY V		****		7	~							•••••				• • • • • • • • • • • • • • • • • • •	
METHYLENE BLUE CAPAC	CITY IN/bbi		13/cm3 mud		14			]	•••••								
ALKALINITY MUD (Pm)	€ MEIE	:H @	<u>•</u> C		.⁄.Σ <b>δ</b>			ļi		•••••	••••••		•••••		•••••		•••••
ALKALINITY FILTRATE (P.	/M <sub>t</sub> )			-,2	1.8		<del>-</del>	1.		0	PERATI	ONS SI	UMMA	\RY			
ALTERNATE ALKALINITY F	ILTRATE (P1/P2)				-	<del>'</del> /		Cir	iA.		871 7		Lake				
CHLORIDE (mg/L)				141				Rm	c S	Lk-7		$\mathcal{I}$				•••••	
TOTAL HARDNESS AS CAL SULPHITE (mg/L)	LCIUM (mg/L)			<u>Oj</u>	Ø			Stra	₽O	<del>)</del>	•••••						
K+ (mg/L)								ب ضا	<b>.</b>	•••••••••••			•••••	••••••			
KCL (% BY Vol.)						,			••••••	••••••	••••••	••••••	•••••••	•••••	•••••		•••••
Minde Congle	ر)			3:	CC CC						••••••	•	••••••		··········	•••••	••••••
												***************************************	••••••		••••••		••••••
MUD ACCOUNTING (BI	BLS.)	·		SU	MMARY				12		LIDS CO	NTROL E		ENT		C	
LUID RECEIVED	1			··				Centrifuc	Тур		0	No. Cones	Hr.	-		Screen Sizes	Hr.
WATER ADDED	<b>VIL</b>							Degasse	<del>'  </del>	6	Desilter Desande	10x6°	3   L	Shake	r No. 1 r No. 2	Silve	1
												- 10×6	U	Gilane	1 140. 2	BIND	-
LUID DISPOSED	T Co.											IPMENT (	FFICIE	NCY			
OLE VOL. INCREASE	Nu							0		Overflow	(ppg)	Under	flow (ppg	)	Out	put Gal/	Min.
								Desande Desilter	er					-	•		
														$\dashv$			
Product	Starting Inventory	Received	Used Last 24 Hours	Clos Inven	ing	Unit Cost		Cost		SOLID	S ANALY	SIS	BI	T/HYC	). PRE	SS. D	ATA
Bantes	444	Addaida	18	39		9.60	17	7-80			lb/bbl	%	Jet Vel	ocity		441	2
Lime	47	40	3 %	4				<del>~ 40</del>	Bari				Impact	Force		66	١
Soda Ash		42							-	Solids	111	1.7	HHP			الخلم_	<u> </u>
Marche 1 Galo		36					ļ		LGS		12	7.7	HSI Bit Pre	es I nes		16.	75
Marjoinal Popular		31		<b>Q</b>	(Kal:	- Squer	et.		Salt		1	150			c Press		D) Pri
KU (Textor)		244			July br	times	N.A.		N =				ECD @			<u>i</u> Z	.64
Solphile		38							K =	v 00~	<u></u>		ECD @				
Divide		16							1 4	Y COST			CUMU	_		<b>-</b>	-
Call.		<u> चेप्र</u>							∐ †	5172	· 40		\$	. 55	7,3	J) :	12
D.F.S. ENGINEER	Λ	<u> 40  </u>	1	НС	ME ADDE	RESS +		<del></del>				EL EDITO:	<u> </u>				
	Any opinion and/or re		Oressed prally or wr			}	130X	-AICE				ELEPHON	" (D	8-	745	(O)	
	, opinion and/or re	commendation, ex	pressed draily or wr	men nereir	i, nas been pi	repared careful	iv and m	av he used	if the vicer	so electr by	N.O.O. 22 12	*******					

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<b>****</b>	(I.D.F.S.)	<b>≋</b> Drilling	Mud	Report
	Ų	_		•

RIG No. 2 DATE STA APRIL'S

										- 1	DLI	''' >	<u>√27</u>	. Im	1 10		
OPERATOR M	AZOUI	RESOUR	166			CONT	TRACTO	OR .	AT	-8	<u> </u>	PM		<u>ue</u>			
REPORT FOR	Juers					REPO	ORT FO	R				· .	A				
WELL NAME AND N		OFOLI				FIELD	OR			JIK	OCATI	MUSA	eky_	—:т	STATE	. 1 .	
		DECLUER	<u> </u>	·			K No.	PEP	111		NTC	MY (	3 ASIN	,		Vil	-
	ASSEMBLY		CASING			NOLUM	E (BBL	.)			•		IRCULAT	ION D	ATA		
BIT SIZE TYPE	JET SIZE	3 1378	SURFACE SET @ 3()	3 187	HOLE	,	37	o	PUMP	SIZE	0	× 87	IN.	CI	RCULA	TION RE (PSI)	
DRILL PIPE TYPE	LENGTH		INTERMEDIATE	7	OTAL CIRC	ULATING Y	VOL.	1		MAKE			ASSUME	B	MOTTC (MIM)	·	lo
DRILL PIPE TYPE	LENGTH		SET @ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	R LINER II	N STORAG	12.K	<b>O</b> EIGHT		BBUS	<b>%-₽</b> -	€U/Y	ACUTA.	EFF. STK/		OTAL CII ME (MII	20	80
DRILL COLLAR SIZE		<b>ર્જિ</b> !	SET (	FT					-07		195		95	Ai	NULAF	YEL (FT/N	IIN)
DAILE COLLAR SIZE	LENGTH	4.2 MUD T	YPE F	w (	OLYM	E.R.			BBL/M	IIN L	₹.	2	L&S GALI	MIN D.		13th	
	P. 19 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1				IUD PRO			T		v_	MIII		RTY SPI				·
SAMPLE FROM				<del> </del>	i.∕. PIT	C EL (	PIT	WEIGH	dΤ .		11.0	VISCOSIT			TRATE		
FLOWLINE TEMPERATUR	oc .			34				PLAST		Mn			LEAN			7-8	
DEPTH (M)	10		<b>℃</b>	15	-			VISCO	SITY	Min		YIELD POINT	HOLE		P#	9-9-	2
WEIGHT (ppg) (lb/	cu.ft) i Sp. G			35° 9.	12			BY AU	THORN	TY:			S WRITTEN	STATIVE		ORILLING CON	NTRACTOR
FL VISCOSITY (sec	./qt.) API @		•C	3						7=						JIHEN	
PLASTIC VISCOSITY OF	Û		۰C	9	•			1.		,	_		MEND				
YIELD POINT (Ib/100ft²)				1				الكر	k.2	إيوا	۲	or !	4 V.s	Pr	<i>J.</i> C		
GEL STRENGTH (lb/100ft²				3 /	13	1		<b></b>	<i>ii</i> .)	) <b>(</b> id.	Džerj.		timer tower	His	y L	os, et	my
API HTHP FILTRATE (cm <sup>3</sup> /30 min				<u></u>	8			<b></b>				O.G	r Hole	· · · · · · · · · · · · · · · · · · ·			
CAKE THICKNESS (32nd			•€		·			ļ		•••••			• • • • • • • • • • • • • • • • • • • •				
SOLIDS CONTENT (% BY		C RETORT		8.				ł	••••••	••••••		•••••		•••••			
LIQUID CONTENT (% BY					920	7		†		••••••		•••••	•••••	•••••		•••••	•••••
SAND CONTENT (% BY V	/ol.)			TY									••••••		•••••	••••••	
METHYLENE BLUE CAPA		···	n³/cm³ mud	15				]							•••••		•••••
PH STRIP	☐ MET	ER @	°C	٩.	0			ļi		•••••	•••••						
ALKALINITY MUD (Pm)  ALKALINITY FILTRATE (Pr.	MA \			<del></del>		<del>,</del>		ļ ·			OE	EDATI	ONS S	I BARA.	A DV		_
ALTERNATE ALKALINITY F				<u>・                                    </u>	-5			1			O.	LIMIT	0143 3	OIVIIVI	Anı		
CHLORIDE (mg/L)				140				200	<u>ښ.</u>	Н		6 20	05 M.	•••••••		••••••	
TOTAL HARDNESS AS CA	LCIUM (mg/L)			12				14.1	n . 	Riv	2. <b></b>	RUA	MOP.S.A	••••••	••••••	••••••	••••••
SULPHITE (mg/L)								Dean	~ 2	987	- 3		3160-	- 32	ψ3 ·	357r2-	fitm.
K+ (mg/L)				_				6W	¢B	V	12 9	Sur 1	3162-	٠			
KCL (% BY Vol.)								Kw.	¢à	Hug.	<b></b>	•••••					
- We (myll	) -	·		30	3			Lof	<i></i>			•••••	•••••				•••••
MUD ACCOUNTING (B	BLS.)		L	SUMI	MARY			<u> </u>				100.00					· · · · · · · · · · · · · · · · · · ·
FLUID BUILT									T	уре		JUS COI	NO. Cones	1 11-	ENI	Scre	en Hr.
FLUID RECEIVED								Centrifu		,,,,	3	Desilter	Cones	1 : .	Shake	Sizer No. 1	
WATER ADDED 70	)	A+	Stakers.					Degasse	er			Desande	1 .	Tie		r No. 2	
		•															
FLUID DISPOSED 19	<u> </u>	Descri											PMENT I	EFFICI	ENCY		
HOLE VOL. INCREASE	3	Devalo	r + Dest	HQY				Desand		Ove	erflow (	opg)	Under	flow (pp	g)	Output C	Gal/Min.
<u> </u>		· · · · · · · · · · · · · · · · · · ·						Desilter	-								
									$\dashv$								
- Product	Starting Inventory	Received	Used Last 24 Hours	Closin	9	Unit	Γ	Cost		s	OLIDS	ANALY	SIS	В	T/HYI	D. PRESS.	DATA
BARVITES	396		1.8	Invento 37%	· · · ·	Cost }-&O	in	280				fb/bbl	%	<del></del>	locity	23	
CANSTIL SOON	33		i	35	12	3-32		B-88	В	arite		-	_	Impac	t Force	23	
Porcor	30		6	24				37.28	-	entonite		11	1-7	HHP		<u> </u>	1
Mayo Gel	119		6	113	l	8-60	<u>II</u>		<u> </u>	rill Solid	ds	1 62	6-9	HSI			<u>-lij</u>
							16	0.5		GS alt		73	184 Tr	+	ess Los		<u>450</u> [loopsi
			<b> </b>			····	10	J-57		=		'-	114		g CSG	Seat 1	5-6+ 1000k21
								•	⊢ ĸ	-		<b></b>	<b> </b>		@ Botto		
						T	<del> </del>		- 1	AILY CO				CUML	ILATIVE	COST	
					_				一'	?	570	15.5		1	、スこ	,897-	71
											_			4	د)ر.	( a v i	• •
.D.F.S. ENGINEER	Ancer	Sku	TINS	HON	1E ADDR	ESS	An	LAO	<u> </u>			T	ELEPHO	VE (*	ガー	745 1	<u>5)</u> .

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IDEC	Contilling	84	Danad
\1.D.F.3.		wua	нероп
	(I.D.F.S.)	√I.D.F.S. ≥ Drilling	√I.D.F.S. ≥

REPORT No. 39 DATE 16Th APRIL 89
RIG No. 2 SPUD DATE 93
DEPTH 3595 M TO

OPERATOR MIN	war fr	SOME	ς.			CONTR	ACTO	R	ATU	Ö	Apm					
REPORT FOR		<del></del>			REPOR	T FOF		KEV		MURE	برين د					
WELL NAME AND No.		) ZOLINS ERMERE	H 2			FIELD (	OR I	PEP	111		ATION	_	MIGA	STATE	Vio	
DRILLING A		PEMPE	CASING		MUD	VOLUME				1 0	(00.0		CULATIO	N DATA	V 1.	
BIT SIZE . TYPE		1 3 306				· · · · · · · · · · · · · · · · · · ·	PITS		PUMP S	SIZE (	× 8	١.	N.	CIRCUL	ATION	12-1121
8 2 Hr B	A 321	3/2/3/2/2	et @ 313	103	4015		37	157	PUMP N		- 19			BOTTON UP (MIN	RE (PSI)	1300/130
DRILL PIPE TYRE	LENGTH	1 977 S	TERMEDIATE	) NA	IAL CIRCI	ULATING VC	) }				0 K -20,	EF	SUMED 6	UP (MIN		
DRILL PIPE TYPE	LENGTH	P	RODUCTION OR	LINER IN	STORAGE	WEI			BBL/STK	•			STĶ/MIN	1 THAIR CIA	IN)	
SIZE UZ HW	55-		ET	FT.					-01	-0495			93/116	D.C.	R VEL. (F)	/MIN)
DRILL COLLAR SIZE	LENGTH	an MUD TY	FN.	an	LYME	30			BBL/MIN	1.4	יא	ruh	AL/MIN		13,	···
				MU	ID PRO	PERTIES 1	7/14	T '				-1-		IFICATION	IC	
SAMPLE FROM				E F.L. E		[] F.L. !≥		WEIGH			VISCO		IT SPEC	FILTRATE		
TIME SAMPLE TAKEN						05.1	<u> </u>	WEIGI	" MI	N	VISCO	"()_	EAN	FILITAI	7-8	
FLOWLINE TEMPERATURE	Ē		°C			23	<del></del>	PLAST VISCO		UN	YIELD POINT		tee	43	0.0	1-5
DEPTH (ft)				((	eunix	.) 355	3		THORITY		OPERATO		1	1 601		CONTRACTOR
WEIGHT (ppg) [] (lb/ci	u.ft)   Sp. G					3 9.4							EPRESENTA	TIVE !	OTHER	CONTRACTOR
Fl' VISCOSITY (sec./	qt.) API @		∞			33					DEC	ONAR	/ENDA	TIONS		
PL , VISCOSITY oP @			°C			า		1,								
YIELD POINT (Ib/100ft²)						6		M	11li	wer	PIVIL	Low	· ot	Mrd	m Oc	pa hole
GEL STRENGTH (lb/100ft²)	10 sec./10 mm.					3 / C	1	1	anir	40	601	<i>\</i>	to L	B0.		
FILTRATE API (cm³/30 min.)	)			· · · · · · ·		10-	, 	1	4					3		•••••
API HTHP FILTRATE (cm³/3			°C				~	1		•••••		•••••		••••••		•••••
CAKE THICKNESS (32nd in						1/		1	•••••	•••••	•••••••	•••••	••••••		•••••	••••••
SOLIDS CONTENT (% BY		RETORT		<b>€</b> ±		8-4	<del></del>	1			••••••			•••••		••••••
LIQUID CONTENT (% BY						- 9		ł	••••••		••••••	•••••				
SAND CONTENT (% BY VO							-6	ł		•••••	••••••	•••••	•••••	••••••	•••••	
METHYLENE BLUE CAPAC	<del></del>	Loguita I Tom	n³/cm³ mud			<u></u>		ł		•••••		•••••	•••••	•••••	•••••	•••••
	[] METI		•C			<u> </u>	<del> </del>	;	•••••	••••••	••••••	•••••	••••••	•••••	•••••	•••••
	L.J MET	EH @				<u> 90</u>		ł		•••••	• • • • • • • • • • • • • • • • • • • •	••••••	•••••	•••••	•••••	•••••
ALKALINITY MUD (Pm)				<del></del>				ł			OPERA	TIO	NS SU	MMARY		
ALKALINITY FILTRATE (P. //				/_		<u>-{ /-</u> ,	2_	FON			O. <b></b>					,
ALTERNATE ALKALINITY F	ILTRATE (P <sub>1</sub> /P <sub>2</sub> )					+		HOW	۲	₩	W.>	<b>6</b> 37		•••••		
CHLORIDE (mg/L)						1400			<b>}</b>	W.		Ψ.	<b></b>	-1-6	. • 1	g(
TOTAL HARDNESS AS CAL	.CIUM (mg/L)					150		ŽĄ.		W	2 L	ભારા.	.vpco	ledy	sk\$l	77W
SULPHITE (mg/L)								10/20	bi	rl!	KUA:			,		
K+ (mg/L)								Ma	Жұл	<b>√</b> 0	<del>-2958</del> .	<b>∴∴</b> .\$	612 V	A		•••••
KCL (% BY Vol.)								We	ב ביוע	ibs	- 7182	. <b>?.</b>				
I'm rate (my	ル)					<u> </u>		ļ	•••••							
	·			01444	14574						001100					
MUD ACCOUNTING (BI	BLS.)			SUMM	ART				1 75.		tr.	CUN	No. Cones	Hr.		Screen Hr.
								0	-	-						_
FLUID RECEIVED -								Centrifo		+	Desi		low"		ker No. 1	Em :0
WATER ADDED								Degass	er		Desa	ander	4000	Sha ا	iker No. 2	Bis 0
	·····		<del></del>					<u> </u>								i
ELLID DIEDOEED A 1	1. <1.	<u> </u>	<b>1</b>	\				ļ				GOIP		FFICIENC	<del></del>	A C-184:-
HOLE VOL. INCREASE	edigitik	from D	esander - 1	JOS JAR	<b></b>					Oven	low (ppg)		Undertik	ow (ppg)	Outp	ut Gal/Min.
HOLE VOL. INCREASE	-							Desan	<del></del>			-				
								Desifte	<u> </u>						-	
	C+	T	110-32	T ~: :		11-2		L	$\dashv$						<u> </u>	
Product	Starting Inventory	Received	Used Last 24 Hours	Closing Inventor	y	Unit Cost	1	Cost	_  _	so	LIDS AN				YD. PRE	
Magagel	108		85	[03		18.60	a	13 00			l lbv	/bbi	%	Jet Velocity		لغنا
0 3										arite		=	-	Impact For	ce	<u> ३३०                                   </u>
		T		1					-	entonite		ک	1-4	ННР		80
									-	ill Solids	Y		70	HSI		1/4
									LC		1	1	84	Bit Press L		<u></u>
									Sa			l	Tr.	CSG Seat		is our
				<b>T</b>					N		1.6			ECD @ CS	G Seat	Bret,
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4					$\top$				D/	AILY COS				CUMULATI		
of Broken sack	s Vsed o	- 14/4	for Hi	\ti.>	P. II.				$\dashv$	Jr.	93.0	(7)	1	ď.	25 a	90.71
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I.D.F.S. ENGINEER	<u>'</u>			HOM	IE ADDF	RESS N						TE	LEPHON	F ,		2107
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# INDEPENDENT DRILLING FLUID SERVICES PTY. LTD. REPORT NO. 40 DA

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<b>₹</b> (I.D.F.S.) <b>₹</b>				Drilling Mud			Report		RIG No.	2	SPUD	DATE 9/2
		<b>—</b>	/ -	•	•		•				ТО	113
OPERATOR N	1.6	0.00			CON	TRACTOR	3 1	L_		<u>595</u> ~	7 10	<del></del>
REPORT FOR	INDEN	RESOURL				ORT FOR	13	OJ 75	Hew		•	<del></del>
	JURUS	OFOLIN					K	EVIN	MURPHY	· ·		
WELL NAME AND I	No. Wik	DERMERS	£2		FIELD	OOR K No.	eo s	111 LE	CATION	BASIN	STATE	Vic
DRILLING	ASSEMBLY		CASING		MUD VOLUM			<u> </u>		IRCULATION	ON DATA	Vio
BIT SIZE TYPE	JET SIZE	1234	SURFACE SET @ 31		HOLE	PITS		UMP SIZE	6 × 87	- IN.	CIRCULATION	ON Day
DRILL PIPE TYPE	KS A LENGTH	1578	SET @ \\ INTERMEDIATE	S NA C	CIRCULATING	<u> 370</u>		UMP MAKE, I	<u> </u>	ACCUMED	BOTTOMS	
SIZE 43	6 3332	-24 Q318	SET @ SI INTERMEDIATE SET @ \XL	7 10	DA	(0			DK-SXA	ASSUMED EF THE CO	6 TOTAL CIRC	118
DRILL PIPE TYPE	LENGIH.	at.	PRODUCTION OF	T LINER IN ST	ORAGE WE	EIGHT	В	BUSTK . 090		STKIM Qui	IN THAT TIME	VEL_(FT/MIN)
DRILL COLLAR SIZE	LENGTH	MUD T						, , ,	<b>,</b>		D.C	930
0.7	l gho.	9(2)			PROPERTIES		В		·	<b>GALIM</b>		733
SAMPLE FROM				E.EL Z.		PIT					CIFICATIONS	
TIME SAMPLE TAKEN		***************************************		07.45			WEIGHT	MIN	VISCOSIT	LEAU	FILTRATE _	7-8
FLOWLINE TEMPERATU	JRE		•c	56				TY MIN	YIELD POINT	Hare	CH.	9-0.5
DEPTH (IA)				3595			BY AUTH		OPERATOR'S	WRITTEN	C DR	RILLING CONTRACTOR
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PL VISCOSITY CP			<u> </u>	34					RECON	MENDA	TIONS	
YIELD POINT (Ib/100ft²)	<u> </u>			7								
GEL STRENGTH (Ib/100f	t²) 10 sec./10 min.			3/11	<del>                                     </del>			***************************************			•••••••••••••••••••••••••••••••••••••••	•••••
FILTRATE API (cm³/30 m	sin.)			7.6						•••••••		
API HTHP FILTRATE (cm			۰C									
CAKE THICKNESS (32nd				1/-	//		·····					(-45
SOLIDS CONTENT (% E				8.4			·····	••••				
SAND CONTENT (% BY		i		<u>-/91.1</u>	<u> </u>				•••••			•••••
METHYLENE BLUE CAP		ol equiv. 🗍 cn	n <sup>3</sup> /cm <sup>3</sup> mud	92 [L					••••••	••••••		
PH Z STRIP	☐ MET		°C	9.0			······································		•••••	· · · · · · · · · · · · · · · · · · ·	•••••	••••••
ALKALINITY MUD (Pm)							••••••••	••••••	***************************************	••••••		***************************************
ALKALINITY FILTRATE (F				・み/・6	1			2.0-	OPERATI	ONS SU	MMARY	•
ALTERNATE ALKALINITY	FILTRATE (P1 /P2)	)		+	/		Keam	\$182	- 3aus	. m		•••••
TOTAL HARDNESS AS C	ALCHIA ( (1)			awi			BOYA.	to the	} \			
SULPHITE (mg/L)	ALCIOM (mg/L)			190			Case beck to 3205 m					
K· (mg/L)											•••••	•••••
KCL (% BY Vol.)				_		— †	Circ. B.V.					
I ate (mu	JL)			3,70			CON.					
	), )						Lon.			***************************************		
MUD ACCOUNTING ( FLUID BUILT	BBLS.)			SUMMAR	Y			1	SOLIDS COI			10
FLUID RECEIVED				<del></del>				<del>                                     </del>	lr.	No. Cones	Hr.	Screen Sizes Hr.
WATER ADDED							Centrifuge Degasser	Down	Desilter Desande	1040	Shaker	
				***************************************			Degasser		Desaride	426	Shaker	No. 2 Buo 0
						•			OLIDS EQU	PMENT E	FFICIENCY	
FLUID DISPOSED									ow (ppg)		ow (ppg)	Output Gal/Min.
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		····					Desilter					
Product	Starting	T	Used Last	Closing	Unit	┰┸		<del>                                     </del>				
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CALLER COOL	34	<u> </u>	5		42.88		-40	Barite	-	~	Impact Force	2000 331
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040,123	7/8		1.8		7,60	13	<u> </u>	Drill Solids	63	70	HSI	1.4
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D.F.S. ENGINEER	<u> </u>			HOME A	DDRESS	1		<u> </u>		1 550000		1435-67 195102
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	Any opinion and/or	recommendation, e	xpressed orally or w	ritten herein, has be	en prepared carefu	elly and may	no ised if	the liker on elec-	te however no re-			

APPENDIX C
LITHOLOGICAL DESCRIPTIONS

#### MINORA RESOURCES N.L. WINDERMERE #2 - LITHOLOGICAL DESCRIPTIONS.

350	100	MAPL, light to medium greenish-grey, cream to light brown fossil fragments, soft to firm.
360	100	MARL, a.a very fossiliferous in part and grading to angillaceous limestone
370	4()	SANDSTONE, dark brown, fine to coarse, mostly fine to medium, poor to moderate sorted, well rounded, polished/glazed surface, loose, poor porosity?  Also white to hight grey-green, very fine, silty, moderate sorted, sub-angular to sub-rounded, trace glauconitic, clay matrix (10%), lithic (30%), firm, poor porosity.
	10	SILCRETE/WEATHERED VOLCANICS? white to cream, very hard, grey and brown lithic grains.
	50 Tr	MARE, a.a. CLAYSTONE, yellow, silty, soft to firm.
380	20	SANDSTONE, a.a.
	40	CLAYSTONE, greyish blue-green, soft to firm, occasional silty.
	40	MARL, a.a fossiliferous and grading to argillaceous limestone in part.
390	10	SANDSTONE, a.a.
	10	CLAYSTONE, a.a.
	80	MARL, a.a white, cream, grey-green.
400	60	SANDSTONE, cream, brown, grey, very fine to fine, moderate sorted, sub-angular, silty clay matrix (15%), trace glauconite, lithic (30%), calcareous cement (5%), soft to firm, poor porosity.
	20	CLAYSTONE, a.a.
	20	MARL, a.a.
410	60	SANDSTONE, a.a also clear, loose, coarse to very coarse, moderate sorted, well rounded, good apparent porosity.
	20 20	CLAYSTONE, a.a.
	Tr	MARL, a.a. – trace to 5% glauconite.  PYRITE, coarse nodules/aggregates of fine crystals.
420	80	SANDSTONE, clear, light to medium brown, medium to very coarse, moderate sorted, sub-rounded to rounded, loose, good porosity.
	10	CLAYSTONE, a.a.
	10 Tr	MARL, a.a. PYRITE, a.a.
	11	FIRIL, a.a.
430	100 Tr	SANDSTONE, clear, some light brown, medium to very coarse, mostly medium to coarse, moderate to well sorted, sub-angular to rounded, loose, good porosity. PYRITE, a.a.
	11	FIRIL, a.a.
440	100	SANDSTONE, a.a.
450	100	SANDSTONE, a.a.
460	50 50	SANDSTONE, a.a. CLAYSTONE, brown, soft, dispersive.
470	50 50	SANDSTONE, a.a. CLAYSTONE, brown, soft, dispersive, sand grains.
480	100	SANDSTONE, clear, medium to coarse, moderate to well sorted, sub-angular to rounded, loose quartz grains, good porosity.

490	100	SANDSTONE, a.a trace pyrite.
500	70 30	SANDSTONE, a.a. CLAYSTONE, dark brown, grevish-brown, soft, dispersive, sandy.
510	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
520	80 20	SANDSTONE, a.a trace mica. CLAYSTONE, a.a.
530	80 20	SANDSTONE, a.a. CLAYSTONE, a.a.
540	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
550	80 20	SANDSTONE, a.a. CLAYSTONE, a.a.
560	50 50	SANDSTONE, a.a. CLAYSTONE, a.a.
570	100 Tr	SANDSTONE, a.a
580	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
590	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
600	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
610	100 Tr	SANDSTONE, a.a sub-angular to sub-rounded.  * CLAYSTONE, a.a.
620	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
630	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
640	100 Tr	SANDSTONE, a.a. CLAYSTONE, a.a.
650	70 30	SANDSTONE, a.a. CLAYSTONE, a.a.
660	90 10	SANDSTONE, clear, medium to coarse, some very coarse, moderate sorted, sub-angular to sub-rounded, loose quartz grains, trace pyrite, good porosity. CLAYSTONE, dark brown, grey-brown, soft, dispersive, silty in part.
670	90 10	SANDSTONE, a.a trace pyrite (<5%) CLAYSTONE, a.a.

680	30 20	SANDSTONE, a.a. CLAYSTONE, blue-grey, soft, grading to mark, also brownish-black, carbonaceous, silty
	50	MARL, greenish-grey to pale blue-green, fossiliferous, soft.
690	30 30	SANDSTONE, a.a. CLAYSTONE, a.a.
	40	MARL, a.a.
700	20 40	SANDSTONE, a.a. SILTSTONE, brownish-black, angillaceous and carbonaceous, pyritic in part, soft to firm.
	40 Tr	MARL, a.a.  PYRITE, crystalline nodules/aggregates.
710	10 50 40	SANDSTONE, a.a. SILTSTONE, a.a grades to silty claystone. MARL, a.a.
720	70	SANDSTONE, clear to dark yellowish-orange, (honey brown), some moderate brown to dusky brown, fine to very coarse, mostly medium to coarse, poor to moderate sorted, sub-angular to rounded, loose iron stained quartz grains, minor lithic grains (10%), rare pyrite, good porosity.
	10 20	SILTSTONE, a.a. MARL, a.a.
730	100 Tr	SANDSTONE, a.a coarse to very coarse, olive-brown lithic grains (10%). MARL, a.a.
740	100	SANDSTONE, a.a fine to very coarse, mostly coarse to very coarse.
750	100	SANDSTONE, a.a trace brown clay matrix.
760	100	SANDSTONE, a.a.
770	100	SANDSTONE, a.a trace pyrite.
780	100 Tr	SANDSTONE, a.a. SILTSTONE, olive-grey, firm to hard.
790	100 Tr	SANDSTONE, a.a. SILTSTONE, a.a.
800	100	SANDSTONE, a.a mostly coarse to very coarse, common pyrite (5%).
810	100	SANDSTONE, a.a pyrite (5%).
820	80 20	SANDSTONE, a.a. SILTSTONE, medium grey, carbonaceous and pyritic in part, firm.
830	50 50	SANDSTONE, a.a sandy in part with coarse quartz grains.
840	70 30	SANDSTONE, a.a pyrite (5%). SILTSTONE, a.a.
850	20 80	SANDSTONE, a.a. CLAYSTONE, dark grey, silty, carbonaceous in part, sticky.

860	20 80 Tr	SANDSTONE, a.a. CLAYSTONE, a.a. PYRITE, a.a.
870	10 90	SANDSTONE, a.a. CLAYSTONE, a.a
880	20 80	SANDSTONE, a.a. CLAYSTONE, a.a.
890	20	SANDSTONE, clear, fine to coarse, poor to moderate sorted, sub-angular to rounded, loose quartz grains, good apparent porosity.
	80	CLAYSTONE, a.a with abundant fine to coarse quartz grains.
900	30 70	SANDSTONE, a.a. CLAYSTONE, a.a.
910	20	SANDSTONE, clear, fine to coarse, poorly sorted, sub-angular to rounded, loose quartz grains, minor brown-black lithic grains (5%), good apparent porosity.
	80	CLAYSTONE, olive grey, slightly calcareous, fossiliferous in part, soft, sandy in part.
	Tr	PYRITE, a.a.
920	20 80	SANDSTONE, a.a also pale yellow-orange (5%). CLAYSTONE, a.a.
930	<del>3</del> 0 70	SANDSTONE, a.a. CLAYSTONE, a.a.
940	20	SANDSTONE, a.a also minor white to light grey, very fine, moderate sorted, sub-rounded, trace glauconite, hard, dolomitic? poor porosity.
	80	CLAYSTONE, a.a.
950	20 80	SANDSTONE, a.a. CLAYSTONE, a.a.
960	20 80	SANDSTONE, a.a. CLAYSTONE, medium dark grey to brownish-grey, silty, trace glauconite, sandy in part.
970	Tr 100	SANDSTONE, a.a. CLAYSTONE, medium dark grey to brownish-grey, silty and sandy, trace glauconite, soft.
980	100	CLAYSTONE, a.a.
990	100	CLAYSTONE, a.a.
1000	100	CLAYSTONE, light olive-grey, silty and sandy with greenish-black glauconite pellets (5%).
1010	100	CLAYSTONE, a.a 5-10% glauconite.
1020	Tr 100	SANDSTONE, clear, medium to coarse, loose, quartz grains. CLAYSTONE, a.a 10% glauconite, trace pyrite (<1%).

1030	Tr 100	SANDSTONE, a.a. CLAYSTONE, yellowish-grey to medium dark grey, silty and sandy, greenish-black glauconite pellets (10%), trace pyrite and carbonaceous material.
1040	Tn 106	SANDSTONE, a.a. CLAYSTONE, a.a.
1050	40	SANDSTONE, clear, white, greenish-grey, very fine to medium, moderate sorted, sub-angular to sub-rounded, loose quartz grains, greenish-grey lithic / quartzite grains (20%), white feldspar (5%), glauconite (10%), soft, poor poresity.
	60	CLAYSTONE, a.a trace pyrite (<1%).
1060	30 70	SANDSTONE, a.a trace mica (<1%). CLAYSTONE, a.a.
1070	30 70	SANDSTONE, a.a trace glauconite (<5%). CLAYSTONE, a.a.
1080	50 50	SANDSTONE, a.a. CLAYSTONE, a.a.
1090	30 70	SANDSTONE, a.a. CLAYSTONE, a.a white to light grey.
1100	50 50	SANDSTONE, a.a. CLAYSTONE, a.a.
1110	40 60	SANDSTONE, a.a. CLAYSTONE, a.a.
1120	30 <sub>-</sub> 70	SANDSTONE, a.a. CLAYSTONE, a.a.
1130	30 70	SANDSTONE, a.a. CLAYSTONE, a.a.
1140	80	SANDSTONE, clear, white, pale green to grey-green, fine to medium, moderate sorted, sub-rounded quartz grains and lithic / quartzite grains (30%), poor to fair
	20	porosity. CLAYSTONE, white to light grey, sandy, soft, trace pyrite.
1150	50 50	SANDSTONE, a.a. CLAYSTONE, a.a light grey, pinkish-grey.
1160	50	SANDSTONE, a.a mostly loose, but some aggregates with abundant clay matrix,
	50	poor porosity. CLAYSTONE, a.a.
1170	20 80	SANDSTONE, a.a. CLAYSTONE, a.a.
1180	10 90	SANDSTONE, a.a. CLAYSTONE, white, light grey to light greenish-grey, silty and sandy, trace glauconite? soft.

1190	<b>40</b> 60	SANDSTONE, white to light grey, very fine to fine, poor to moderate sorted, sub-angular to sub-rounded, clay matrix (5%), strong calcareous cement (10%), grey-black and grey-green lithic / quartzite grains (20%), white feldspar (10%), hard, poor porosity.  CLAYSTONE, a.a.
1200	100	CLAYSTONE, light to dark grey, glauconitic, sandy in part.
1210	100	CLAYSTONE, a.a.
1220	10	SILTSTONE, light to dark grey, trace glauconite, very argillaceous - grading to silty claystone, soft to firm.
	90	CLAYSTONE, a.a trace plant fragments.
1230	40	SANDSTONE. clear, fine to coarse, mostly fine to medium, poorly sorted, subangular to rounded, grey-black and grey-green lithic / quartzite grains (30%), loose, poor to fair porosity.
	20 40	SILTSTONE, a.a. CLAYSTONE, a.a trace pyrite.
1240	40	SANDSTONE, a.a.
	20 40	SILTSTONE, a.a. CLAYSTONE, a.a trace carbonaceous (plant) fragments.
1250	40	SANDSTONE, a.a.
	20 40	SILTSTONE, a.a.
	40	CLAYSTONE, a.a.
1260	30	SANDSTONE, a.a minor (20%), white to light grey, fine to coarse, angular to sub-rounded, poorly sorted, strong calcareous cement (20%), very poor porosity.
	30	SILTSTONE, a.a.
	40 Tr	CLAYSTONE, a.a. COAL, dull brown-black, lignitic.
	٠.	COAL, dail bi Otti biack, fightale.
1270	20	SANDSTONE, white to light grey, very fine to medium, mostly very fine to fine, angular to sub-rounded, moderate sorted, lithic / quartzite grains (15%), pink and white feldspar (10%), strong calcareous cement (15%), hard, very poor porosity.
	30	SILTSTONE, white to light grey, greenish-grey, carbonaceous material (10%), firm.
	50	CLAYSTONE, a.a.
1280	20	SANDSTONE, a.a.
	30 50	SILTSTONE, a.a.
	30	CLAYSTONE, a.a grades to siltstone.
1290	30	SANDSTONE, a.a minor pyrite (5%).
	20 50	SILTSTONE, a.a. CLAYSTONE, a.a.
1300	30 20	SANDSTONE, a.a minor pyrite (5%). SILTSTONE, a.a.
	50	CLAYSTONE, a.a.

1310	60 20 20	SANDSTONE, clear, white, pale blue-green, dark green to grey-green, fine to coarse, mostly medium, moderate sorted, sub-rounded, lithic / quartitle grains (20%), feldspar (5%), trace pyrite (<1%), calcareous cement in part (15%), mostly loose, poor porosity.  SILTSTONE, white to light grey, trace carbonaceous material (<5%), grades to claystone.  CLAYSTONE, a.a.
1320	30 30 40	SANDSTONE, a.a. SILTSTONE, a.a. – firm to hard. CLAYSTONE, a.a. – soft to firm.
1330	20 40 40	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1340	10 40 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1350	10 40 50	SANDSTONE, white, pale blue-green, grey-black, very fine to medium, mostly fine to medium, poor to moderate sorted, sub-angular to sub-rounded, lithic grains (20%), moderate to strong calcareous cement (15%), hard, poor porosity. SILTSTONE, light to medium grey, grey-brown, carbonaceous (5%), firm to hard, grading to claystone. CLAYSTONE, light grey, silty, trace carbonaceous material and pyrite, soft to firm.
1360	10 <sup>-</sup> 40 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1370	10 40 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1380	20 30 50	SANDSTONE, white, very fine to medium, mostly fine, moderate sorted, sub-angular to sub-rounded, medium grey to grey-black lithic / quartzite grains (15%), trace mica, calcareous cement (10%), poor porosity.  SILTSTONE, light to medium grey, lithic, micaceous, carbonaceous, feldspathic, calcareous in part, firm to hard.  CLAYSTONE, light grey, greenish-grey, silty, soft to firm, trace pyrite.
1390	10 40 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1400	10 30 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1410	10 30 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1420	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.

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1430	10 30 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1440	10 30	SANDSTONE, a.a trace pyrite.  SILTSTONE, white, light grey, light greenish-grey, carbonaceous (<5%), micaceous (<5%), lithic (<5%), argillaceous and grading to claystone in part, calcaneous in part, firm to hard.
	60	CLAYSTONE, light to medium grey, light olive grey, silty, soft to firm
1450	10 30 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1460	10 40 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1470	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1480	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1490	Tr 30- 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1500	10 30 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1510	10	SANDSTONE, white, light grey, grey-green, very fine to occasional medium, poor to moderate sorted, sub-angular to sub-rounded, grey-green and grey-black lithic grains (20%), feldspar (<5%), hard, calcareous cement (15%), poor porosity.
	40	SILTSTONE, light to medium grey, grey-green, lithic, feldspathic, trace carbonaceous material, calcareous, grades to very fine sandstone, hard.
1520	50 10	CLAYSTONE, white, light to medium grey, grey-green, silty, soft to firm.
1020	40 50 Tr	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a. COAL & PYRITE, a.a.
1530	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1540	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1550	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.

1560	10 30 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1570	Tr 30 70	SANDSTONE, a.a. SILTSTONE, white to light grey, light greenish-grey, lithic, feldspathic, calcareous in part, carbonaceous in part, trace pyrite, firm to hard. CLAYSTONE, white, light greenish-grey, light brownish-grey, silty, soft to firm.
1580	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1590	Tr 30 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1600	10 40 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1610	10 40 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1620	20 30 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1630	10 30 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1640	20 40 40	SANDSTONE, white, light grey, very fine to medium, occasional coarse, moderate sorted, sub-angular to sub-rounded, lithic (25%), feldspar (5%), trace pyrite, calcareous cement (15%), hard, poor porosity.  SILTSTONE, a.a. – grades to very fine sandstone.  CLAYSTONE, a.a.
1650	20 40 40	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1660	20 40 40	SANDSTONE, a.a but becoming more quartzose with fine to coarse, loose, sub-angular to sub-rounded, clear quartz grains (25%). SILTSTONE, a.a. CLAYSTONE, a.a.
1670	20 40 40	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1680	30 20 50	SANDSTONE, clear, white, pale grey-green, loose and aggregates, very fine to coarse, mostly very fine to fine, moderate sorted, sub-rounded, pale green, grey-green and grey-black lithic grains (20%), minor feldspathic (5%), trace mica and pyrite, calcareous cement (15%), poor porosity.  SILTSTONE, a.a.  CLAYSTONE, a.a.

1690	30 20 50 Tr	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a. COAL, a.a.
1700	70	SANDSTONE, clear, white, bale green, grev-green, grey-black, mostly loose, some aggregates, poor to moderate sorted, sub-rounded, lithic / quartitle grains (30%), feldspathic (5%), trace pyrite and piotite, calcite cement is 15% of aggregates, poor porosity.
	30	CLAYSTONE, a.a silty.
1710	30 40 30	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1720	40 20 40	SANDSTONE, a.a grades to siltstone in part. SILTSTONE, a.a. CLAYSTONE, a.a.
1725	40 20 40	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a. TRACE (<1%) DULL YELLOW SPOTTY FLUORESCENCE - NO CUT.
1730	60 10 30	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a. TRACE FLUORESCENCE – a.a.
1735	60 10 30	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1740	70 10 20	SANDSTONE, clear, white, greyish-green, grey-black, very fine to coarse, mostly fine to medium, sub-angular to sub-rounded, occasional rounded, mostly loose, some aggregates, grey-green lithic grains (30%), feldspar (5%), clay matrix (5%), calcareous cement (15%), trace pyrite, firm, poor porosity. Occasional dark yellow-brown, "glazed" ironstone grains and rare fossil fragments? - caving. SILTSTONE, a.a. CLAYSTONE, a.a.  TRACE (<1%) DULL YELLOW SPOTTY FLUORESCENCE - NO CUT.
		CORE #1: 1743.8 - 1749.3 m. Recovered 78%.
1755	60 40	SANDSTONE, a.a. CLAYSTONE, a.a high percentage of cavings - fossils, glauconite etc.
1760	10 30 60	SANDSTONE, a.a. SILTSTONE, white, medium grey, very argillaceous, grades to claystone, trace carbonaceous material. CLAYSTONE, a.a. – trace carbonaceous material.
1765	10 20 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.

1770	50 10 40	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a. CLAYSTONE, a.a. 10-15% VERY DULL YELLOW-ORANGE MINERAL? FLUORESCENCE - NO CUT. RARE SPECKS OF DIM TO BRIGHT BLUE-WHITE FLUORESCENCE WITH AN INSTANT CRUSH CUT AND THIN TO MODERATE RING RESIDUE.
		CORE #1 : 1777.0 - 1793.9 m. Recovered 98%.
1600	40	SANDSTONE, white to very light grey, very fine to fine, moderate sorted sub-angular to sub-rounded, lithic (20%), abundant clay matrix, grades to sandy claystone.
	60	CLAYSTONE, light to medium grey, grey-brown, very dispersive, sandy.
		DST #1 : 1775.2 - 1802.3 m. RECOVERED 299 m. MUD, MUDDY WATER & SLIGHTLY GAS CUT WATER (Rw = 0.3 @ 20C).
1805	30	SANDSTONE, clear, white, very fine to medium, moderate sorted, sub-angular to sub-rounded, mostly loose, some aggregates, lithic (15%), clay matrix (10%), calcareous in part (10%), poor porosity.
	70	CLAYSTONE, white to light grey, soft, silty and sandy, grades to very argillaceous siltstone in part.
	Tr	COAL/LIGNITE, dull brown to black.
1810	30	SANDSTONE, white to greenish-grey, very fine to fine, moderate to well sorted, sub-rounded, lithic (15%), hard, strong calcareous cement (15%), poor porosity.
	70 Tr	CLAYSTONE, a.a. COAL/LIGNITE, a.a.
1815	40 30 30	SANDSTONE, a.a. SILTSTONE, light to medium grey, grey-green, brownish-grey, carbonaceous and lignitic in part, firm to hard. CLAYSTONE, a.a.
	Tr	COAL/LIGNITE, a.a.
1820	20 40 40	SANDSTONE, a.a. – some medium to coarse, loose, quartz grains. SILTSTONE, a.a. CLAYSTONE, a.a.
1825	20 10 70	SANDSTONE, a.a. SILTSTONE, a.a calcareous in part and grades to very fine sandstone. CLAYSTONE, dark greenish-grey to dark grey, minor (20%) light greenish-grey. silty in part, soft to mostly firm.
1830	20 20 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1835	20 10 70	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1840	30 10 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.

1845	30 10 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1850	30 10 50	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1855	20	SANDSTONE, white, light grey, very fine to fine, moderate sorted, sub-rounded. html: (25%), feldspan (5%), trace mica, strong calcareous cement (15%), very poor porosity.
	20 60	SILTSTONE, light grey, lithic, micaceous, sandy and calcareous in part, hard. CLAYSTONE, light to dark grey, silty in part, trace carbonaceous fragments, firm.
1860	30 10 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1865	30 10 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
1869	20 20 60	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a.
	~=	RUN GEARHART OPEN HOLE WIRELINE LOGS : DLL/MSFL/GR & BHCS/GR/MEL. RUN 9-5/8" CASING & CEMENT AT 1867 m.
1875	30 70	SILTSTONE, light grey, light olive-grey, carbonaceous specks, very argillaceous and grades to silty claystone, firm. CLAYSTONE, very light to light grey, light olive-grey, greenish-grey, silty, firm.
	Tr	COAL, dull black, lignitic.
1880	30 70 Tr	SILTSTONE, a.a. CLAYSTONE, a.a. COAL, a.a.
1885	40	SANDSTONE, clear, white to very light grey, very fine, moderate sorted, subangular to sub-rounded, grey-brown to black lithic grains (30%), feldspar (10%), strong calcareous cement (15%), very poor porosity.
	20 40	SILTSTONE, a.a. CLAYSTONE, a.a.
1890	10 30 40 20	SANDSTONE, a.a. SILTSTONE, a.a. CLAYSTONE, a.a. COAL / LIGNITE, dark brown to black, very carbonaceous, sub-fissile.
1895	10 40	SANDSTONE, a.a. SILTSTONE, a.a.
	40 10	CLAYSTONE, a.a. COAL / LIGNITE, a.a.

1950	40 40 20 Tr	SANDSTONE, a.a. SILTSTONE, a.a. – dark green to black glauconite nodules (1%). CLAYSTONE, a.a. SHALE/COAL, dark brown-black, lignitic.
1955	30 60	SANDSTONE, a.a grades to siltstone SILTSTONE, white to yellowish-grey, light brownish-one. Time-prower light grey. Inthic/volcanic grains, trace carbonaceous material, rune dans uneen to brack glauconite nodules.
	10 Tr	SHALE, dark brown to black, lignitic. TUFF/VOLCANICS, a.a.
1960	30 50 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. TUFF, white to very pale orange, very fine-cryptocrystalline, trace brown mica.
1965	30 40	SANDSTONE, a.a. SILTSTONE, very light grey to light olive grey, greenish grey, lithic/volcanic grains, trace mica, calcareous.
	20 10	SHALE, brownish grey to brownish black, very carbonaceous. TUFF, a.a.
1970	20 80 Tr Tr	SANDSTONE, a.a calcareous. SILTSTONE, a.a. GLAUCONITE, dark green nodules: 1-2%. TUFF, a.a (<1%).
1975	20	SANDSTONE, white to very light grey, silty to very fine, moderate sorted, calcareous cement (10%), lithic (10%), feldspathic (5%), micaceous (5%), hard, poor porosity.
	80 Tr Tr	SILTSTONE, white to light olive-grey, lithic, micaceous, calcareous in part, grades to very fine sandstone.  GLAUCONITE, dark green nodules: 1-2%.  TUFF, a.a (<1%).
1980	10 90 Tr	SANDSTONE, a.a calcareous. SILTSTONE, a.a. COAL, a.a.
1985	20 80 Tr	SANDSTONE, a.a calcareous. SILTSTONE, a.a. COAL, a.a.
1990	20 80	SANDSTONE, a.a calcareous. SILTSTONE, a.a.
1995	20 80	SANDSTONE, a.a calcareous. SILTSTONE, a.a.
2000	20 80	SANDSTONE, a.a. – moderate to strong calcareous cement. SILTSTONE, a.a.

1905	20 40 40 Tr	SANDSTONE, a.a. SILTSTONE/VOLCANICS, medium light grey to olive grey, hand, black "beppen" lithic/volcanic grains, hand, minor (41%) coanse quanta grains demented in siltstone. CLAYSTONE, a.a. BASALT/DOLERITE? dank green to tlack, firm to range
1910	20 50 30 Tr	SANDSTONE, a.a. SILTSTONE/VOLCANICS, a.a. CLAYSTONE, a.a. BASALT, a.a.
1915	80 20	SILTSTONE/VOLCANICS, a.a. CLAYSTONE, a.a.
1920	60	SILTSTONE, a.a volcanogenic, minor coarse quartz grains and medium to dark
	40	green to black basalt? fragments, hard.  CLAYSTONE, white to yellowish grey, soft, weathered, silty in part. Possibly weathered volcanics or siltstone.
	Tr	COAL, a.a.
1925	30	SANDSTONE, mostly white, very fine, moderate sorted, sub-rounded, silty, calcareous cement (10%), lithic (10%), feldspathic (10%), trace brown mica, poor porosity.
	50	SILTSTONE, a.a also white, light grey, sandy, calcareous in part, tuffaceous?
	20	glauconitic. CLAYSTONE, a.a grades to siltstone.
1930	40	SANDSTONE, mostly white, very fine, moderate sorted, sub-rounded, silty, calcareous cement (10%), lithic (10%), feldspathic (10%), trace brown mica, poor porosity.
	40	SILTSTONE, a.a. – also white, light grey, sandy, calcareous in part, tuffaceous? glauconitic.
	20	CLAYSTONE, a.a grades to siltstone.
	Tr Tr	SHALE/COAL, dark brown to black, carbonaceous. TUFF/VOLCANICS, white to brown, firm.
1935	30	SANDSTONE, a.a.
	40	SILTSTONE, a.a.
	20 10	CLAYSTONE, a.a. SHALE/COAL, a.a.
1940	40	SANDSTONE, a.a.
	40	SILTSTONE, a.a.
	20	CLAYSTONE, a.a.
	Tr	TUFF/VOLCANICS, a.a.
1945	30	SANDSTONE, white, cream, light grey, very fine, moderate sorted, calcareous in
	40	part, minor (5%) grey-black and orange lithic/volcanic grains, very poor porosity. SILTSTONE, white to yellowish-grey, hard, brown-black lithic/volcanic grains, calcareous in part, also 50% light to medium grey, light brown, greenish-grey, hard.
	30 Tr	CLAYSTONE, light brownish-grey, light to medium grey, silty, firm to hard. SHALE, carbonaceous, grading to coal.

moderate to strong calcareous cement (10%), lithics (10%), feldspathic (1	0703,
micaceous (5%), very poor porosity, grades to siltstone.  80 SILTSTONE, white to light grey, lithic, feldspathic, micaceous, calcareous, tuffaceous, minor carbonaceous fragments, firm to hard.	
Tr TUFF, white to yellow-grey, micaseous.	
2010 20 SANDETUKE, Ma  80 SILTSTONE, white, very boot grey to medium grey, greenish-grey, micaceo felospathic, little, tuffaceous, minor carbonaceous fragments.	us,
The SHALE, dark brownish-grey to black, very carbonaceous. The TUFF, a.a.	
2015 20 SANDSTONE, a.a. 80 SILTSTONE, a.a. Tr SHALE, a.a.	
2020 10 SANDSTONE, a.a. 90 SILTSTONE, a.a. Tr SHALE, a.a.	
2025 10 SANDSTONE, a.a. 80 SILTSTONE, a.a. 10 SHALE/COAL, a.a. Tr _ GLAUCONITE, dark green rounded nodules.	
2030 20 SANDSTONE, a.a. 80 SILTSTONE, a.a. Tr SHALE/COAL, a.a. Tr GLAUCONITE, a.a.	
2035 20 SANDSTONE, a.a. 80 SILTSTONE, a.a. Tr GLAUCONITE, a.a (1%).	
2040 20 SANDSTONE, a.a. 80 SILTSTONE, a.a. Tr SHALE/COAL, a.a.	
2045 20 SANDSTONE, a.a. 80 SILTSTONE, a.a. Tr SHALE/COAL, a.a.	
2050 10 SANDSTONE, a.a. 70 SILTSTONE, a.a. 20 CLAYSTONE, white, silty, soft. Tr SHALE/COAL, a.a.	
2055 20 SANDSTONE, white, light grey, light pinkish-grey, very fine, grades to silts moderate sorted, calcareous cement (10%), lithic/volcanic grains (10%), fe	
<ul> <li>(5%), trace mica, poor porosity.</li> <li>SILTSTONE, white, light grey, light olive-grey, greenish-grey, lithic/volcani grains, feldspathic, minor mica, calcareous in part, firm to hard.</li> </ul>	с

SHALE, brownish-grey to brownish-black, lignitic, grading to coal.

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2060	10 50 10 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. TUFF, a.a.
2065	20 80	SANDSTONE, ala veny caicaneous (15-20%), veny poor ponosity. SILTSTONE, ala.
2070	Tr 100	SANDSTONE, ala. SILTSTONE, right provinish-grey, light plive-grey, greenish-grey, light grey, lithic, feldspathic, micaceous, cairareous in part.
2075	20 80	SANDSTONE, a.a. : SILTSTONE, a.a.
2080	10 90	SANDSTONE, a.a. SILTSTONE, a.a.
2085	20 80	SANDSTONE, a.a. SILTSTONE, a.a 25% light brown, very calcareous.
2090	10 70 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, greenish-brown to black, very carbonaceous.
2095	10 90 Tr-	SANDSTONE, a.a. SILTSTONE, a.a. TUFF, white, soft, trace biotite.
2100	10 90 Tr	SANDSTONE, a.a. SILTSTONE, a.a. TUFF, a.a.
2105	20 80 Tr	SANDSTONE, a.a. SILTSTONE, a.a. TUFF, a.a.
2110	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2115	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2120	100	SILTSTONE, pale olive to light grey, firm to hard, lithic, feldspathic, micaceous, trace carbonaceous material.
2125	10 50	SANDSTONE, a.a. SILTSTONE, a.a.
2130	40	SANDSTONE, clear, white, very fine, grades to siltstone, moderate sorted, subangular, minor calcareous cement (5%), lithic (10%), feldspathic (5%), trace mica, poor porosity.
	60	SILTSTONE, a.a grades to very fine sandstone.

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2135	50 50	SANDSTONE, clear, white, light grey, greenish-grey, silty to very fine. moderate sorted, sub-angular, calcareous cement (10%), lithic/volcanic grains (15%), feldspar (5%), trace mica, poor porosity.  SILTSTONE, white, pinkish-grey, light grey, sandy, lithic, feldspathic, micaceous, calcareous in part, grades to very fine sandstone.
2140	30 60 10	SANDSTONE, a.a SILTSTONE, a.a. SHALE, brownish-grey to black, very carbonaceous, grading to coal
2145	100 Tr	SILTSTONE, white, very light grey, light olive-grey, lithic/volcanic grains, sandy in part, firm to hard.  TUFF, a.a.
2150	Tr 100 Tr	SANDSTONE, a.a. SILTSTONE, a.a. TUFF, a.a.
2155	30 70	SANDSTONE, white, greenish-grey, very fine, moderate sorted, calcareous cement (10%), lithic/volcanic grains (15%), feldspar (5%), poor porosity. SILTSTONE, a.a.
2160	30 60 10 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, dark brown to black, very carbonaceous. TUFF, a.a.
2165	-30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE/COAL, dark grey, dark brown to black, very carbonaceous, lignitic.
2170	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a slightly calcareous. SHALE/COAL, a.a.
2175	30 50 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, brownish-grey, carbonaceous, firm to hard.
2180	30 60 10 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2185	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2190	Tr 100 Tr	SANDSTONE, a.a calcareous.  SILTSTONE, light to dark grey, brownish-grey, lithic, carbonaceous, grades to very fine sandstone.  SHALE, a.a.
	Tr	TUFF, white, soft, trace mica.
2195	90 10	SANDSTONE, a.a. SILTSTONE, a.a.

2200	10 60 30 Tr	SANDSTONE, a.a slightly calcareous. SILTSTONE, a.a. SHALE, dark brownish-grey, carbonaceous. TUFF, a.a.
2205	10 90 Tr	SANDSTONE, a.a. SILTSTONE, a.a SHALE, a.a
2210	80 20 Tr	SANDSTONE, a.a. SILTSTONE, a.a. TUFF, a.a.
2215	80 20	SILTSTONE, a.a. SHALE, a.a grades to lignite.
2220	80 20 Tr	SILTSTONE, a.a. SHALE, a.a. TUFF, a.a.
2225	80 20	SILTSTONE, a.a. SHALE, a.a.
2230	10 90	SANDSTONE, a.a.  GSILTSTONE, brownish-grey, greenish-grey, micaceous, carbonaceous, sandy in part.
2235	10 90 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2240	10 80 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2245	10 90	SANDSTONE, a.a. SILTSTONE, a.a.
2250	40 60	SANDSTONE, white, very light grey, very fine, moderate sorted, sub-angular, moderate clay matrix (5%), calcareous cement (5-10%), grey and grey-green lithic/volcanic grains (10%), feldspar (10%), trace mica, poor porosity. SILTSTONE, a.a.
2255	30 70 Tr Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2260	Tr 100	SANDSTONE, a.a. SILTSTONE, white to medium grey, light brownish-grey, lithic, micaceous, feldspathic, minor carbonaceous specks, calcareous in part, firm, grades to very fine sandstone.
2265	Tr 100	SANDSTONE, a.a. SILTSTONE, a.a.
2270	10 90	SANDSTONE, a.a. SILTSTONE, a.a.

2275	10 80 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, brownish-grey to brownish-black, very carbonaceous, brittle, grades to coal.
2280	20 80 Tr	SANDSTONE, a a SILTSTONE, a a. SHALE, a.a
2285	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2290	30	SANDSTONE, clear to white, very fine, poor to moderate sorted, sub-angular, medium calcareous cement (5-10%), grey-green and black lithic/volcanic grains (5-10%), white feldspar - weathered in part (10%), poor porosity.
	70	SILTSTONE, white, light to medium grey, greenish-grey, lithic, feldspathic, micaceous, trace to moderate carbonaceous material, firm, grades to very fine sandstone.
	Tr	SHALE, brownish-grey, carbonaceous in part, firm to hard.
2295	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2300	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
	Tr	SHALE, a.a.
2305	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2310	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2315	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2320	20 50	SANDSTONE, a.a.
	20 10	SHALE, dark brown to black, grading to coal. COAL, shaley.
2325	30 60	SANDSTONE, a.a. SILTSTONE, a.a.
	10 Tr	SHALE, a.a. COAL, a.a.
2330	30 70 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2335	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2340	20 80	SANDSTONE, a.a. SILTSTONE, a.a.

2345	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2350	10	SANDSTONE, white to light grey, silty to very fine, poor to moderate sorted, sub-angular, calcareous cement in part (10%), lithic/volcanic grains (10%), feldspar (5%), poor porosity
	90	SILTSTONE, a.a.
2355	10 90	SANDSTONE, a a. SILTSTONE, light to medium grey, lithic, feldspathic, micaceous, calcareous in part, grades to very fine sandstone.
2360	Tr 100	SANDSTONE, a.a. SILTSTONE, light to medium grey, lithic, micaceous, feldspathic, carbonaceous, sandy in part.
2365	Tr 100	SANDSTONE, a a. SILTSTONE, light to medium grey, occasional dark grey, sub-fissile, lithic, micaceous, feldspathic, carbonaceous fragments, sandy in part.
2370	Tr 100	SANDSTONE, a.a. SILTSTONE, a.a.
2375	10 70 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2380	Tr 90 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2385	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2390	30	SANDSTONE, white, light grey, very fine, poor to moderate sorted, sub-angular, moderate to strong calcareous cement (5-10%), lithic/volcanic grains (10%), feldspar (10%), poor porosity.
	70	SILTSTONE, a.a grades to very fine sandstone.
2395	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2400	10 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2405	10 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2410	10 90	SANDSTONE, a.a. SILTSTONE, a.a.

2415	10 90	SANDSTONE, white, light grey, very fine, poor to moderate sorted, sub-angular to sub-rounded, calcareous cement (15%), lithic/volcanic grains (10-15%), feldspar (10%), firm, poor porosity.  SILTSTONE, white, light brownish-grey, light olive-grey to greenish-grey, lithic/volcanic grains, feldspathic, trace mica, sub-fissile to blocky, firm to hand
2496	20 80 Tr Tr	SANDSTONE, ala SILTSTONE, ala. SHALE, ala. COAL, ala.
2425	20 80 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2430	30 70	SANDSTONE, white, light greenish-grey, very fine, moderate sorted, sub-angular, moderate to strong calcareous cement (10%), green and grey-black lithic/volcanic grains (15%), feldspar (10%), trace mica, firm, poor porosity.  SILTSTONE, light to medium brownish-grey, lithic/volcanic grains, feldspathic,
	Tr Tr	micaceous, calcareous in part, firm, grades to very fine sandstone.  SHALE, brownish-grey, firm.  COAL, a.a.
2435	10 90	SANDSTONE, a.a. SILTSTONE, a.a.
2440	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2445	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2450	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2455	30 70	SANDSTONE, white, light greenish-grey, very fine, moderate sorted, sub-angular, calcareous cement (10%), lithic/volcanic grains (15%), feldspar (10%), firm, poor porosity.
2460	30 70	SILTSTONE, a.a.  SANDSTONE, a.a.  SILTSTONE, a.a.
2465	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2470	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2475	10 80 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, brownish-grey to brownish-black, very carbonaceous, brittle, grades to coal.

2480	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2485	30	SANDSTONE, white, pinkish-grey, yellowish-grey, very fine, grades to siltstone, poor to moderate sorted, sub-angular, calcareous cement (10%), greenish-white
	70	lithic/volcanic grains (10%), pink and white feldspar (10%), firm, poor porosity. SILTSTONE, white, light grey, light olive-grey, brownish-grey, sandy.
	Ŧŗ	lithic/volcanic grains, feldspathic, trace carbonaceous material. CCAL, a.a.
2490	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2495	10 90	SANDSTONE, a.a. SILTSTONE, a.a.
2500	30 70 Tr	SANDSTONE, a.a. SILTSTONE, a.a. TUFF, a.a.
2505	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2510	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2515	20 80 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2520	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2525	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2530	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2535	100	SANDSTONE, clear, white, loose, very fine to medium, predominantly fine, moderate sorted, sub-angular to sub-rounded, trace calcite grains and calcareous cement, grey, pale green and orange-pink lithic/quartzite/volcanic grains (20%), white feldspar (5%), trace to minor (1-2%), brown mica, poor to fair porosity.
	Tr	SILTSTONE, a.a.
2540	100	SANDSTONE, a.a. – becoming more angular, with increasing calcite grains and calcareous cement and more feldspar and mica.
2545	100 Tr	SANDSTONE, clear, white, minor pale green and pale orange-pink, very fine to occasional medium, mostly fine, poor to moderate sorted, angular to sub-angular, calcite grains and calcareous cement (5%), pale green and orange-pink lithic/quartzite/volcanic grains (20%), white and pinkish feldspar - weathered in part (10-15%), brown mica (<5%), poor porosity. SILTSTONE, a.a.
	Tr	SHALE, a.a.

2550	80 20	SANDSTONE, a.a but becoming very fine and silty with very poor porosity SILTSTONE, brownish-grey, lithic, feldspathic, micaceous, trace carbonaceous material, shaley in part.
2555	60 40	SANDSTONE, clear, white, very light grey, very fine, poor to moderate sorted, sub-angular, calcareous cement (10%), lithic/volcanic grains (20%), fedds: br (10%), mica (5%), poor porosity. SILTSTONE, a.a.
2560	50 <sub>-</sub> 50	SANDSTONE, a.a minor yellow-brown, very calcareous. SILTSTONE, a.a.
2565	40 60 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2570	10 70	SANDSTONE, a.a. SILTSTONE, white, pinkish-grey to yellowish-grey, lithic/volcanic, feldspathic, minor carbonaceous material, trace mica, firm.
	20 Tr	SHALE, light to medium brownish-grey, silty in part, firm. COAL, dull to bright black, shaley in part.
2575	10 70 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2580	20 70 10	SANDSTONE, a.a. – one grain pink-red garnet. SILTSTONE, a.a. SHALE, a.a.
2585	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2590	40	SANDSTONE, white, very light grey, very pale orange, very fine, poor to moderate sorted, angular to sub-rounded, calcareous cement (10-15%), lithic/volcanic grains (15%), feldspar (10%), trace mica, poor porosity.
	60 = Tr	SILTSTONE, a.a. COAL, a.a.
2595	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2600	30	SANDSTONE, clear, silty to very fine, poor to moderate sorted, sub-angular, calcareous cement (15%), lithic/volcanic grains (20%), feldspar (15%), trace mica, poor porosity.
	70	SILTSTONE, white, pale yellow-brown, light brownish-grey, sandy, calcareous in part, lithic/volcanic, feldspathic, trace mica.
	Tr	COAL, a.a.
2605	30 70 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2610	40 60	SANDSTONE, a.a grades to siltstone. SILTSTONE, a.a.
2612	100	coal, brownish-black, shaley in part.

2615	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2620	30 70 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2625	30 70 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2630	40 60	SANDSTONE, white, silty to very fine, poor to moderate sorted, sub-angular to sub-rounded, calcareous cement (15%), lithic/volcanic grains (20%), feldspathic (15%), trace mica, poor porosity. SILTSTONE, a.a.
2635	30	SANDSTONE, white, pinkish-grey, silty to very fine, poor to moderate sorted, subangular, moderate to strong calcareous cement(10%), lithic/volcanic grains (25%), feldspar (15%), trace mica, poor porosity.
	70	SILTSTONE, a.a. – white, grading to grades to very fine sandstone (20%), also light greenish-grey to olive-grey, brownish-grey, lithic/volcanic, feldspathic, carbonaceous in part, calcareous in part, firm.
2640	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, light to dark brownish-grey, carbonaceous, silty.
2645	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2650	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
2655	20 80 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2660	60 40 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2665	30 70 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2670	30 50 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, light to medium brown, olive-grey, silty in part, firm. COAL, dark brown to black, shaley in part.
2675	20 60 10	SANDSTONE, a.a. SILTSTONE, light brownish-grey, greenish-grey, lithic/volcanic, feldspathic, micaceous, carbonaceous in part, calcareous in part, firm. SHALE, a.a. COAL, a.a.

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2680
          20
                 SANDSTONE, a.a.
          60
                 SILTSTONE, a.a.
          10
                 SHALE, a.a.
          10
                 COAL, a.a.
 2685
          20
                 SANDSTONE, a.a.
                 SILTSTONE, a a
          60
          20
                 SHALE, a.a.
                COAL, a.a.
                SANDSTONE, a.a.
 2690
          20
          50
                SILTSTONE, a.a.
          10
                SHALE, a.a.
          20
                COAL, a.a.
2695
          10
                SANDSTONE, a.a.
          60
                SILTSTONE, a.a.
          20
                SHALE, a.a.
          10
                COAL, a.a.
2700
         Tr
                SANDSTONE, a.a.
         70
                SILTSTONE, a.a.
         20
                SHALE, a.a.
          10
                COAL, a.a.
                                                                   ( u
2705
                SANDSTONE, a.a.
         Tr
         80
                SILTSTONE, a.a.
         20
                SHALE, a.a.
         Tr
                COAL, a.a.
NOTE:
                SHALE SHAKER SCREENS TOO COARSE AND SOME SAND FALLING THROUGH.
2710
         TR
                SANDSTONE, a.a.
         80
                SILTSTONE, a.a.
         10
                SHALE, a.a.
         10
                COAL, a.a.
                SANDSTONE, a.a.
2715
         10
         70
                SILTSTONE, a.a.
         10
                SHALE, a.a.
         10
                COAL, a.a.
2720
         10
                SANDSTONE, a.a.
         70
                SILTSTONE, a.a.
         10
                SHALE, a.a.
         10
                COAL, a.a.
2725
         Tr
                SANDSTONE, a.a.
                SILTSTONE, light brownish-grey, lithic/volcanic, feldspathic, trace carbonaceous
         60
                SHALE, brownish-grey, silty, carbonaceous and grading to coal in part.
         10
                COAL, brownish-black to black, dull to shiney lustre, brittle.
         10
2730
         10
                SANDSTONE, a.a.
         40
                SILTSTONE, a.a.
         30
                SHALE, a.a.
         20
                COAL, a.a.
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2735	10 40 30 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2740	10 70 20 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2745	10 60 20 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2750	20 50 20 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2755	10 70 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
<sup>(2</sup> 760	10  70	SANDSTONE, clear, white, very fine, moderate sorted, angular to sub-angular, calcareous cement (10%), lithic/volcanic grains (20%), feldspar (15%), trace mica, poor porosity.  SILTSTONE, light to medium brownish-grey, light olive-grey, lithic, feldspathic, micro-micaceous, carbonaceous in part, firm, grades to shale.
	10 10	SHALE, brownish-grey, olive-grey, silty, carbonaceous in part, firm. COAL, a.a.
2765	10 70 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2770	10 70 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2775	20 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2780	10	SANDSTONE, white, silty to very fine, moderate sorted, sub-angular, calcite grains and cement (10%), lithic/volcanic grains (20%), feldspar (15%), trace mica and carbonaceous material, poor porosity.
	10	SILTSTONE, white, light grey, light brownish-grey, greenish-grey, lithic, feldspathic, micro-micaceous, carbonaceous in part,firm SHALE, dark brown to black, coally.
2785	20 60 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.

2790	10 70 20 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2795	10 70 20 Te	SIANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2800	20 50 10 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2805	10 70 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2810	10 60 20 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2815	20 70 10 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2820	30 40 20 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2825	30 70 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2830	20 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
NOTE :		FINER SHAKER SCREENS INSTALLED.
2835	30 70	SANDSTONE, a.a grades to siltstone. SILTSTONE, a.a.
2840	40 60	SANDSTONE, a.a. clear, white pale grey-green, very fine, moderate sorted, sub-angular, calcareous cement (10%), lithic/volcanic grains (15%), feldspar (10%) poor porosity. SILTSTONE, a.a.

2845	20	SANDSTONE, clear, white, light greenish-grey, silty to very fine, moderate sorted, sub-angular, calcareous cement (10%), iithic/volcanic grains (20%), feldspar (10%), very poor porosity.			
	80	SILTSTONE, white, light greenish-grey, light brownish-grey, lithic/volcanic, feldspathic, minor carbonaceous specks, calcaneous in part, sub-fissile to blocky, firm.			
2850	20 80	SANDSTONE, a.a. SILTSTONE, a.a			
2855	40 60	SANDSTONE, a.a. SILTSTONE, a.a.			
2860	40 60	SANDSTONE, a.a. SILTSTONE, a.a.			
2865	40 60 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.			
2870	20 80	SANDSTONE, a.a. SILTSTONE, a.a.			
2875	20 80	SANDSTONE, a.a. SILTSTONE, a.a.			
2880	30 70	SANDSTONE, a.a. SILTSTONE, a.a.			
2885	20 80	SANDSTONE, white, yellowish-grey, silty to very fine, moderate sorted, angular to sub-angular, strong calcite cement (15%), lithic/volcanic grains (15%), feldspar (15%), trace mica, poor porosity.  SILTSTONE, white, yellowish-grey, light greenish-grey, light grey, light brownish-grey, lithic, feldspathic, micro-micaceous, carbonaceous specks, calcareous in part,			
2890	40	firm, grades to very fine sandstone.  SANDSTONE, a.a.			
2030	60	SILTSTONE, a.a.			
2895	40	SANDSTONE, a.a mostly white to light grey, also pale orange to light brown, hard, very fine, moderate sorted, sub-angular, very calcareous, lithic, feldspathic, very poor porosity.			
	60	SILTSTONE, a.a.			
2900	40 60	SANDSTONE, a.a. SILTSTONE, a.a.			
2905	30	SANDSTONE, clear, white, light greenish-grey, very fine, moderate sorted, sub-angular, moderate calcareous cement (5-10%), lithic/volcanic grains (20%), feldspar (15%), grades to siltstone, poor porosity.			
	70	SILTSTONE, a.a.			
2910	30 70	SANDSTONE, a.a. SILTSTONE, a.a.			
2915	30 70	SANDSTONE, a.a. SILTSTONE, a.a.			

2920	30	SANDSTONE, white, yellowish-grey, very fine, poor to moderate sorted, angular to sub-angular, calcareous cement (10%), lithic/volcanic grains (20%), feldspar
	70	(15%), silty in part, poor porosity.  SILTSTONE, white, light grey, light brownish-grey, light greenish-grey, lithic, feldspathic, micro-micaceous, trace carbonaceous material, hand, sub-fissile to blocky, sandy in part.
2925	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a becoming grey-brown, carbonaceous. COAL, dark brown to black, shaley.
2930 :	30 50 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, predominantly brownish-grey, some brownish-black and light greenish-grey, silty, carbonaceous in part and grading to coal in part. COAL, a.a.
2935	30 60 10 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2940	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
2945	40 60	SANDSTONE, a.a. SILTSTONE, a.a.
2950	30 70	SANDSTONE, a.a grades to siltstone. SILTSTONE, a.a mostly white to light greenish-grey.
2955	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
2960	20 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2965	20 60 10 10	SANDSTONE, white, yellowish-grey, light grey-green, silty to very fine, poorly sorted, sub-angular, calcareous cement in part (10%), lithic/volcanic grains (25%), feldspar (15%), trace mica, hard, very poor porosity. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
2970	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
2975	10 70 20 Tr	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, light to medium brownish-grey, light olive-grey, brownish-grey to black, carbonaceous, firm. COAL, a.a.
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2980	10 90 Tr	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
	; ;	COME, a.a.
2985	20	SANDSTONE, a.a.
	70	SILTSTONE, a.a.
	10	COAL, a a
2990	20	SANDSTONE, a.a.
	70	SILTSTONE, a.a.
	10	COAL, a.a.
2995	10	SANDSTONE, white, light greenish-grey, moderate sorted, sub-angular, calcareous cement in part (5-10%), lithic/volcanic grains (20%), feldspar (15%), hard, very poor porosity.
	60	SILTSTONE, light brown, light brownish-grey, micro-micaceous, lithic, feldspathic, firm, sub-fissile.
	10	SHALE, moderate brown, brownish-grey, silty, carbonaceous in part.
	10	COAL, a.a.
3000	20	SANDSTONE, a.a.
3000	20 60	SILTSTONE, a.a.
	10	SHALE, a.a.
	10	COAL, a.a.
7005	00	CLEDOTONE
3005	20 60	SANDSTONE, a.a. SILTSTONE, a.a.
	-10	SHALE, a.a.
	10	COAL, a.a.
3010	10	SANDSTONE, a.a.
	60	SILTSTONE, light to moderate brown, light brownish-grey, sandy in part, lithic, feldspathic, carbonaceous, calcareous in part, firm.
	20	SHALE, light to medium brownish-grey, very carbonaceous in part, firm.
	10	COAL, a.a.
3015	30	SANDSTONE, a.a.
	70 Tr	SILTSTONE, a.a. SHALE, a.a.
	Tr	COAL, a.a.
	•••	CONE, ala.
3020	20	SANDSTONE, a.a.
	60	SILTSTONE, a.a.
	20	SHALE, a.a.
-	Tr	COAL, a.a.
3025	30	SANDSTONE, clear, white, pinkish-grey, silty to very fine, moderate sorted, sub-angular, moderate to strong calcareous cement (10%), lithic/volcanic grains (20%), feldspar (15%), poor porosity.
	70	SILTSTONE, a.a.
	Tr	SHALE, a.a.
	Tr	COAL, a.a.
3030	20	SANDSTONE, a.a.
	80	SILTSTONE, a.a.
	Tr	COAL, a.a.

3035	30 60 10	SANDSTONE, clear, white, yellowish-grey, very fine, moderate sorted, sub-angular, calcareous cement (5-10%), lithic/volcanic grains (20%), feldspar (15%), grades to siltstone in part, very poor porosity. SILTSTONE, light to medium brownish-grey, pinkish-grey, lithic, feldspathic, micro-micaceous, carbonaceous in part, slightly calcareous, grades to very fine sandstone. COAL, duil to sharey black, brittle.
3040	30 70 Tr Tr	SANDSTONE, a.a also minor (20%) pale to light blue-green, very fine, lithic (15%), feldspathic (10%) wery book occasity. SILTSTONE, a.a minor (10%) pale blue-green to greenish-grey, lithic, micromicaceous. SHALE, a.a. COAL, a.a trace pyrite (marcasite?)
3045	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3050	10 70 20	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3055	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3060	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3065	20 60 20	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3070	20 40 20 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3075	20 50 10 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3080	20 50 10 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3085	20 50 10 20	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.

3090	10 70 10 10	SANDSTONE, a.a.  SILTSTONE, light to medium grey, light to medium brownish-grey, occasional light greenish-grey, lithic, feldspathic, micro-micaceous, carbonaceous, calcareous in part, firm.  SHALE, a.a.  COAL, a.a.
3095	10 70 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3100	10 70 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3105	20 60 10 10	SANDSTONE, white, yellowish-grey, very fine, poor to moderate sorted, angular to sub-angular, moderate calcareous cement (10%), lithic/volcanic grains (20%), feldspar (10%), very poor porosity.  SILTSTONE, a.a.  SHALE, a.a.  COAL, a.a.
3110	30 60 10 Tr	SANDSTONE, a.a.  SILTSTONE, a.a.  SHALE, a.a.  COAL, a.a.
3115	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3120	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3125	20 60 10 10	SANDSTONE, white to very light grey, pinkish-grey. silty to very fine, moderate sorted, angular to sub-angular, medium calcareous cement (10%), lithic (20%), feldspar (15%), trace mica, grades to siltstone, very poor porosity. SILTSTONE, a.a. – slight to moderate calcareous. SHALE, a.a. COAL, a.a.
3130	20 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3135	20 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3140	20 60 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.

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3145	30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
3150	20 70 10	SANDSTONE, a.a. SILTSTONE, a.a SHALE, a.a.
3155	- 30 60 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a.
3160	20 60 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3165	40 50 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3170	40 50 10	SANDSTONE, a.a. SILTSTONE, a.a. COAL, a.a.
3175	40 40 20	SANDSTONE, clear, white, silty to very fine, poor to moderate sorted, sub-angular, moderate calcareous cement (5-10%), lithic/volcanic grains (15%), feldspar (15%), micaceous in part, poor porosity. SILTSTONE, a.a. SHALE, light to medium grey-brown, silty.
3180	40 40 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3185 -	30 50 10 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.
3190	70	SANDSTONE, predominantly clear and white, minor light greenish-grey, loose, very fine to medium, mostly fine, moderate sorted, angular to sub-angular, trace calcareous cement, pale greenish-grey lithic grains (10%), white feldspar (5-10%), minor brown mica (<5%), trace pink to red garnet, poor to fair porosity.
	20 10	SILTSTONE, a.a. COAL, a.a.
3195	100 Tr Tr	SANDSTONE, a.a occasional coarse, mostly fine. SILTSTONE, a.a. COAL, a.a.
3200	30 50 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, a.a. COAL, a.a.

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3205	80 20	SANDSTONE, clear, white, minor pale greenish-grey, loose, very fine to occasional medium, moderate sorted, sub-angular to sub-rounded, calcareous cement (10%), minor clay matrix (<5%), greenish-grey lithic grains (20%), feldspar (15%), trace mica, grades to siltstone, poor porosity.  SILTSTONE, a a				
3210	80 20	SANDSTONE, clean, white, minor pale greenish-grey, mostly loose, very fine to occasional medium, poor to moderate sorted, angular to sub-angular, calcaneous cement (10%), white clay matrix (5%), grey-green lithic grains (20%), white feldspan (10%), trace mica (41%), rare garnet, poor porosity.  SILTSTONE, a.a.				
3215	20 80	SANDSTONE, a.a rare orange-pink garnet. SILTSTONE, a.a.				
3220	30	SANDSTONE, a.a becoming silty and finer and more lithic/feldspathic, very poor				
	70	porosity. SILTSTONE, white, light to medium brownish-grey, light grey, lithic, feldspathic,				
	Tr	micro-micaceous, carbonaceous, firm, grading to shale in part. COAL, a.a.				
3225	20	SANDSTONE, white, very fine, moderate sorted, angular to sub-angular, calcareous cement (10%), white clay matrix (5%), lithic (20%), feldspathic (15%), trace mica, poor porosity.				
	- 80	SILTSTONE, medium to dark grey, brownish-grey, lithic, feldspathic, carbonaceous, micro-micaceous, sub-fissile, firm to hard.				
3230	20 80	SANDSTONE, a.a. SILTSTONE, a.a.				
3235	10	SANDSTONE, clear, white, loose and aggregates, very fine to occasional medium, moderate sorted, angular to sub-angular, moderate calcareous cement (5%), lithic				
	90	(20%), feldspar (10%), rare garnet, poor porosity. SILTSTONE, white to light grey, light to medium brownish-grey, micro-micaceous, carbonaceous in part, firm to hard. TRACE DULL YELLOW-WHITE PIN-POINT FLUORESCENCE (<1%), WEAK CUT AND FAINT FILM RESIDUE.				
3240	20 80	SANDSTONE, a.a. – rare garnet. SILTSTONE, a.a. TRACE FLUORESCENCE a.a.				
3245	20 80	SANDSTONE, a.a. SILTSTONE, a.a grades to very fine sandstone.  TRACE FLUORESCENCE a.a.				
3250	20 80	SANDSTONE, a.a rare pink garnet. SILTSTONE, pinkish-grey, light to medium brownish-grey, light grey, lithic, feldspathic, micaceous and carbonaceous in part, sub-fissile to blocky, firm to hard.  TRACE FLUORESCENCE a.a.				
3255	20 80	SANDSTONE, a.a. SILTSTONE, a.a. TRACE FLUORESCENCE a.a.				

3260	40	SANDSTONE, clear, white to light grey, very fine to occasional medium, mostly very fine, poor to moderate sorted, angular to sub-angular, moderate to strong calcareous cement (15%), greenish-grey lithic grains (15%), white feldspar (15%), brown mica (1%), rare garnet, very poor porosity.
	60	SILTSTONE, 9 a TRACE FLUCRESCENCE a.g.
3265	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3270	40	SANDSTONE, white to light greenish-grey, very fine to fine, moderate sorted, angular to sub-angular, silica cement, lithic (20%), feldspar (15%), trace brown mica, poor porosity.
	60	SILTSTONE, light to medium grey, light brownish-grey, light olive-grey, lithic, feldspathic, micaceous, trace carbonaceous material, firm to hard, sub-fissile to blocky.
3275	30 70	SANDSTONE, a.a moderate hard, calcareous in part. SILTSTONE, a.a.
3280	60 40	SANDSTONE, clear, white, very fine to medium, mostly very fine to fine, poor to moderate sorted, angular to sub-angular, silica cement, calcareous in part, green, grey, black and reddish-brown lithic grains (10%), feldspar (10%) - weathered in part, minor brownish mica (<1%), rare pink garnet, friable, poor porosity. SILTSTONE, light to medium grey, light to medium brownish-grey, lithic, feldspathic, micaceous, minor carbonaceous specks and laminae, sub-fissile, firm.
3285	<sup>-</sup> 30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3290	10 90	SANDSTONE, a.a. SILTSTONE, a.a.
3295	40 60	SANDSTONE, a.a. – also light greenish-grey. SILTSTONE, a.a.
3300	30	SANDSTONE, white to light greenish-grey, very fine to medium, mostly very fine to fine, poor to moderate sorted, angular to sub-angular, weak silica cement, calcareous in part, minor clay matrix (5%), pale green lithic grains (10%), pink and white feldspar (15%), trace mica, rare pink garnet, friable, poor porosity.
3305	70 40	SILTSTONE, a.a.  SANDSTONE, a.a.
	60	SILTSTONE, a.a also brownish-grey to brownish-black, carbonaceous, shaley.
3310	70	SANDSTONE, white, light greenish-grey, pinkish-grey, very fine to medium, mostly fine, poorly sorted, angular to sub-angular, weak silica cement, trace calcite, white clay matrix (5%), pale green and grey lithic grains (10%), feldspar (15%), trace brown mica, firm, very poor porosity.
	30	SILTSTONE, a.a micaceous and carbonaceous in part.
3315	70 30	SANDSTONE, clear, white, light greenish-grey, very fine to occasional medium, poor to moderate sorted, sub-angular to sub-rounded, weak silica cement (<5%), calcareous in part (<5%), minor clay matrix (5%), lithic grains (10%), feldspar (10%), trace mica (<1%), firm, poor porosity.
	JU	SILTSTONE, a.a.

	3320	60 40	SANDSTONE, a.a. SILTSTONE, a.a.
	3325	80 20	SANDSTONE, a.a. SILTSTONE, a.a.
	3330	60 40	SANDSTONE, a.a. SILTSTONE, a.a.
	3335	50 50	SANDSTONE, a.a. SILTSTONE, a.a.
	3340	40 60	SANDSTONE, clear, white, very fine to occasional coarse, mostly fine, poorly sorted, angular, silica cement, clay matrix (5%), pale green lithic grains (10%), white feldspar – weathered (15%), trace mica (1%), rare pink garnet and green chlorite? firm to hard, very poor porosity.  SILTSTONE, a.a.
	3345	40 60	SANDSTONE, a.a clay matrix (10%). SILTSTONE, a.a.
	3350	70 30	SANDSTONE, a.a. SILTSTONE, a.a.
	3355 ,	80 20	SANDSTONE, a.a. SILTSTONE, a.a.
	3360	`20 80	SANDSTONE, a.a. SILTSTONE, light grey, light brownish-grey, feldspathic, micro-micaceous, carbonaceous in part, sub-fissile, firm to hard.
-	3365	70 30	SANDSTONE, a.a rare well developed crystal faces on some quartz grains. SILTSTONE, a.a.
	3370	70 30	SANDSTONE, a.a. SILTSTONE, a.a.
	3375	70 30	SANDSTONE, a.a. SILTSTONE, a.a.
	3380	20	SANDSTONE, white pale greenish-grey, very light grey, very fine to coarse, mostly very fine to fine, poor to moderate sorted, angular to sub-angular, weak silica cement, calcareous in part, clay matrix (5%), green, grey and black lithic grains (10%), pinkish and white feldspar (15-20%), minor brown mica (5%), rare pink garnet, firm, poor porosity.  SILTSTONE, a.a.
	3385	70 20 10	SANDSTONE, a.a. SILTSTONE, a.a. SHALE, brownish-grey, greenish-grey, silty.
	3390	90 10	SANDSTONE, a.a. SILTSTONE, a.a.
•	3395	90 10	SANDSTONE, a.a. SILTSTONE, a.a.

3400	80 20	SANDSTONE, a.a moderately calcareous. SILTSTONE, a.a.
3405	<b>5</b> 0 20	SANDSTONE, white, pinkish-grey to yellowish-grey, light greenish-grey, very fine to medium, poor to moderate sorted, angular to sub-angular, calcareous cement (10%), white clay matrix (5%), green and grey-black lithic grains (10%), white feldspar (15%), trace mica, firm to hard, poor porosity.  SiLTSTONE, a.a.
3410	30 70	SANDSTONE, a.a rare garnet. SILTSTONE, light greenish-grey, light grey, light to medium brownish-grey, lithic, feldspathic, micaceous, carbonaceous in part, sub-fissile, firm to hard.
3415	50 50	SANDSTONE, a.a. SILTSTONE, a.a.
3420	40 60	SANDSTONE, a.a. SILTSTONE, a.a.
3425	40 60	SANDSTONE, a.a. SILTSTONE, a.a.
3430	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3435	30	SANDSTONE, white, yellowish-grey, light greenish-grey, very fine to medium,
		poorly sorted, angular to sub-angular, moderate calcareous cement (5%), white clay matrix (5-10%), greenish-grey to black lithic grains (10%), white feldspar - weathered in part (15%), trace brown mica (1%), rare pinkish and red garnet, poor
	70	porosity. SILTSTONE, light brownish-grey, light grey, lithic, feldspathic, micaceous, carbonaceous in part.
3440	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3445	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3450	50 50	SANDSTONE, a.a. SILTSTONE, a.a.
3455	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
3460	50 50	SANDSTONE, a.a. SILTSTONE, a.a.
3465	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3470	20 80	SANDSTONE, a.a. SILTSTONE, pinkish-grey to light brownish-grey, minor light greenish-grey and light olive-grey, lithic, micaceous, feldspathic, carbonaceous specks and laminae, firm, sub-fissile.
3475	20 80	SANDSTONE, a.a. SILTSTONE, a.a.

3480	20 80	SANDSTONE, a.a grades to shale in part.
3485	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3490	20 80	SANDSTONE, a.a moderate to strong calcareous cement (10%). SILTSTONE, a.a.
3495	20 80	SANDSTONE, a.a. SILTSTONE, a.a.
3500	20 80	SANDSTONE, a.a moderate to strong calcareous cement (10%). SILTSTONE, a.a.
3505	20 80	SANDSTONE, white, light greenish-grey, very fine to fine, occasional medium, poor to moderate sorted, angular to sub-rounded, silica and calcareous cement, clay matrix (5%), lithic grains (15%), feldspar (10%), occasional brown mica flakes, rare pink garnet, firm, poor porosity.  SILTSTONE, a.a.
3510	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3515	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3520	30 70	SANDSTONE, a.a. SILTSTONE, a.a.
3525	50 50	SANDSTONE, a.a. SILTSTONE, a.a.
3529	100	SANDSTONE, clear, white, occasional light greenish-grey, very fine to coarse, poorly sorted, angular to sub-rounded, calcareous cement (5%), grey-green and black lithic grains (10%), white feldspar (5-10%), trace mica (1%), rare garnet, friable to firm, very poor to poor porosity - mostly destroyed by clay and cement.
3530	80 20	SANDSTONE, a.a becoming more lithic and feldspathic. SILTSTONE, a.a.
3535	80 20	SANDSTONE, clear, white, occasional pale green, very fine to medium, occasional coarse, poorly sorted, angular to sub-rounded, silica and calcareous cement (10%), clay matrix (5%), green and grey-black lithic grains (10%), white feldspar (5-10%), trace mica, rare garnet, trace to poor porosity. SILTSTONE, a.a.
3540	90 10	SANDSTONE, a.a becoming fine to coarse, very poor porosity. SILTSTONE, a.a.
3545	80 20	SANDSTONE, a.a rare garnet, very poor porosity. SILTSTONE, a.a.
3550	70 30	SANDSTONE, a.a. SILTSTONE, a.a.

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	3555	80	SANDSTONE, white, yellowish-grey, light greenish-grey, very fine to medium, occasional coarse, calcareous cement (10-15%), clay matrix (5%), lithic (15%), feldspar (15%), trace mica, rare garnet, firm, very poor porosity.
		20	SILTSTONE, a.a.
	3560	70 30	SANDSTONE, a.a. SILTSTONE, a.a.
	3565	60 40	SANDSTONE, a.a. SILTSTONE, a.a.
•	3570	40 60	SANDSTONE, a.a. SILTSTONE, a.a.
	3575	50 50	SANDSTONE, a.a. SILTSTONE, a.a.
	3580	40 60	SANDSTONE, a.a. SILTSTONE, a.a.
	3585	50 50	SANDSTONE, a.a. SILTSTONE, a.a.
	3590 ( a	30	SANDSTONE, white, minor pale greenish-grey, very fine to occasional medium, poor to moderate sorted, angular to sub-angular, silica and calcite cement, clay matrix (5%), lithic grains (10%), feldspar (10%), trace biotite, rare rose pink garnet, very poor porosity.
		70	SILTSTONE, grey, light to medium brownish-grey, lithic, feldspathic, micromicaceous, carbonaceous in part, firm, sub-fissile, grading in part to shale.
-	3595	30 70	SANDSTONE, a.a. SILTSTONE, a.a.

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APPENDIX D
CONVENTIONAL CORE DESCRIPTIONS



# CORE DESCRIPTION FORM

Basin <u>otway</u>	Well WINDERMERE #2	Location 35 (4' 11" S 142 01'18" E
Core No. ONE	Date 18/3/1989	Depth 1743.8 - 1749.3m
m Cut	m Recovery $4 \cdot 3$	m %

Bit Type/Size (2416 (81/2) Formation HEATHFLELD Described by D. SHORT

CORING   CORNERS   SKETCH   UITHOLOGY   SULVEY   STRUCTURES   STRUCT	METRES  RATE  SIZE  SEDIMENTARY D   2   2   2   2   2   2   2   2   2
1744 1    1	1743 80 - 1746 50 m  Little Sanostone, dark greenish gran  4 1 A 1 0 g E N 1  T N N D U R T 1  H K E N Y E  Quarts grains, greenish-gran  A H C R N A P G  Quarts grains, greenish-gran  A H K E T N  D S I L D F M A V I N  fine to medium, moderate sorted founded, crystal faces on some grains, greenish-gran (30%) feldspar, black little gran (30%) feldspar, Weothered in ta (15%), trace mic sericile and choin (25%) clay mak (10%), minor calcaveous comen sivenics, veny poor porosity.
1747 4	1747 4  1747 4  1747 4  1747 4  1748 3  1748 50 - 1741.45 m dark grey, hard, massive, trace very fine dispersion by nite? grains, trace carbonaceon material, increasi with depth.  1747 4  1747 4  1747 4  1748 60  CARBONACEDUS CLAYSTE brownish black hard, sob fissile common carbonaceon material and material and material and plant fragment



Basin OTWAY	Well WINDERMERE#2	Location 3 <u>8° ιμ' ιι</u> " S 1 <u>42° οί ιε</u> " Ε
Core No. ONE	Date 18/3/1989	Depth 1743-8-1749.3m
m Cut5.5		
Bit Type/Size Rc476 (812"	Formation HEATHFIELD	Described by D. Shert

Bit i	ype/Size	KC416 (8/2	/ <b>F</b>	ormation	110	AP-( )	7.	161	<u>-9</u>	-	Dŧ	350	)	red by v. s.c.
METRES	1/10/11/0	DOMINANT GRAIN SIZE	1 1	SKETCH LITHOLOGY : SEDIMENTARY STRUCTURES	FACIES	CONTACTS	ROCK TYPE	COLOUR	GRAIN SIZE	SORTING	CEMENTS	AMOUNT Ø	SHOWS	COMMENTS
1748 0														1747.60 - 1748.10 m CLAYSTONSE, OS for 1746.50 - 1747.45 1748.10 - 1749.3 m NO RECOVERY.
1749 1	- - - - - - -			-		i i								
2				-										
3														
											į			
4	- - - - - - -										•			



Basin OTWAY	Well WINDERMORE #2	- Location <u>%° ւգ՝ լլ"</u> Տ( <u>կՀ°۵1՝ ւ</u> ջ " E
Core No. Two	Date 19/3/1989	Depth 1777.0~1793.9 m
m Cut16.9	m Recovery (6.8	m %
Bit Tyne/SizeRC476(8/2)	Formation HEATHGELD	Described by D. SHORT

METRE		CORING RATE MINS / M.	DOMINANT GRAIN SIZE	SAMPLES	SKETCH LITHOLOGY SEDIMENTARY STRUCTURES	FACIES	ROCK TYPE	COLOUR	GRAIN SIZE	SORTING	CEMENTS	AMOUNT Ø	TYPE	SMOHS COMMENTS
1778	1				Δ Δ π Δ π Δ		LITHIC SAN	REENINH G	EKY	ODERATE	ABUNDANT CL	٩	INTERGRANO	1777.0 - 1781.9 m  SANDSTONE, greensh  grey, very fine to  medium, moderate  sorted, sub rounded  abundant light to  dank green and  grey green to black  lithic grain (3020)  feldspen - weathered  in part (5-1090)  brott (45%)  clay malnx (1022  hord poor parasity
17 79	2	         			Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ Δ		OSTONE	1	MEDIUM		AYMATRIX	O R	LAR	SAMOSTONE as for 1777.0-1781.9 in but with coarse to very coarse quart, grains an granulus, claystone clasts to 0.5 cm, poor
1780	3				m Δ + Δ - Δ - Δ									Patchy yellow- white muneral (calcide) fluoresce  1782.1 - 1782.2m Tight Sansostore with shale claystone classe to 2 cm.
1781	4				+ m  Δ  Δ  Δ									to 2 cm.



Basin OTWAY	Well WINDERMERE #2	– Location <u>ૠાન લા</u> ક <u>ભાગ અને હ</u> ા દ
Core No. Two	Date 19/3/1989	Depth 1770.0 - 1793.9
m Cut16 9	m Recovery 16.8	m %99
Bit Type/Size (62)	Formation HEATHFIELD	Described by D. SHORT

METRES	CORING RATE	DOMINANT GRAIN SIZE	SAMPLES	SKETCH LITHOLOGY SEDIMENTARY STRUCTURES	FACIES	CONTACTS	ROCK TYPE	COLOUR	ပ	SORTING	CEMENTS	AMOUNT Ø	TYPE	SHOWS	COMMENTS
				ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο					×-4×	P MOD		2000 LAMC 1			1782.2 - 1782.8 m SANOSTONE as for 1777.0 - 1781.9 m. Mostly very fine to fine, abundant clay malux very poor porosity. 1782.8 - 1783.0m SHALE, brownish-blace
(7 <u>83</u> 1				4 4 0 4 1				·	VERY FINE	P.000 - 40		0,000 000			very carbonacious plant fragments, micaceout in por 1783.0-1784.7 m SANOSTONE as for 1782.2-1782.8, m
1784 2				Δ Μ				~	COARSK	DERATE	-	FAIR	-		meden, poor to moderate sorted, sob capila, poor porosity. 1784. B-1784. 9w CLAYSTONE medun to dark greey, have trace consonaces
1785 3	<u>+</u>     			Δ Δ Δ					ンサーチボンチースル	HODE		V. P.00 R			materal, des claysione clasts to 10 cm. 1784.9-1785.9 m SAISSTONE as for 1782.2-1782.8 m, carlsmace from 1785.6-1785.7 m.
1786 4		-		Δ +, Δ				-	FINEL	RATE		POOR			TOS E CLOS JUX.



### CORE DESCRIPTION FORM

Basin OTWAY	Well Winderiere #2	Location 380 (410 11 8 (410 01 16 E
Core No. Two	Date	Depth <u>1770.6 - 1793.9</u>
m Cut	m Recovery	m %99%
Di T 10: - P(17/64"	) Farmation HOLDHGIA	Described by D. SHORT

Bit Type/Size ((416(82) Formation (EM) HELL) Described by SIZE CONTACTS **SKETCH** CEMENTS DOMINANT SORTING AMOUNT CORING COLOUR ES SHOWS LITHOLOGY GRAIN SAMPLI COMMENTS RATE GRAIN SIZE **METRES** SEDIMENTARY MINE/M. VC C C VF VF SIT **STRUCTURES** 1787 0 1785.9-1788.3 ~ M M 00 E 0 SAMOSTONE, as for D D 1777.0-1781.9 mg R E fure to medu R menos carbonaceous U M A lammar poor to A 1 fair porosity ĸ 1788 1788.3-1790.1 m. SAMO STONE CE for 1777.0 - 1781.9 M, ρ ERY very fine to madum, ven 0 Ó poor parocity. R E F K 1 Y H 1789 2 0 E P l H M ٥ 0 E ĸ ٥ D I E υ R /M A † 1790.1-1790.7m SANDSTONE 93 1790 3 K POR ٧ for 1777.0-1781.9m F FAT but medun to ١ in part with C R **→** . frequents, boor М ٧ fair porocity D 1791 F Y F D R E RY R A F ρ 1 0 Ř N E R



Basin otway	Well WINDERMEKE # Z	Location380141 S 14200118" E
Core No. Two	Date 19/3/1989	Depth 1770.0 - 1793.9
m Cut16.9 m	m Recovery <u>16.8 m</u>	m % <u>39.4</u>
Bit Type/Size Rc476 (81/2)	Formation HEATH FIELD	Described by D.SHORT

	1 9 0 0 12	C 13.10C.	•	or marror.	 •									
METRE	MINE /M.	DOMINANT GRAIN SIZE	SAMPLES	SKETCH LITHOLOGY SEDIMENTARY STRUCTURES	 CONTACTS	ROCK TYPE	COLOUR	GRAIN SIZE	SORTING	CEMENTS	AMOUNT Ø	TYPE	SHOWS	COMMENTS
1792   C				Δ A + Δ Δ				FINE			e 00R			1790.7-1793.0 m. SANOSTONE DE FOT 1777.0-1781.9m, very fine to fine, minor Carlsonaecon specks and laminae, poor porosity.
[११९३ ।														porosity.  1793.0-1793.8m  SHALE dork grey- brown, hard, muse conformacions fragments end plant fossils.
1794														1793.8-1793.9 m No RECOVERY
	3													

APPENDIX E
SIDEWALL CORE DESCRIPTIONS



# SIDE WALL CORE DESCRIPTION

WELL: \_\_WINDERMERE #2

reservoir potential Very Calc (15%) Glay & Clay Mtx is 30-40 Clyst,silty & carb in part. Slst, sandy & carb Abt cly mtx 10% & weathered felds & As for SWC #4 but less calc cement Lst firm to hard, arg and silty. (Core is "Mushy") Slst, carb, mica, Qtz & sandy i.p. SHEET  $\frac{1}{1}$  OF  $\frac{3}{2}$ REMARKS mica destroys No recovery in part. ST \* LUUMEUULUU COL. TYPE RESD 18/4/89 **GEOLOGIST:** D.A. SHORT FLUORESCENCE 1 very low very Jow ¥ Trace Pr Calc 0 ٧P Calc Pr DATE SIZE SHAPE TYPE SHTG TYPE & TYPE & TYPE & TYPE & TYPE OL TYPE OL TYPE SH WATRIX Calc 9 . DЕРТН FROM: \_\_\_\_ broken up) Wh Cly 묽 髺 frm -friable frm -friable sft - frm sft/loose silty & arg frm sft frm frm sft -占 --ī Mica Mica ar-net Gar-net Mica Fe1d 10 10 Feld 10 10 10 Lith Carb Lith Lith Σ Σ Σ Qtz Qtz Qtz A-SA A-SA A-SA ΥF-VF-Lt brn Pale Yel ROCK % COLOUR 100 yell -gy sst/ Wh Yell-cly 100 gy Gy -100 med. gy g 5 ol-gy Brn -100 Dk gy Brn -24 M۲ clyst100 100 100 100 ATTEMPT: 100 sst clst slst clst slst sst lst 42 2,2 1,5 G .E. ~ ~ ~ 0 ~ DEPTH 3200 3194 3015 2945 3190 3167 3100 3055 3191 3192 RUN Nº: 12 က 6 2 9 Ŋ 4



# SIDE WALL CORE DESCRIPTION

WELL: WINDERMERE #2

3			, pr			thin		2		"chok.ed" '				in		blk, part		C 19		- ty		•	
٩	8	HEMARKS	Sst, vf, silty, clay "choked" v. pr	ty.		Slst with minorthin v.f. sst band		Sst with 20-30% clyst/cly mtx.			٠			lty i		Slst, dk brn - blk, carb, sandy in part		Slst as for SWC 19 - sandy lenses	,	Slst very calc - grading to silty			
er 2	֓֞֞֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֡֓֡֓֡֓֓֡֓֡֓֡֓֡֡֡֡	W H	vf, "chok	porosıty.		∧ith SSt b		ith 2 /cly	:	clay or.				si part.		dk b sand		as fo dy le		very ng to			
SHEET			Sst,	bd		Slst with mind		Sst with 20-30 clyst/cly mtx.	:	Sst - clay v.p por.				Clyst - silty part.	_	slst, carb,		Sist - san		Slst gradi	st.		
			3			<i>(</i> ) >		0, 0		0, <u>&gt;</u>						0, 0							t
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# SIDE WALL CORE DESCRIPTION

WELL: WINDERMERE #2

. DEPTH FROM: 3200 - 1876 — Loa DATE: 18/4/89 GEOLOGIST: D.M. SHORT REC: 22 24 ATTEMPT: \_\_ RUN Nº: ONE

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SHEET 3 OF 3	BEMABKS		Clystn, silty in part.			SIst, sandy & v. arg.					•		- - - - - - -		E .	-				. 1			
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APPENDIX F
CORE ANALYSIS

MINORA RESOURCES N.L.

CORE ANALYSIS REPORT For

WINDERMERE No. 2



## **CORE ANALYSIS RESULTS**

Company MINORA RESOURCES N.L.

WINDERMERE No. 2

APPRAISAL

Vell

ield

Formation HEATHFIELD

File CD-SA-310

Date Report 03.04.1989

Analysts DS, PA

Consideration   Consideratio	ieia	APPRAISAL						Analysis 20, 111
1743.83   0.087   13.4   2.63   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1777.60   0.007   3.2   2.63   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1778.21   0.157   16.2   2.63   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1779.43   0.064   13.6   2.65   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1779.43   0.0071   14.9   2.61   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, now sill cmt, shong-sbrnd, a/a.   2.63   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1779.43   0.0071   14.9   2.61   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, now sill cmt, shong-sbrnd, a/a.   2.65   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1779.43   0.064   13.6   2.65   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1779.43   0.064   13.6   2.60   SST: a/a.   SST: greenish gy, f-med grn, mod hod srt, about with arg mtx, a/s 1779.43   0.064   13.6   2.60   SST: a/a, occ f carb grns, row of srt, company growth arg mtx, now arg mt	tate	VICTORIA			Location OTWAY 1	BASIN		
DEFTH   Metres   Me	IALE - SH	CHERT CH	CONGLOMERAT	E — CONG	SANDY — SDY FINE — FN SHALY — SHY MEDIUM — ME	CRYSTALLINE — XI ED GRAIN — GRN	GRA	AY — GY LAMINATION — LAM VERY — VI
srt, 10% with cly, mod hot sile sing-umr sbrud, abut lt-dk gy lith grus, occ altered felds, biocitie & chlorite, pr visual  2 1744.43 0.112 13.6 2.65 SST: gmish gy, f-occ med gm, mod mod sile cut, sbang-umr sbrud, 20-2 tray-occ bik frm lith gms, pr transparent gurtz, occ pink & green grns, pr visual porosity.  3 1745.03 0.058 13.7 2.65 SST: greenish gy, f-med gm, mod hot mod-pr srt, v arg mtx, mod hd cut, sbang-sbrud, a/a.  4 1745.64 0.097 13.7 2.63 SST: a/a.  5 1746.24 0.213 15.3 2.67 SST: greenish gy, f-med gm, mod hot mod srt, abut with arg mtx, a/a.  6 1777.02 0.059 11.5 2.63 SST: a/a, occ f carb gms.  7 1777.60 0.007 3.2 2.65 SST: greenish gy, med-f gm, mod hot mod srt, coum arg mtx, hot cut, sbang-sbrud, a/a, v pr vi posity.  8 1778.21 0.157 16.2 2.63 SST: greenish gy, med-f gm, mod hot mod srt, abut with arg mtx, mod sile cut, sbang-sbrud, a/a, v pr vi grush gy, med-f gm, mod hot mod srt, abut with arg mtx, mod sile cut, sbang-sbrud, a/a, v pr vi grush gy, pr visual porosity.  9 1778.79 0.141 15.2 2.64 SST: a/a, occ biotite flakes.  10 1779.43 0.064 13.6 2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mon od srt, alant with arg mtx, mod sile cut, sbang-sbrud, a/a.	l l		MILLIDARCYS		% PORE			
mod srt., 10% wht cly mtx, mod sil cmt, sheng-mrr sbrnd, 20-3 lt gy-occ blk frm lith gyns, p trans quartz, occ pink & green gyns, pr visual porosity.  3 1745.03 0.058 13.7 2.65 SST: greenish gy, f-med gyn, mod hd cmt, shang-sbrnd, a/a.  4 1745.64 0.097 13.7 2.63 SST: a/a.  5 1746.24 0.213 15.3 2.67 SST: greenish gy, f-med gyn, mod hd cmt, shang-sbrnd, a/a.  6 1777.02 0.059 11.5 2.63 SST: a/a, occ f carb gyns.  7 1777.60 0.007 3.2 2.65 SST: greenish gy, med-f gyn, mod hd mod srt, comm arg mtx, now mod srt, comm arg mtx, hc cmt, shang-sbrnd, a/a, v pr vi porosity.  8 1778.21 0.157 16.2 2.63 SST: greenish gy, med-f gyn, mod hd mod srt, abut wht arg mtx, mod sil cmt, shang-sbrnd, abnt lt-gy lith gyns, occ lt green lit gyns, pr visual porosity.  9 1778.79 0.141 15.2 2.64 SST: a/a.  10 1779.43 0.064 13.6 2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod srt, abut wht arg mtx, mod srt	l	1743.83	0.087	13.4		2.63	SST:	grnish gy, f-med grn, mod hd, mod srt, 10% wht cly, mod hd sil cmt, sbang-mnr sbrnd, abnt lt-dk gy lith grns, occ altered felds, tr biotite & chlorite, pr visual por.
mod-pr srt, v arg mtx, mod hd cmt, shang-sbrnd, a/a.  4 1745.64 0.097 13.7 2.63 SST: a/a.  5 1746.24 0.213 15.3 2.67 SST: greenish gy, f-med grn, mod hd mod srt, abnt wht arg mtx, a/a  6 1777.02 0.059 11.5 2.63 SST: a/a, occ f carb grns.  7 1777.60 0.007 3.2 2.65 SST: greenish gy, med-f grn, mod hd mod srt, comm arg mtx, hc cmt, shang-sbrnd, a/a, v pr vi porosity.  8 1778.21 0.157 16.2 2.63 SST: greenish gy, med-f grn, mod hd mod srt, shang-sbrnd, a/a, v pr vi porosity.  9 1778.79 0.141 15.2 2.64 SST: a/a.  10 1779.43 0.064 13.6 2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod nod srt, abnt wht arg mtx, mod srt, abnt whit arg mtx, mod srt, abnt	2			13.6		2.65	SST:	grnish gy, f-occ med grn, mod hd, mod srt, 10% wht cly mtx, mod hd sil cmt, sbang-mnr sbrnd, 20-30% lt gy-occ blk frm lith grns, pred trans quartz, occ pink & green grns, pr visual porosity.
5       1746.24       0.213       15.3       2.67       SST: greenish gy, f-med grn, mod he mod srt, abnt wht arg mtx, a/e         6       1777.02       0.059       11.5       2.63       SST: a/a, occ f carb grns.         7       1777.60       0.007       3.2       2.65       SST: greenish gy, med-f grn, mod he mod srt, comm arg mtx, he cmt, sbang-sbrnd, a/a, v pr vi porcesity.         8       1778.21       0.157       16.2       2.63       SST: greenish gy, med-f grn, mod he mod srt, abnt wht arg mtx, mod sil cmt, sbang-sbrnd, abnt lt-gy lith grns, occ lt green liti grns, pr visual porcesity.         9       1778.79       0.141       15.2       2.64       SST: a/a.         10       1779.43       0.064       13.6       2.60       SST: a/a, occ biotite flakes.         11       1780.00       0.071       14.9       2.61       SST: greenish gy, f-occ med gy, mod sil cmt, sbang-sbrnd, a/a.	3	1745.03	0.058	13.7		2.65	SST:	greenish gy, f-med grn, mod hd, mod-pr srt, v arg mtx, mod hd sil cmt, sbang-sbrnd, a/a.
mod srt, abnt wht arg mtx, a/s  1777.02 0.059 11.5 2.63 SST: a/a, occ f carb grns.  7 1777.60 0.007 3.2 2.65 SST: greenish gy, med-f grn, mod he mod srt, comm arg mtx, he cmt, sbang-sbrnd, a/a, v pr vi porosity.  8 1778.21 0.157 16.2 2.63 SST: greenish gy, med-f grn, mod he mod srt, abnt wht arg mtx, mod sil cmt, sbang-sbrnd, abnt lit-gy lith grns, occ lt green litigrns, pr visual porosity.  9 1778.79 0.141 15.2 2.64 SST: a/a.  10 1779.43 0.064 13.6 2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod srt, abnt wht arg mtx, mod srt, abnt whit arg mtx, mod srt, abnt wht arg mtx, mod srt, abnt whit arg mtx, mod s	4	1745.64	0.097	13.7		2.63	SST:	a/a.
7 1777.60 0.007 3.2 2.65 SST: greenish gy, med-f grn, mod he mod srt, comm arg mtx, he cmt, shang-sbrnd, a/a, v pr vi porosity.  8 1778.21 0.157 16.2 2.63 SST: greenish gy, med-f grn, mod he mod srt, abnt wht arg mtx, mod sil cmt, shang-sbrnd, abnt lt-gy lith grns, occ lt green lit grns, pr visual porosity.  9 1778.79 0.141 15.2 2.64 SST: a/a.  10 1779.43 0.064 13.6 2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod srt, abnt wht arg mtx, mod sil cmt, shang-sbrnd, a/a.	5	1746.24	0.213	15.3		2.67	SST:	greenish gy, f-med grn, mod hd, mod srt, abnt wht arg mtx, a/a.
mod srt, comm arg mtx, ho cmt, sbang-sbrnd, a/a, v pr vi porosity.  8 1778.21 0.157 16.2 2.63 SST: greenish gy, med-f grn, mod ho mod srt, abnt wht arg mtx, mod sil cmt, sbang-sbrnd, abnt lt-gy lith grns, occ lt green lit grns, pr visual porosity.  9 1778.79 0.141 15.2 2.64 SST: a/a.  10 1779.43 0.064 13.6 2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod mod srt, abnt wht arg mtx, mod srt, abnt which arg mtx, mod srt, a	6	1777.02	0.059	11.5		2.63	SST:	a/a, occ f carb grns.
mod srt, abnt wht arg mtx, mod sri, sbang-sbrnd, abnt lt- gy lith grns, occ lt green lit grns, pr visual porosity.  9 1778.79 0.141 15.2 2.64 SST: a/a.  10 1779.43 0.064 13.6 2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod srt, abnt wht arg mtx, mod srt, abnt wht arg mtx, mod srt, sbang-sbrnd, a/a.	7	1777.60	0.007	3.2		2.65	SST:	mod srt, comm arg mtx, hd sil cmt, sbang-sbrnd, a/a, v pr visual
10 1779.43 0.064 13.6 '2.60 SST: a/a, occ biotite flakes.  11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod srt, abnt wht arg mtx, mod sil cmt, sbang-sbrnd, a/a.	8	1778.21	0.157	16.2	·	2.63	SST:	mod srt, abnt wht arg mtx, mod hd sil cmt, sbang-sbrnd, abnt lt-dk gy lith grns, occ lt green lith
11 1780.00 0.071 14.9 2.61 SST: greenish gy, f-occ med gy, mod srt, abnt wht arg mtx, mod sil cmt, sbang-sbrnd, a/a.	9	1778.79	0.141	15.2		2.64	SST:	a/a.
mod srt, abnt wht arg mtx, mod sil cmt, sbang-sbrnd, a/a.	10	1779.43	0.064	13.6		<b>`2.6</b> 0	SST:	a/a, occ biotite flakes.
12 1780.66 0.076 13.7 2.60 SST: a/a, comm biotite flakes.	11	1780.00	0.071	14.9		2.61	SST:	mod srt, abnt wht arg mtx, mod hd
	12	1780.66	0.076	13.7		2.60	SST:	a/a, comm biotite flakes.



### **CORE ANALYSIS RESULTS**

Company MINORA RESOURCES N.L.

Forma

Formation HEATHFIELD

File CD-SA-310

Veil WINDERMERE No. 2

Date Report 03.04.1989 Analysts DS, PA

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State

APPRAISAL VICIORIA

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AND — SD HALE — SH ME — LM	DOLOMITE — DO CHERT — CH GYPSUM — GYP	OL ANNHYDRAITE — CONGLOMERATE FOSSILIFEROUS -	- CONG	Litholo SANDY — SDY SHALY — SHY LIMY — LMY	gical Abbre FINE — FN MEDIUM — MI COARSE — CS	CRYSTAL ED GRAIN	.LINE — XLN · GRN AR — GRNL	GRA	OWN - BRN FRACTURED - FRAC SLIGHTLY - SLI LY - GY LAMINATION - LAM VERY - VI LGY - VGY STYLOLITIC - STY WITH - WI
APLE lo.	DEPTH Metres	PERMEABILITY MILLIDARCYS K.A.	POROSITY He inj		SATURATION ORE WATER	GRAIN DENSITY	VERT PERM		SAMPLE DESCRIPTIONS AND REMARKS
13	1781,20	0.117	14.9	, oic	WALEN	2.61		SST:	greenish gy, f-rr med grn, mod hd, v arg mtx, mod sil cmt, sbang-occ ang, abnt lt-dk gy lithic grns, occ tan & wht altered felds, pr visual porosity.
14	1781.88	0.122	11.9			2.62		SST:	greenish gy, f-rr crse grn, hd, pr srt, v arg mtx, mod sil cmt, sbrnd- occ cong-ang.
34	1782.06	3.1	7.9	0.0	72.3	2.63		SST:	greenish gy & wht-clr, f-v crse cong lenses, hd, pr srt, argill & calc in cong, mod sil cmt, sbrnd-ang, comm sft greenish gy clyst incl, lithics, comm felds, rr mica.
15	1782.45	0.067	14.6			2.64		SST:	greenish gy & wht-clr, f grn, mod hd, mod srt, v arg mtx, mod sil cmt, sbang-sbrnd, a/a, w- occ v crse to pebbly clyst clasts.
35	1783.07	0.374	17.5	0.0	70.8	2.69		SST:	greenish gy, f-med grn, occ crse lensed, mod srt, argill mtx, mod silc mtd, sbang-sbrnd, occ clyst incl, abnt gy lith, rr carb mica, comm weathered felds.
16	1783.18	0.260	15.4			2.65		SST:	greenish gy, med-f grn, mod hd, mod-pr srt, mod arg mtx, mod sil cmt, sbang-sbrnd, abnt gy lithic grns, occ carb grns, pr visual porosity.
17	1783.70	0.657	14.5	0.0	66.2	2.64		SST:	greenish gy, med, occ crse grn, mod hd, pr srt, v arg mtx, mod sil cmt, sbang-sbrnd, a/a w/ cong text w/ comm v crse qtz grns & pebbly clyst clasts.
18	1784,29	0.579	15.3	0.0	62.0	2.65		SST:	greenish gy, med-f grn, mod hd, mod srt, v arg mtx, mod sil cmt, sbang-sbrnd, a/a.
36	1784.67	2.0	17.0	0.4	78.2	2.68		SST:	greenish gy, dom med, occ crse grn mod hd, mod-well srt, v arg mtx, tr sil cmt, sbang-sbrnd, abnt lt- dk gy liths, occ carb, felds, mica



## **CORE ANALYSIS RESULTS**

MINORA RESOURCES N.L. Company

Formation HEATHFIELD

File CD-SA-310

Vell

WINDERMERE No. 2

Date Report 03.04.1989

Field

APPRAISAL

Analysts DS, PA

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3tate	VICTORIA			Locatio	on OTWAY BA	SIN					
AND — SD HALE — SH IME — LM	DOLOMITE — DO CHERT — CH GYPSUM — GYP	OL ANNHYDRAITE - CONGLOMERATI FOSSILIFEROUS	E CONG	Litholo sandy — sdy shaly — shy limy — lmy	gical Abbre FINE — FN MEDIUM — MI COARSE — CS	CRYSTAL ED GRAIN —	LINE — XLN GRN AR — GRNL	GRA	WN — BRN Y — GY GY — VGY	FRACTURED — FRAC LAMINATION — LAM STYLOLITIC — STY	SLIGHTLY — SLI VERY — VI WITH — WI
VPLE No.	DEPTH Metres	PERMEABILITY MILLIDARCYS K.A.	POROSITY He "inj		SATURATION ORE WATER	GRAIN DENSITY	VERT PERM		SA	MPLE DESCRIPTIONS AND REMARKS	
.9	1785.00	0.081	13.5			2.61	SS	ST:	mod srt, sbang-st	a gy, f-occ med v arg mtx, mod ornd, abnt lt-dk cc carb grns, oc	sil cmt, gy lith
20	1785.60	0.179	12.5			2.60	SS	ST:	a/a.		
21	1786.24	0.432	16.4	0.0	65.5	2.63	SS	ST:	a/a.		
22-	1786.83	0.088	15 <b>.</b> 0 (	냅		2.64	SS	ST:	a/a.		
23	1787.40	0.288	13.9			2.63	SS	ST:		ned grn, w/ occ and grns.	thin carb
37	1787.47	0.510	15.5	0.0	70.3	2.66	S	ST:	mod-pr s sbang-st grns, oc	n gy, f—dom med srt, v arg mtx, ornd, abnt lt—dk cc altered felds r vf sst lenses.	mod sil cmt, gy lithic , occ carb
24	1788.06	0.595	14.7	0.0	63 <b>.</b> 5	2.64	S	ST:	mod-pr s sbang-mr lithic s	n gy, f-med grn, srt, v arg mtx, nr sbrnd, abnt l grns, occ altere ns, pr visual po	mod sil cmt, t-dk gy ed felds, occ
25	1788.70	0.108	14.0			2.62	S	ST:	a/a.		
38	1789.05	0.278	16.2	0.0	69.2	2 <b>.</b> 67	S	ST:	a/a.		
26	1789.30	0.137	14.8			2.62	S	ST:	mod srt sbang-marg lith	n gy, f-med grn, , v arg mtx, moo nr sbrnd, abnt 1 n grns, comm can al porosity.	l sil amt, Lt—dk gy
27	1789.91	0.122	15.2			2.64	S	ST:	a/a, f	grn, sbang-sbrno	l <b>.</b>
39	1790.26	4.3	16.9	0.2	68.1	2.66	S	ST:	crse gr	n gy, med-dom co n, frm-mod hd, o , lightly sil co a/a.	mod srt, v



### **CORE ANALYSIS RESULTS**

Company MINORA RESOURCES N.L.

Formation HEATHFIELD

File CD-SA-310

VeII ₩

WINDERMERE No. 2

Date Report 03.04.1989

ield

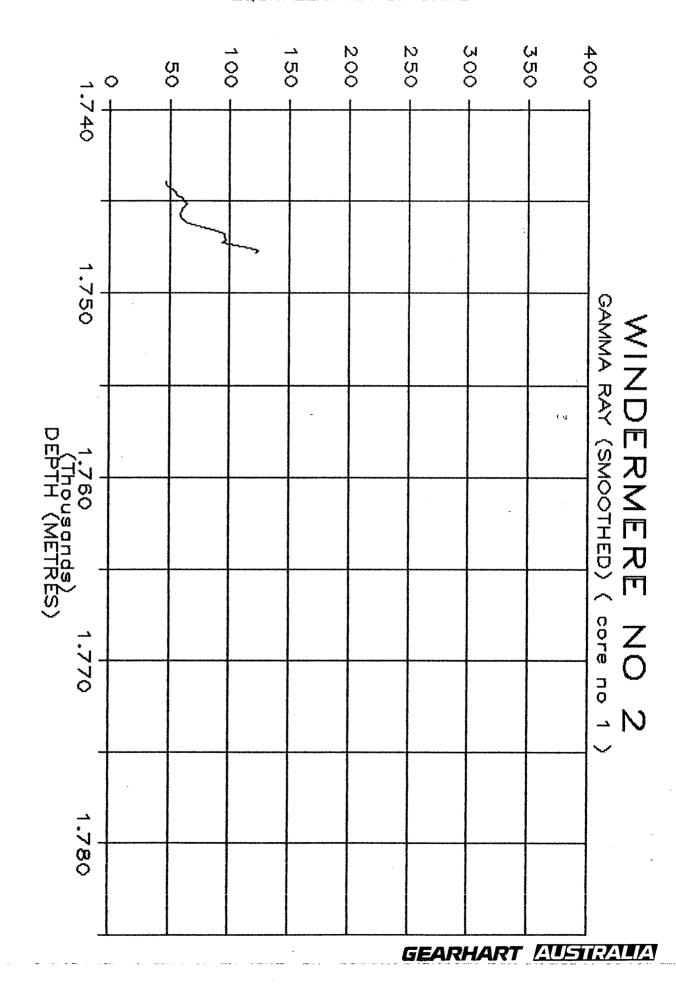
APPRAISAL

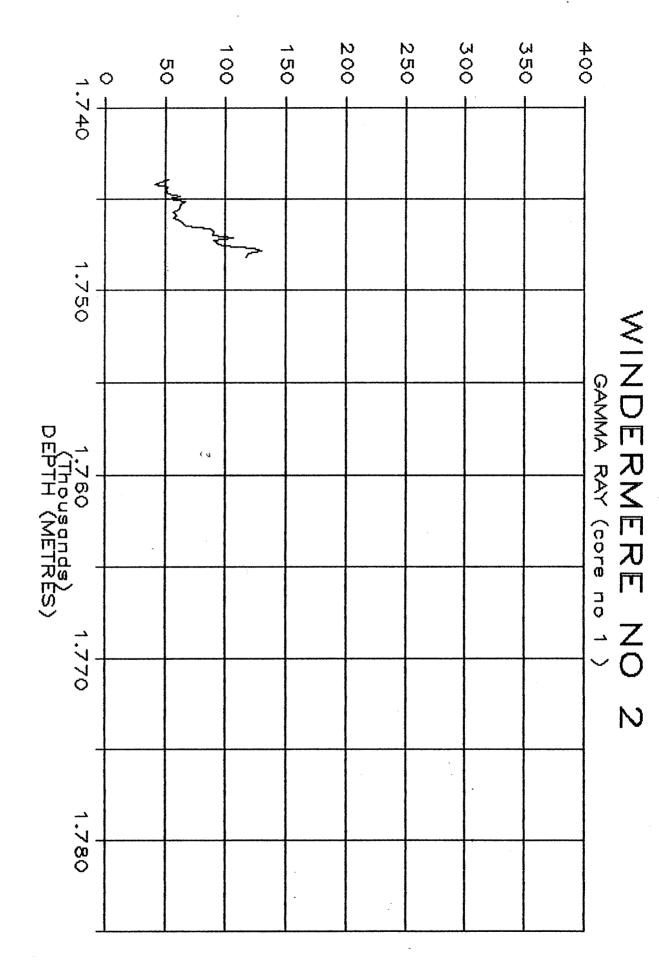
Analysts DS, PA

tate VTCTORTA

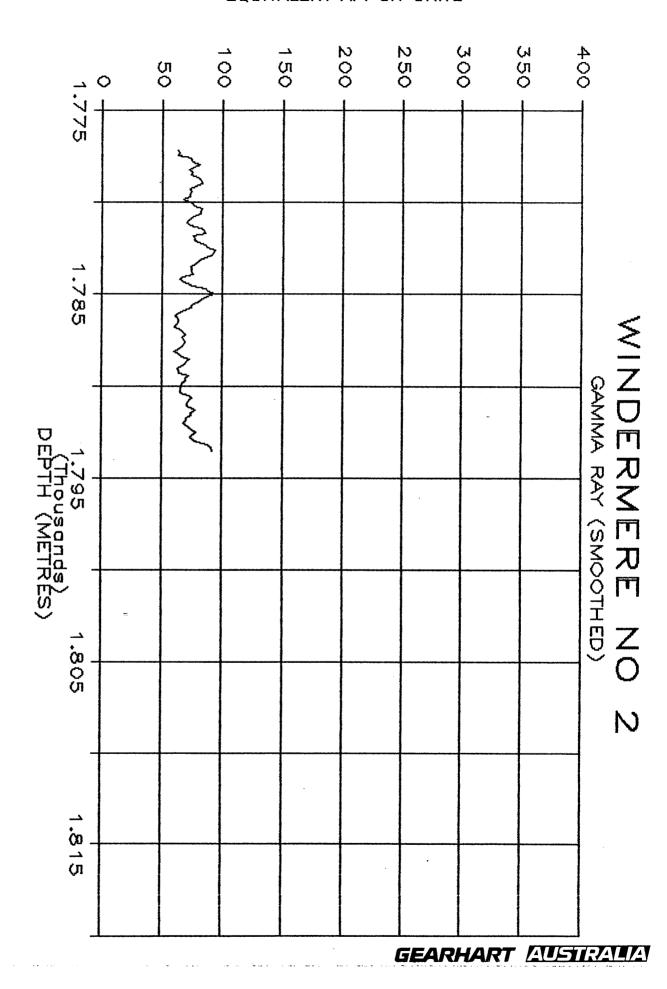
Location OTWAY BASIN

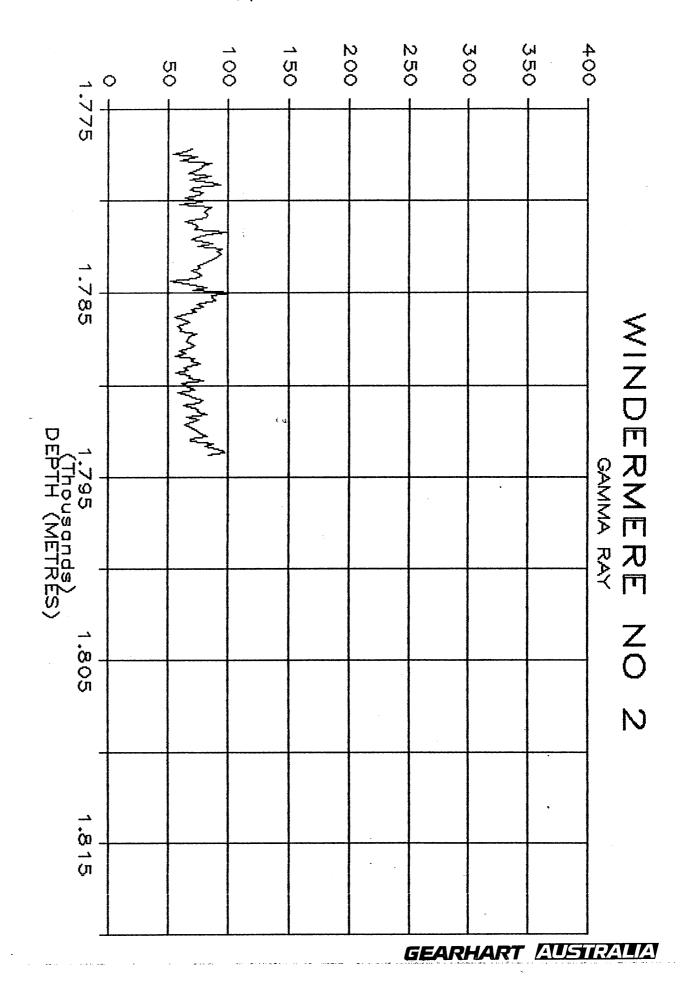
state	VICTORIA			Locati	on Olwal Da	NTTOTI							
AND — SI HALE — S IME — LM	SH CHERT — CH	DL ANNHYDRAITE - CONGLOMERATI FOSSILIFEROUS	E — CONG	Litholo SANDY — SDY SHALY — SHY LIMY — LMY	ogical Abbre FINE — FN MEDIUM — MI COARSE — C	CRYSTAI ED GRAIN -	LLINE — XLN - GRN .AR — GRNL	GR	DWN — BRN FRACTURED — FRAC SLIGHTLY — S NY — GY LAMINATION — LAM VERY — VI GGY — VGY STYLOLITIC — STY WITH — WI				
MPLE No.	DEPTH Metres	PERMEABILITY MILLIDARCYS K.A.	POROSITY He inj		SATURATION PORE :	GRAIN DENSITY	VERT PERM		SA	MPLE DESCRIPTIONS AND REMARKS	;		
28	1790.51	2.5	17.1	0.0	58.8	2.66	L	SST:	mod hd, sil cmt arg lith	n gy, med-occ v pr-mod srt, v a , sbang-sbrnd, a n grns, comm car eratic i/p.	arg mtx, mod abnt 1t—dk gy		
29	1791.11	0.057	14.0			2.61		SST:	srt, v a	n gy, med-f grn, arg mtx, mod sil abnt lt-dk gy li porosity.	. cmt, sbang-		
30	1791.72	0.047	15.2			2.62		SST:	a/a.				
31	1792.34	0.025	13.8			2.61		SST:	mod srt sbang-sl	n gy, f-occ med , v arg mtx, mod brnd, a/a, w/ oc laminae.	l sil cmt,		
32	1792.94	0.045	13.7		-	2.62		SST:	a/a, f-	rr med grn.			
33	1793.34	0.004	6.5			2.58		SST:	pr srt,	n gy, f-v crse g v arg mtx, mod brnd, cong textu lasts.	sil cmt,		

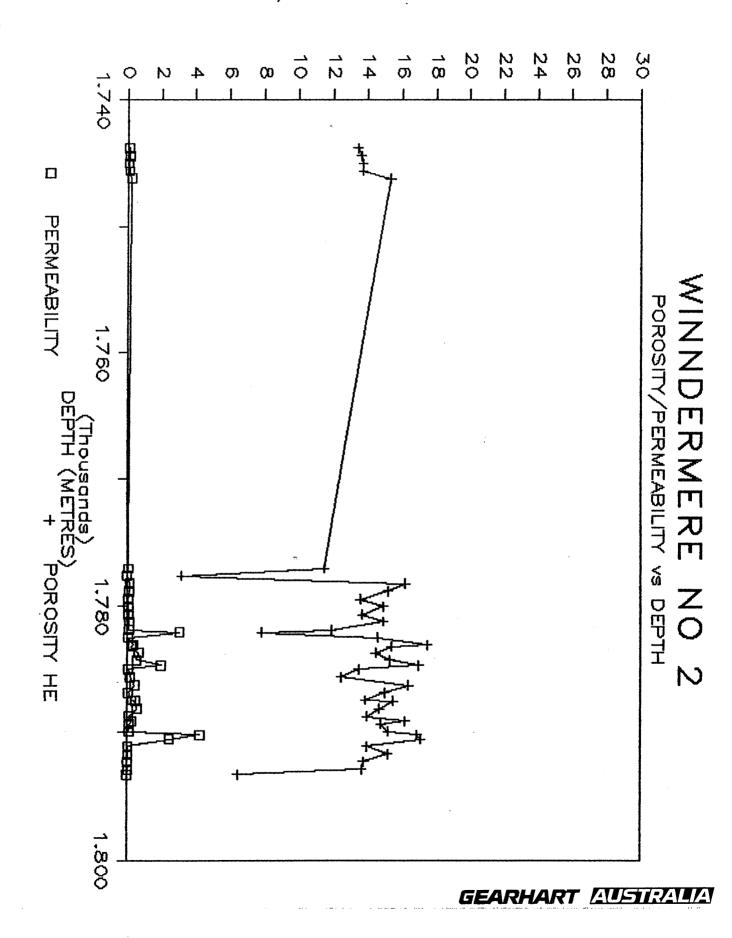




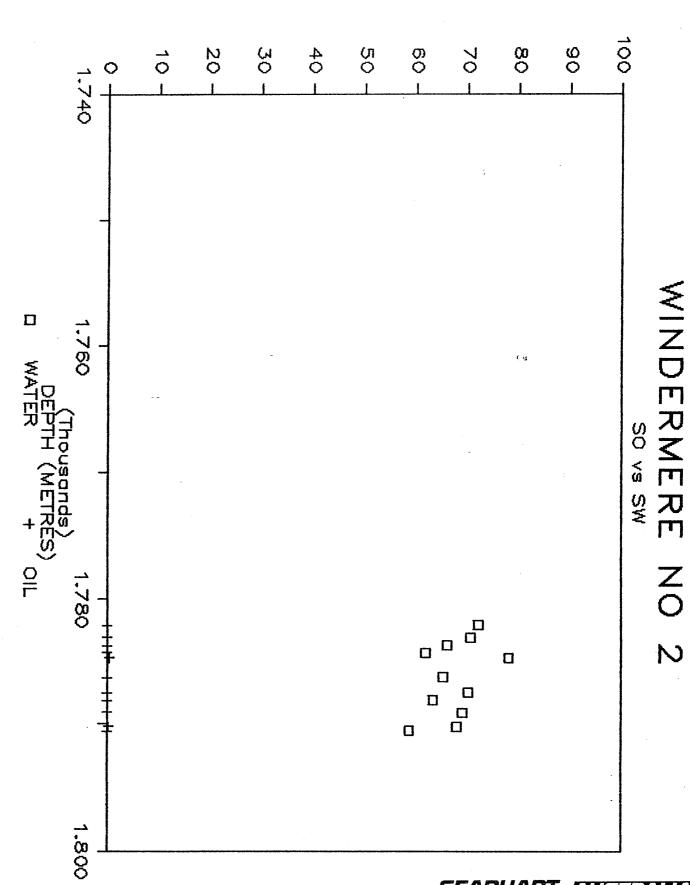
# EQUIVALENT API GR UNITS



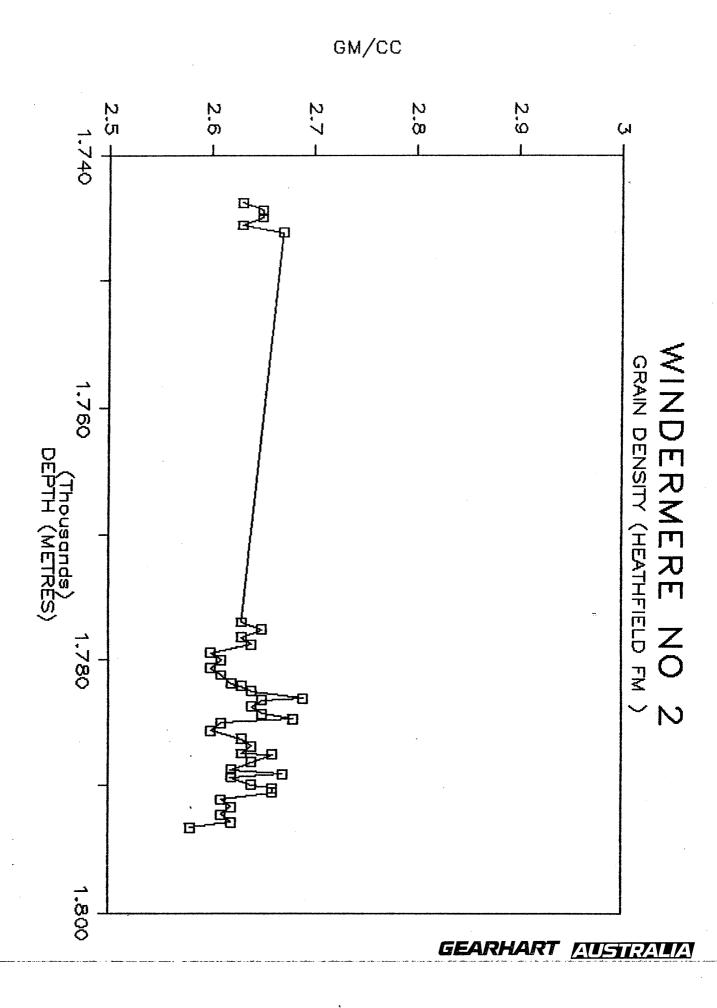


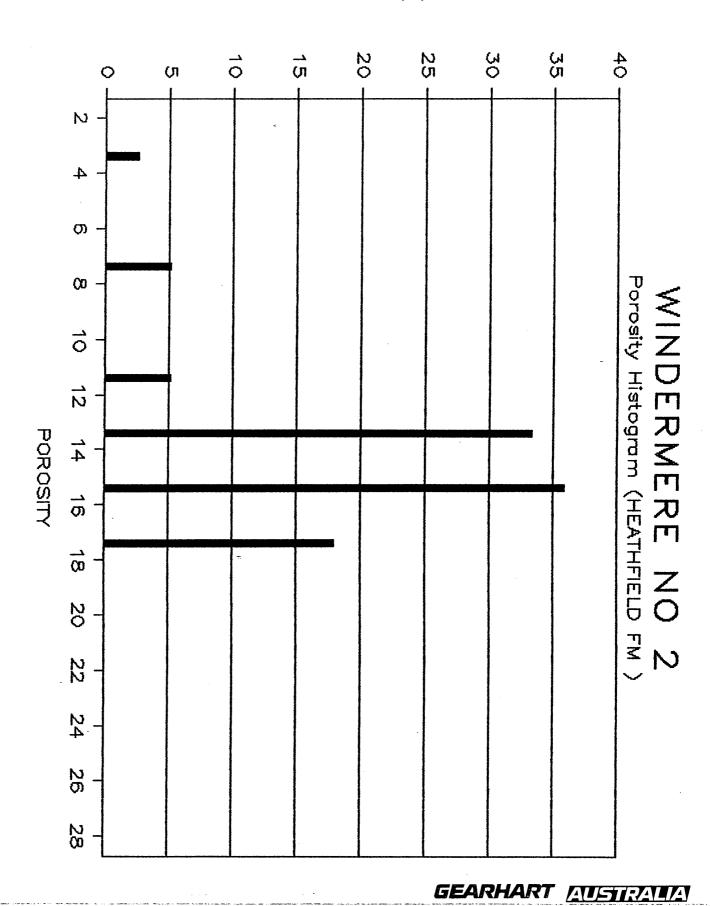




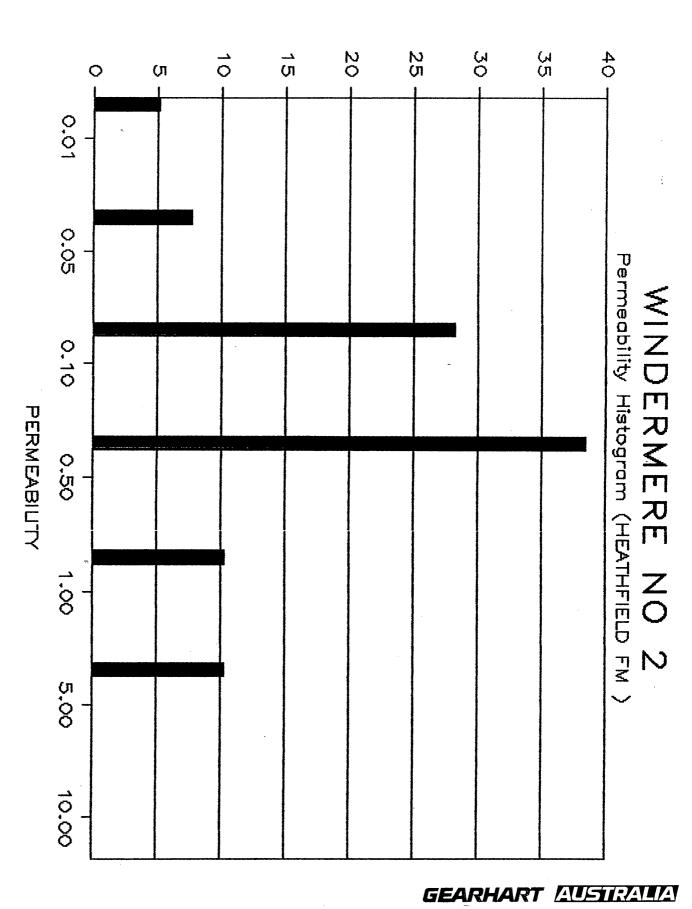


GEARHART AUSTRALIA

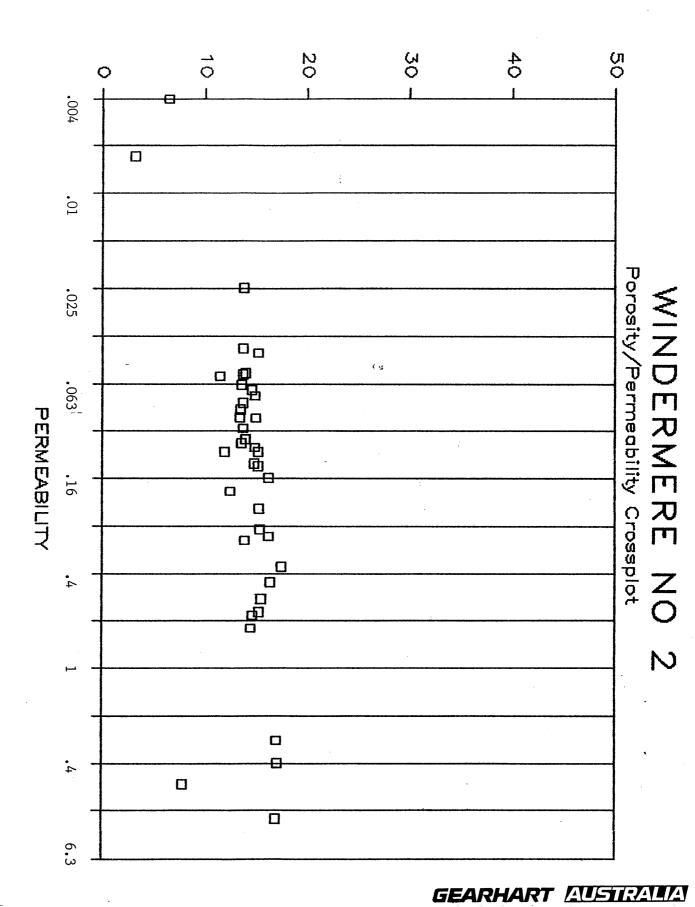








# POROSITY



This is an enclosure indicator page. The enclosure PE907879 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907879 has the following characteristics:

ITEM\_BARCODE = PE907879
CONTAINER\_BARCODE = PE902151

NAME = Core Photograph

BASIN = OTWAY PERMIT = PEP 111

TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Photograph EXP 1 (Enclosure from Appendix F--Core Analysis--of Well

Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

 $DATE\_RECEIVED = 9/11/89$ 

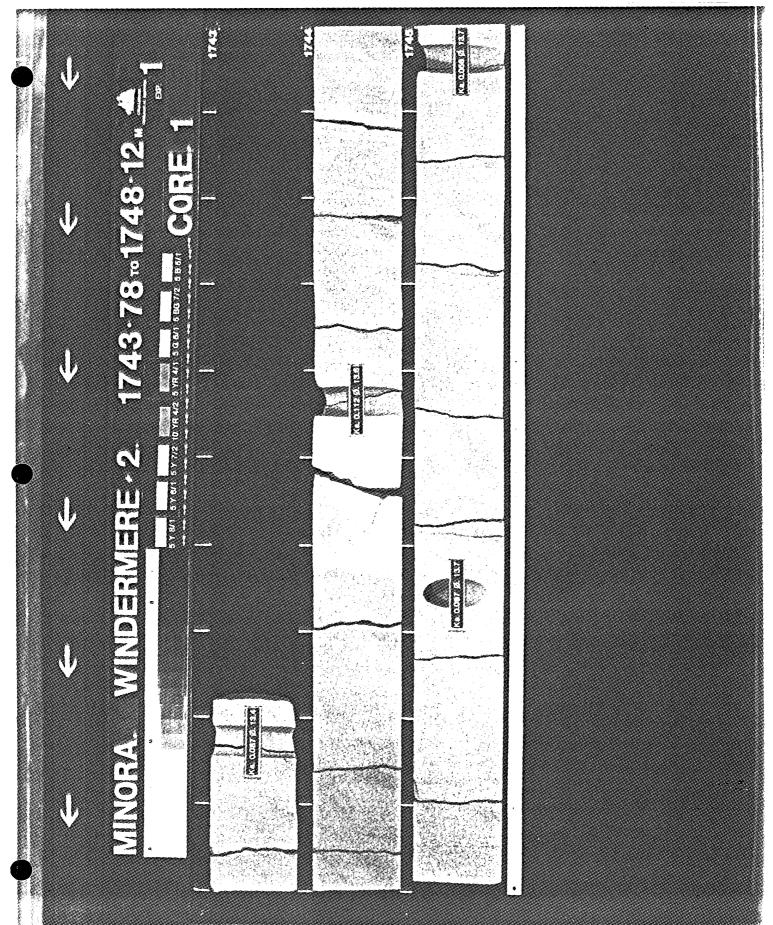
 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL





This is an enclosure indicator page. The enclosure PE907880 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907880 has the following characteristics:

ITEM\_BARCODE = PE907880
CONTAINER\_BARCODE = PE902151

NAME = Core Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Photograph EXP 2 (Enclosure from Appendix F--Core Analysis--of Well

Completion Report vol.2) for

Windermere-2

REMARKS = DATE\_CREATED =

DATE\_RECEIVED = 9/11/89

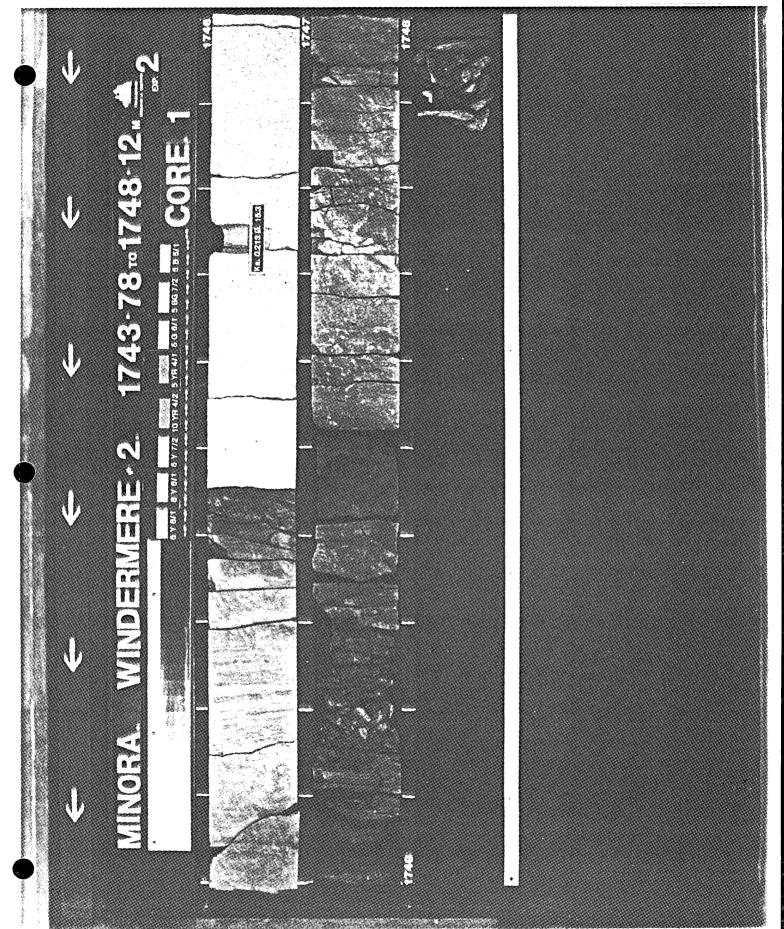
 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL





This is an enclosure indicator page. The enclosure PE907881 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907881 has the following characteristics:

ITEM\_BARCODE = PE907881
CONTAINER\_BARCODE = PE902151

NAME = Core Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Photograph EXP 3 (Enclosure from Appendix F--Core Analysis--of Well

Completion Report vol.2) for

Windermere-2

REMARKS = DATE\_CREATED =

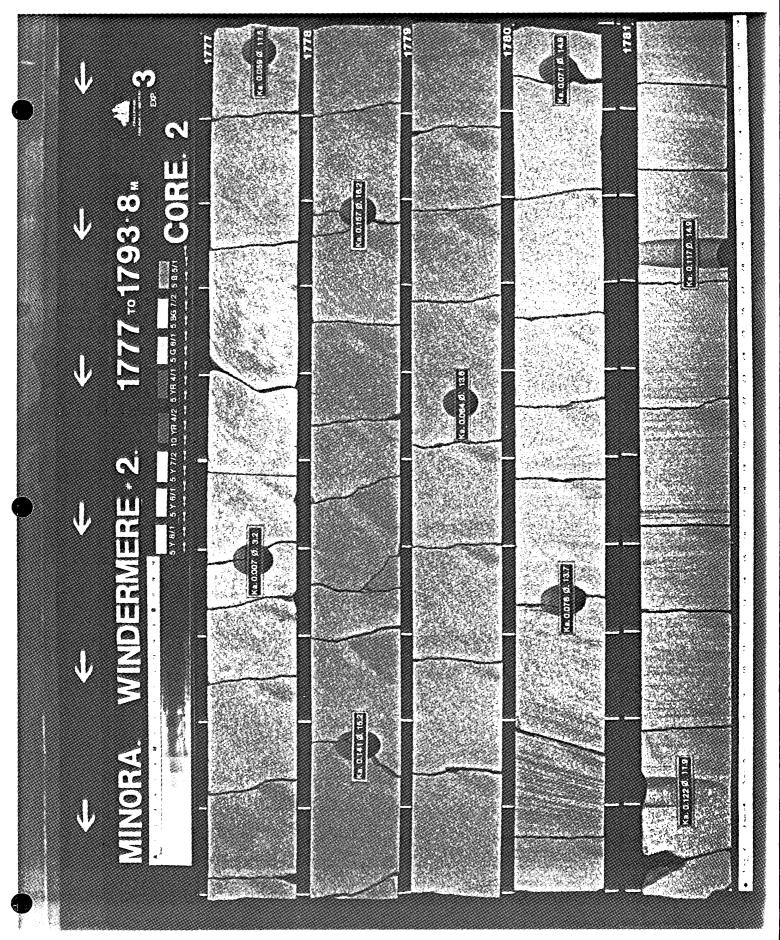
DATE\_RECEIVED = 9/11/89

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL





This is an enclosure indicator page.

The enclosure PE907882 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907882 has the following characteristics:

ITEM\_BARCODE = PE907882
CONTAINER\_BARCODE = PE902151

NAME = Core Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Photograph EXP 4 (Enclosure from

Appendix F--Core Analysis--of Well

Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED = DATE\_RECEIVED = 9/11/89

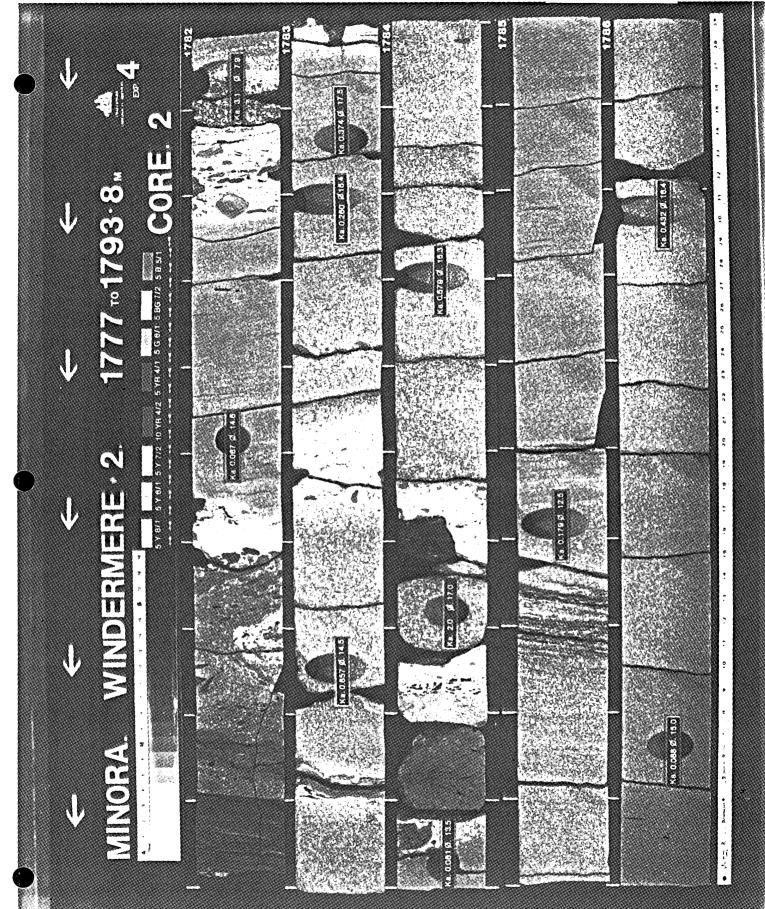
 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL





This is an enclosure indicator page. The enclosure PE907883 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907883 has the following characteristics:

ITEM\_BARCODE = PE907883
CONTAINER\_BARCODE = PE902151

NAME = Core Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Photograph EXP 5 (Enclosure from Appendix F--Core Analysis--of Well

Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

DATE\_RECEIVED = 9/11/89

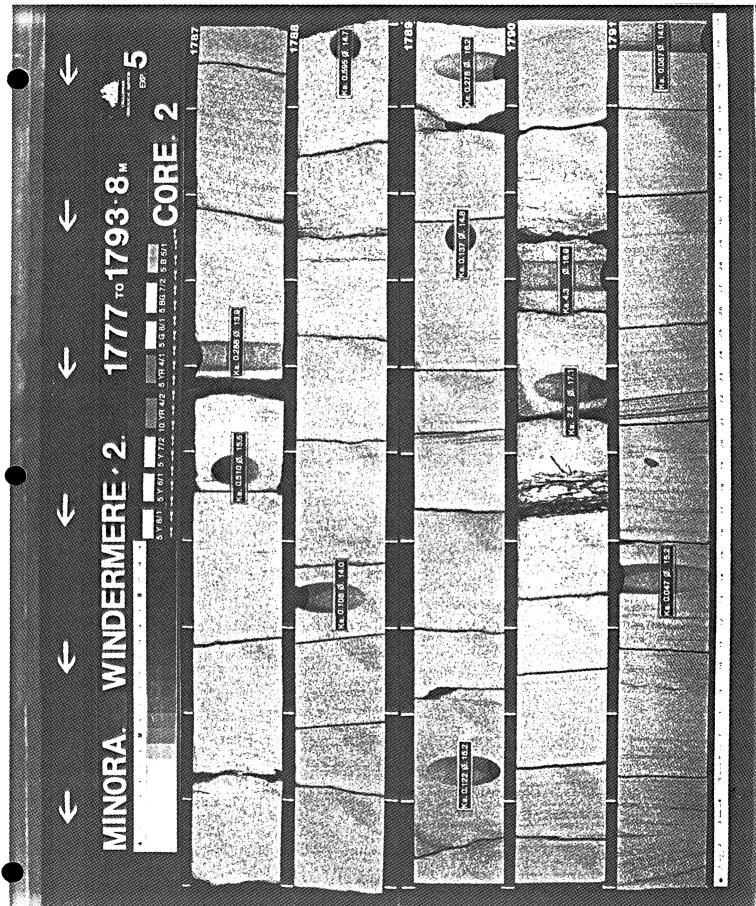
 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL





This is an enclosure indicator page. The enclosure PE907884 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907884 has the following characteristics:

ITEM\_BARCODE = PE907884
CONTAINER\_BARCODE = PE902151

NAME = Core Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Photograph EXP 6 (Enclosure from Appendix F--Core Analysis--of Well

Completion Report vol.2) for

Windermere-2

REMARKS = DATE\_CREATED =

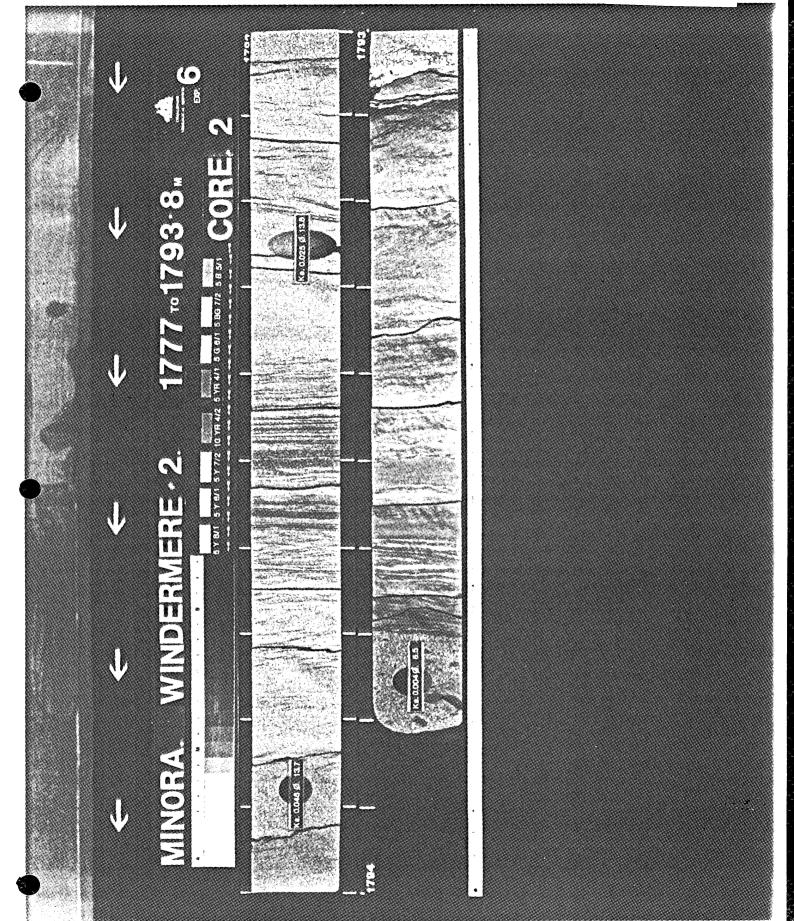
DATE\_RECEIVED = 9/11/89

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL



# APPENDIX G PETROLOGICAL REPORT

Minora Resources N.L.,

27-5-89

GPO BOX D164

Perth

WA 6001

1000 0 07 805

O/n

Preparation of seven thin sections of 3 SWC,s and 4 coreplugs, Windermere No 2

R Townend

1

#### SUMMARY

Six of the seven intervals are similar, being very impure sands, containing high proportions of feldspar and lithic fragments. Many of these lithic fragments are feldspar-rich volcanics. They are classified as impure arenites rather than wackes although having more than 15% matrix, because this matrix is seen as authigenic. They are probably VOLCANOCLASTICS, based on the high volcanic lithic material, but also on the presence of apparent zeolites as an authigenic cement. They are are not classified as tuffs because volcanic debris in the matrix notably glass is lacking. Note that the zeolites may be derived from this source, and also the possibly magnesian clays/chlorite cement.

The extent of the authigenic activity, as the earlier deposited phyllosilicates, and the subsequent zeolite in some of the sands has resulted in very low porosities and permiabilities. There is another interval where carbonate cementation has produced the same result.

Sample Windermere 2 1746.24m

Lithology LITHIC ARKOSIC ARENITE

Sorting well sorted,

Grainsize medium sand, 0.25-0.4mm

8.9%

Grainshape subangular to subrounded, subhedral(feldspar)

#### Modal Constituents

63.3%	<b>.</b>
10.4%	Monocrystalline, subangular, equant. grains rimmed by stained clay?
31.1%	Plagioclase=K feldspar, subhedral, fresh, rimmed by stained clay without penetration.Rare clinozoisite ex plag.
32.1%	Feldspar porphyries with groundmass biotite common, stain for K feldspar. Fresh, subrounded. Less common type lacks mica. Uncommon plutonic textured feldspar fragments.
	•
24.9%	Mainly micaceous schists, and fine quartzites.
1.5% tr.	Large single flakes, also rare Biotite. rare tourmaline, fine zircon.
36.7%	- 1
91.1%	Brown stained ?smectite forming a ubiquitous coating to clasts, and expanding frequently to fill pores. The birefringent clay has a radial nature typical of authigenic formation.
	10.4% 31.1% 32.1% 24.9% 1.5% tr. 36.7%

# Diagenesis

Zeolite?

There are two principal and quite separate cements formed authigenically. The main type is the brown coloured fibroradial ?smectitic clay that coats all clastic grains as a narrow rim even where clasts are almost touching, and often is more extensive filling a pore completely. The second and later authigenic cement is a minor phase but totally infilling pores between the clay rims, with a poikilotopic nature. Optically identified as a probable zeolite. Porosity

pores between clay rims.

Local poikilotopic cement totally fills

Macroporosity was measured at 6.1%, as isolated but coarse pores. The clay rims to closely touching well packed subangular clasts, and the poikilotopic mineral have significantly reduced porosity.

This is an enclosure indicator page. The enclosure PE907885 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907885 has the following characteristics:

ITEM\_BARCODE = PE907885
CONTAINER\_BARCODE = PE902151

NAME = Core Thinsection Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Thinsection Photographs 1 & 2

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

 $DATE\_RECEIVED = 9/11/89$ 

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL



PHOTO 1 WIND.2 1746M WELL SORTED QUARTZ DEFICIENT ARKOSIC LITHIC ARENITE, WITH OCCASIONAL MACROPORES.NIC UNC.FIELD WIDTH 1.8MM

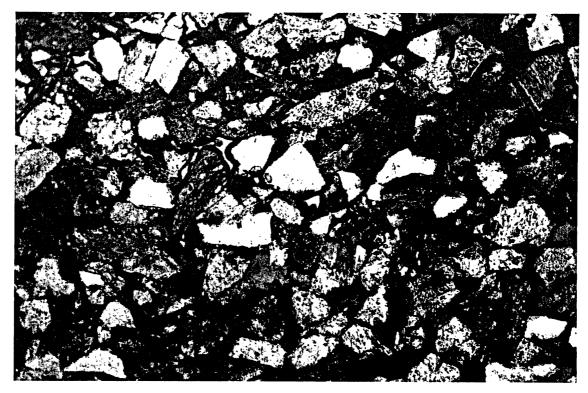




PHOTO 2 WIND. 2 1746M QUARTZ/FELDSPAR/LITHIC CLASTS RIMMED BY STAINED CLAY MATRIX, PLUS CLEAR ?ZEOLITE CEMENT. NIC UNC. FIELD WIDTH 0.7MM

Sample Windermere No 2 1783.07m

Lithology LITHIC ARKOSIC ARENITE

Sorting well sorted.

Grainsize medium sand, 0.2-0.4mm

Grainshape subangular to subrounded, subhedral (feldspar)

#### Modal Constituents

FRAMEWORK	76.3%	;
Quartz	24.2%	Monocrystalline, subangular, equant. to elongate, rimmed by clay, no overgrowths
Feldspar	22.0%	Plagioclase=K feldspar, fresh crystals, medium sand, subrhombic to subrounded rimmed by radial clay.
Lithic		
Fragments(ig)	25.4%	Biotitic flow banded plagioclase volcanics, most aphyric, subrounded medium sand. Non biotite felsic lavas less common.
Lithic		
Fragments(m̃t)	27.9%	Mica schists, quartzite, chalcedony, chlorite quartzite, shales. subrounded.
Biotite	0.1%	Long fresh flakes against clast in place of clay rim.
Accessories	0.4%	Tourmaline, leudoxene.
MATRIX/CEMENT	23.7%	
Clay	83.4%	Clay forms ubiquitous rim of radial growths against clast contacts, also fills pores. Classified as possible smectite
Zeolite?	16.6%	Locally infills pores completely between clay rims, can be poikilotopic. Some evidence of replacement of clasts with former shapes preserved by clay haloes, now infilled.

#### Diagenesis

Identical to the 1746m interval,, with zeolite? more active, replacing clasts.

#### Porosity

Macroporosity measured at 11% but some of this probably induced. Authigenic clay and zeolite significantly reduce porosity.

This is an enclosure indicator page. The enclosure PE907886 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907886 has the following characteristics:  $\mbox{ITEM\_BARCODE} = \mbox{PE907886}$ 

CONTAINER\_BARCODE = PE902151

NAME = Core Thinsection Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

> G--Petrological Report--of Well Completion Report vol.2) for Windermere-2

REMARKS =

DATE\_CREATED =

 $DATE\_RECEIVED = 9/11/89$ 

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL



PHOTO 3 WIND. 2 1783M WELL SORTED LITHIC ARKOSIC ARENITE SHOWING STAINED CLAY RIMS AND CLEAR ?ZEOLITE CEMENT. NIC UNC. FIELD WIDTH 1.8MM



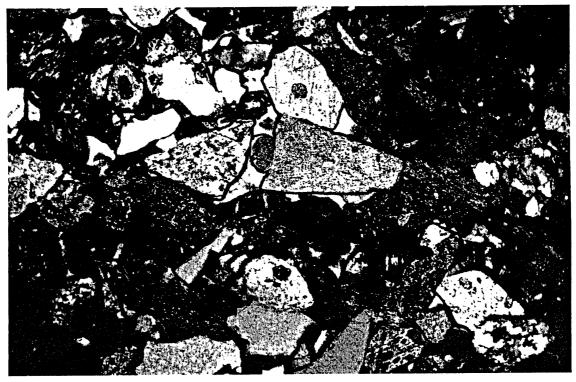


PHOTO 4 WIND. 2 1783M AS FOR PHOTO 3, SHOWING HETEROGENEOUS NATURE OF CLASTS. NIC CROS.FIELD WIDTH 1.8MM

Sample Windermere No 2 1790.26m

Lithology LITHIC ARKOSIC ARENITE

Sorting moderately sorted

Grainsize medium to coarse sand.

Grainshape angular to subrounded, subhedral (feldspar)

Modal Constituents

FRAMEWORK 71.5%

Quartz 31.6% monocrystalline, equant to elongate, angular to subangular, coated by clay, overgrowths not visible.

Feldspar 30.8% K feldspar>>plagioclase.K feldspar forms perthites to 1mm of subangular habit.

Plagioclase subagular ,sub 0.5mm sericitic and replaced by clinozoisite.

Lithic

Fragments(ig) 17.0% Plutonic textured quartz two feldspar granite fragments)>volcanic of aphyric feldspar microlite dominance.Grains sub rounded.

Lithic

Fragments(mt) 19.7% Quartzite semi chert, equant=mica schists, elongate. Fine silt textured chips may be sediments, or tuffaceous seds, with rare example of possible welded silicified tuff.

Accessories 0.9% Ores of isometric oxide type to 0.3mm

MATRIX/CEMENT 28.5%

"Clay"

70.1% A fine radial fibrous textured rim to most clasts, classified as stained clay, ?smectite with a chlorite component, green tinged. Present between otherwise touching clasts. May be "isolated" by replacive zeolite of clast.

Rarely coalesces to fill pores.

Zeolite? 29.1% Zeolite forms poikilotopic crystals to 1mm across, penetrates behind clay rims.

Diagenesis

Quite similar to the previous interval, commonly showing penetration of zeolite within clay rims against clasts.

Porosity

Macroporosity measured at 5%, some is visible as pores following margins between adjacent clasts. Porosity considerably reduced by zeolite deposition.

This is an enclosure indicator page. The enclosure PE907887 is enclosed within the container PE902151 at this location in this document.

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The enclosure PE907887 has the following characteristics:
    ITEM_BARCODE = PE907887
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CONTAINER\_BARCODE = PE902151

NAME = Core Thinsection Photograph

BASIN = OTWAYPERMIT = PEP 111 TYPE = WELL SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Thinsection Photographs 5 & 6

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for

Windermere-2

REMARKS =

DATE CREATED =

DATE\_RECEIVED = 9/11/89

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL



PHOTO 5 WIND. 2 1790M MODERATELY SORTED LITHIC ARKOSIC ARENITE.
NIC UNC. FIELD WIDTH 1.8MM





PHOTO 6 WIND. 2 1790M POIKILOTOPIC ?ZEOLITE CEMENT TO MIXED CLASTS. NIC CROS. FIELD WIDTH 0.7MM

Sample Windermere No 2 1793.35m

Lithology GREYWACKE

Sorting poor,

Grainsize fine to very coarse sand.

Grainshape angular to subangular,>>subrounded.

#### Modal constituents

FRAMEWORK	56.0%	
Quartz	20.2%	Monocrystalline>polycrystalline.Grains 0.1-1mm, angular common, subrounded rare elongate=equant.Orientation of slivers moderate.Overgrowths not visible.
Feldspar	13.7%	K feldspar>plagioclase, fine to medium sand, subhedral to angular. K feldspar fresh, some porosity, coarser than less fresh saussuritic plag.
Lithic		•
Fragments(ig)	28.0	Aphyric altered felsic volcanics sub- angular, 0.2-0.5mm, trachytic, rarely porphyritic, second group very biotitic. rare plutonic quartz feldspar composites
Lithic		; 
Fragments(mt)	35.7%	Foliated mica semi-schists common.  Major lithology is a large argillaceous poorly foliated granule size masses.  uncommon cherty quartz.
Micas	0.6%	Biotite narrow or wide flakes, slight alteration. some porosity in cleavages. Muscovite similar habit, less common.
Chlorite	1.2%	Aggregates.
Accessories	0.6%	Tourmaline, equant, some opaques prob carbonaceous.
MATRIX/CEMENT	44.0%	

Fine silt (quartz phyllosilicate etc) uniformly dispersed, probably grades into clasts. Poorly bedded.

## Diagenesis

Argillaceous matrix likely to be clastic in origin with authigenic activity limited by lack of primary porosity.

## Porosity

Sporadic primary /secondary porosity visible, much likely to be induced, sediment essentially impervious.

This is an enclosure indicator page. The enclosure PE907888 is enclosed within the container PE902151 at this location in this document.

CONTAINER\_BARCODE = PE90/888

NAME = Core Thinsection Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE PHOTO

DESCRIPTION = Core Thinsection Photographs 7 & 8

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for Windermere-2

REMARKS =

DATE\_CREATED =

DATE\_RECEIVED = 9/11/89

 $W_NO = W992$ 

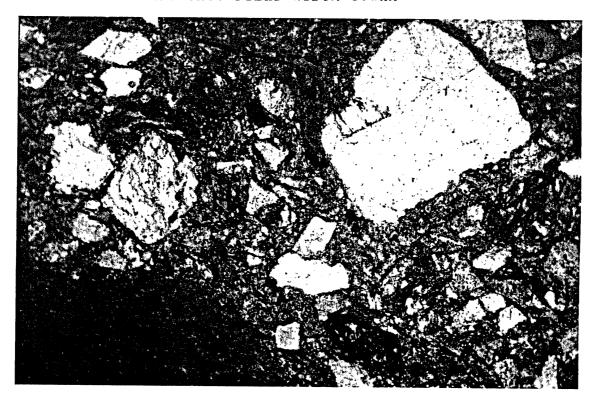
WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL



PHOTO 7 WIND. 2 1793M POORLY SORTED LITHIC ARKOSIC SANDSTONE/ GREYWACKE. NIC UNC. FIELD WIDTH 1.8MM



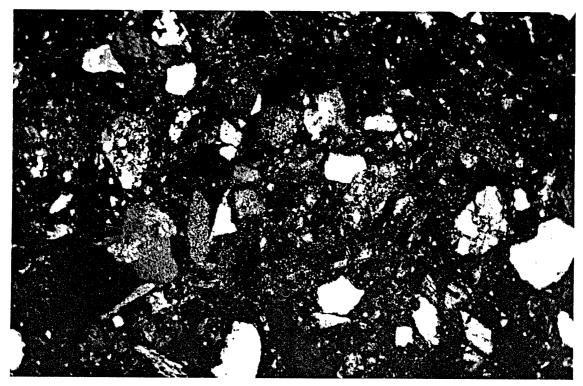


PHOTO 8 WIND. 2 1793M HETEROGENEOUS CLASTS IN GREYWACKE? NIC CROS. FIELD WIDTH 1.8MM

Sample Windermere No 2 2531m SWC.

Lithology CARBONATE CEMENTED LITHIC ARKOSIC ARENITE

Sorting well sorted

Grainsize fine to medium sand

Grainshape angular to subrounded, rare subhedral.

Modal Constituent:	Modal	Cons	ti	tue	nts
--------------------	-------	------	----	-----	-----

Modal Consti	ituents	
FRAMEWORK	68.7%	÷
Quartz	34.9%	Monocrystalline, 0.2-0.4mm, commonly angular due to corrosion by carbonate.
Feldspar	29.1%	K feldspar=plagioclase, dimensions as quartz. Habits subhedral to subrounded, part replacement by carbonate common.
Lithic Fragments(IG)	17.1%	Feldspar-rich aphyric volcanics common, some chloritic with leucoxene.habit subrounded.
Lithic Fragments(mt)	17.7%	Micaceous quartzite, phyllites, cherts?
Biotite	0.6%	coarse twisted fresh flakes to 0.4mm.
Accessories	0.6%	Leucoxene aggregates.
MATRIX/CEMENT	31.3%	
Carbonate	51.4%	Locally dominant semi poikilotopic totally infilling pores, and part replacing feldspar>quartz, penetrates cleavages of former.
Chlorite	38.6%	Locally extensive replete with sec. TiO2

# Diagenesis

Mica/Clay

10%

Authigenic carbonate commonly totally infilled pores and partly replaced silicate clasts. Breakdown of biotite produced porefilling chlorites. Sericitic/?illitic clay deposited evenly separately from carbonate, ex ?solution, little corrosion of clasts.

οf

Sericitic patches without foliation,

infilling primary pores.

mica.

breakdown

### Porosity

Least fractured parts of small chip with dominant carbonate cement show negligible macroporosity.

#### PE907889

This is an enclosure indicator page. The enclosure PE907889 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907889 has the following characteristics:

ITEM\_BARCODE = PE907889
CONTAINER\_BARCODE = PE902151

NAME = Core Thinsection Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Thinsection Photographs 9 & 10

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

DATE\_RECEIVED = 9/11/89

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL

(Inserted by DNRE - Vic Govt Mines Dept)



PHOTO 9 WIND. 2 2531M CARBONATE CEMENTED ARENITE. NIC CROS. FIELD WIDTH 1.8MM

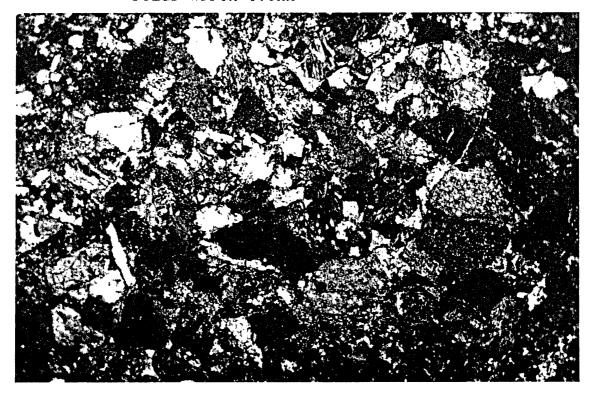




PHOTO 9 WIND. 2 2531M CARBONATE PARTLY REPLACING FELDSPAR IN IN LITHIC ARKOSIC ARENITE. NIC CROS. FIELD WIDTH 0.7MM

Sample Windermere No 2 3190m SWC

Lithology LITHIC ARKOSIC ARENITE

Sorting moderately well sorted

Grainsize very fine to medium sand

Grainshape angular to subhedral, and subrounded.

#### Modal constituents

# FRAMEWORK 56.9%

Quartz 40.0% Monocrystalline, 0.15-0.4mm, angular -sub. rounded, some corrosion by cement, Overgrowths

not visible.

Feldspar 20.2% Plagioclase > K feldspar(microcline).Subhedral most fresh well twinned plag.K feldspar sub

hedral to angular, fresh. Some corrosion by

clay matrix.

#### Lithic

Fragments(IG) 19.6% Aphyric to porphyritic feldspar dominant volcanics, (Plagioclase) K feldspar).
Plag. sometimes sericitic.

#### Lithic

Fragments(mt) 19.6% Quartzite, deformed, Mica schist, chert or felsic volc. groundmass?

Micas 0.6% Biotite>Muscovite.

Accessories tr. Opaques,?carbonaceous

#### MATRIX/CEMENT 43.1%

Clay 88.5% Stained Clay ubiquitous as rim to clasts,

and occasionally infilling pores. May be a deposited from solution, although the biotite has an identical polarising colour.

Little apparent corrosion of clasts.

Opaques 11.5% Locally prevalent as pore filling irregular

?carbonaceous material.

#### Diagenesis

The principal diagenetic activity was the formation of the brown tinted phyllosilicate deposited as a rim to all clasts. Its ubiquity, pervasiveness and very fine texture without foliation, supports deposition from solution. Reaction with feldspar bearing clasts insignificant.

# Porosity

There is some macroporosity within the clay filled pores, but permiability appears to be very low owing to the extent of the extent of the cement.

#### PE907890

This is an enclosure indicator page. The enclosure PE907890 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907890 has the following characteristics:

ITEM\_BARCODE = PE907890
CONTAINER\_BARCODE = PE902151

NAME = Core Thinsection Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL
SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Thinsection Photograph 11

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED = DATE\_RECEIVED = 9/11/89

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

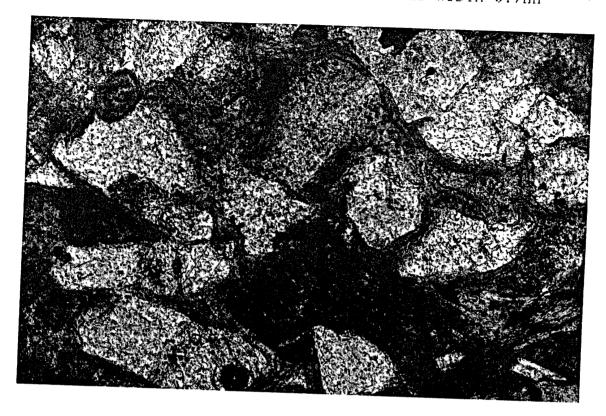
CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL

(Inserted by DNRE - Vic Govt Mines Dept)



PHOTO 11 WIND. 2 3190M CLAY RIMMING AND CEMENTING WELL SORTED LITHIC ARKOSIC ARENITE. NIC UNC. FIELD WIDTH 0.7MM



Sample Windermere No 2 3191m SWC

Lithology LITHIC ARKOSIC ARENITE

Sorting well sorted

Grainsize fine to medium sand.

Grainshape angular to subrounded, subhedral (feldspar)

Modal Constituents

FRAMEWORK 66.5%

Quartz 32.8% Monocrystalline,>Polycrystalline 0.15-0.4mm angular to subrounded.Some corrosion by cement.No evidence of overgrowths.

Feldspar 29.9% Plagioclase>K feldspar, subhedral rhombic xls dominant, others show corrosion by matrix. dimensions mainly 0.2-0.4mm. Interiors fresh apart from rare carbonate part replacement.

Lithic

fragments(IG) 18.9% Feldspar porphyries dominant,plagioclase)

K feldspar, some chloritic,interior fresh.

dimensions as quartz,most angular.

Lithic

Fragments(mt) 15.9% Mainly micaceous schists and fine quartzite.

Micas

1.0% Biotite>Muscovite. Large equant flakes or narrow flakes deformed against clasts.

Some relic flakes mainly chlorite.

Accessories 1.5% Garnet fragmented, leucoxene.

MATRIX/CEMENT 33.5%

"Clay"

Rims of radially textured clay deposited on clast margins.Low birefringence suggests a high kaolin content or it is chloritic. Commonly it expands to fill pores.

Diagenesis

The only significant activity is the deposition of the clay whose texture as in previous samples is indicative of an authigenic nature, probably from solutions. Corrosion of clasts is low.

Porosity

In the least fractured part of the slide, the macroporosity visible is negligible due to the ubiquity of the cement filling all cavities and pores between the clasts.

#### PE907891

This is an enclosure indicator page. The enclosure PE907891 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907891 has the following characteristics:

ITEM\_BARCODE = PE907891
CONTAINER\_BARCODE = PE902151

NAME = Core Thinsection Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = Core Thinsection Photographs 12 & 13

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

 $DATE\_RECEIVED = 9/11/89$ 

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL

(Inserted by DNRE - Vic Govt Mines Dept)



PHOTO 12 WIND. 2 3191M WELL SORTED LITHIC ARKOSIC ARENITE.
NIC CROS. FIELD WIDTH 1.8MM



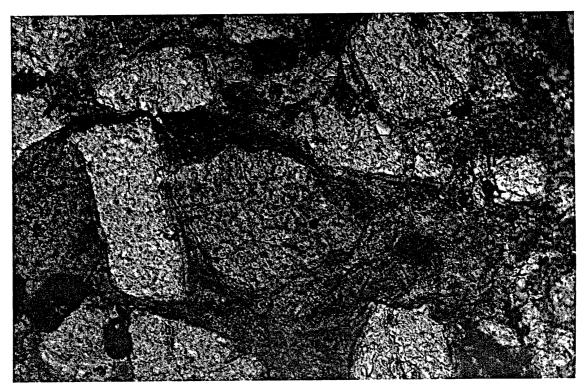


PHOTO 13 WIND. 2 3191M CLAY RIMMING ALL CLASTS AND FILLING PORES. NIC UNC. FIELD WIDTH 0.7MM

25-10-89

Mr I.Copp,

Minora Resources N.L.,

263 Adelaide tce,

Perth

1000 0 07 1056

o/n 0224

SEM /EDS examination of two thin sections. Windermere No 2.

R Townend

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#### Introduction

Previous petrographic examination of various thin sections from Windermere No 2 had postulated the presence of zeolites as cement in some of the sands. It was requested that further work be carried out to confirm this.

#### Results

Two slides ( Wind. 2 1783.07 and 1790.26m) were selected for further work. Using the optical microscope, areas of possible zeolite were marked with lead arrows and examined by the SEM/EDS.

The marked minerals had identical chemistry ,high Si, moderate Al and low Ca. (see attached charts). Combined with the optical data(inclined extinction, mod. birefringence, two cleavages), this suggested LAUMONTITE as the zeolite species.

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LAUMONTITE

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APPENDIX H
WIRELINE LOG INTERPRETATION

# WINDERMERE #2 - LOG ANALYSIS

#### INTRODUCTION

The wireline log analysis of Windermere #2 was made on a Macintosh SE computer utilizing the Maclog log evaluation programme.

Interpretations were made of selected intervals in the Heathfield Member, the Lower Eumeralla Subunit, the Windermere Member and the Crayfish Formation.

Because of bad hole conditions which seriously affected the density / neutron log over particular zones of interest the log analysis was done using Sonic-Gamma Ray and DLL-MSFL only.

The Gearhart wireline logs available for log analyses were:

Run 1	DLL/MSFL/GR/SP/Cal	304.7-1855.4m.
	BHCS/GR/MEL/Cal	15.1-1856.0m.
Run 2	DLL/MSFL/GR/SP/Cal	1865.5-3594.8m.
	BHCS/GR/MEL/Cal	1865.5-3558.0m.
	SLD/CNS/PE/GR/Cal	1865.5-3594.7m.

### 0-1867.5 metres

After setting  $13^3/_8$ " casing at 314.2 metres  $12\frac{1}{4}$ " hole was drilled to 1743.8 metres and  $8\frac{1}{2}$ " hole to 1867.5 metres. Cores were cut from 1743.8-1749.3 and 1770.0-1793.9 metres (drillers depths) which correspond to depths of 1744.8-1750.3 and 1771.0-1794.9 metres (wireline logs).

DST #1 over the interval 1775.2-1802.3 metres recovered 299 metres of mud and muddy formation water - Rw=0.3 ohm-m @ 70°F. This compares favourably with a Windermere-1 Heathfield water Rw of 0.286 at 25°C obtained during production testing which resulted in a total of approximately 73 barrels of formation water being produced during swabbing operations.

Run 1 of wireline logs was conducted at 1867.5 metres. No hole problems were experienced while logging and the caliper log showed the hole to be fairly well to gauge through the Heathfield Member and Middle-Upper Eumeralla Subunits, but above 1020 metres the hole was up to 5 inches (125mm) over-gauge.

## 1867.5-3595.0 metres

After logging,  $8\frac{1}{2}$ " hole was then drilled to a total depth of 3595 metres. No further conventional cores were cut. One successful bottom hole drill stem test was run over the interval 3174.0 - 3230.7 metres and recoverd slightly gas cut water cushion with a trace of oil.

Run 2 of wireline logs was conducted at 3595 metres. Severe hole problems were experienced while logging and several clean-out trips were necessary. The caliper log showed the hole to be rugose and 1-10" (25-250mm) over-gauge throughout, except for the bottom 200 metres where the hole was generally 0-1" (0-25mm) over-gauge.

The rugosity caused the tools to "stick and jump" while logging and this particularly affected density readings resulting in poor and un-useable data. Unfortunately the Windermere Member at 3187-95 metres was the most over-gauge section in the well with hole sizes of 14-18" (350-450mm) and as a result the density/neturon data through the zone are virtually useless.

The affects on the Sonic and DLL/MSFL logs were less although some data values were questionable. some cycle skipping on the Sonic Log and the Microspherically Focused Log sometimes has anomalously low values in the over-gauge sections.

#### **METHOD**

Wireline log data was selectively read from the logs and inputted into the programme.

The following parameters were used for all zones:

Surface Depth

0 metres

Total Depth

3595 metres

Surface Temperature

70 F

Bottom Hole Temperature 280 F (Estimated from logs) Mud filtrate density 1.00

Other specific parameters used on individual zones are listed on the evaluation sheet.

## V-Clay

The volume of clay was calculated by three methods: Gamma Ray Vclay=(GRlog - GRmin)/(GRmax-GRmin) Dens/Neut Vclay=(RHOma-RHMAclean)/(RHMAclay-RHMAclean) Resistivity Vclay=Rclay/Rt if 0.4 <=Rclay/Rt <=1.0 otherwise Vclay=0.452 + 0.105xlnRclay/Rt if Rclay/Rt <0.4 The lowest value from the three methods was then used as V-clay. (In practice since the evaluation utilized the sonic and resistivity logs the density-neutron was not used and V-clay was the lower of the gamma ray or resistivity values, generally the gamma ray.)

## Porosity

Porosity was calculated from the sonic log using the Total-CFP Sonic Porosity Transform where: Por.=1 -(Deltatma/Deltat) $^{(1/X)}$  and Deltatma=54usecs/ft. and x=1.6. This method was used because the density/neutron log values are unreliable over several of the zones of interest.

#### Water Saturation

Water saturations were calculated using the Schlumberger Indonesian Equation.

Apparent water resistivity (Rwa) values were obtained from the Hingle Plots which suggested a common water resistivity of about 1.0 ohm-m @ 75°F and this value, (adjusted for temperature) was used in all evaluations. This contrasts with a measured value of 0.3 ohm-m @ 70°F on water recovered from DST #1 of the lower Heathfield Member and is probably as a result of clay and other constituents present in the sand. As a comparison, log interpretation was also conducted over the Heathfield zones at an Rw of 0.29 ohm-m @ 75°F reflecting the resistivities obtained from DST-1 and whilst swabbing Windermere-1. Rmf values used were taken from measured values (logs) adjusted to formation temperatures.

RESULTS (see also attached sheets and plots).

Heathfield Members GR clean GR clay Rt clay Rw (from Rwann Rmf-	<u>er</u> (Rw 1.0ohm-m @75° a)	30 120 4 0.40	API units
1671-1701m	Porosity Water saturation Clay content	85-	-16% -100% -60%
1720-1748m	Porosity Water saturation Clay content	75-	-14% -95% -50%
1760-1806m	Porosity - Water saturation Clay content	70-	·13% ·90% ·55%
Heathfield Member	<u>er</u> (Rw 0.29ohm-m @75	°F) <u>16</u>	71-1806m
GR clean GR clay Rt clay Rw (from DST-1	L)	30 120 4 0.14 0.09	API units Ohm-metres Ohm-metres
1671-1701m	Porosity Water saturation Clay content	60-	16% 90% 60%
1720-1748m	Porosity Water saturation Clay content	55-	14% 65% 50%
1760-1806m	Porosity Water saturation Clay content	55-	13% 70% 55%

Prior to logging two cores were cut, (1744.8-1750.3 and 1771.0-1794.9 metres logs), and a drill stem test had been run to evaluate the basal Heathfield Member sand. The drill stem test over the interval 1775.2 - 1802.3 metres recovered 299 metres of mud and muddy water (Rw=0.3 ohm-m @ 70F) but no gas or oil indicating that the zone had a high water saturation. Measured core porosities in the Lower Heathfield were generally 13-16% compared to log derived porosities of 10-13%.

Lower Eumeralla	Subunit	2529-2547m						
GR clean GR clay Rtclay Rw (from Rwa Rmf	•	30 140 20 0.34 0.80	API units API units ohm-metres ohm-metres Ohm-metres					
2529-2547m	Porosity Water Saturat: Clay content	ion	5.5-9.5% 70-100% 30-40%					

In cuttings and sidewall cores the interval 2529-2547m is predominantly sandstone, clear, white, pale green, pale orange-pink, very fine to medium, mostly fine, moderate sorted, sub-angular to sub-rounded, trace calcite grains and calcite cement, pale green, grey, orange pink lithic / quartzite / volcanic grains, white feldspar, minor brown mica, poor to occasional fair porosity.

Windermere Member	<u>318</u>	87-3194m				
GR clean GR clay Rt clay Rw (from Rwa) Rmf		API units API units ohm-metres ohm-metres ohm-metres				
3187-3194m	Porosity Water saturation Clay content	9-16% 50-90% 10-30%				

A drill stem test of the interval 3174-3231 metres recovered gas cut water cushion with a trace of oil. Sidewall cores from 3190, 3191 and 3194 metres were lithic sandstones with poor visual porosities and a high clay contents.

The relatively low water saturations calculated from this zone tend to confirm the results of the drill stem test but could also be a result of anomalous log values due to bad hole conditions.

Crayfish Formati	<u>on</u> <u>33</u>	16-3325m
GR clean GR clay Rt clay Rw (from Rwa Rmf	20	API units ohm-metres ohm-metres
3316-3325m	Porosity Water saturation Clay content	5-9% 30-80% 15-35%

The relatively low water saturations calculated in this zone are probably the result of anomalous log values due to bad hole conditions.

		352	29-3552m
GR clean GR clay Rt clay Rw (from Rwa Rmf	a) _	20 0.27	API units API units ohm-metres ohm-metres
3529-3552m	Porosity Water saturat Clay content	ion	4-7% 60-80% 30-35%

In cuttings this sand is very fine to occasional coarse, poorly sorted, angular to sub-rounded, calcareous clay matrix, lithic, feldspathic with poor to very poor porosity.

## CONCLUSIONS

Wireline log analyses confirmed that the sands of the Heathfield Member had fair porosity and a fairly high clay content which destroys permeability. The also indicate high water saturations which agrees with the results of DST #1.

The Lower Eumeralla Formation, the Windermere Member and Crayfish Formation had very poor to poor porosity and moderate to fairly high clay contents. Indicated water saturations are generally high in the sands although there are some relatively low values which are probably the result of anomalous log values due to bad hole conditions.

HEATHFIELD MEMBER

1671 - 1701 metres

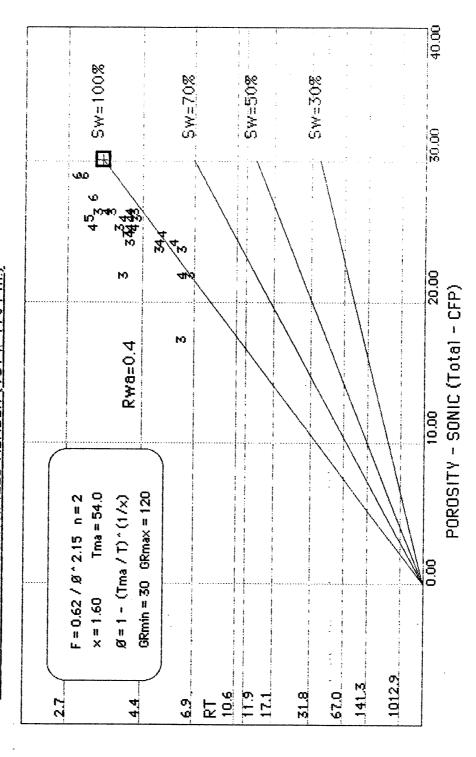
WINDERMERE 2

HEATHFIELD

Mud filtrate density=1.00 g/cc. Surface temperature=70.00 degrees F. Bottom hole temperature=280.00 degrees F. Surface depth=0.00 meters. Depth logger=3595.00 meters.

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WINDERMERE #2 HEATHFIELD MEMBER (1671-1701 m.)



WINDERMERE 2 HEATHFIELD

Velay is minimum of Velay from Rt, SP & GR. PHIE=(1-Velay)\*PHIT.

x=1.60 Tma=54.00 microsec/ft CFP-Total model.

GRelean=30.00 GRelay=120.00 SPelan=80.00 SPelay=50.00.

RWA=(RT\*PHIT^2.15)/0.62 Relay=4.0.

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Depth	PHIT		VelaySP		Velay	PHIE	RWA	RMFA
meters								
1671.00	27.3	100.0	100.00	61.1	61.1	10.6	0.307	0.496
1672.00	26.3	100.0	100.00	41.1	41.1	15.5	0.311	0.429
1673.00	26.3	100.0	100.00	37.8	37.8	16.4	0.292	0.384
1674 00	26.3	100.0	100.00	35.6	35.6	17.0	0.320	0.374
1675.00	24.7	100.0	100.00	37.8	37.8	15.4	0.311	0.367
1676.00	21.8	100.0	100.00	36.7	36.7	13.8	0.231	0.304
1677.00	25.2	100.0	100.00	35.7	36.7	15.0	0.309	0.418
1678.00	25.8	100.0	100.00	48.9	48.9	13.2	0.332	0.515
1679.00	28.8	100.0	100.00	64.4	64.4	10.2	0.311	0.444
1680.00	28.8	100.0	100.00	57.8	67.8	9.3	0.322	0.444
1681.00	25.8	100.0	100.00	50.0	50.0	12.9	0.262	0.350
1682.00	25.2	100.0	100.00	42.2	42.2	14.6	0.259	0.334
1683.00	24.7	100.0	100.00	47.8	47.8	12.9	0.319	0.399
1684.00	25.8	100.0	100.00	47.8	47.8	13.5	0.350	0.481
1685.00	25.2	97.6	100.00	41.1	41.1	14.9	0.343	0.418
1686.00	25.2	100.0	100.00	42.2	42.2	14.6	0.334	0.501
1687.00	25.8	100.0	100.00	40.0	40.0	15.5	0.332	0.481
1688.00	25.2	100.0	100.00	40.0	40.0	15.1	0.334	0.426
1689.00	17.2	66.7	100.00	35.6	35.6	11.1	0.219	0.365
1690.00	23.6	80.0	100.00	37.8	37.8	14.7	0.360	0.360
1691.00	24.1	100.0	100.00	38.9	38.9	14.7	0.303	0.379
1692.00	25.8	95.2	100.00	36.7	36.7	16.3	0.367	0.481
1693.00	26.3	100.0	100.00	43.3	43.3	14.9	0.365	0.502
1694.00	26.3	100.0	100.00	44.4	44.4	14.6	0.365	0.502
1695.00	26.3	97.6	100.00	37.8	37.8	16.4	0.374	0.502
1696.00	24.7	78.4	100.00	42.2	42.2	14.3	0.406	0.478
1697.00	21.8	61.5	100.00	33.3	33.3	14.5	0.396	0.396
1698.00	21.8	66.7	100.00	40.0	40.0	13.1	0.365	0.487
1699.00	23.6	66.7	100.00	38.9	38.9	14.4	0.432	0.505
1700.00	24.1	71.4	100.00	43.3	43.3	13.7	0.425	0.425
1701.00	24.1	80.0	100.00	45.6	45.6	13.1	0.379	0.379

```
WINDERMERE 2 HEATHFIELD (Rw = 0.14 @ 170°F) Velay is min. of Velay from SP, GR & Rt. PHIE=(1-Velay)*PHIT. GRelean=30.00 GRelay=120.00 SPelaan=80.00 SPelay=50.00 Rtelay=4.000. Rw=0.140 everywhere except from 0.00 to 0.00 where Rw=0.200. Rmf=0.090 a=0.62 m=2.15 n=2.00. PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<1.50 and RHOB<>0) or if NPHI>55.0 or if Sonic>140.0 microsec/ft. SPelaan=80.00 SPelay=50.00 (1/RT)^0.5=[(Velay^b)/(Relay^0.5)+(PHIE^(m/2))/(a*Rw)^0.5]*SwInd^(n/2) b=1-(Velay/2) ***** Sonic porosity x=1.60 \text{ Tma}=54.00 \text{ microsec/ft} \text{ CFP-Total model}.
```

	•	_	<b>EVALUAT</b>	ION (	Sonic p	orosity)
Depth meters	RHOma	PHIT	Velay		Swind	
1671.00	****	27.3	61.1	10.6	86.0	86.0
1672.00	****	26.3	41.1	15.5	77.0	77.0
1673.00	**	26.3	37.8	16.4	78.5	78.5
1674.00	****	26.3	35.6	17.0	74.5	74.5
1675.00	****	24.7	37.8	15.4	74.5	74.5
1676.00	****	21.8	36.7	13.8	82.2	82.2
1677.00	****	25.2	36.7	16.0	75.0	75.0
1678.00	***	25.8	48.9	13.2	76.0	76.0
1679.00	****	28.8	64.4	10.2	90.0	90.0
1680.00	***	28.8	67.8	9.3	90.3	90.3
1681.00	skajesjesje	25.8	50.0	12.9	85.9	85.9
1682.00	****	25.2	42.2	14.6	83.3	83.3
1683.00	****	24.7	47.8	12.9	75.7	75.7
1684.00	***	25.8	47.8	13.5	73.7	73.7
1685.00	***	25.2	41.1	14.9	72.2	72.2
1686.00	***	25.2	42.2	14.6	73.4	73.4
1687.00	****	25.8	40.0	15.5	73.6	73.6
1688.00	***	25.2	40.0	15.1	72.8	72.8
1689.00	****	17.2	35.6	11.1	76.7	76.7
1690.00	***	23.6	37.8	14.7	68.0	68.0
1691.00	***	24.1	38.9	14.7	74.9	74.9
1692.00	*****	25.8	36.7	16.3	69.3	69.3
1693.00	***	26.3	43.3	14.9	71.6	71.6
1694.00	****	26.3	44.4	14.6	71.9	71.9
1695.00	****	26.3	37.8	16.4	69.4	69.4
1696.00	****	24.7	42.2	14.3	65.9	65.9
1697.00	***	21.8	33.3	14.5	62.6	62.6
1698.00	****	21.8	40.0	13.1	65.7	65.7
1699.00	****	23.6	38.9	14.4	62.2	62.2
1700.00	****	24.1	43.3	13.7	64.1	64.1

45.6

13.1

68.2

24.1

1701.00

## WINDERMERE 2

#### HEATHFIELD

Velay is min. of Velay from SP, GR & Rt. PHIE=(1-Velay)\*PHIT. GRelean=30.00 GRelay=140.00 SPelaan=80.00 SPelay=50.00 Rtelay=4.000. Rw=0.400 everywhere except from 0.00 to 0.00 where Rw=0.200. Rmf=0.090 a=0.62 m=2.15 n=2.00. PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<1.50 and RHOB<>0) or if NPHI>55.0 or if Sonic>140.0 microsec/ft. SPelaan=80.00 SPelay=50.00  $(1/RT)^{*}0.5=\{(Velay^{*}b)/(Relay^{*}0.5)+(PHIE^{*}(m/2))/(a*Rw)^{*}0.5]*SwInd^{*}(n/2)b=1-(Velay/2)$ 

\*\*\*\* Sonic porosity x=1.50 Tma=54.00 microsec/ft CFP-Total model.

EVALUATION (Sonic porosity)

			EAHLOUI	IUN (	sonic p	orosity.
Depth	RHOma	PHIT	Velay	PHIE	Swind	SxoInd
meters						
1571.00	****	27.3	50.0	13.7	100.0	100.0
1672.00	****	26.3	33.6	17.5	100.0	100.0
1673.00	****	26.3	30.9	18.2	100.0	100.0
1674.00	****	26.3	29.1	18.7	100.0	100.0
1675.00	****	24.7	30.9	17.1	100.0	100.0
1676.00	***	21.8	30.0	15.2	100.0	100.0
1677.00	米米米米	25.2	30.0	17.7	100.0	100.0
1678.00	***	25.8	40.0	15.5	100.0	100.0
1679.00	****	28.8	52.7	13.5	100.0	100.0
1680.00	****	28.8	55.5	12.8	100.0	100.0
1681.00	***	25.8	40.9	15.2	100.0	100.0
1682.00	***	25.2	34.5	16.5	100.0	100.0
1683.00	***	24.7	39.1	15.0	100.0	100.0
1684.00	****	25.8	39.1	15.7	98.2	98.2
1685.00	****	25.2	33.6	16.7	99.5	99.5
1686.00	****	25.2	34.5	16.5	100.0	100.0
1687.00	*****	25.8	32.7	17.3	100.0	100.0
1688.00	***	25.2	32.7	17.0	100.0	100.0
1689.00	***	17.2	29.1	12.2	100.0	100.0
1690.00	***	23.6	30.9	16.3	95.0	95.0
1691.00	****	24.1	31.8	16.5	100.0	100.0
1692.00	****	25.8	30.0	18.0	97.9	97.9
1693.00	****	26.3	35.5	17.0	97.7	97.7
1694.00	***	26.3	36.4	16.7	97.6	97.6
1695.00	****	26.3	30.9	18.2	97.5	97.5
1696.00	****	24.7	34.5	16.2	90.3	90.3
1697.00	***	21.8	27.3	15.8	89.2	89.2
1698.00	****	21.8	32.7	14.7	90.5	90.5
1699.00	****	23.6	31.8	16.1	86.5	86.5
1700.00	ajcajcajcajk	24.1	35.5	15.6	87.1	87.1
1701.00	****	24.1	37.3	15.1	91:7	91.7

HEATHFIELD MEMBER

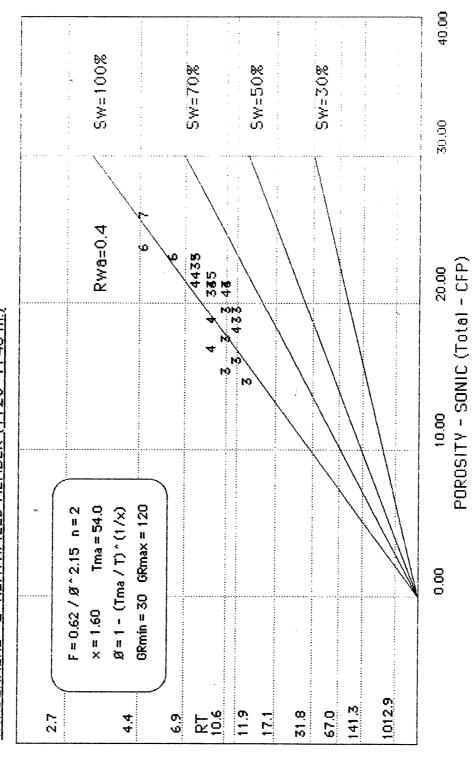
1720 - 1748 metres

JINDERMERE 2 HEATHFIELD

Bottom hole temperature=280.00 degrees Depth logger=3595.00 meters Mud filtrate density=1.00 g/cc. Surface temperature=70.00 degrees F. Surface depth=0.00 meters

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WINDERMERE #2 HEATHFIELD MEMBER (1720-1748 m.)



#### WINDERMERE 2

# HEATHF I ELD

Velay is minimum of Velay from Rt, SP & GR. PHIE=(1-Velay)\*PHIT. x=1.60 Tma=54.00 microsec/ft CFP-Total model.

GRelean=30.00 GRelay=120.00 SPelean=80.00 SPelay=50.00.

RWA=(RT\*PHIT^2.15)/0.62 RMFA=(Rxo\*PHIT^2.15)/0.62 Relay=4.0.

PBF FUALHATION (Sonic poresity)

		PRI	e evalua	TION (S	onic p	oros i t	u)	
Depth	PHIT	VelayRt	VelaySP				RWA	RMFA
meters		-	_	_	_			
1720.00	24.7	100.0	100.00	66.7	66.7	8.2	0.319	0.319
1721.00	24.1	80.0	100.00	65.6	65.6	8.3	0.379	0.379
1722.00	26.8	100.0	100.00	73.3	73.3	7.2	0.381	0.381
1723.00	23.0	57.1	100.00	55.6	55.6	10.2	0.478	0.478
1724.00	22.4	57.1	100.00	48.9	48.9	11.4	0.452	0.452
1725.00	22.4	66.7	100.00	46.7	46.7	11.9	0.387	0.387
1726.00	23.0	66.7	100.00	48.9	48.9	11.7	0.410	0.410
1727.00	22.4	50.0	100.00	38.9	38.9	13.7	0.517	0.517
1728.00	22.4	50.0	100.00	46.7	46.7	11.9	0.517	0.517
1729.00	19.9	57.1	100.00	40.0	40.0	11.9	0.351	0.351
1730.00	22.4	50.0	100.00	40.0	40.0	13.4	0.517	0.517
1731.00	18.6	<b>5</b> 0.0	100.00	33.3	33.3	12.4	0.345	0.345
1732.00	16.5	50.0	100.00	33.3	33.3		0.267	0.267
1733.00	21.8	<b>57.</b> 1	100.00	33.3	33.3	14.5	0.426	0.426
1734.00	22.4	50.0	100.00	35.6	35.6	14.4	0.517	0.517
1735.00	15.7	40.0	100.00	33.3	33.3	10.5	0.302	0.302
1736.00	20.5	44.4	100.00	35.6	35.6	13.2	0.483	0.483
1737.00	19.9	44.4	100.00	36.7	36.7	12.5	0.451	0.451
1738.00	21.8	50.0	100.00		42.2	12.6	0.487	0.487
1739.00	22.4	57.1	100.00	35.6	35.6	14.4	0.452	0.452
1740.00	24.1	66.7	100.00	33.3	33.3	15.1	0.455	0.455
1741.00	23.6	66.7	100.00	36.7	36.7	14.9	0.432	0.432
1742.00	17.2	44.4	100.00	38.9	38.9	10.5	0.329	0.329
1743.00	19.2	44.4	100.00	43.3	43.3	10.9	0.419	0.419
1744.00	17.9	57.1	100.00	42.2	42.2	10.3	0.279	0.279
1745.00	20.5	50.0	100.00	32.2	32.2	13.9	0.429	0.429
1746.00	19.9	44.4	100.00	38.9	38.9	12.2	0.451	0.451
1747.00	24.1	66.7	100.00	38.9	38.9	14.7	0.455	0.455
1748.00	24.1	66.7	100.00	58.9	58.9	9.9	0.455	0.455

#### WINDERMERE 2

### HEATHF I ELD

Volay is min. of Volay from SP, GR & Rt. PHIE=(1-Volay)\*PHIT. GRelean=30.00 GRelay=120.00 SPelean=80.00 SPelay=50.00 Rtelay=4.000. Rw=0.400 everywhere except from 0.00 to 0.00 where Rw=0.200. Rmf=0.090 a=0.62 m=2.15 n=2.00. PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<2.00 and RHOB<>0.00 or if NPHI>55.0 or if Sonic>100.0 microsec/ft. SPclean=80.00 SPclay=50.00 (1/RT)^0.5=[(Velay^b)/(Řelay^0.5)+(PHIE^(m/2))/(a\*Rw)^0.5]\*Swind^(n/2) b=1-(Velay/2)

\*\*\*\* Sonic porosity x=1.60 Tma=54.00 microsec/ft CFP-Total model.

		EVALUAT	ION (	Sonic p	orosity:
RHOma	PHIT	Velay		Swind	
****	24.7	66.7	8.2	96.4	96.4
****	24.1	65.6	8.3	86.8	86.8
****	26.8	73.3	7.2	94.6	94.6
****	23.0	55.6	10.2	75.6	75.6
****	22.4	48.9	11.4	77.7	77.7
****	22.4	46.7	11.9	84.5	84.5
****	23.0	48.9	11.7	83.0	83.0
****	22.4	38.9	13.7	75.2	75.2
****	22.4	46.7	11.9	73.2	73.2
****	19.9	40.0	11.9	85.0	85.0
****	22.4	40.0	13.4	74.9	74.9
	18.6	33.3	12.4	85.7	85.7
	16.5	33.3	-11.0	91.4	91.4
		33.3	14.5	83.5	83.5
		35.6	14.4	76.2	76.2
			10.5	83.7	83.7
		35.6	13.2	75.4	75.4
			12.6	76.3	76.3
			12.6	75.3	75.3
			14.4	81.4	81.4
					84.7
			–		85.0
					81.0
					74.9
					88.3
					81.4
				75.4	75.4
					83.3
****	24.1	58.9	9.9	79.8	79.8
	****  ****  ****  ****  ****  ****  ****	**** 24.7  **** 26.8  **** 23.0  **** 22.4  **** 22.4  **** 22.4  **** 22.4  **** 22.4  **** 22.4  **** 22.4  **** 22.4  **** 19.9  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8  **** 21.8	#### 24.7 66.7  **** 24.1 65.6  **** 26.8 73.3  **** 23.0 55.6  **** 22.4 48.9  **** 22.4 46.7  **** 22.4 38.9  **** 22.4 46.7  **** 19.9 40.0  **** 19.9 40.0  **** 16.5 33.3  **** 21.8 33.3  **** 22.4 35.6  **** 15.7 33.3  **** 22.4 35.6  **** 15.7 33.3  **** 22.4 35.6  **** 19.9 36.7  **** 21.8 42.2  **** 22.4 35.6  **** 19.9 36.7  **** 19.9 36.7  **** 21.8 42.2  **** 22.4 35.6  **** 19.9 36.7  **** 19.9 36.7  **** 21.8 42.2  **** 22.4 35.6  **** 19.9 36.7  **** 21.8 42.2  **** 22.4 35.6  **** 24.1 33.3  **** 29.5 32.2  **** 19.9 38.9  **** 19.9 38.9  **** 24.1 38.9	#### 21.8 33.3 14.5 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 22.4 35.6 14.4 #### 23.6 36.7 14.9 #### 23.6 36.7 14.9 #### 23.6 36.7 14.9 #### 23.6 36.7 14.9 #### 23.5 32.2 13.9 #### 19.9 38.9 12.2 ##### 19.9 38.9 12.2 ##### 19.9 38.9 12.2 ##### 19.9 38.9 12.2 ##### 19.9 38.9 12.2 ##### 19.9 38.9 12.2 ##### 19.9 38.9 14.7	#### 24.7 66.7 8.2 96.4  **** 24.1 65.6 8.3 86.8  **** 26.8 73.3 7.2 94.6  **** 23.0 55.6 10.2 75.6  **** 22.4 48.9 11.4 77.7  **** 22.4 46.7 11.9 84.5  **** 23.0 48.9 11.7 83.0  **** 22.4 46.7 11.9 73.2  **** 22.4 46.7 11.9 73.2  **** 19.9 40.0 11.9 85.0  **** 19.9 40.0 13.4 74.9  **** 16.5 33.3 12.4 85.7  **** 21.8 33.3 14.5 83.5  **** 22.4 35.6 14.4 76.2  **** 19.9 36.7 12.6 76.3  **** 19.9 36.7 12.6 76.3  **** 21.8 42.2 12.6 75.3  **** 22.4 35.6 14.4 81.4  **** 24.1 33.3 16.1 84.7  **** 24.1 33.3 10.9 74.9  **** 17.9 42.2 10.3 88.3  **** 17.9 42.2 10.3 88.3  **** 17.9 42.2 10.3 88.3  **** 20.5 32.2 13.9 81.4  **** 19.9 36.9 12.2 75.4  ***** 19.9 38.9 12.2 75.4  ***** 20.5 32.2 13.9 81.4  ***** 20.5 32.2 13.9 81.4  ***** 20.5 32.2 13.9 81.4  ***** 20.5 32.2 13.9 81.4  ***** 20.5 32.2 13.9 81.4

			Per A 1 (000 JA) 1 1 1		~~ ~ ~	~, ~~, ~9
Depth	RHOma	PHIT	Velay	PHIE	Swind	
meters						
1720.00	****	24.7	66.7	8.2	81.5	81.5
1721.00	****	24.1	65.6	8.3	73.3	73.3
1722.00	***	26.8	73.3	7.2	82.0	82.0
1723.00	****	23.0	55.6	10.2	61.0	61.0
1724.00	****	22.4	48.9	11.4	60.8	60.8
1725.00	****	22.4	46.7	11.9	65.4	65.4
1726.00	****	23.0	48.9	11.7	64.7	64.7
1727.00	****	22.4	38.9	13.7	55.8	55.8
1728.00	****	22.4	46.7	11.9	56.6	56.6
1729.00	****	19.9	40.0	11.9	64.5	54.5
1730.00	****	22.4	40.0	13.4	55.9	55.9
1731.00	****	18.6	33.3	12.4	63.2	63.2
1732.00	****	16.5	33.3	11.0	68.6	68.6
1733.00	****	21.8	33.3	14.5	60.3	60.3
1734.00	**	22.4	35.6	14.4	55.5	55.5
1735.00	***	15.7	33.3	10.5	63.2	63.2
1735.00	****	20.5	35.6	13.2	55.6	55.6
1737.00	****	19.9	36.7	12.6	56.8	56.8
1738.00	****	21.8	42.2	12.6	57.1	57.1
1739.00	****	22.4	35.6	14.4	59.3	59.3
1740.00	****	24.1	33.3	16.1	60.4	60.4
1741.00	****	23.6	36.7 <sup>°</sup>	14.9	61.9	61.9
1742.00	****	17.2	38.9	10.5	62.4	62.4
1743.00	****	19.2	43.3	10.9	58.2	58.2
1744.00	****	17.9	42.2	10.3	68.9	68.9
1745.00	****	20.5	32.2	13.9	58.8	58.8
1746.00	******	19.9	38.9	12.2	56.9	56.9
1747.00	****	24.1	38.9	14.7	61.2	61.2
1748.00	***	24.1	58.9	9.9	65.1	65.1

HEATHFIELD MEMBER

1760 - 1806 metres

WINDERMERE 2 HEATHFIELD

Mud filtrate density=1.00 g/cc. Surface temperature=70.00 degrees F. Bottom hole temperature=280.00 degrees F. Surface depth=0.00 meters. Depth logger=3595.00 meters.

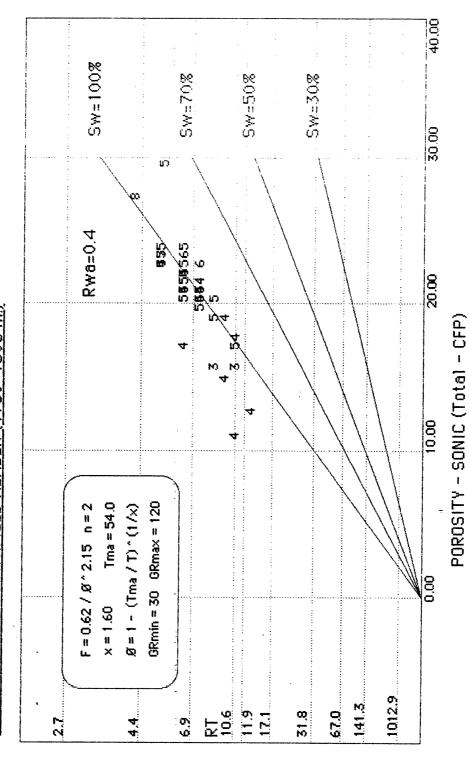
•		00.00	000	000	00	000	00.0	00.0	00.0	0	000	00	00.0	00	00.0	00.0	00.0	00.0	00.0	00 0	00.0	000	0.0	0.00
•		0.0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0
Sonic	usec/fi	0.66	84.0	80.0	80.0	75.0	78.0	84.0	81.0	84.0	0.08	84.0	76.0	78.0	0.08	73.0	73.0	0.08	81.0	0.08	67.0	85.0	85.0	84.0
Sonic	usec/ft	93.000	84.000	000.00	80.000	75.000	78.000	84.000	81.000	84.000	000.00	84.000	36.000	78.000	90.000	73.000	73.000	90.000	31.000	30.000 30.000	57,000	35.000	35.000	34.000
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8		02.0	0.06	35.0	35.0	35.0 0.85	75.0	73.0	75.0	0.65	75.0	77.0	74.0	74.0	75.0	55.0	55.0	75.0	71.0	74.0	0.9	75.0	22.0	ک 0.0
:		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
:		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
:		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
₹.		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9		4.00	~ 8	7.00	8.00	10.00	8.00	6.00	۲. 90.	6.00	~ 00.	ສ.00	10.00	9.00	7.00	10.00 00.00	8.00	6.00	2 <sup>.</sup> 00	2.00	<del>1</del> 0.00	5.00 5.00	5.00	00 00 00 00 00 00 00 00 00 00 00 00 00
TS T		4.00	7.00	7.00	8.00 8.00	10.00	8.00	6.00	7.00	6.00	7.00	5.00	10.00 10.00	00. <del>6</del>	90.	±0.00	8.00 8.00	6.00	7.00	8	±0.00	ъ. О	ა. 8	2.8
		4.00	7.00	2.00	8.00	10.00	8.00	6.00 6.00	7.00	0.00 0.00	7.00	5.00	10.00	0.6 0.00	7.00	10.00	8.00	6.00	7.00	7.00	<del>1</del> 0.00	5.00	8	2.00
Dep th	Meters	1760.00	1761.00	1762.00	1763.00	1764.00	1765.00	1766.00	1767.00	1768.00	1769.00	1770.00	1771.00	1772.00	1773.00	1774.00	1775.00	1776.00	1777.00	1778.00	1779.00	1780.00	1781.00	1782.00
	MSFL LLS LLD RT GR Sonic	MSFL LLS LLD RT GR Sonic 8 usec/ft	MSFL LLS LLD RT	#SFL LLS LLD RT	MSFL         LLS         LLD         RT         HT         LLS         LLD         RT         μsec/ft         μsec/f	MSFL         LLS         LLD         RT         HT         HT <th< td=""><td>MSFL         LLS         LLD         RT        </td><td>MSFL         LLS         LLD         RT         HT         <t< td=""><td>#\$FL LLS LLD RT</td><td>#\$FL LLS LLD RT</td><td>#\$FL LL\$ LLD RT</td><td>#\$FL LLS LLD RT  #\$FL LLS LLS LT  #\$FL LLS LLS LLS LT  #\$FL LLS LLS LLS LT  #\$FL LLS LLS LLS LLS  #\$FL LLS LLS LLS LLS  #\$FL LLS</td><td>#\$FL LLS LLD RT  #35c/ft µ35c/ft µ35c/</td><td>#\$FL LLS LLD RT</td><td>#\$FL LL\$ LL\$ LLD RT</td><td>LLS LLD RT</td></t<></td></th<>	MSFL         LLS         LLD         RT	MSFL         LLS         LLD         RT         HT         HT <t< td=""><td>#\$FL LLS LLD RT</td><td>#\$FL LLS LLD RT</td><td>#\$FL LL\$ LLD RT</td><td>#\$FL LLS LLD RT  #\$FL LLS LLS LT  #\$FL LLS LLS LLS LT  #\$FL LLS LLS LLS LT  #\$FL LLS LLS LLS LLS  #\$FL LLS LLS LLS LLS  #\$FL LLS</td><td>#\$FL LLS LLD RT  #35c/ft µ35c/ft µ35c/</td><td>#\$FL LLS LLD RT</td><td>#\$FL LL\$ LL\$ LLD RT</td><td>LLS LLD RT</td></t<>	#\$FL LLS LLD RT	#\$FL LLS LLD RT	#\$FL LL\$ LLD RT	#\$FL LLS LLD RT  #\$FL LLS LLS LT  #\$FL LLS LLS LLS LT  #\$FL LLS LLS LLS LT  #\$FL LLS LLS LLS LLS  #\$FL LLS LLS LLS LLS  #\$FL LLS	#\$FL LLS LLD RT  #35c/ft µ35c/ft µ35c/	#\$FL LLS LLD RT	#\$FL LL\$ LL\$ LLD RT	LLS LLD RT								

WINDERMERE 2 HEATHFIELD

Mud filtrate density=1.00 g/cc. Surface temperature=70.00 degrees F. Bottom hóle temperature=280.00 degrees F. Surface depth=0.00 meters. Depth logger=3595.00 meters.

	•																								0.00	
	•	است.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Senic	t usec/fi	83.0	82.0	80.0	79.0	0.98	.0 .0	82.0	81.0	83.0	84.0	0.98	85.0	84.0	85.0	84.0	85.0	0.86	83.0	ئ 0. ق	85.0	85.0	72.0	69.0	91.0
	Sonic	usec/f	83.000	82.000	80.000	79.000	86.000	84,000	82,000	81.000	83.000	84.000	86.000	85.000	84.000	85.000	84.000	85.000	98.000	83.000	75.000	86.000	85.000	72.000	69.000	81.000
			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0.0
	£																								0.99	
			0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	8.0	9.0	0.0	0.0	8.0	8.	0.0	8	8.0	0.0	0.00	0.0
ګ	:		0.00	0.00	0.00	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	9.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	8
A LISTING			0.0	0.0	8.	0.0	0.00	0.00	0.0	0 8	0.0	0.0	0.0	8.0	9.0	8.0	8.0	8.0	0.0	0.0	0. 0	8	8.	0.0	0.0	8 .0
DATA	RI		6.00	6.00	8.00	7.00	6.00	6.00	7.00	6.00	<b>6</b> .00	5.00	S. 00	5.00 0.00	ა .00	5.00	5.00	5.00	5.00	6.00 6.00	6.00	5.00 5.00	6.00	0.6 6	12.00	0.00 0.00
	9		6.00	<b>6</b> .00	8° 00	7.00	6.00	6.00	7.00	<b>6</b> .00	6.00	5.00	J. 00	5.00 5.00	3.00 2.00	5.00	5.00 5.00	5.00	5.00	<b>9</b> .00	<b>9</b> .00	J. 00	6.00	0.00 6	12.00	6.00
	rrs		•		•	•	•			•						•		•							12.00	
	MSFL		6.00	6.00	8.00	۲. 90.	6.00 6	6.00	۲. 8	9.00	9.00	ນ .00	2	5.00	2.00	2.00	5.00	 8	5.00 5.00	6.00	9.00	5.00	0.00 0.00	9.00	12.00	9.8
	Depth	meters	1783.00	1784.00	1785.00	1786.00	1787.00	1788.00	1789.00	1790.00	1791.00	1792.00	1793.00	1794.00	1795.00	1796.00	1797.00	1798.00	1799.00	1800.00	1801.00	1802.00	1803.00	1804.00	1805.00	•

WINDERMERE #2 HEATHFIELD MEMBER (1760-1806 m.)



WINDERMERE 2 HEATHFIELD

1806,00

22.4

66.7

100.00

50.0

50.0

11.2

0.387

0.387

Velay is minimum of Velay from Rt, SP & GR. PHIE=(1-Velay)\*PHIT. x=1.60 Tma=54.00 microsec/ft CFP-Total model.
GRelean=30.00 GRelay=120.00 SPelay=50.00 SPelay=50.00.
RWA=(RT\*PHIT^2.15)/0.62 RMFA=(Rxo\*PHIT^2.15)/0.62 Relay=4.0.

PRE EVALUATION (Sonic porosity) Depth PHIT VelayRt VelaySP VelayGR Velay PHIE RMFR RMA meters 1760.00 28.8 100.0 100.00 83.3 83.3 4.8 0.444 0.444 1761.00 24.1 57.1 100.00 0.531 66.7 57.1 10.3 0.531 1762.00 21.8 57.1 100.00 50.0 50.0 10.9 0.426 0.425 1763.00 21.8 50.0 100.00 50.0 50.0 10.9 0.487 0.487 18.5 1764.00 40.0 100.00 50.0 40.0 11.1 0.432 0.432 1765.00 20.5 50.0 100.00 50.0 50.0 10.3 0.429 0.4291766.00 24.1 66.7 100.00 50.0 50.0 12.1 0.455 0.455 50.0 1767.00 22.4 57.1 100.00 50.0 11.2 0.452 0.452 1768.00 24.1 100.00 66.7 50.0 50.0 12.1 0.455 0.455 1769.00 21.8 57.1 100.00 50.0 50.0 10.9 0.426 0.4261770.00 24.1 80.0 100.00 52.2 52.2 11.5 0.379 0.379 19.2 1771.00 40.0 100.00 40.0 48.9 11.5 0.466 0.466 1772.00 100.00 20.5 44.4 48.9 44.4 0.483 11.4 0.483 1773.00 21.8 57.1 100.00 50.0 50.0 10.9 0.426 0.426 1774.00 17.2 40.0 100.00 38.9 38.9 10.5 0.365 0.365 1775.00 17.2 50.0 100.00 38.9 0.292 0.292 38.9 10.5 1776.00 21.8 66.7 100.00 0.365 50.0 50.0 10.9 0.365 100.00 1777.00 22.4 57.1 45.6 45.6 12.2 0.452 0.452 1778.00 21.8 57.1 100.00 48.9 48.9 11.1 0.426 0.426 100.00 1779.00 40.0 12.6 40.0 40.0 7.6 0.188 0.188 1780.00 24.7 80.0 100.00 50.0 50.0 12.3 0.399 0.399 1781.00 24.7 80.0 100.00 52:2 52.2 11.8 0.399 0.399 1782.00 24.1 80.0 100.00 50.0 50.0 12.1 0.379 0.379 1783.00 23.6 66.7 100.00 53.3 53.3 0.432 11.0 0.432 1784.00 23.0 66.7 100.00 58.9 58.9 9.4 0.410 0.410 1785.00 100.00 21.8 50.0 50.0 50.0 10.9 0.487 0.487 1786.00 57.1 0.401 21.2 100.00 52.2 52.2 10.1 0.401 1787.00 25.2 66.7 100.00 55.6 55.6 11.2 0.501 0.501 66.7 1788.00 24.1 100.00 50.0 50.0 0.455 12.1 0.455 1789.00 23.0 100.00 57.1 48.9 48.9 11.7 0.478 0.478 22.4 1790.00 66.7 100.00 48.9 48.9 11.4 0.387 0.387 1791.00 23.6 66.7 100.00 48.9 48.9 12.0 0.432 0.432 24.1 100.00 1792.00 80.0 48.9 48.9 12.3 0.379 0.3791793.00 25.2 80.0 100.00 53.3 53.3 11.8 0.418 0.418 1794.00 24.7 80.0 100.00 55.6 55.6 11.0 0.399 0.399 1795.00 24.1 80.0 100.00 75.6 75.6 5.9 0.379 0.379 24.7 1796.00 80.0 100.00 70.0 70.0 7.4 0.399 0.399 24.1 80.0 1797.00 100.00 50.0 50.0 12.1 0.379 0.379 1798.00 24.7 80.0 100.00 52.2 52.2 11.8 0.399 0.399 1799.00 80.0 31.1 100.00 52.2 52.2 14.9 0.655 0.655 1800.00 23.6 66.7 100.00 50.0 50.0 11.8 0.432 0.432 18.6 1801.00 66.7 100.00 48.9 48.9 9.5 0.259 0.259 1802.00 25.2 80.0 100.00 55.6 55.6 11.2 0.418 0.418 24.7 66.7 1803.00 100.00 60.0 60.0 9.9 0.478 0.478 1804.00 16.5 44.4 100.00 45.6 9.1 44.4 0.300 0.300 33.7 1805.00 14.2 33.7 100.00 9.4 40.0 0.291 0.291

### **HEATHFIELD** WINDERMERE 2 Velay is min. of Velay from SP, GR & Rt.

PHIE=(1-Velau)\*PHIT. GRelean=30.00 GRelay=120.00 SPelean=80.00 SPelay=50.00 Rtelay=4.000. Rw=0.400 everywhere except from 0.00 to 0.00 where Rw=0.200. a=0.62 m=2.15 n=2.00. Rmf = 0.090

PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<2.00 and RHOB<>0) or if NPH1>55.0 or if Sonic>100.0 microsec/ft. SPclean=80.00 SPclay=50.00

(1/RT)^0.5=[(Vclay^b)/(Rclay^0.5)+(PHIE^(m/2))/(a\*Rw)^0.5]\*Swind^(n/2) b=1-(Volay/2)

\*\*\*\* Sonic porosity x=1.60 Tma=54.00 microsec/ft CFP-Total model.

EVALUATION (Sonic porosity) **RHOma** PHIT Velay PHIE Swind Sxoind Depth meters \*\*\*\* 83.3 95.0 95.0 1760.00 28.8 4.8 74.1 10.3 1761.00 \*\*\*\* 24.1 57.1 74.1 \*\*\*\* 78.3 1762.00 21.8 50.0 10.9 78.3 \*\*\* 1763.00 21.8 50.0 10.9 73.3 73.3 \*\*\*\* 1764.00 18.6 40.0 11.1 73.6 73.6 \*\*\*\* 75.0 1765.00 20.5 50.0 10.3 75.0 1766.00 \*\*\*\* 24.1 12.1 50.0 81.0 81.0 1767.00 \*\*\*\* 22.4 50.0 11.2 77.4 77.4 \*\*\* 1768.00 24.1 50.0 12.1 81.0 81.0 \*\*\*\* 21.8 10.9 78.3 1769.00 50.0 78.3 \*\*\*\* 24.1 1770.00 52.2 11.5 88.3 88.3 \*\*\* 11.5 1771.00 19.2 40.0 72.3 72.3 \*\*\*\* 72.3 72.3 1772.00 20.5 44.4 11.4 \*\*\*\* 1773.00 21.8 50.0 10.9 78.3 78.3 \*\*\*\* 1774.00 17.2 38.9 10.5 76.8 76.8 \*\*\*\* 1775.00 17.2 38.9 10.5 85.9 85.9 \*\*\*\* 1776.00 21.8 50.0 10.9 84.6 84.6 \*\*\*\* 1777.00 22.4 45.6 12.2 78.5 78.5 1778.00 \*\*\* 21.8 78.6 78.6 48.9 11.1 1779.00 \*\*\* 12.6 40.0 7.6 86.5 86.5 \*\*\* 1780.00 24.7 50.0 12.3 87.8 87.8 \*\*\*\* 24.7 1781.00 52.2 87.5 87.5 11.8 24.1 88.7 \*\*\*\* 50.0 88.7 1782.00 12.1 \*\*\* 1783.00 23.6 53.3 11.0 81.3 81.3 1784.00 \*\*\* 23.0 58.9 9.4 81.2 81.2 \*\*\*\* 1785.00 21.8 50.0 10.9 73.3 73.3 \*\*\*\* 21.2 10.1 78.7 1786.00 52.2 78.7 \*\*\*\* 1787.00 25.2 55.6 11.2 78.8 78.8 \*\*\* 1788.00 24.1 50.0 81.0 81.0 12.1 \*\*\* 48.9 1789.00 23.0 11.7 76.8 76.8 \*\*\*\* 1790.00 22.4 48.9 11.4 83.9 83.9 \*\*\*\* 1791.00 23.6 48.9 12.0 82.1 82.1 \*\*\*\* 1792.00 24.1 48.9 12.3 88.9 88.9 \*\*\*\* 25.2 53.3 1793.00 11.8 86.5 86.5 \*\*\*\* 24.7 1794.00 55.6 11.0 87.1 87.1 \*\*\* 24.1 1795.00 75.6 5.9 86.7 86.7 \*\*\*\* 1796.00 24.7 70.0 7.4 86.2 86.2 \*\*\* 1797.00 24.1 50.0 12.1 88.7 88.7 24.7 \*\*\*\* 52.2 87.5 11.8 87.5 1798.00 \*\*\*\* 1799.00 31.1 52.2 14.9 78.7 78.7 \*\*\*\* 50.0 1800.00 23.6 11.8 81.8 81.8 \*\*\*\* 1801.00 18.6 48.9 9.5 90.6 90.6 \*\*\*\* 1802.00 25.2 55.6 11.2 86.3 86.3 \*\*\* 1803.00 24.7 50.0 9.9 79.1 79.1 akakakak 1804.00 16.5 44.4 9.1 79.5 79.5 \*\*\*\* 9.4 1805.00 14.2 33.7 80.0 80.0

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1806.00

22.4

50.0

11.2

83.7

83.7

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WINDERMERE 2
                                      HEATHFIELD (Rw = 0.14 € 170°F)
 Velay is min. of Velay from SP, GR & Rt. PHIE=(1-Velay)*PHIT.
  GRelean=30.00 GRelay=120.00 SPelean=80.00 SPelay=50.00 Rtelay=4.000.
 Rw=0.140 everywhere except from 0.00 to 0.00 where Rw=0.200.
              a=0.62 m=2.15 n=2.00.
 Rmf=0.090
 PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity.
 Coal is detected if (RHOB<1.50 and RHOB<>0) or if NPHI>55.0 or if Sonic>140.0 microsec/ft. SPclean=80.00 SPclay=50.00
 (1/RT)^0.5=[(Velay^b)/(Relay^0.5)+(PHIE^(m/2))/(a*Rw)^0.5]*Swind^(n/2)
 b=1-(Vclay/2)
 **** Sonic porosity x=1.60 Tma=54.00 microsec/ft CFP-Total model.
                       EVALUATION (Sonic porosity)
 Depth
          RHOma
                PHIT
                         Velay PHIE Swind Sxoind
 meters
1760.00
                 28.8
                         83.3
                                4.8
                                       86.3
                                               86.3
         ****
1761.00
                 24.1
                         57.1
                                10.3
                                       59.9
                                               59.9
          ***
1762.00
                 21.8
                         50.0
                                10.9
                                       61.9
                                               61.9
1763.00
          ****
                         50.0
                 21.8
                                10.9
                                               57.9
                                       57.9
1764.00
          ***
                 18.6
                         40.0
                                11.1
                                       56.4
                                               56.4
1765.00
          ****
                 20.5
                         50.0
                                10.3
                                       59.8
                                               59.8
          ***
1766.00
                 24.1
                         50.0
                                12.1
                                       63.1
                                               63.1
          ****
1767.00
                 22.4
                         50.0
                                11.2
                                       61.0
                                               61.0
                         50.0
          ****
                                       63.1
1768.00
                 24.1
                               12.1
                                               63.1
          ****
                                       61.9
1769.00
                 21.8
                         50.0
                                10.9
                                               61.9
1770.00
         ***
                         52.2
                 24.1
                                11.5
                                       69.6
                                               69.6
         ****
1771.00
                 19.2
                         40.0
                                11.5
                                       55.2
                                               55.2
1772.00
         ***
                 20.5
                         44.4
                                       56.0
                                               56.0
                                11.4
                         50.0
         ***
1773.00
                 21.8
                                10.9
                                       61.9
                                               61.9
         ****
1774.00
                 17.2
                         38.9
                                10.5
                                       59.2
                                               59.2
         ***
1775.00
                 17.2
                         38.9
                                10.5
                                       66.2
                                               66.2
         ****
                 21.8
                         50.0
1776.00
                                10.9
                                       66.9
                                               66.9
                         45.6
1777.00
         ****
                 22.4
                                12.2
                                       60.4
                                               60.4
1778.00
         spiritale spirita
                                               61.8
                 21.8
                         48.9
                                11.1
                                       61.8
         ***
1779.00
                 12.6
                         40.0
                                7.6
                                               70.0
                                       70.0
         ***
1780.00
                         50.0
                                12.3
                 24.7
                                       68.2
                                               68.2
1781.00
         ***
                 24.7
                         52.2
                                11.8
                                       68.8
                                               68.8
1782.00
         ***
                 24.1
                         50.0
                                12.1
                                       69.1
                                               69.1
         ****
1783.00
                 23.6
                         53.3
                                11.0
                                       64.6
                                               64.6
                         58.9
         **
1784.00
                 23.0
                                9.4
                                       66.6
                                               66.6
                 21.8
1785.00
         ***
                        50.0
                               10.9
                                       57.9
                                               57.9
         Helichele
                               10.1
1786.00
                 21.2
                         52.2
                                       63.2
                                               63.2
         ***
1787.00
                 25.2
                         55.6
                                11.2
                                       62.8
                                               62.8
         ****
1788.00
                 24.1
                         50.0
                               12.1
                                       63.1
                                               63.1
```

1789.00

1790.00

1791.00

1792.00

1793.00

1794.00

1795.00

1796.00

1797.00

1798.00

1799.00

1800.00

1801.00

1802.00

1803.00

1804.00

1805.00

1805.00

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23.0

22.4

23.6

24.1

25.2

24.7

24.1

24.7

24.1

24.7

31.1

23.6

18.6

25.2

24.7

16.5

14.2

22.4

48.9

48.9

48.9

48.9

53.3

55.6

75.6

70.0

50.0

52.2

52.2

50.0

48.9

55.6

60.0

44.4

33.7

50.0

11.7

11.4

12.0

12.3

11.8

11.0

5.9

7.4

12.1

11.8

14.9

11.8

9.5

11.2

9.9

9.1

9.4

11.2

59.9

65.7

63.8

68.9

68.2

69.6

76.9

74.1

69.1

68.8

59.9

64.0

72.8

68.8

64.7

63.4

61.4

65.9

59.9

65.7

63.8

68.9

68.2

69.6

76.9

74.1

69.1

68.8

59.9

64.0

72.8

68.8

64.7

63.4

61.4

65.9

LOWER EUMERALLA FORMATION

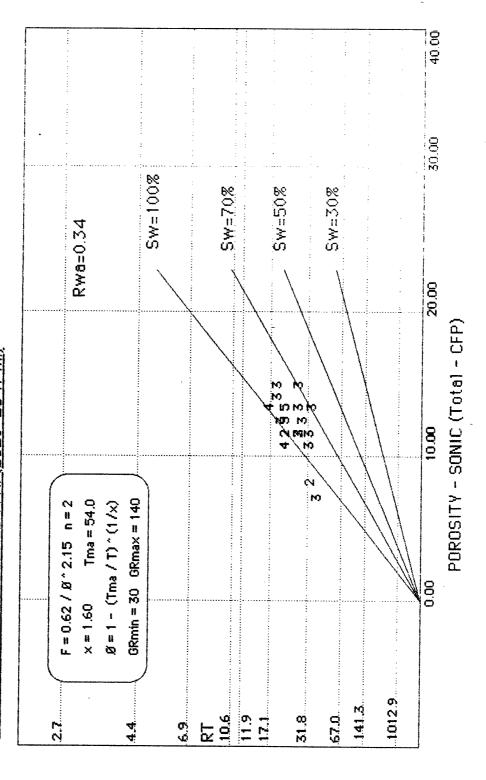
2529 - 2547 metres

MINDEFATERE 2 M. EUMERALLA

Mud filtrate density=1.00 g/cc.
Surface temperature=70.00 degrees F. Bottom hole temperature=280.00 degrees F.
Surface depth=0.00 meters. Depth logger=3595.00 meters.
DATA LISTING

	CALL		8	96	8 8	3 8	88	000	0.0	000	000	9	0	00.0	000	8	9		88	30	00.0	
	•	+					00															
	Sonic	HEAD!		50.00		9.6	0.89	67.0	0.99	0.99	0.89	67.0	65.0	0.99	0.89	67.0	0 69	20.0	70.0	0.89	0.99	
	Sonic	Usan /ft	61 000	52 DO	65 000	56.330 56.000	0.0 68.000	67.000	<b>66.000</b>	66.000	68.000	67.000	65.000	66.000	58.000	57.000	900.69	70.000	70.000	58,000	56.000	
	•		0	C	, c	0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Æ		71.0	60		0	0.0	71.0	0.99	62.0	83.0	92.0	0.0	62.0	0.00	67.0	0.9	و 0	0.2 22	71.0	65.0	
2	NPHIIS NPHIC		00 23.38	00 15 65	00 17 01	00 18 05	18.00 20.35	00 21.44	00 21.48	00 21.48	00 20.21	50 21.78	00 22.35	00 17.89	50 20.79	00 21.41	50 20.79	50 21.95	50 23.03	00 23.53	00 23.57	
	RHOB 7		36	9	4	2	2.51	5	ධු	යු	S	26	S	20	ል	22	ğ	22	22	8	22	
5	FT						25.00															
	9						25.00															
	LIS		35.00	31.00	30.00	25:00	25.00	27.00	30.00	25.00	20.00	20.00	89.89	20.00	16.00	19.00	<b>18</b> .00	18.00	25.00	32.00	90.0g	
	TSF.		32.08 80.08	31.00	80.08 80.08	23.08 29.08	89. 89.	27.00	80.00	8 8 8	8.8	8.8	8.8	8.8	16.00 10.00	19.00	18.00	18.00	23.88 8	85.88 87.88	8.8	٠
	Depth		2529.00	2530.00	2531.00	2532.00	2533.00	2534.00	2535.00	2536.00	2537.00	2538.00	2539.00	2540.00	2541.00	2542.00	2543.00	2544.00	2545.00	2546.00	2547.00	

WINDERMERE #2 EUMERALLA FM. (2529-2547 m.)



WINDERMERE 2 LOWER EUMERALLA

Velay is minimum of Velay from Rt, SP & GR. PHIE=(1-Velay)\*PHIT.

x=1.60 Tma=54.00 microsec/ft CFP-Total model.

GRelean=30.00 GRelay=140.00 SPelan=80.00 SPelay=50.00.

RWA=(RT\*PHIT^2.15)/0.62 RMFA=(Rxo\*PHIT^2.15)/0.62 Relay=20.0.

PRE EVALUATION (Sonic porosity)

Depth	PHIT	VelayRt	Ve LaySP	Ve LayGR	Velay	PHIE	RWA	RMFA
meters	*							
2529.00	7.3	57.1	100.00	37.3	37.3	4.6	0.205	0.205
2530.00	8.3	64.5	100.00	27.3	27.3	6.0	0.235	0.235
2531.00	10.9	66.7	100.00	30.9	30.9	7.6	0.416	0.416
2532.00	11.8	80.0	100.00	34.5	34.5	7.7	0.407	0.407
2533.00	13.4	80.0	100.00	32.7	32.7	9.0	0.537	0.537
2534.00	12.6	74.1	100.00	37.3	37.3	7.9	0.508	0.508
2535.00	11.8	66.7	100.00	32.7	32.7	7.9	0.488	0.488
2536.00	11.8	80.0	100.00	29.1	29.1	8.4	0.407	0.407
2537.00	13.4	100.0	100.00	50.0	50.0	6.7	0.430	0.430
2538.00	12.6	100.0	100.00	56.4	56.4	5.5	0.376	0.376
2539.00	10.9	100.0	100.00	40.9	40.9	6.5	0.277	0.277
2540.00	11.8	100.0	100.00	29.1	29.1	8.4	0.325	0.325
2541.00	13.4	100.0	100.00	40.9	40.9	7.9	0.344	0.344
2542.00	12.6	100.0	100.00	33.6	33.6	8.4	0.357	0.357
2543.00	14.2	100.0	100.00	32.7	32.7	9.6	0.437	0.437
2544.00	15.0	100.0	100.00	39.1	39.1	9.1	0.490	0.490
2545.00	15.0	80.0	100.00	38.2	38.2	9.3	0.680	0.680
2546.00	13.4	62.5	100.00	37.3	37.3	8.4	0.688	0.688
2547.00	11.8	66.7	100.00	31.8	31.8	8.0	N 488	0.488

### WINDERMERE 2

2547.00 \*\*\*\*

### LOWER EUMERALLA

Velay is min. of Velay from SP, GR & Rt. PHIE=(1-Velay)\*PHIT. GRelean=30.00 GRelay=140.00 SPelaan=80.00 SPelay=50.00 Rtelay=20.000. Rw=0.340 everywhere except from 0.00 to 0.00 where Rw=0.200. Rmf=0.800 a=0.62 m=2.15 n=2.00. PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<1.50 and RHOB<>0) or if NPHI>55.0 or if Sonic>90.0 microsec/ft. SPelaan=80.00 SPelay=50.00 (1/RT)^0.5=I(Velay^b)/(Relay^0.5)+(PHIE^(m/2))/(a\*Rw)^0.5]\*SwInd^(n/2) b=1-(Velay/2)

\*\*\*\* Sonic porosity x=1.60 Tma=54.00 microsec/ft CFP-Total model.

			EVALUAT	ION (	Sonic p	orosity:
Depth	RHOma	PHIT	Velay	PHIE	Swind	SxoInd
meters						
2529.00	***	7.3	37.3	4.5	94.0	100.0
2530.00	****	8.3	27.3	6.0	100.0	100.0
2531.00	****	10.9	30.9	7.6	83.5	100.0
2532.00	****	11.8	34.5	7.7	86.4	100.0
2533.00	****	13.4	32.7	9.0	79.4	100.0
2534.00	<b>spespespespe</b>	12.6	37.3	7.9	79.3	99.7
2535.00	***	11.8	32.7	7.9	79.2	100.0
2536.00	****	11.8	29.1	8.4	87.3	100.0
2537.00	****	13.4	50.0	6.7	88.6	100.0
2538.00	****	12.6	56.4	5.5	91.4	100.0
2539.00	****	10.9	40.9	6.5	99.6	100.0
2540.00	****	11.8	29.1	8.4	97.7	100.0
2541.00	***	13.4	40.9	7.9	99.0	100.0
2542.00	***	12.5	33.6	8.4	94.9	100.0
2543.00	****	14.2	32.7	9.6	89.8	100.0
2544.00	****	15.0	39.1	9.1	87.0	100.0
2545.00	***	15.0	38.2	9.3	73.7	94.1
2546.00	****	13.4	37.3	8.4	70.0	88.6

31.8

8.0

79.3 100.0

11.8

WINDERMERE MEMBER

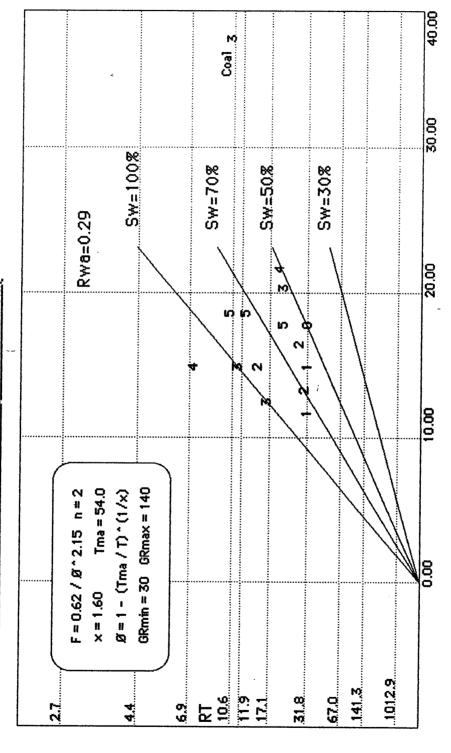
3180 - 3194 metres

WINDERMERE 2 L. EUMERALLA

Mud filtrate density=1.00 g/cc. Surface temperature=70.00 degrees F. Bottom hole temperature=280.00 degrees F. Surface depth=0.00 meters. Depth logger=3595.00 meters.

	CAL		000	88	86			3.5	00.00	200		3	9.0	20	8 6	3 6	3.5	2	8 6	3	8.0
	•	ئىد				) c															
	Sonic	لعد																			
	Sonic	usec/f	70,000	115 000	80.000	0.00 25 0.00	2000	3.000	67.000	78,000	20 000	000.	4.000	72,000	65 nn	300.00	200.0	74,000	68 nnn		70.000
	:		0.0	0		; c	) c	) i	0.0	0.0		9 (	) )	0.0	0.0		) )	0.0	0		0.0
	8		0.6	65.0	75.0	000	5	) i	64.0	71.0	58 D		დე. დე	56.0	51.0	ر د بر 2	2.2	40.0	52.0		ა. ე.
14	NPHIC		8 9	0.00	00.0	0			00.00	8.0	0.0		O	8.0	0.00		3	0.00 0.00	0.00		3.5
9	¥PH Is		0.0	0.0	0.00	00.0	5	3 6	3.5	9.0	0.00		5.00	0. 0.	8.0	000	3	0.0 0.0	80.0	6	D. 00
	RHOB NPHI		9.0	0.0	0.0	0.00	5		3.5	8.0	0.00	c	2	8.	9.0	5	) (	0.00	9.0	ç	3
DATA	RT	1	. 00	10.00	19.00	10.00	12.00	9 0	9.6	8 8 8	1.00	5	. O. O.	8.8	8.8	200		8 8 8	80.6% 80.6%	5	3
	FD	1	7.00	10.00 10.00	19.00	10.00	12,00	ų,	2	20.00 20.00	1.8	20.00	2 .	26.00	30.00 30.00	30,00		8 8 8	23.80 80.80	2	3.
	LLS	1	7.00	10.00	19.00	10.00	12.00	100	00.00	20.00	- 80	20.00	0.00	20.00	30.00	30.00		80.00 00.00	29.00	7	3 <u>f</u>
	MSFL					9.	-80	ر 1	 	2.20	5. 8.	2	3 6	3.5	29. 80. 80.	4.00		۶. UO	4.00 0.	2	5
	Depth		3180.00	3181.00	3182.00	3183.00	3184.00	2105 00	00.00	3186.00	3187.00	3188 00	0000	3189.00	3190.00	3191.00	00000	3192.00	3193.00	2104 00	20.

WINDERMERE #2 WINDERMERE MEMBER (3180-3194 m.)



POROSITY - SONIC (Total - CFP)

### WINDERMERE 2

### WINDERMERE MEMBER

Velay is minimum of Velay from Rt, SP & GR. PHIE=(1-Velay)\*PHIT. x=1.60 Tma=54.00 microsec/ft CFP-Total model. GRelean=30.00 GRelay=140.00 SPelean=80.00 SPelay=50.00.
RWA=(RT\*PHIT^2.15)/0.62 RMFR=(Rxo\*PHIT^2.15)/0.62 Relay=20.0.
PRE\_EVALUATION\_\_(Sonic\_parasity)

		PRE	e evalua	TION (S	onic p	orosity)		
Depth	PHIT	VelayRt	Ve LaySP	Ve LayGR	Velay	PHIE	RWA	RMFA
meters								
3180.00	15.0	100.0	100.00	44.5	44.5	8.3	0.190	0.049
3181.00	37.7	100.0	100.00	31.8	31.8	25.7	1.975	0.296
3182.00	21.8	100.0	100.00	40.9	40.9	12.9	1. 157	0.085
3183.00	18.6	100.0	100.00	57.3	57.3	7.9	0.432	0.043
3184.00	18.6	100.0	100.00	51.8	51.8	8.9	0.518	0.078
3185.00	12.6	100.0	100.00	30.9	30.9	8.7	0.301	0.047
3186.00	20.5	100.0	100.00	37.3	37.3	12.9	1.073	0.118
3187.00	15.0	100.0	100.00	34.5	34.5	9.8	0.299	0.054
3188.00	17.9	100.0	100.00	50.0	50.0	8.9	0.796	0.318
3189.00	16.5	76.9	100.00	23.6	23.6	12.5	0.866	0.100
3190.00	11.8	66.7	100.00	19.1	19.1	9.5	0.488	0.325
3191.00	15.0	66.7	100.00	13.6	13.6	12.9	0.815	0.109
3192.00	17.9	66.7	100.00	9.1	9.1	16.2	1.194	0.119
3193.00	13.4	69.0	100.00	20.0	20.0	10.7	0.623	0.086
3194.00	15.0	100.0	100.00	21.8	21.8	11.7	0.381	0.136

### WINDERMERE 2

### WINDERMERE MEMBER

Velay is min. of Velay from SP, GR & Rt. PHIE=(1-Velay)\*PHIT. GRelean=30.00 GRelay=140.00 SPelay=80.00 SPelay=50.00 Rtelay=20.000. Rw=0.290 everywhere except from 0.00 to 0.00 where Rw=0.200. Rmf=0.680 a=0.62 m=2.15 n=2.00. PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<1.50 and RHOB<>0) or if NPHI>55.0 or if Sonie>90.0 microsec/ft. SPelay=80.00 SPelay=50.00 (1/RT)^0.5=[(Velay^b)/(Relay^0.5)+(PHIE^(m/2))/(a\*Rw)^0.5]\*SwInd^(n/2) b=1-(Velay/2)

\*\*\*\* Sonic porosity x=1.60 Tma=54.00 microsec/ft CFP-Total model.

			EVALUAT	ION	(Sonic p	orosity:
Depth meters	RHOma	PHIT	Velay			SxoInd
3180.00	****	15.0	44.5	8.3	100.0	100.0
3181.00	coal	coal	coal	coal	coal	coal
3182.00	****	21.8	40.9	12.9	62.0	100.0
3183.00	****	18.6	57.3	7.9	100.0	100.0
3184.00	****	18.6	51.8	8.9	92.1	100.0
3185.00	***	12.6	30.9	8.7	98.4	100.0
3186.00	****	20.5	37.3	12.9	62.0	100.0
3187.00	****	15.0	34.5	9.8	100.0	100.0
3188.00	****	17.9	50.0	8.9	72.4	100.0
3189.00	***	16.5	23.6	12.6	62.0	100.0
3190.00	***	11.8	19.1	9.5	76.5	100.0
3191.00	****	15.0	13.5	12.9	61.6	100.0
3192.00	****	17.9	9.1	16.2	51.1	100.0
3193.00	***	13.4	20.0	10.7	69.6	100.0
3194 00	****	15.0	21.8	11.7	01.2	100.0

CRAYFISH FORMATION

3316 - 3325 metres

WINDERMERE 2

Mud filtrate density=1.00 g/cc. Surface temperature=70.00 degrees F. Bottom holé temperature=280.00 degrees F. Surface depth=0.00 meters. Depth logger=3595.00 meters. DATA LISTING

	- HS		:	12.00	12 00	000	9 6	20.21	74.CD	15.00	14 00	3 5		12.50	11.80	11 50	9 6	9 (	7.70	11.20	14.00	9 0	<u>4</u> .00	13.50	12.00
	•																								0.0
	Sonic	+ 11000 /6+		_ _ 	0.40	. 65 	) W		o. 0.	62.0	62.0	63.0	9 0	03.U	62.0	61 n	51.0	) (	0.0	61.0	64 0		) 5	64.0	67.0
	Sonic	110000			64.000	65 000	000		5.00	62.000	62.000	63.000	000	200. 200. 200.	62.000	61 000	61.000	900		<u> </u>	64,000	64 000	3	64.000 000.400	.0 67.000
	:		(	O.O	0.0	0	) C	) c	)    -	0.0	0.0	C	, ,		0.0	0.0		) c	) )	0.0	0.0	C		0.0	0.0
	8		C U	00.00	0.0	85.0	1		9 1	60.0	65.0	67.0	0	2	<u>-</u> -	76.0	28	, C	2 :	71.0	0.09	48.0	) i	53.0	0.09
	NPHIC		0	3	8.0	0.00	2		3 6	0.00	9.0	0.00	2		8	0.0	00.00			8.0	0.0	5	) (	8.	0.0
2	NPH Is		0	3	8.	0.0	2			o. 00.	8	0.0	0	9 1	9.0	0. 0.	0.00	5		3.5	8.0	2		3.5	8.0
_	RHOB											0.0													
	RT		00 30	n 1	81.77	49.50	50,00	123 88		. 4 0	80.24	67.56	55.00		33.00 23.00	65.00	65.00	191		340.00	247.84	187, 95		32.00	28.00
	9		50 57	9 6	20. CC	45.00	50.00	100 001		00.00 10.00	65.00	55.00	55.00		00. 00.	65.00	65.00	120.00		5	200.00	150.00	0	32.00	28.00
	FS											45.00		•							_		_		,
	MSFL		20.00		00.00	8.00	٠. 8	10.00	0	8 6	3	ი ი	90.4	i C	9.6	£.6	20.00 20.00	55.00	000	9.6	2 2 3	e.8	č	9 6	0.00
;	Depth	meters	3316, 50	00.11.00	20.7.00	3317.50	3318.00	3318.50	2210 00	00.00	33.19.30	3320.00	3320.50	2221 00	227.00	3321.30	3322.00	3322.50	3322 00	00.000	3323.30	3324.00	2224 50	00. H.C.C.	3323.00

WINDERMERE #2 CRAYFISH FM. (3316-3325 m.)

### Sw = 0.28  Tma = 54.0  Tma = 54.0  D GRmax = 140  D GRmax = 140  Sw = 7.0%  Sw = 50.%  Sw = 50.00  50.00  30.00					
Tma = 54.0 ma / T) * (1/x) 0 GRmax = 140 Sw=100% Sw=70% Sw=50% Sw=50% Sw=50% Sw=50% Sw=50% Sw=500	F=0.62/B*2.15 n=2		Rwa=0.28		
0 GRmax = 140 Sw=100% Sw=70% Sw=50% Sw=30% Sy=30.00	x=1.60 Tma=54.0 B=1-(Tma/T)*(1/x)				
SW=70% SW=50% 3 4 2 4 5 5 8 = 30.8	GRmin = 30 GRmax = 140		Sw=100%		
SW=70% SW=50% 3 4 2 4 5 SW=30% 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3					
SW=50% SW=30% SA A A SW=30% SW=30% SW=50% SW=50% SW=50%		,	SW=70%		
SW=50% 3 4 5 4 5 SW=30% 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	<u></u>				
3 4 5 4 SW=30% 3 3 4 5 4 SW=30% 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	<u></u>		Sw=50%		
0.00 20.00 30.00		<u> </u>	Sw=30%		
0.00 10.00 30.00	\$	4 6			
10.00 20.00 30.00		4			
	000		20.00	30.00	40.00
POROSITY - SONIC (Total - CEP)		- SONIC (Total - CFP	20.00	00: <b>00</b>	

WINDERMERE 2 CRAYFISH FORMATION
Velay is minimum of Velay from Rt, SP & GR. PHIE=(1-Velay)\*PHIT.
x=1.60 Tma=54.00 microsec/ft CFP-Total model.

GRelean=30.00 GRelay=140.00 SPelean=80.00 SPelay=50.00.
RWA=(RT\*PHIT^2.15)/0.62 RMFA=(Rxo\*PHIT^2.15)/0.62 Relay=20.0.
PRE\_EVALUATION\_\_(Senie\_peresity)

		PR	e evalua	TION (S	onic p	orosity:	)	
Depth	PHIT	VelayRt	VelaySP	Ve LayGR	Velay	PHIE	RWA	RMFA
meters		_	-	_	_			
3316.50	6.4	28.4	100.00	31.8	28.4	4.6	0.428	0.087
3317.00	10.1	30.4	100.00	35.5	30.4	7.0	0.949	0.116
3317.50	10.9	40.4	100.00	50.0	40.4	6.5	0.686	0.111
3318.00	10.9	40.0	100.00	42.7	40.0	6.6	0.693	0.097
3318.50	9.2	26.1	100.00	27.3	26.1	6.8	1.178	0.095
3319.00	8.3	26.9	100.00	27.3	26.9	6.1	0.872	0.061
3319.50	8.3	30.6	100.00	31.8	30.6	5.7	0.609	0.023
3320.00	9.2	32.4	100.00	33.6	32.4	6.2	0.643	0.029
3320.50	9.2	34.6	100.00	39.1	34.6	6.0	0.523	0.038
3321.00	8.3	32.8	100.00	37.3	32.8	5.6	0.494	0.038
3321.50	7.3	32.8	100.00	41.8	32.8	4.9	0.381	0.264
3322.00	7.3	32.8	100.00	43.6	32.8	4.9	0.381	0.293
3322.50	7.3	21.5	100.00	42.7	21.5	5.8	1.125	0.323
3323.00	7.3	15.5	100.00	37.3	15.5	6.2	1.994	0.469
3323.50	10.1	18.8	100.00	27.3	18.8	8.2	2.875	0.058
3324.00	10.1	21.7	100.00	16.4	16.4	8.4	2.181	0.116
3324.50	10.1	62.5	100.00	20.9	20.9	8.0	0.371	0.070
3325.00	12.5	71.4	100.00	27.3	27.3	9.2	0.527	0.094

### WINDERMERE 2

### CRAYFISH FORMATION

Velay is min. of Velay from SP, GR & Rt. PHIE=(1-Velay)\*PHIT. GRelean=30.00 GRelay=140.00 SPelaan=80.00 SPelay=50.00 Rtelay=20.000. Rw=0.280 everywhere except from 0.00 to 0.00 where Rw=0.200. Rmf=0.660 a=0.62 m=2.15 n=2.00. PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<1.50 and RHOB<>0) or if NPHI>55.0 or if Sonic>90.0 microsec/ft. SPelaan=80.00 SPelay=50.00 (1/RT)^0.5=[(Velay^b)/(Relay^0.5)+(PHIE^(m/2))/(a\*Rw)^0.5]\*SwInd^(n/2) b=1-(Velay/2)

\*\*\*\* Sonic porosity x=1.60 Tma=54.00 microsec/ft CFP-Total model.

EVALUATION (Sonic porosity)

				EVHLUHI	IUN (	Sonic p	orosity
	Depth neters	RHOma	PHIT	Velay	PHIE	Swind	SxoInd
33	316.50	****	6.4	28.4	4.6	61.8	100.0
33	317.00	****	10.1	30.4	7.0	50.4	100.0
33	317.50	****	10.9	40.4	6.5	60.2	100.0
33	318.00	****	10.9	40.0	6.6	60.0	100.0
33	318.50	****	9.2	25.1	6.8	44.3	100.0
33	319.00	***	8.3	26.9	6.1	49.3	100.0
33	319.50	***	8.3	30.6	5.7	57.8	100.0
33	320.00	****	9.2	32.4	6.2	58.5	100.0
33	320.50	****	9.2	34.6	6.0	64.3	100.0
33	321.00	****	8.3	32.8	5.6	63.4	100.0
33	321.50	spesjesje	7.3	32.8	4.9	68.0	99.7
33	322.00	***	7.3	32.8	4.9	68.0	94.5
33	322.50	***	7.3	21.5	5.8	42.9	100.0
33	323.00	***	7.3	15.5	6.2	33.7	94.3
33	323.50	****	10.1	18.8	8.2	30.0	100.0
33	324.00	***	10.1	16.4	8.4	34.7	100.0
33	24.50	<b>Mediale</b>	10.1	20.9	8.0	82.9	100.0
33	25.00	***	12.5	27.3	9.2	73.6	100.0

CRAYFISH FORMATION

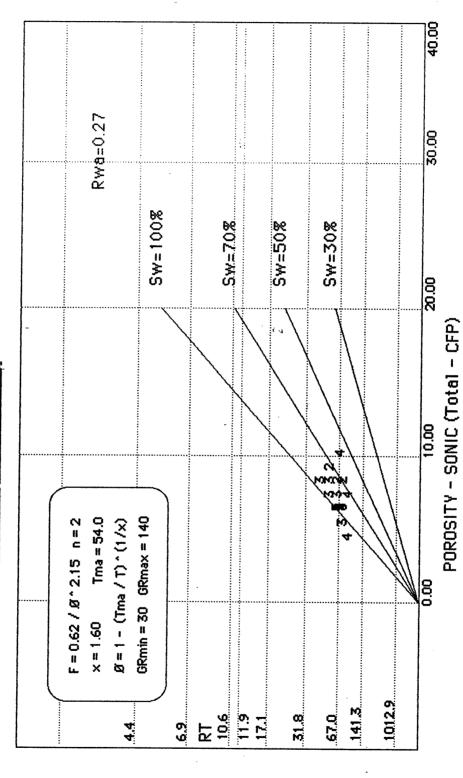
3529 - 3552 metres

MINDERMERE 2

Bottom hole temperature=280.00 degrees Depth logger=3595.00 meters Mud filtrate density≈1.00 g/cc. Surface temperature=70.00 degrees F. Surface depth=0.00 meters.

psec/ft psec/ft 62.000 62.0 62.000 62.0 60.000 60.0 62.000 62.0 62.000 62.0 62.0 642.0 642.0 642.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 643.0 6 Sonic 64.000 61.000 61.000 62.000 63.000 61.000 60.000 60.000 58.000 60.000 61.000 60.000 60.000 00000000000000000000000 885008850088500 8800885008500 880088500 880088500 88008860 NPHIIS NPHIC 10.03 13.40 12.73 11.63 11.63 11.63 11.63 11.53 11.53 12.07 12.68 12.68 13.68 13.52 13.36 13.36 10.41 12.81 12.63  $\begin{array}{c} 50.9 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.09 \\ 0.$ DATA LISTING RHOB M 뭅 #SFL 3529.00 3530.00 3531.00 3533.00 3534.00 3535.00 3536.00 3537.00 3539.00 3540.00 3541.00 3542.00 3544.00 3544.00 3545.00 3546.00 3549.00 3550.00 3550.00 3532.00 me ters Depth

WINDERMERE #2 CRAYFISH FM. (3529-3550 m.)



WINDERMERE 2 CRAYFISH FORMATION
Velay is minimum of Velay from Rt, SP & GR. PHIE=(1-Velay)\*PHIT.
x=1.60 Tma=54.00 microsec/ft CFP-Total model.
GRelean=30.00 GRelay=140.00 SPelaan=80.00 SPelay=50.00.
RWA=(RT\*PHIT^2.15)/0.62 RMFA=(Rxo\*PHIT^2.15)/0.62 Relay=20.0.

האושו אוייו	MII 2.			=(HXO*P)			Re lay=20	.0.
Dankh	DUIT	PH • • • • • • • • • • • • • • • • • • •	E EVALUA	HUN (	Sonie p	orosity)		
Depth	, raii	velaynt	Ve laySP	verayor	r ve i ay	PHIE	RWA	RMFA
meters	~ ~		100.00					
3529.00	8.3	32.0	100.00	27.3	27.3	6.0	0.532	0.532
3530.00	8.3	33.7	100.00	27.3	27.3	6.0	0.456	0.455
3531.00	6.4	33.7	100.00	38.2	33.7	4.2	0.260	0.260
3532.00	8.3	40.0	100.00	31.8	31.8	5.6	0.380	0.380
3533.00	8.3	40.0	100.00	31.8	31.8	5.6	0.380	0.380
3534.00	10.1	32.8	100.00	50.0	32.8	6.8	0.754	0.754
3535.00	7.3	33.7	100.00	36.4	33.7	4.9	0.352	0.352
3536.00	7.3	40.0	100.00	36.4	36.4	4.7	0.293	0.293
3537.00	7.3	40.0	100.00	34.5	34.5	4.8	0.293	0.293
3538.00	8.3	50.0	100.00	33.6	33.6	5.5	0.304	0.304
3539.00	9.2	40.0	100.00	22.7	22.7	7.1	0.476	0.143
3540.00	7.3	40.0	100.00	35.4	36.4	4.7	0.293	0.293
3541.00	7.3	40.0	100.00	35.4	36.4	4.7	0.293	0.293
3542.00	6.4	33.7	100.00	40.9	33.7	4.2	0.260	0.260
3543.00	8.3	40.0	100.00	33.6	33.6	5.5	0.380	0. 152
3544.00	6.4	33.7	100.00	40.9	33.7	4.2	0.260	0.065
3545.00	4.4	30.6	100.00	45.5	30.6	3.0	0.154	0.038
3546.00	5.4	33.7	100.00	52.7	33.7	4.2	0.260	0.043
3547.00	7.3	30.6	100.00	42.7	30.6	5.1	0.469	0.059
3548.00	5.4	32.0	100.00	39.1	32.0	3.7	0.211	0.211
3549.00	6.4	32.0	100.00	38.2	32.0	4.3	0.303	0.303
3550.00	6.4	33.7	100.00	37.3	33.7	4.2	0.260	0.260
3551.00	6.4	32.8	100.00	56.4	32.8	4.3	0.282	0.282
3552.00	6.4	32.0	100.00	45.5	32.0	4.3	0.303	0.303
								J.000

### WINDERMERE 2

### CRAYFISH FORMATION

Velay is min. of Velay from SP, GR & Rt. PHIE=(1-Velay)\*PHIT. GRelean=30.00 GRelay=140.00 SPelaan=80.00 SPelay=50.00 Rtelay=20.000. Rw=0.270 everywhere except from 0.00 to 0.00 where Rw=0.200. Rmf=0.640 a=0.62 m=2.15 n=2.00. PHIE cutoff sets Sw and Sxo to 100% below 0.0 % porosity. Coal is detected if (RHOB<1.50 and RHOB<>0) or if NPHI>55.0 or if Sonic>90.0 microsec/ft. SPelaan=80.00 SPelay=50.00 (1/RT)^0.5=[(Velay^b)/(Relay^0.5)+(PHIE^(m/2))/(a\*Rw)^0.5]\*Swind^(n/2) b=1-(Velay/2)

\*\*\*\* Sonic porosity x=1.60 Tma=54.00 microsec/ft CFP-Total model.

EVALUATION (Sonic porosity)

			EAHLOHI	iun (	Sonic p	orosıty
Depth meters	RHOma	PHIT	Velay	PHIE	Swind	SxoInd
3529.00	****	8.3	27.3	6.0	62.3	79.6
3530.00	****	8.3	27.3	6.0	67.3	86.0
3531.00	****	5.4	33.7	4.2	75.1	90.1
3532.00	***	8.3	31.8	5.6	72.0	89.8
3533.00	****	8.3	31.8	5.6	72.0	89.8
3534.00	****	10.1	32.8	6.8	55.6	70.5
3535.00	***	7.3	33.7	4.9	69.7	84.9
3536.00	****	7.3	36.4	4.7	75.1	90.3
3537.00	****	7.3	34.5	4.8	75.9	92.1
3538.00	****	8.3	33.6	5.5	79.7	98.5
3539.00	****	9.2	22.7	7.1	69.9	100.0
3540.00	****	7.3	36.4	4.7	75.1	90.3
3541.00	****	7.3	36.4	4.7	75.1	90.3
3542.00	****	6.4	33.7	4.2	75.1	90.1
3543.00	****	8.3	33.6	5.5	71.3	100.0
3544.00	****	6.4	33.7	4.2	75.1	100.0
3545.00	****	4.4	30.6	3.0	80.4	100.0
3546.00	****	6.4	33.7	4.2	75.1	100.0
3547.00	***	7.3	30.6	5.1	61.6	100.0
3548.00	***	5.4	32.0	3.7	76.7	91.0
3549.00	****	6.4	32.0	4.3	70.5	85.2
3550.00	***	5.4	33.7	4.2	75.1	90.1
3551.00	****	6.4	32.8	4.3	72.6	87.5
3552.00	****	6.4	32.0	4.3	70.5	85.2

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APPENDIX I

( 13

CASING AND CEMENTING REPORTS AND BIT RECORD



### **WELL CASING REPORT**

CASING SIZE:	:UPERVISOR: 30 11/3/	J E OZOLI	NS (9½hrs to DEPTH M. BRT. 313.93
TART	30 11/3/9  CASING GRADE  N80 K55 N80	LENGTH (M)	OPTH M. BRT.
TART   HIGUP & RUN CASING @1900hrs10/3/89HR	CASING GRADE  N80 K55 N80	LENGTH (M)	DEPTH M. BRT. 313.93
NO JOINTS   DESCRIPTION   COUPLING THREAD   CASING WEIGHT LB/FT	CASING GRADE  N80 K55 N80	LENGTH (M)	DEPTH M. BRT. 313.93
THREAD   LB/FT	N80 K55 N80	(M) 0.43	M. BRT. 313.93
### FI.OAT SHOE - HALLIBURTON BTC  1 R3 CASING BTC 68  ###################################	K55 N80		
1       R3 CASING       BTC       68         FLOAT COLLAR - HALLIBURTON       BTC       68 & 72         24       R3 CASING       BTC       68 & 72         1       PUP       BTC       68	K55 N80		212 50
1       R3 CASING       BTC       68         FLOAT COLLAR - HALLIBURTON       BTC         24       R3 CASING       BTC       68 & 72         1       PUP       BTC       68	N80	12.04	313.50
24         R3 CASING         BTC         68 & 72           1         PUP         BTC         68			301.46
1 PUP BTC 68	VEE	0.32	301.14
1 PUP BTC 68		275.71	25.43
	K55	4.62	20.81
1 PUP BTC 68	K55	3.09	17.72
1 R3 CASING (COLLAR REMOVED) BTC 68	K55	11.30	6.42
BRADENHEAD FMC 3000psi BTC		0.37	6.05
KB TO BRADENHEAD FLANGE		6.05	0
`-			
		ļ	
	~		
		]	<u> </u>
NO. OF JOINTS LENGTH (M	. 1	PUP JOI	MTS
	<u>"</u>		
OTAL CASING ON BOARD 30		2_	
OTAL CASING RUN  26  OTAL CASING LEFT:  4 (WOULD NOT DRIFT 12	282")	2_	
		CDDTNC	DOM
	TYPE	: SPRING	170/11
CTION(S) COVERED: 1.0CATED AT 311, 298, 290, 278, 267, and 11m			
ACING:			
DMMENTS: THREADLOCKED: FLOAT SHOE - JT #1 - FLOAT COLLAR	JT #2 -	JT# 3	
DMMENTS: THREADICCRED: FICAL SHOE - 01 #1 FICAL COLLEGE			



### **WELL CASING REPORT**

WELL NAME/N	O: WINDERMERE No.2	PERMIT/FIELD	PEP111		DATE: 24	/3/89	
CASING SIZE:	9 5/8" (INS),	BIT SIZE:	2 1/4"	(INS),	DEPTH: 18	69	(M)
RIG NAME: AT	CO A2 , RKB	SEASER GL 5.	51	(M), SUP	ERVISOR: _	I OZOLINS	
RIG UP & RUN	CASING @ <u>17.30 23/3/89</u>	HR	LAND CASING	à @ <u>20.0</u>	0 24/3/3	8 <u>9</u> HRS	
NO JOINTS	DESCRIPTION	COUPLI	NG CASING V	VEIGHT (	CASING	LENGTH	DEPTH

NO JOINTS	DESCRIPTION	COUPLING THREAD	CASING WEIGHT LB/FT	CASING GRADE	LENGTH (M)	DEPTH M.
	DEPTH BOTTOM SHOE					1867.00
	FLOAT SHOE (HALLTBURTON)	BUTTRESS		N80	0.44	1866.56
1	9 5/8" CASING FLOAT COLLAR (HALLIBURION)	BUTTRESS BUTTRESS	47	N80 N80	11.57	1854.99 1854.67
1	9 5/8" CASING	BUTTRESS	47	N80	11.91	1842.76
	SHUT OFF BAFFLE (HALLTBURTON)			N80	INSERT	1842.76
68	9 5/8" CASING DV STAGE CEMENTING COLLAR	BUTTRESS	47	N80 N80	803.70 1.04	1039.06 1038.02
88		BUTTRESS	47	N80	1032.07	5.95
	(Top joint cut off 6" above Bradenhead Hanger)					
	KB TO 6" ABOVE BRADENHEAD FLANGE (6.0515)				5.95	0
				17 Mar 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		

	NO. OF JOINTS	LENGTH (M)	PUP JOINTS
TOTAL CASING ON BOARD	170		2
TOTAL CASING RUN	158		-
TOTAL CASING LEFT:	12		2

TOTAL CASING LEFT:
CENTRALISERS: QUANTITY: 12 total MAKE: HALLIBURTON TYPE: SPRING BOW SECTION(S) COVERED: Used 4 stop collars
SPACING: LOCATED AT: 1864, 1851, 1843, 1831, 1819, 1807 (ABOVE SHOE)
1035, 1026, 1014, 1002, 991 (ABOVE STAGE COLLAR)
& 308m (INSIDE SURFACE CASING)
COMMENTS:
THREADLOCKED: FS-JT 1 - FC - JT 2 - JT 3
and JT 70 - DV stage collar - JT 71 - JT 72
STRING WEIGHT: INDICATOR 254000 BLOCKS 18000 = 236,000lbs Prior to cementing
LANDING TENSION: INDICATOR 290000 BLOCKS 18000 = 272,0001bs when setting casing slips
(HAD TO WORK SLIPS IN FOR EVEN LOADING ON SLIP SECMENTS)

## MINORA

### **WELL CEMENTING REPORT**

WELL NAME/NO: WINDERMERE	NO.2	ERMIT/FIELD I	PEP111	DATE	· 11/3	/89	
JOB: SURFACE CASING	C	ASING SIZE: 13	3/8 (INS).	WEIGHT: <u>68 &amp; 7</u>	<u>2_</u> LB/F	Γ. GRAD	E: <u>K55</u>
RIG NAME: ATCO A 2	CEMENT	COMPANY:_HZ	ALLIBURTON	CEMENTE	R: B ]	HOOVER	}
TOOL PUSHER(S): K MURPHY			CO. SUPERVIS	OR: JURIS OZC	LINS		
WELL DEPTH: <u>341</u>		(M)	BIT SIZE: _	17 1/2			(INS)
CONDUCTOR SECONDARION SET AT: 10	(M), SIZE: _	(IN	N) WEIGHT:	94(LB/F	T) GRA	DE:	
MUD DETAILS (PRIOR TO	CEMENTING)						
MUD TYPE: SPUD MUD	•	ENSITY (IN) 9.	.1 (IB/G	AL) (OLIT)	9.1		(LR/GAL)
viscosity: 46							
CEMENT DATA: 1. SINGLE							
INTERVAL CEMENTED: 1. I							ELLAR FLOOF
· -	TAIL FROM: 314	мто _264	M TOTAL: _	50 REMARKS:	NEAT		
2. 1	_EAD FROM:	м то	M TOTAL: _	REMARKS:			
-	TAIL FROM:	M TO	M TOTAL:	REMARKS:			
	CKS YIELD O:) (CU FT/:	SLUF	RRY VOLUME (CU FT)	SLURRY DENSIT (LB/GAL)			S & AMOUNT BLENDED
				11.4			
			261 101	15.8			
2. XXXX						n	/a
	-	_		further top-		•	
MIXWATER (TYPE)	(GAL/S		(0)	IXWATER BL)		LISTIANIVE	D II VVVI ED
1. LEAD 4.3% Bentonite	(BWOW) 17.	7	174	4 27sx	Magco	gel (	2700#)
TAIL_Neat	5.1			7			
2. TORUP 4% CaCl <sup>2</sup> (BWOW)	Jeo used pa			3 2 sx in gel mix wa		um Ch	loride (110
· · · · · · · · · · · · · · · · · · ·	useu pa	it or i pa	TT OT MET	ni ger illix wa	cer)		
VOLUMES:	=	···					TOTAL
	EXCESS TO			EXCESS TO OPEN HOLE	OTAL 1./110	)	EMENT
1 CU FT		CUFI:		FT — 100 % —	74	υ FT/ ) 1/	CUFT
2 CU FT					34_(	CU FT'	CU FT
DETAILS PRE FLUSH 1) _5		C	2)			0.4W.	
DISPLACEMENT: (6m Stick CALCULATED	up) (BBL) ACT	UAL (BBL)	CEMEN	T UNIT		RIG PI	JMP
1. 150.8		L50.8	ngs (=01.'-	2 12 1 / 11		148	. 8′
2		ped at 207		3.12gals/stk	<del> </del>		
JOB SUMMARY:	Calc	pump eff	iciency = 9	06.4%	1		
OPERATION	TIME RATE (HR) (BPM)	PRESSURE (PSI)		ERATION	TIME (HR)	RATE (BPM)	PRESSURE (PSI)
PUMP 50bbls WATER (RIG	FROM 7	300	HALLIBURIO	N PUMP 2bbls	0822		
PRES.TEST LINES TO 300	0700		DISPLACE W	TITH RIG PUMP	0825	5	600
START MIXING GEL CMT	0715		PUMP PLUG		0855	5	2000
STOP TO TAKE ON WATER	<u> </u>						
FOR NEXT CEMENT	0743		CIP 0855 h	rs 11/3/89	-		
CLEAR CEMENT TRANS.LIN	E 0747		3000psi pr	ess.test10mir	0855		3000
START MIXING NEXT CEME	WT0808						
FINISH MIXING	0820		TOP UP THE	OUGH 13m STIN	GER 1	600	
RELEASE TOP PLUG	0822						-

COMMENTS: CEMENT CONTAMINATED RETURNS STARTED 153bbls before plug bumped. Est.146 bbls good cement returns = 786 cuft - only used 705 cuft excess. Expect some channelling took place. Nevertheless, 100% excess could be reduced in future.



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### **WELL CEMENTING REPORT**

WELL NAME/NO: WINDERM	ERE NO.2	F	ERMIT/FIELD	PEP111	DATE	: 24/	3/89	- CKOLS NI	
JOB: <u>INTERMEDIATE CA</u>									
RIG NAME: ATCO A2									
TOOL PUSHER(S): P GELI	NAS			_ CO. SUPERVISOR:	J OZOLIN	S			_
WELL DEPTH: <u>1869</u>			(N	l) BIT SIZE:	12 1/4"			(INS)	
LAST CASING SET AT: 314	(M),	SIZE: _	13 3/8 (	IN) WEIGHT: 68	<u>&amp; 72 (LB/F</u>	T) GRA	DE:_K5	5	_
MUD DETAILS (PRIOR T	O CEMEN	TING)							
MUD TYPE: 3% KCL/POLY		•	ENSITY (IN) _9	.3 (LB/GAL).	(OUT)_	9.3		(LB/GAL)	
viscosity: 39									2
CEMENT DATA: 1. SING									
INTERVAL CEMENTED:		,						D SHOE	
				M TOTAL:					
				84M TOTAL:					FΜ
			-	M TOTAL:	•				
CEMENT					SLURRY DENSIT				
	SACKS (NO:)			(CU FT)	(LB/GAL)		DRY E	BLENDED	
1. LEAD G	266	1.1	5	306	15.8		]	N/A	
2. LEAD G	659	2 0	n ·	1012	17 /			AT /78	
TAIL			· · · · · · · · · · · · · · · · · · ·	1.51/	1.1.4			N/A	
				TOTAL MIXW	ATER		DDITIVE	S & AMOUNT	
(TYPE)	DMC	•	•	(BBL)		i	PREMIXE	D IN WATER	
1. LEAD 1% HALAD 322			U	31./	300	# <u>(68X)</u>	HALAI	) 322 (37b)	ols)
2. LEAD 4.3% BENTONT			.7	278.0	5200:	#(52sx	) MAGC(	CET. (340 )	oble
TAIL									JJ
VOLUMES:								TOTAL	
	EXCESS			CALCULATED		OTAL_	С	TOTAL EMENT	
1. 12 ½ (est) CU	FT20	_%30	06 CUFT:	12½ CUFT	_20 %_3	$306^{-10}$	CHICE_	2jt shoe t	rac
2. <u>13 3/4</u> CU	FT50	_%_19	L2 CUFT:	CU FT	%	c	UFT	CU FT	
DETAILS PRE FLUSH 1)	10bbls	water	ahead	2) _10	bbls water	: ahea	d		
DISPLACEMENT: CALCULAT	ED (BBI )	۸۲٦	UAL (BBL)	CEMENT U	MIT		RIG PL	18.4D	
1443			443	5	· · · · · · · · · · · · · · · · · · ·		438	JIVIT	
2. 249			249	5			244		
JOB SUMMARY:	NOTE:* P	umps e	efficiency	= 96% as worl	ked out fro	m str	okes t	o bump	
STAGE ONE OPERATION	TIME (HR)	RATE (BPM)	PRESSURE (PSI)	STAGE TWO OPERA	TION	TIME (HR)	RATE (BPM)	PRESSURE (PSI)	
Pumped 10bbls water(		<u> </u>		Pumped 10bbl	···	<del></del>	l`	(, 0,)	
Press, test lines 300			3000	Load top plu		1605	1		
Mix &pump Stage I 15	1237		3000	Mix & pump S	_	1614			
Lift cap & drop plug	1302			Release top		1748			
Pump 5 bbls mud (Hal	1			Pump 5bbls m					
Displace 438bbl mud	1	R 10 -	300	Displace 244	•			7 600	
sump with 1500psi (R	. 15.	V-1V-4		Bump with 10					
Hallib.bump with 3000	7		3000	1 -	-	1017			
& check floats OK	-			Bump with 30 close sleev		1815		3000	
Lift cap & drop open	1400' ing bomb	·	<del></del>	COMMENTS: Cem					cs =
DVcollar open 800 ps	_		800		imated 20bk				
Circulate csq & prepa					tanks		<u> </u>		
gel water								No.	

# BIT RECORD

OPERATOR : MINORA RESOURCES NL

RIG : ATCO A2

WELL : WINDERMERE NO.2

PERMIT : PEP 111

SPUDDED : 9 MARCH 1989

		fear/hrs. pen/Core #1. covery 78%. ring & circlip) n #1 % 3 core) lost No.1 core.
Remarks	POH for surface casing.	Started drilling rough. POH for fear/hrs. FOH for torque/bounce/hrs/slow pen/Core #1. Fame cond as run in. Core #1 recovery 78%. FOH for Core #2. FOH for Core #2. FOH for DST #1 FOH for Inst #1 FOH for hrs & to try PDC bit FOH for slow ROF/High \$/ft. FOH for slow ROF/High \$/ft. FOH for washout (In weld between #1 & 3 core) FOH for washout (In weld between #1 & 3 core) FOH for washout (In weld between #1 & 10 core) FOH for washout (In weld between #1 & 10 core) FOH for washout (In weld between #1 & 10 core) FOH for torque/hrs and to log. Lost No.1 core. Clean out trip - 10 hrs reaming
	1章	Started dril POH for torq Same cond as POH for Core Core #2 reco POH for DST POH for logs Hole opening POH for hrs POH for hrs POH for bot POH for wash POH for bot Clean out tri
5 G	-	1/8 1/16 1/16 1/17 1/17 1/17 1/17 1/18
Condition T B G	2 2	7 5 40m 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
=	¥	0.40.40.00.00 0.40.40.00.00 0.40.40.00.00
Mud Props. Wt  Vis   W PPg  Secs	9.1   46   nc	24844468     888888888888888888888888888888888888
# # # # # # # # # # # # # # # # # # #	9.1	0,00,00,00,00,00,00,00,00,00,00,00,00,0
Press		1500 1775 1775 1775 1775 1770 1700 1700
Hydraulics s   GPM  Press ds     psi	22   715   1200	28 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
Hydr Jets 32nds	3 x 22	14,14,22 114,14,22 111,12,12 111,12,12 114,14,22 10,10,14 0,10,14 0,10,13 10,10,13 10,10,13 11,13,13
#		14.14.22 108L 151K 11.12.12 151K 11.12.12 114.14.22 114.14.22 114.14.22 114.14.22 114.14.22 114.14.22 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.14.23 114.
Max Dev	0.50	
₹	120	
	2-20	(6.5 hours) (9-20   120-10 (5-40   120-10 (8-10   80-62 (9-60   60 (9-40   70 40   70 40   75 5-15   65-96 5-15   65-96
Jan.	ł	23.5   25.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23.5   23
90 /	8 8	March 1989 (2.5 hours) 51.0   23.5   20-30   92.5   13.2   35-40   103.0   0.5   8-10   106.5   8.0   30   118.5   1.4   10   118.5   1.4   10   118.5   7.4   30-40   144.0   8.1   15-25   40   198.0   6.5   40   198.0   6.2   15   207.0   6.2   15   207.0   6.2   15   207.5   6.1   40   310.5   6.7   40   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   347.5   6.1   40   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.5   40.
3 ¥	4	ace casing 12 March 1856   36.5   51.0   547   41.5   92.5   5   10.0   118.5   10.0   118.5   10.0   118.5   10.0   118.5   10.0   118.5   10.0   118.5   10.0   118.5   10.0   128.5   125   15.5   144.0   125   15.5   144.0   126   11.5   218.5   20   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   20.0   2
Hours	14.5	ace casing 12 856   36.5   547   41.5   5   10.5   28   3.5   17   12.0   8   1.0   67   9.0   12.5   15.5   15.5   10.5   56   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56   9.0   56
Metres	8	rface Ca 856   547   17   17   18   18   18   192   192   193   194   195   196   197   198   19
Depth Depth In Out Metres Metres	₩.	Drilled out surface casing 12 March 1989 (2.5 at 1197 at 1198 at 1198 at 1199 a
Depth In I	9	Drilled 1197   1197   1774   1774   1774   1774   1777   1802   1777   1802   1774   1802   1794   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1806   1
Bit   Size   Make   Type   IADC  Serial  Depth  Depth  Metres Hours No.     Code   Number   In   Out     in.	1 17-1/2   Varel   L114   L1.4   29801   10   341   331   14.5   14.5   22.8	1.3.5   23998   341   11.3.5   1881419   1197   1197   1197   1197   1197   1197   1197   1197   1197   1197   1197   1197   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1198   1
ADC 150		11.3.5   2 11.3.5   2 11.3.5   88 15.1.7   89 14.3.7   84 14.3.7   84 15.1.7   89 15.1.7   89 15.1.7   89 15.1.7   89 15.1.7   89 15.1.7   89 15.1.7   89 15.1.7   89 15.1.7   89
ype 1	114 11.	
g		and the state of t
Ž !	2 i Var	1   Varel 1   Christ ' 2   Christ ' 2   Christ ' 2   Reed 2   Reed 2   Reed 2   Reed 2   Reed 3   Reed 5   Reed 5   Reed 6   Reed 7   Reed 8   Reed
Size in	17-17	2   112-1/4   3   112-1/4   4   8-1/2   4   8-1/2   8   8-1/2   8   8-1/2   9   8-1/2   9   8-1/2   9   8-1/2   10   8-1/2   8   8-1/2   9   8-1/2   11   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8-1/2   8   8   8-1/2   8   8-1/2   8   8   8-1/2   8   8   8-1/2   8   8   8-1/2   8   8   8-1/2   8   8   8-1/2   8   8   8-1/2   8   8   8   8   8   8   8   8   8
W E		CHIRR RRCHI S 2 2 5 5 7 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

APPENDIX J
DRILL STEM TEST REPORTS



SEC. - TWP. - RNG

SEE REMBRKS

FIELD

NISUB ABMID

HINDERMERE LEASE NAME

MELL NO

TEST NO.

5824.4 - 5913.0 TESTED INTERVAL

MINORA RESOURCES

STRIE BUSTRALIA DR

TICKET ND. 35078300 30-MAR-89 ADELRIDE

FORMATION TESTING SERVICE REPORT

Him Hace

# 350783-1888

GAUGE NO: 1888 DEPTH: 5778.9 BLANKED OFF: NO HOUR OF CLOCK: 24

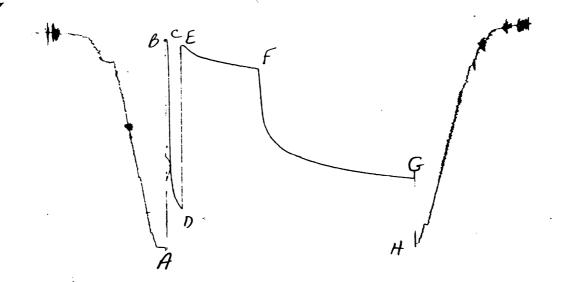
ID	DESCRIPTION		SSURE	TI		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		;			
В	INITIAL FIRST FLOW		12.0	5.0	4 0	F
С	FINAL FIRST FLOW		42.7	3.0	4.8	Г
С	INITIAL FIRST CLOSED-IN		42.7	22.0	20.0	С
D	FINAL FIRST CLOSED-IN		70.6	32.0	29.0	L
Ε	INITIAL SECOND FLOW		70.6	180.0	182.1	F
F	FINAL SECOND FLOW	453	452.6	160.0	102.1	Г
F	INITIAL SECOND CLOSED-IN	453	452.6	360.0	361.1	С
G	FINAL SECOND CLOSED-IN		458.9	0.00	301.1	ں
Н	FINAL HYDROSTATIC	•				

yline in error

### 350783 -7483

GAUGE NO: 7483 DEPTH: 5801.8 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE			ME	TYPE
	TAITTOL HANDROCTOTIC	REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2756	2742.0			
В	INITIAL FIRST FLOW	48	44.3	5.0	4.8	F
С	FINAL FIRST FLOW	48	63.7	3.0	4.0	. •
C .	INITIAL FIRST CLOSED-IN	48	63.7	22.0	20 0	С
D	FINAL FIRST CLOSED-IN	2256	2249.5	32.0	29.0	
Ε	INITIAL SECOND FLOW	111	86.7	180.0	182.1	F
F	FINAL SECOND FLOW	444	454.8	180.0	102.1	
F	INITIAL SECOND CLOSED-IN	444	454.8	360.0		C ·
G	FINAL SECOND CLOSED-IN			300.0		
Н	FINAL HYDROSTATIC	2755	2737.2			



# 350783-8822

GAUGE NO: 8822 DEPTH:5910.0 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	<u></u>	SURE	TI		TYPE
	0200.121 12011	REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2842	2847.0			
В	INITIAL FIRST FLOW	135	129.3	5.0	4.8	F
С	FINAL FIRST FLOW	135	137.0	3.0	7.0	
С	INITIAL FIRST CLOSED-IN	135	137.0	32.0	29.0	C
D	FINAL FIRST CLOSED-IN	2362	2365 . 7	J2.V	23.0	
Ε	INITIAL SECOND FLOW	219	222.6	180.0	182.1	F
F	FINAL SECOND FLOW	538	543.9	100.0	102.1	
F	INITIAL SECOND CLOSED-IN	538	543.9	360.0	361.1	C.
G	FINAL SECOND CLOSED-IN		2030.1	300.0	301.1	
Н	FINAL HYDROSTATIC	2842	2854.2		-	

EQUIPMENT & HOLE DATA	TICKET NUMBER: 35078300	
FORMATION TESTED: HEATHFIELD  NET PAY (ft):	DATE: 3-20-89 TEST NO: 1	_
GROSS TESTED FOOTAGE: 88.6 ALL DEPTHS MEASURED FROM: KELLY BUSHING	TYPE DST: OPEN HOLE	
CASING PERFS. (ft):	HALLIBURTON CAMP:ADELAIDE	
TOTAL DEPTH (ft): 5913.0	TESTER: B. HOOVER	
PACKER DEPTH(S) (ft): 5817, 5824 FINAL SURFACE CHOKE (in): 0.50000		_
BOTTOM HOLE CHOKE (in): 0.750 MUD WEIGHT (16/gal): 9.20	WITNESS: J.E. DZOLIN	
MUD VISCOSITY (sec): 43  ESTIMATED HOLE TEMP. (°F):	DRILLING CONTRACTOR:ATCO RIG #2	
ACTUAL HOLE TEMP. (°F): 170 @ 5909.0 ft		_
FLUID PROPERTIES FOR RECOVERED MUD & WATER	SAMPLER DATA Psig AT SURFACE:	
SOURCE RESISTIVITY CHLORIDES  SAMPLE CHAMBER 0.300 6 58 F 14000 ppm	cu.ft. DF GAS:	
eppm	cc OF OIL:	
	cc OF WATER:	
<b>c</b> ppm	ce OF MUD:	
	TOTAL LIQUID cc:	_
HYDROCARBON PROPERTIES  OIL GRAVITY (*API): @*F	CUSHION DATA TYPE AMOUNT WEIGHT	T
GAS/OIL RATIO (cu.ft. per bbl):		
GAS GRAVITY:		_
RECOVERED: 980' (10.25 BBLS.) OF MUDDY I	1 2	VALVE
NOTE: NO NITRATES IN FLUID FI	ROM SAMPLE CHAMBER	STER
	と	쁘
REMARKS: LEGAL LOCATION: LAT. 38 DEG. 14' 10.59" S. AN	ND LONG. 142 DEG. 0° 17.90" F	Ε.
NOTE: THE CLOCK IN GAUGE #7483 STOPPED DURING RESTARTED WHEN PACKER WAS BYPASSED.	G THE FINAL CIP PERIOD AND	

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TYPE & SI	ZE MERSUR	ING DEVICE:		.5" CERF	MMIC CHOKE TICKET NO: 3507830					
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS					
3-20-89										
0315					STARTED MAKING UP TOOL					
0420					STOPPED					
0435	-				TOOL IN HOLE					
0505	3				MADE UP HEAD ON SINGLE					
0525	1				LAID DUT HEAD					
0713					MADE UP HEAD AND CHICKSANS					
					STRING WT. 99000#					
0727					SET WEIGHT ON TOOL 35.000#					
0730	.5				OPENED TOOL WITH A WEAK BUBBLE					
0732					CLOSED FLOOR MANIFOLD, SLIGHT					
					INCREASE, WEAK BUBBLE					
0735			<del></del>		CLOSED TOOL					
0807					OPENED TOOL WITH A WEAK BUBBLE					
	<del></del>				CLOSED FLOOR MANIFOLD					
0810					WEAK BLOW					
0815					WEAK BLOW					
0820					WEAK TO MODERATE BOTTOM OF					
					BUCKET					
0824					DPENED 2" MANIFOLD VALVE TO					
					FLARE LINE. BLOW DECREASING					
0830					VERY WEAK BUBBLE					
0831					NO BLOW					
0835					CLOSED FLOOR MANIFOLD, VERY					
					WEAK BUBBLE					
0845					BUBBLE CONTINUE TO INCREASE					
					SLOWLY TO A MODERATE BLOW.					
	-				BOTTOM OF BUCKET					
1000					MODERATE BLOW					
1030					SAME					
1100		<del>                                     </del>			SAME					
1107		+			CLOSED TOOL					
1707					PULLED FREEDKPICKED UP					
					1000# EXTRA WEIGHT					
2007					TOOL OUT OF HOLE					
2020		<del>                                     </del>			STARTED BREAKING OUT TOOL					
2135					TOOL LAID DUT					

CLOCK NO: 29491 HOUR: 24



GAUGE NO: 1888

**DEPTH:** 5778.9

RE	F	MINUTES	PRESSURE	ΔP	<u>t x At</u> t + At	log t + At	RE	F	MINUTES	PRESSURE	ΔP	<u>t × &amp;t</u> t + &t	log t+At
			FIRST	FLOW					SE	ECOND CI	_OSED-I	N	
 B C	1	0.0 4.8		30.7			FG	1 2	0.0 361.1	452.6 458.9	Б.З	123.2	0.181
		F	IRST CL	.OSED-IN	1								
C D	1 2	0.0	42.7 70.5	27 .9	4.1	0.067					i		
υ	2	0.65			Τ,1	0.001							
		•	SECOND	FLOW									
E	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36	0.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 65.0 70.0 75.0 80.0 85.0 90.0 95.0 100.0 115.0 120.0 135.0 140.0 145.0 150.0 155.0 160.0 175.0	272.0 282.2 289.2 297.9 305.7	28.7 27.7 24.4 26.3 24.9 18.3 14.6 11.5 10.3 7.0 8.7 7.8 8.5 7.3 7.1 8.5 6.8 6.3 7.5 5.4 7.0 6.8 6.3 5.4 5.2 4.7 6.6 5.2 4.9 4.5								( vg	
F	37	182.1	452.6	6.6									·

REMARKS:

CLOCK NO: 6719 HOUR: 24



**GAUGE NO:** 7483

DEPTH: 5801 8

R	EF	MINUTES	PRESSURE	ΔP	<u>tx At</u> t + At	log t + At.
			FIRST	FLOW		
В	1	0.0	44.3			
C	2	4.8	63.7	19.4		
İ						
		F	IRST CL	OSED-IN	١	
C	1	0.0	63.7	;		
	2	1.0	1958.3	1894.7	0.8	0.768
l	3	2.0	1987.9	1924.2	1.4	0.525
l	4	0.E	2011.1	1947.5	1.8	0.419
1	5	4.0	2040.3	1976.7	2.2	0.342
	Б	5.0	E.080S	1996.7	2.5	0.291
	7	6.0	2079.5	2015.9	2.7	0.255
1	8	7.0	2093.2	2029 .5	2.8	0.227
	9	8.0	2103.2	2039 .5	3.0	0.204
ĺ	10	9.0	2114.9	2051.3	3.1	0.186
	11	10.0	2129.8	2066.2	3.2	0.170
l	12	12.0	2152.4	2088.7	3.4	0.146
İ	13	14.0	2169.8	2106.2	3.6	0.128
	14	16.0	2182.9	2119¢Ž	3.7	0.114
	15	18.0	2198.3	2134.6	3.8	0.103
	16	20.0	2211.4	2147.8		E20.0
	17		- 2223.5	2159.8		0.086
	18	24.0	2233.5	2169.8	4.0	
۱,	19	26.0	2242.2	2178.6	4.0	0.074
D	20	29.0	2249 .5	2185 .9	4.1	0.067
			SECOND	FLOW	•	
E	1	0.0	86.7			
	2	5.0	<b>9</b> 8.6	11.9		ı
	Э	10.0	127.0	28.4		
	4	15.0	158.7	31.7	_	
	5	20.0	188.4	29 .7	₹.	
	Б	25 .0	210.6	22.2		1
	7	30.0	231 .4	20.8		1
	8	35.0	251.0	19.5		1
	9	40.0	266 .8	15.9		- 1
	10	45.0	279 .4	12.5		
	11	50.0	288.1	8.7		1
	12	55.0	296.8	8.7		1
	13	.60.0	303.7	8.8		
	14	65.0	312.9	9.2		1
	15	70.0	319.7	6.8		j
	16	75.0	327.6	7.9		1
	17	80.0	335.7	8.1		1
	18	85.0 90.0	342.2 349.8	6.5 7.5		ı
	19 20	90.0 95.0	349.8 357.1	7.6		1
	21	100.0	357.1 362.7	7.3 5.6		•
	ET	100.0	JUE . 1	J. 6		

7		DE	PTH: 58	801.8		
RI	EF	MINUTES	PRESSURE	ΔP	<u>t x &amp;t</u> t + &t	lag <u>t + At</u>
	SEC	OND FLOW -	CONTINUED			
	22	105.0	370.5	7.8		
	23	110.0	377.3	6.8		
	24	115.0	381.5	4.3		
l	25	120.0	9.885	7.3		
	26	125.0	396 . 5	7 .6		
	27	130.0	401.0	4.4		
	58	135.0	407.8	6.8		
l	29	140.0	412.7	4.9		
1	30 31	145.0 150.0	418.3 425.2	5.6 7.0		
	32	155.0	429.4	4.1		
	33	160.0	434.0	4.6		
	34	165.0	439.2	5.2		
	35	170.0	444.1	4.9		
	36	175.0	449.2	5.1		
F	37	182.1	454.8	5.6		
		SF	COND CL	OSED -T	N	
F				LOOLD I	••	
	1 2	0.Q 1.0	454.8 656.7	201.9	1.0	2.257
	3	5.0	960.2	505.4	4.9	1.585
	4	8.8	1148.1	693.3	8.4	1.346
	5	14.7	1250.6	795 .9	13.7	1.136
	6	19.7	1312.5	857.7	17.8	1.020
2	7	35 . 7	1428.0	973.2	30.0	
G	8	NO DATE	FOR THIS	POINT		
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L,	E	G	E	N	D	:		

T STAIR-STEP

2 CLOCK STOPPED

CLOCK NO: 32068 HOUR: 24



**GAUGE NO:** 8822

DEPTH: 5910.0

log t + At

1.0 2.286

2.0 1.981 2.9 1.805 3.9 1.681

4.8 1.586 5.8 1.509 6.8 1.442 1.388 1.338

9.5 1.292 11.3 1.220 13.0 1.156 14.7 1.103 16.4 1.057 18.0 1.015 19.7 0.977

21.3 0.944 22.8 0.913 24.3 0.885 25.9 0.859

0.802

0.754

0.712

0.676

0.543

0.614

0.565

0.523 60.8 0.488 65.1 0.458

29.5

32.9

36.2

39.4

.42.5

45.4

56.0

50.9

7.7 8.6

t × At

D	RE	F	MINUTES	PRESSURE	ΔP	t×At t+At	log t + At	RE	F	MINUTES	PRESSURE	<b>∆</b> P	
									SEC	OND FLOW -			
				FIRST	FLOW				19	90.0	440.1	6.3	
	1							1	20	95.0	446 . 5	6.4	
	В	1	0.0	129.3					21	100.0	453.2	6.7	
	1	2	1.0	128.5	-0.7				22	105.0	460.4	7.2	
	l	3	2.0	129 . 1	0.5				23	110.0	466 . 7	6.2	
		4	0.E	131.0	1.9				24	115.0	470.5	3.9	
		5	4.0	135.7	4.7				25	120.0	477 .5	7.1	
	С	6	4.8	137.0	1.3			1	26	125.0	482.7	5.1	
									27	130.0	486.9	4.2	
					00E0 TI				28	135.0	494.4	7.5	
			F	IRSI UL	OSED-IN			ŀ	29	140.0	500.8	6.4	
	_								30	145.0	504.1	3.3	
	C	1	0.0	137.0				1	31	150.0	510.0	5.9	
		2	1.0	202.7	65.7	0.8	0.763	1	32	155.0	513.6	3.6	
		3	2.0	362.1	225 . 1	1.4	0.535	1	33	160.0	521.0	7.4	
		4	0.E	1707.7	1570.7	1.8	0.414	1	34	165.0	526.4	5.4	
		5	4.0	1932.1	1795 . 1	2.2	0.342	1	35	170.0	530.7	4.3	
		6	5.0	1988.7	1851.7	2.4	0.293	_	36	175.0	536.2	5.6	
		7	6.0	2046 . 0	1909.0	2.7	0.257	F	37	182.1	543.9	7.7	
		8	7.0	2082.7	1945 . 7	2.8	0.227	1					
		9	8.0	2118.9	1981 .9	3.0	0.204	1		GE	ברטאום בו	LOSED-İ	N
		10	9.0	_2149.5	2012.5	3.1	0.185	( 9		SE	LUND L	LUJED T	14
		11	10.0	2167.5	2030.4	3.2	0.170	F	۰	0.0	543.9		
		12	12.0	2208.0	2071.0	3.4	0.146	1	1	0.0	543.3 632.8	88.9	
_		13	14.0	-	2095 .8	3.6	0.128	1	2	1.0 2.0	696.2	152.3	
		14	16.0	2258.2	2121.1	3.7	0.114	1	3	3.0	782.3	238.4	
		15	18.0	2283.5	2146.5	3.8	0.103	1	4		882.5	338.5	
		16	20.0	2300.8	2163.8	3.9	0.033		5 .	5.0	970.2	426.2	
		17	22.0	2320.0	2183.0	3.9 4.0	0.008		5 7	5.0 6.0	1051.5	507.5	
		18	24.0	2337.0 2351.3	2200.0 2214.2	4.0	0.074	1	8	7.0	1127.5	583.6	
	D	19 20	26.0 29.0	2365.7	2228.7	4.1	0.067		9	8.0	1170.4	626.4	
	D	20	۷. دے	2303.1	2220.1		0.00.	1	10	9.0	1205.2	661.3	
								İ	11	10.0	1232.4	688.5	
				SECOND	FINU		1	1	12	12.0	1281.9	738.0	
				OLCOND	. 2011			i	13	14,0	1314.0	770.1	
	Ε	1	0.0	222.5				I	14	1Ē.0	1340.6	796 .6	
	_	2	5.0	216.7	-5 .9		1	1	15	18.0	1366.6	822.7	
		3	10.0	218.9	2.2		1		16	20.0	1388.9	845.0	
		4	15.0	241.1	22.2			1	17	22.0	1407.5	863.6	
		5	20.0	271.2	30.1		1	I	18	24.0	1428.7	884.7	
		6	25.0	296 .5	25.3		1	1	19	26.0	1445 .9	902.0	
		7	30.0	314.5	18.0			1	20	28.0	1459.8	915 .8	
		8	35.0	333.7	19.2			1	21	30.0	1472.0	928.1	
		9	40.0	352.9	19.2			1	22	35.0	1506.7	962.8	
		10	45.0	365.7	12.8	-		1	23	40.0	1534.6	990.7	
		11	50.0	378.3	12.6		1	1	24	<del>4</del> 5.0	1563.4	1019.5	
1		12	55.0	384.0	5.7			1	25	50.0	1588.4	1044.4	
ł		13	60.0	392.6	8.6		. [		<b>2</b> 6	55.1	1611.6	1067.7	
- 1		14		401.9	9.3			1	27	60.Q	1630.8	1086 .9	
		15	70.0	411.Б	9.8		1	1	28	70.0	1660.3	1116.4	
		16	. 75.0	419.5	7.9			1	29	80.0	1689.8	1145.9	
		17	80.0	427.1	7.6				30	90.0	1711.8	1167.9	
		18	85.Q	433.2	6.1		I		31	100.0	1739.2	1195 .2	
								<u></u>					

REMARKS:

CLOCK NO: 32068 HOUR: 24



GAUGE NO: 8822

DEPTH: 5910.0

RE	F	MINUTES	PRESSURE	ΔР	<u>t x At</u> t + At	log t + At
	SEC	OND CLOSED-	IN - CONTIN	UED		
	32 110.0		1761.5	1217 .5	69.3	0.431
	33	120.0	1781.1	1237 .2	73.1	0.408
	34	135.0	1806.9	1263.0	78.4	0.377
	35	150.0	1831.3	1287.4	83.2	0.351
	36	165.0	1852.8	1308.9	87.5	0.329
	37	180.0	1873.3	1329.3	91.7	0.309
	38	195.0	1892.3	1348.4	95.4	0.292
	39	210.0	1908.5	1364.6	98.9	0.276
ï	40	220.0	1919.8	1375.9	101.1	0.267
	41	235.0	1934.8	1390.8	104.1	0.254
	42	250.0	1946.4	1402.5	106.9	0.242
	43	265.0	1960.7	1416.7	109.6	0.232
	44	280.0	1972.5	1428.5	112.1	0.222
	45	295.0	1984.8	1440.8	114.4	0.213
	46	310.0	1996.2	1452.3	116.6	0.205
	47	325.0	2005.1	1462.2	118.7	0.197
	48	340.0	2016.3	1472.4	120.6	0.190
G	49	361.1	2030.1	1486.2	123.2	0.181

	••	┺				
-	REF	MINUTES	PRESSURE	ΔP	tx At t + At	log t+At
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REMARKS:

		O.D.	I.D.	LENGTH	DEPTH
	DRILL PIPE	4.500	3.826	5171 .9	
	FLEX WEIGHT	4.500	2.764	183.2	
	DRILL COLLARS	6 .375	2.875	339 . 7	
۰	IMPACT REVERSING SUB	6.000	3.000	1.0	
	DRILL COLLARS	6.375	2.875	31 . 1	:
	IMPACT REVERSING SUB	6.000	3.000	1.0	
	DRILL COLLARS	6.375	2.875	31.1	
8	BAR CATCHER SUB	5.750	1.120	1.0	
	AP RUNNING CASE	5.000	2.250	4.1	5778.9
	CROSSOVER	5.000	2.200	1.0	
٥	DUAL CIP VALVE	5.000	0.870	4.9	
	SAMPLE CHAMBER	5.000	2.500	4.9	€u
0	DRAIN VALVE	5.000	2.200	0.9	
۰	HYDROSPRING TESTER	5.000	0.750	5.3	
	AP RUNNING CASE	5.000	2.250	4.1	5801.8
	JAR	5.000	1.750	5.0	
v	VR SAFETY JOINT	5.000	1.000	2.8	
	OPEN HOLE PACKER	6.000	1.530	5.8	5816.6
•	DISTRIBUTOR VALVE	5.000	1 .680	2.0	
	OPEN HOLE PACKER	6.000	1.530	5.8	5824 . <del>4</del>
	ANCHOR PIPE SAFETY JOINT	5.000	1.500	4.3	
	FLUSH JOINT ANCHOR	5.000	2.370	16.0	
	CROSSOVER	6.000	3.000	. 1.0	
	DRILL COLLARS	6 .375	2.875	60.4	
Щ	CRDSSOVER	6.000	3.000	1 .0	
•	BLANKED-OFF RUNNING CASE	5.000		4.1	5910.0
	-				
	TOTAL DEPTH				5913.0



SEC - TWP - RNG

SEE REMARKS

FIELD

NISUB AUMID

VICTORIA

STATE AUSTRALIA

LEASE NAME

WELL NO.

TEST NO.

10440.1 - 10491.9 TESTED INTERVAL

MINORA RESOURCES N.L.
LEASE OWNER/COMPANY NAME

TICKET ND. 35495610 18-APR-89 MDDMBA

FORMATION TESTING SERVICE REPORT

354956.1-8822

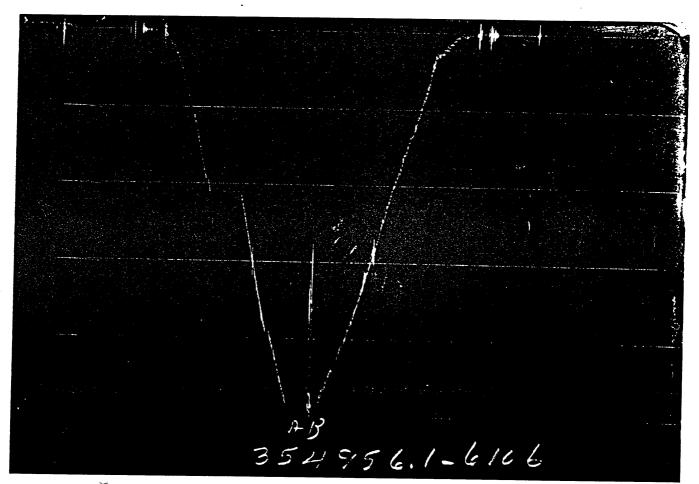
GAUGE NO: 8822 DEPTH: 10395.7 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		T	TYPE	
10	DESCRIT TION	REPORTED	CALCULATED	REPORTED	CALCULATED	1 11 -
А	INITIAL HYDROSTATIC					
В	FINAL HYDROSTATIC					

3549561-7483

HOUR OF CLOCK: 24 DEPTH: 10416.0 BLANKED OFF: NO GAUGE ND: 7483

TD	DECEDITION	PRE	SSURE	TI	ME	TYPE
ID	DESCRIPTION	REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	4842	4868.1		-	
В	FINAL HYDROSTATIC	4842	4868.1			1



GAUGE NO: 6106 DEPTH: 10452.5 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRE	SSURE	T	TYPE	
110	DEGENTI TIEN	REPORTED	CALCULATED	REPORTED	CALCULATED	1
А	INITIAL HYDROSTATIC	4871	4897.0	-	;	
В	FINAL HYDROSTATIC	4871	4897.0			

AB 354956.1-1888

GAUGE NO: 1888 DEPTH: 10596.9 BLANKED OFF: YES HOUR OF CLOCK: 24

I	DESCRIPTION	PRE	SSURE	ŢŢ	TYPE	
	DESCRIPTION	REPORTED	CALCULATED	REPORTED	CALCULATED	1 11 -
F	INITIAL HYDROSTATIC	4894	4923.2		-	
E	FINAL HYDROSTATIC	4894	4923.2			

EQUIPMENT & HOLE DATA	TICKET NUMBER: 35495610
FORMATION TESTED: LOWER EUMERALLA NET PAY (ft): 20.2	DATE: <u>4-8-89</u> TEST NO: <u>2</u>
GROSS TESTED FOOTAGE: 51.8	TUDE SOT ON DIM CIDODOLE
ALL DEPTHS MEASURED FROM: K.B. (19 'AGL)	TYPE DST: ON BTM. STRADDLE
CASING PERFS. (ft):	HALLIBURTON CAMP:
HOLE OR CASING SIZE (in): 8.500	MOOMBA
ELEVATION (ft): 151.4 GROUND LEVEL	
TOTAL DEPTH (ft): 10599.9	TESTER: IAN HOVELL
PACKER DEPTH(S) (ft): 10432, 10440, 10492, 10500	
FINAL SURFACE CHOKE (in): 0.75000  BOTTOM HOLE CHOKE (in): 0.750	
MUD WEIGHT (16/gal): 9.00	WITNESS: J.E. OZOLINS ????
MUD VISCOSITY (sec): 30	
ESTIMATED HOLE TEMP. (°F): 200	DRILLING CONTRACTOR:
ACTUAL HOLE TEMP. (°F): 260 @ 10596.9 ft	ATCO RIG L#2
FLUID PROPERTIES FOR RECOVERED MUD & WATER SOURCE RESISTIVITY CHLORIDES	
RECOVERED:	MEASURED FROM TESTER VALVE
REMARKS: LEGAL LOCATION: 38 DEG. 14' 10.59" S. LAT.,	142 DEG. 01' 17.9 E. LONG.

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TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
4-7-89					
2400					MADE UP TOOLS
4-8-89					
0215					RUN IN HOLE
0800					ĤEAD UP
					DDWN WT. 170,000#
					UP WT. 190.000#
					HANGING WT. 176.000#
0832					SET WT. DN TOOL 42,000#
0836	.75				DPENED TOOL
					LDST PACKER SEAT
					PULLED FREE AND HELD
0838					SET WT. DN PACKERS 50,000#
0840					OPENED TOOLLOST SEAT, STOPPED
					MOMENTARILY, ANNULUS DROPPED
					AGAIN
0842					PULLED FREE AND PULLED DUT OF
					HOLE
1440					BRDKE TOOL
1615			***************************************		TOOL OUT OF HOLE
					REDRESSED TOOLS AND PREPARED
					FOR DST #2A
				<del></del>	
			<del></del>		
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DRILL COLLARS. 5.000 2.750 31.1  BAR CATCHER SUB 5.000 1.120 1.0  AP RUNNING CASE 5.000 2.250 4.1 10395.7  CROSSOVER 5.000 2.250 4.1 10395.7  CROSSOVER 5.000 0.870 4.9  DATE CARREST SUB 5.000 0.870 4.9  DATE CARREST SUB 5.000 0.870 4.9  DATE CARREST SUB 5.000 0.870 4.9  DATE CARREST SUB 5.000 0.870 5.3  AP RUNNING CASE 5.000 0.750 5.3  AP RUNNING CASE 5.000 0.750 5.3  AP RUNNING CASE 5.000 1.750 5.0  CROSSOVER 5.000 0.870 1.0  DEEN HOLE PACKER 7.500 0.870 1.0  DEEN HOLE PACKER 7.500 1.530 5.8 10440.1  FLUSH JOINT ANCHOR 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DRILL COLLARS 5.000 3.000 1.0  DR			O.D.	I.D.	LENGTH	DEPTH
DRILL CULLARS 6.500 2.750 62.1  IMPACT REVERSING SUB 6.000 3.000 1.0 10361.4  DRILL CULLARS 5.500 2.750 31.1  B BAR CATCHER SUB 6.000 1.120 1.0  AP RUNNING CASE 5.000 2.250 4.1 10395.7  CROSSOVER 5.000 3.000 1.0  DUBL CIP VALVE 5.000 0.670 4.9  SAMPLE CHAMBER 5.000 2.250 4.1  APRUNNING CASE 5.000 2.200 0.9  HYDROSPRING TESTER 5.000 0.750 5.3  APRUNNING CASE 5.000 1.750 5.0  VR SAFETY JOINT 5.000 1.750 5.0  VR SAFETY JOINT 5.000 1.750 5.0  DISTRIBUTOR VALVE 5.000 2.370 5.8 10432.3  DISTRIBUTOR VALVE 5.000 2.370 5.8 10440.1  FLUSH JOINT ANCHOR 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  DEEN HOLE PACKER 7.500 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  DEEN HOLE PACKER 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  APRUNNING CASE 5.000 2.750 1.0  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.0  DRILL CULLARS 6.500 2.750 31.0  DRILL CULLARS 6.500 2.750 31.0  DRILL CULLARS 6.000 3.000 1.0  DRILL COLLARS						<del></del>
DRILL COLLARS. 5.500 2.750 31.1  BAR CATCHER SUB 5.000 1.120 1.0  AP RUNNING CASE 5.000 2.250 4.1 10395.7  CROSSOVER 5.000 2.250 4.1 10395.7  CROSSOVER 5.000 0.870 4.9  DRILL COLLARS. 5.000 2.200 0.9  HYDROSPRING TESTER 5.000 2.250 4.1 10416.0  AP RUNNING CASE 5.000 2.250 4.1 10416.0  CROSSOVER 5.000 1.750 5.0  CROSSOVER 5.000 0.870 1.0  DEEN HOLE PACKER 7.500 1.530 5.8 10440.1  FLUSH JOINT ANCHOR 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.370 9.0  CROSSOVER 5.000 2.370 9.0  CROSSOVER 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1	1	PUMP OUT REVERSING SUB	Б.000	3.000	1.0	E.88201
DRILL COLLARS. 6.500 2.750 31.1  BAR CATCHER SUB 6.000 1.120 1.0  AP RUNNING CASE 5.000 2.250 4.1 10395.7  CROSSOVER 5.000 3.000 1.0  DUAL CIP VALVE 5.000 0.870 4.9  DARIN VALVE 5.000 2.200 0.9  HYDROSPRING TESTER 5.000 0.750 5.3  AP RUNNING CASE 5.000 2.250 4.1 10416.0  TO AP RUNNING CASE 5.000 1.750 5.0  VR SAFETY JOINT 5.000 1.750 5.0  CROSSOVER 7.500 0.870 1.0  DEN HOLE PACKER 7.500 2.370 5.8 10432.3  DISTRIBUTOR VALVE 5.000 2.370 9.0  CROSSOVER 7.500 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  DEN HOLE PACKER 7.500 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  DRILL COLLARS 5.000 2.750 1.0  CROSSOVER 5.000 2.750 1.0  DRILL COLLARS 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  DRILL COLLARS 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 6.000 3.000 1.0  CROSSOVER 7.500 2.750 1.0  DRILL COLLARS 6.500 2.750 31.1  CROSSOVER 6.000 3.000 1.0  CROSSOVER 7.500 2.750 31.1	, H	DRILL COLLARS	6.500	2.750	62.1	
BAR CATCHER SUB	0	IMPACT REVERSING SUB	Б.000	3.000	1.0	10351.4
AP RUNNING CASE 5.000 2.250 4.1 10395.7 CROSSOVER 5.000 3.000 1.0 DUAL CIP VALVE 5.000 0.870 4.9 SAMPLE CHAMBER 5.000 2.500 4.9 DRAIN VALVE 5.000 0.750 5.3 RP RUNNING CASE 5.000 2.250 4.1 10416.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.750 5.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.0 JAR 5.000 1.	, H	DRILL COLLARS	6.500	2.750	31.1	·
CROSSOVER. 5.000 3.000 1.0  DUAL CIP VALVE. 5.000 0.870 4.9  SAMPLE CHAMBER. 5.000 2.500 4.9  DRAIN VALVE. 5.000 2.200 0.9  HYDROSPRING TESTER. 5.000 0.750 5.3  AP RUNNING EASE 5.000 1.750 5.0  JAR. 5.000 1.750 5.0  VR SAFETY JUINT. 5.000 1.000 2.8  CROSSOVER. 5.000 0.870 1.0  DPEN HOLE PACKER. 7.500 2.370 5.8 10432.3  DISTRIBUTOR VALVE 5.000 2.750 1.0  RP RUNNING EASE 5.000 2.750 1.0  RP RUNNING EASE 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 1.0  DRILL COLLARS 6.000 3.000 1.0  DRILL COLLARS 6.500 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 31.1	58	BAR CATCHER SUB	Б.000	1.120	1.0	
DUAL CIP VALVE. 5.000 0.870 4.9  SAMPLE CHAMBER 5.000 2.500 4.9  DRAIN VALVE. 5.000 2.200 0.9  HYDROSPRING TESTER 5.000 0.750 5.3  AP RUNNING EASE 5.000 1.750 5.0  JAR. 5.000 1.750 5.0  VR SAFETY JOINT 5.000 1.750 5.0  CROSSOVER 7.500 0.870 1.0  DPEN HOLE PACKER 7.500 2.370 5.8 10440.1  FLUSH JOINT ANCHOR 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  CROSSOVER 5.000 2.750 1.0  CROSSOVER 5.000 3.000 1.0  DRILL COLLARS 6.500 2.750 31.1  CROSSOVER 5.000 2.750 1.0  CROSSOVER 5.000 2.750 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 2.750 31.1  CROSSOVER 5.000 2.750 1.0  DRILL COLLARS 6.500 2.750 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 2.750 1.0  DRILL COLLARS 6.500 2.750 31.1  CROSSOVER 5.000 2.750 1.0  DRILL COLLARS 6.500 3.000 1.0  CROSSOVER 5.000 2.750 1.0  DRILL COLLARS 5.000 3.000 1.0  CROSSOVER 5.000 2.750 1.0  DRILL COLLARS 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0  CROSSOVER 5.000 3.000 1.0	80	AP RUNNING CASE	5.000	2.250	4.1	10395.7
SAMPLE CHAMBER		CROSSOVER	5.000	3.000	1.0	
DRAIN VALVE	2	DUAL CIP VALVE	5.000	0.870	4.9	
HYDROSPRING TESTER	02	SAMPLE CHAMBER	5.000	2.500	4.9	
AP RUNNING CASE. 5.000 2.250 4.1 10416.0  JAR. 5.000 1.750 5.0  VR SAFETY JOINT. 5.000 1.000 2.8  CROSSOVER. 5.000 0.870 1.0  DPEN HOLE PACKER. 7.500 2.370 5.8 10432.3  DISTRIBUTOR VALVE. 5.000 2.370 5.8 10440.1  FLUSH JOINT ANCHOR. 5.000 2.370 9.0  CROSSOVER. 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 3.000 1.0  DRILL COLLARS. 6.500 3.000 1.0  CROSSOVER. 5.000 2.750 31.1  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0  CROSSOVER. 5.000 3.000 1.0	з 💼	DRAIN VALVE	5.000	2.200	e.o	
JAR	o   •	HYDROSPRING TESTER	5.000	0.750	5.3	
VR SAFETY JUINT. 5.000 1.000 2.8 CRDSSQVER. 5.000 0.870 1.0 DPEN HOLE PACKER 7.500 2.370 5.8 10432.3 DISTRIBUTOR VALVE. 5.000 2.0 DPEN HOLE PACKER. 7.500 1.530 5.8 10440.1 FLUSH JUINT ANCHOR 5.000 2.370 9.0 CROSSQVER. 5.000 2.750 1.0 AP RUNNING CASE 5.000 2.750 1.0 CROSSQVER 5.000 2.750 1.0 CROSSQVER 6.000 3.000 1.0 DRILL COLLARS. 6.500 2.750 31.1 CROSSQVER 6.000 3.000 1.0 DRILL COLLARS. 6.500 2.750 31.1 CROSSQVER 5.000 2.750 1.0 DRILL COLLARS. 6.500 2.750 1.0 CROSSQVER 5.000 2.750 1.0 DRILL COLLARS. 6.500 2.750 31.1 CROSSQVER 5.000 2.750 1.0 DRILL COLLARS. 6.500 3.000 1.0 DRILL COLLARS. 6.500 2.750 31.1 CROSSQVER 5.000 2.750 1.0 DRILL COLLARS. 5.000 2.750 1.0 DRILL COLLARS. 5.000 2.750 1.0 DRILL COLLARS. 5.000 2.750 5.8 10491.9 DISTRIBUTOR VALVE. 5.000 1.530 5.8 10491.9	· 📗	AP RUNNING CASE	5.000	2.250	4.1	10416.0
VR SAFETY JOINT	5		5.000		5.0	
DPEN HOLE PACKER. 7.500 2.370 5.8 10432.3  DISTRIBUTOR VALVE. 5.000 2.0  DPEN HOLE PACKER. 7.500 1.530 5.8 10440.1  FLUSH JOINT ANCHOR. 5.000 2.370 9.0  CROSSOVER. 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.250 4.1 10452.5  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 31.1  CROSSOVER. 6.000 3.000 1.0  DRILL COLLARS. 6.500 2.750 31.1  CROSSOVER. 5.000 2.750 1.0  DRILL COLLARS. 7.500 1.530 5.8 10491.9  DISTRIBUTOR VALVE. 5.000 1.680 2.0	Б	VR SAFETY JOINT	5.000		2.8	
DISTRIBUTOR VALVE. 5.000 2.0  DPEN HOLE PACKER. 7.500 1.530 5.8 10440.1  FLUSH JOINT ANCHOR 5.000 2.370 9.0  CROSSOVER. 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.250 4.1 10452.5  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 5.000 3.000 1.0  DRILL COLLARS. 6.500 2.750 31.1  CROSSOVER. 6.000 3.000 1.0  CROSSOVER. 5.000 2.750 1.0  CROSSOVER. 7.500 1.530 5.8 10491.9  DISTRIBUTOR VALVE. 5.000 1.680 2.0		CRDSSDVER	5.000	0.870	1.0	
OPEN HOLE PACKER.         7.500         1.530         5.8         10440.1           FLUSH JOINT ANCHOR.         5.000         2.370         9.0           CROSSOVER.         5.000         2.750         1.0           AP RUNNING CASE.         5.000         2.250         4.1         10452.5           CROSSOVER.         5.000         2.750         1.0           CROSSOVER.         6.000         3.000         1.0           DRILL COLLARS.         6.500         2.750         31.1           CROSSOVER.         6.000         3.000         1.0           CROSSOVER.         5.000         2.750         1.0           OPEN HOLE PACKER.         7.500         1.530         5.8         10491.9           ODISTRIBUTOR VALVE.         5.000         1.680         2.0		OPEN HOLE PACKER	7 .500	2.370	5.8	10432.3
FLUSH JOINT ANCHOR 5.000 2.370 9.0  CROSSOVER 5.000 2.750 1.0  AP RUNNING CASE 5.000 2.250 4.1 10452.5  CROSSOVER 5.000 2.750 1.0  CROSSOVER 6.000 3.000 1.0  DRILL COLLARS 6.500 2.750 31.1  CROSSOVER 6.000 3.000 1.0  CROSSOVER 5.000 2.750 1.0  CROSSOVER 7.500 1.530 5.8 10491.9  DISTRIBUTOR VALVE 5.000 1.680 2.0		DISTRIBUTOR VALVE	5.000		2.0	
CROSSOVER 5.000 2.750 1.0  AP RUNNING CASE. 5.000 2.250 4.1 10452.5  CROSSOVER 5.000 2.750 1.0  CROSSOVER 6.000 3.000 1.0  DRILL COLLARS. 6.500 2.750 31.1  CROSSOVER 6.000 3.000 1.0  CROSSOVER 5.000 2.750 1.0  ORDER HOLE PACKER. 7.500 1.530 5.8 10491.9  DISTRIBUTOR VALVE. 5.000 1.680 2.0		OPEN HOLE PACKER	7 .500	1.530	5.8	10440.1
AP RUNNING CASE 5.000 2.250 4.1 10452.5  CROSSOVER 5.000 2.750 1.0  CROSSOVER 6.000 3.000 1.0  DRILL COLLARS 6.500 2.750 31.1  CROSSOVER 6.000 3.000 1.0  CROSSOVER 5.000 2.750 1.0  DPEN HOLE PACKER 7.500 1.530 5.8 10491.9  DISTRIBUTOR VALVE 5.000 1.680 2.0		FLUSH JOINT ANCHOR	5.000	2.370	9.0	
CRDSSDVER       5.000       2.750       1.0         CRDSSDVER       6.000       3.000       1.0         DRILL COLLARS       6.500       2.750       31.1         CRDSSDVER       6.000       3.000       1.0         CRDSSDVER       5.000       2.750       1.0         DPEN HOLE PACKER       7.500       1.530       5.8       10491.9         DISTRIBUTOR VALVE       5.000       1.680       2.0		CROSSOVER	5.000	2.750	1.0	
CRDSSDVER       6.000       3.000       1.0         DRILL COLLARS       6.500       2.750       31.1         CRDSSDVER       6.000       3.000       1.0         CRDSSDVER       5.000       2.750       1.0         OPEN HOLE PACKER       7.500       1.530       5.8       10491.9         ODISTRIBUTOR VALVE       5.000       1.680       2.0		AP RUNNING CASE	5.000	2.250	4.1	10452.5
DRILL COLLARS						
CRDSSOVER       5.000       2.750       1.0         OPEN HOLE PACKER       7.500       1.530       5.8       10491.9         ODISTRIBUTOR VALVE       5.000       1.680       2.0						
CRDSSOVER       5.000       2.750       1.0         OPEN HOLE PACKER       7.500       1.530       5.8       10491.9         ODISTRIBUTOR VALVE       5.000       1.680       2.0	#-#	CROSSOVER	Б.000	3.000	1.0	
DISTRIBUTOR VALVE 5.000 1.680 2.0						
		OPEN HOLE PACKER	7.500	1.530	5.8	10491.9
OPEN HOLE PACKER	•	DISTRIBUTOR VALVE	5.000	1.680	2.0	
		OPEN HOLE PACKER	7.500	1.530	5.8	10499.7
	CONTINUE	n				**

			O.D.	I.D.	LENGTH	DEPTH	
5		CROSSOVER	Б.000	2.750	1.0		
19		ANCHOR PIPE SAFETY JOINT	5.000	1.500	4.3		
5		CROSSOVER	6.000	3.000	1.0		
3		DRILL COLLARS	6.500	2.750	60.4		
5		CRDSSOVER	Б.000	000.E	1.0		
20		FLUSH JOINT ANCHOR	5.000	2.370	24 .0		
81 <sup>:</sup>	•	BLANKED-OFF RUNNING CASE	5.000		4.1	10596 .9	
	7	TOTAL DEPTH				10599 .9	



SEC. - TWP. - RNG

SEE REMARKS

F IELD AREA

DIMAY BASIN

VICTORIA

STATE AUSTRALIA DR

MINOR RESOURCES N.L.
LEASE OWNER/COMPANY NAME

WINDAMERE LEASE NAME

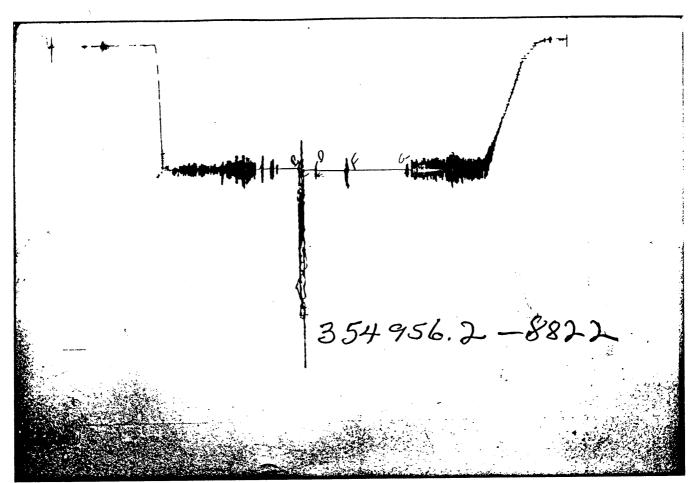
MELL NO.

Z-A TEST NO.

10413.8 - 10599.9 TESTED INTERVAL

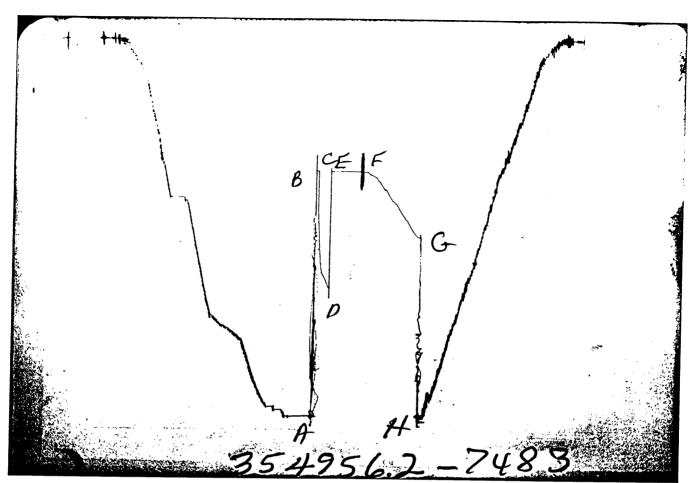
TICKET NO. 35495620 18-APR-89 MODMBA

FORMATION TESTING SERVICE REPORT



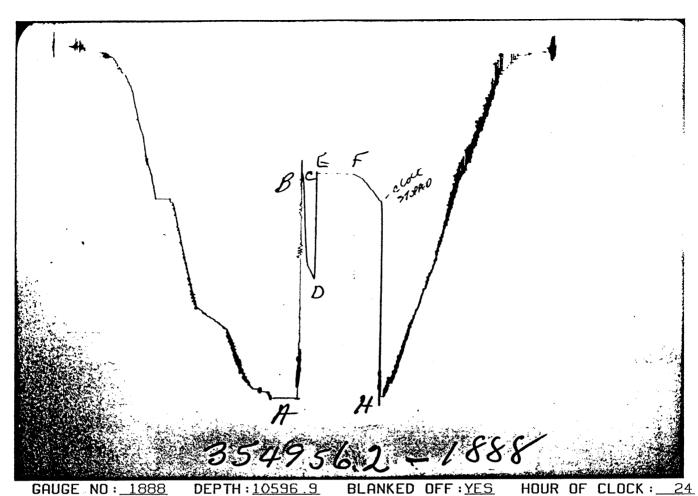
GAUGE NO: 8822 DEPTH: 10361.3 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION		SSURE	TI		TYPE
<u> </u>		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC					
В	INITIAL FIRST FLOW		1675.4	6.0	6.3	F <sup>1</sup>
С	FINAL FIRST FLOW	1662	1787 . 7	J. 0	0.0	
С	INITIAL FIRST CLOSED-IN	1662	1787.7	30.0	27.3	С
D	FINAL FIRST CLOSED-IN		1698.5	30.0	÷	
Ε	INITIAL SECOND FLOW		1698.5	71.0	71.0	F
F	FINAL SECOND FLOW	1692	1712.6	11.0	11.0	
F	INITIAL SECOND CLOSED-IN	1692	1712.6	142.0	144.4	С
G	FINAL SECOND CLOSED-IN		1712.6	142.0	177.7	ر
Н	FINAL HYDROSTAȚIC		•			



	$\neg$
GAUGE NO: 7483 DEPTH: 10382.4 BLANKED OFF: NO HOUR OF CLOCK:_	24

ID	- DESCRIPTION	PRE	SSURE	TI	ME	TYPE
	DECONII TION	REPORTED	CALCULATED	REPORTED	CALCULATED	1 '' -
A	INITIAL HYDROSTATIC	4808	4824.5			
В	INITIAL FIRST FLOW	1682	1684.0		C 2	_
С	FINAL FIRST FLOW	1682	1684.0	6.0	6.3	F
С	INITIAL FIRST CLOSED-IN	1682	1684.0	20.0	27 2	
D	FINAL FIRST CLOSED-IN	3179	3196.0	30.0	27 . 3	С
Ε	INITIAL SECOND FLOW	1682	1693.8	71.0	71.0	F
F	FINAL SECOND FLOW	1685	1690.3	71.0	71.0	Г
F	INITIAL SECOND CLOSED-IN	1685	1690.3	142.0	144 4	(
G	FINAL SECOND CLOSED-IN	2522	2549.1	142.0	144.4	С
Н	FINAL HYDROSTATIC	4808	4818.8			



PRESSURE REPORTED CALCULATED TIME **TYPE** ID DESCRIPTION REPORTED CALCULATED A INITIAL HYDROSTATIC 4867 4903.2 В INITIAL FIRST FLOW 1772 1782.6 6.0 6.3 F С FINAL FIRST FLOW 1807 1855.7 C INITIAL FIRST CLOSED-IN 1807 1855.7 30.0 27.3 С FINAL FIRST CLOSED-IN 3223 3261.1 D INITIAL SECOND FLOW Ε 1769 1783.9 71.0 F 71.0 F FINAL SECOND FLOW 1776 1793.9 INITIAL SECOND CLOSED-IN F 1776 1793.9 142.0 С G FINAL SECOND CLOSED-IN 2155 4860 4883.7 Н FINAL HYDROSTATIC

	EQUIPMENT & HOLE DATA	TICKET NUMBER: 35495620	
	NET PAY (ft): 20.2 [10459.3-10479.5]	DATE: 4-9-89 TEST NO:	2-A
<b>'</b>	GROSS TESTED FOOTAGE: 186.2  ALL DEPTHS MEASURED FROM: K.B. (19 AGL)	TYPE DST: OPEN HOLE	
	CASING PERFS. (ft):	HALLIBURTON CAMP:MOOMBA	
	ELEVATION (ft): 151.4 GROUND LEVEL  TOTAL DEPTH (ft): 10599.9	TESTER: IAN HOVELL	
	PACKER DEPTH(S) (ft): 10398, 10406, 10414 FINAL SURFACE CHOKE (ini): 0.75000	TESTER:	
	BOTTOM HOLE CHOKE (in): 0.750	WITNESS: J.E. OZOLINS ??	<u> </u>
	MUD WEIGHT (1b/gal): 9.00 MUD VISCOSITY (sec): 30		
	ESTIMATED HOLE TEMP. (°F): 260  ACTUAL HOLE TEMP. (°F): 275 @ 10596.9 ft	DRILLING CONTRACTOR:  ATCO RIG #2	
l	FLUID PROPERTIES FOR	COMPLED DOTO	
	RECOVERED MUD & WATER	SAMPLER DATA Psig AT SURFACE:	
l	SOURCE RESISTIVITY CHLORIDES	cu.ft. DF GAS:	
		cc OF OIL:	
	e ppm	cc OF WATER:	
		TOTAL LIQUID cc:	
ľ	HYDROCARBON PROPERTIES	CUSHION DATA	
	OIL GRAVITY ( °API): @ °F GAS/OIL RATIO (cu.ft. per bbl): GAS GRAVITY:	TYPE AMOUNT WEIGHT WATER (FT.) 4285.0	
$\vdash$	RECOVERED:		Σω
	WATER CUSHION ONLY, SLIGHTLY	GAS CUT WITH DIL TRACE.	MEASURED FROM TESTER VALVE
			SUREC
			MER!
1	REMARKS:		
	LEGAL LOCATION: 38 DEG. 14' 10.59" S. LAT., :	142 DEG. 01 17.9" E. LONG	•
		•	

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
4-8-89					
2130					MADE UP TOOLS
2245					RUN IN HOLE
4 -9 -89					
0600					HEAD UP
					HANGING WT. 187.000#
					UP WT. 190,000#
					DDWN WT. 180,000#
0645					SET WT. DN TODL-48,000#
0651	.75				OPENED TOOL
0657					CLOSED TOOL
0727					DPENED TOOL
0834					ROTATED TO CLOSE TOOL
0838					CLOSED TOOL
1100					PULLED FREE AND HELD
					LET PACKERS DECOMPRESS
					PULLED OUT OF HOLE
1620	-				BROKE DOWN TOOL
1745					LAID OUT TOOL
					CHARTS READ AND EVALUATED
					CLOCK IN BT #1888 STOPPED
					AFTER 57 MINUTES OF FINAL CIP
					BOTH BT AND CLOCK IS TO BE
					REPLACED.
· · · · · · · · · · · · · · · · · · ·					
			_		
			1.00	3.750	
		<del> </del>			
**************************************					
		-			

CLOCK NO: 29491 HOUR: 24



GAUGE ND: 8822

DEPTH: 10361.3

CL	DCK	NO: 2	9491 H	IOUR: 24			II	DE	PTH: 103	361.3 		
RE	F	MINUTES	PRESSURE	ΔP	<u>tx &amp;t</u> t + &t	log t + At	REF	MINUTES	PRESSURE	AP	<u>t × At</u> t + At	log t + At
			FIRST	FLOW								
B C	1 2	0.0 E.3		112.3								
		F	IRST CL	OSED-IN					•			
C D	1	0.0 27.3	1787.7 1698.5	-89.2	5.1	0.091						·
			SECOND	FLOW								
Ε	1 2 3 4 5	0.0 10.0 20.0 30.0 40.1	1698.5 1709.7 1709.7 1709.7 1709.7	11.1 0.0 0.0 0.0								
F	6 7 8	50.0 60.0 71.0	1709 .7 1711 .5 1712:6	0.0 1.8 1.1								
		SE	COND CL	.OSED-IN								
F G	1	0.0 144.4	1712.6 1712.6	0.0	50.4	0.186		i				
				ŧ								
				÷								
								•			-	
								•	•			·
					-				-			
								<u>.</u>				

REMARKS:

CLOCK NO: 7273 HOUR: 24



**GAUGE NO:** 7483

DEPTH: 10382.4

					,								
	RI	EF	MINUTES	PRESSURE	ΔP	<u>t × At</u> t • At	log t + At	REF	MINUTES	PRESSURE	AP ·	<u>t x &amp;t</u> t + &t	log t + At
				ETDET	רו טוו								
				FIRST	FLUW								1
	В	1	0.0	1684.0									
	C	2	6.3	1684.0	0.0								
												*	
			F	IRST CL	.OSED-IN	1							
	С	1	0.0	1684.0				11 :					
		2	2.0	2614.5	930.5	1.5	0.620	11					
		Э	4.0	2771.3	1087.3	2.4	0.414	11	6				I
		4	Б.О	2877.6	1193.6	3.1	0.313						1
		5	8.0	2995.3	1311.2	3.5	0.253						
		6	10.0	3020.5	1336.5	3.9	0.213						i
١		7	12.0	0. 8606	1355.0	4.1	0.184						
-		8	14.0	3061.7	1377.7	4.4	0.162						
ı		9	16.0	3078.9	1394.9	4.5	0.145						
-		10	18.0 20.0	3107.3 3134.9	1423.3 1450.9	4.7 4.8	0.131 0.119						
		11 12	20.0	3162.7	1478.7	4.9	0.113				•		
		13	24.0	3189.8	1505.8	5.0	0.102						
-	D	14	27.3	3196.0	1512.0	5.1	0.091		€ હ				į
-													1
1				ימרכטעום:	E1 011								1
	)			SECOND	FLUW								
٦	E	1	0.0	1693.8					i				
1		2	10.0	1692.5	-1.3								
		3	20.0	1690.1	-2.4								
1		4	30.0	1688.7	-1.4				:				
1		5	40.0	1688.7	0.0								1
1		6	50.0	1691.2	2.6								
.	F	7 8	60.0 71.0	1691.2 1690.3	0.0 -1.0			İ					
١	•	•	11.0	1030.5	1.0								
I			er	COND CI	DOCDTA						₹.		
			ÐE.	COND CL	.uJED -TI	V		1					
	F	1	0.0	1690.3									1
		5	10.0	1696.8	6.5	8.9	0.940						
I		3	20.0	1720.6	30.4	15.9	0.687						
I		4	30.0	1751.1	60.9	21.6	0.554	1					1
1		5 6	40.0 50.0	1802.6 · 1871.7	112.3 181.5	26.3	0.467 0.406						
1		6 7	60.0	1926.7	236.4	30.4 33.8	0.406				•		. ]
ı		8	70.0	2021.1	330.9	36.7	0.323	1	•				
I		9	80.0	2086.8	396.6	39.3	0.294	1					į
		10	90.0	2157.0	466 . 7	41.6	0.269	1					
1		11	100.0	2247.0	556 .7	43.6	0.249	1	-				_ ]
		12	110.0	2320.2	629.9	45 .4	0.231						`
		13	120.0	2416.3	726.1	47.0	0.216						
	-	14	130.0	2500.8	810.5	48.5	0.203			•			
1	_	15	140.0	2545 .1	854.9	49.8	0.191	1		-			
	G	16	144.4	2549.1	858.8	50.3	0.186	1				-	1
τ			-					L					

REMARKS:

CLOCK NO: 6719 HOUR: 24



GAUGE NO: 1888

**DEPTH**: 10596.9

	L							**					
	RE	F	MINUTES	PRESSURE	ĄΡ	<u>t× &amp;t</u> t + &t	log t + At	REF	MINUTES	PRESSURE	ΔP	t× åt t + åt	log t + At
				FIRST	FLOW								
	В	1	0.0	1782.6	2.0								
		2 3	1.0 2.0	1785.6 1789.1	3.0 3.5								. [
		4	3.0	1794.3	5.2		•						1
		5	4.0	1817.5	23.3								
		6	5.0	1839.6	22.0								
	С	7	6.3	1855 .7	16.1								
			F	IRST CL	OSED-IN	I							
	_	,											
	С	1	0.0 2.0	1855.7 2263.4	407.7	1 5	0.621			~			
1		2 3	4.0	2531.8	676.1	1.5 2.4	0.413						
1		4	6.0	2764.6	908.8	3.1	0.313						
ı		5	8.0	2944.9	1089.1	3.5	0.253						İ
		6	10.0	3049.5	1193.8	3.9	0.213						
-		7	12.0	3086.3	1230.6	4.1	0.184						
		8	14.0	3105.3	1249.6	4.4	0.162						
`1		9	16.0	3127.6 3147.6	1271.8	4.5	0.145					-	
١		10 11	18.0 20.0	3176.2	1291 .9 1320 .5	4.7 4.8	0.131 0.119						
		12	22.0		1342.7	4.9	0.110						
		13	24.0	3231.0	1375.3	5.0	0.102						
	D	14	27.3	3261.1	1405.4	5.1	0.091		i				1
		1		SECOND	FLOW				•				
I	_												
۱	Ε	1	0.0	1783.9 1786.5	2.6								
١		3	20.0	1784.2	-2.3		1						
ı		4	30.0	1783.2	-1.0		I						
ı		5	40.0	1784.5	1.4	<del>-</del>						7	
1		6	50.0	1787.5	0.E		İ						
١	_	7	60.0	1791.7	4.2		1						
١	F	8	71.0	1793.9	2.3		1						
			SE	COND CL	.OSED-IN								
	_						-						
	F	1	0.0	1793.9	20.0					*			1
		2 3	10.0 20.0	1826.2 1878.3	32.3 84.4	8.9 · 15.9	0.940 0.687						1
		4	30.0	1960.1	166.1	21.5	0.553	1					
		5	40.0	2042.0	248.1	26 .4	0.467	}					
		6	50.0	2136.8	342.8	30.4	0.406						1
	Ö	7	57.0	2172.5	378.6	32.8	0.372						1
ı	G	8	NO DATA	FOR THIS	POINT								
							l						
$\mathbf{I}$							1	1					1

LEGEND:

CLOCK STOPPED

REMARKS:

			O.D.	I.D.	LENGTH	DEPTH
		-				
1		DRILL PIPE	5.500		9740.0	
1		DRILL PIPE	5.500		183.2	
3		DRILL COLLARS	6.500	2.750	340.7	
51	D	PUMP DUT REVERSING SUB	6.000	3.000	1.0	10263.9
3		DRILL COLLARS	Б.500	2.750	62.2	
50	۰	IMPACT REVERSING SUB	6.000	3.000	1.0	10327.1
3		DRILL COLLARS	Б.500	2.750	31 .1	
258		BAR CATCHER SUB	Б.000	1.120	1.0	
80		AP RUNNING CASE	5.000	2.250	4.1	10361.3
5	Ш	CROSSOVER	5.000	3.000	1.0	
12	٥	DUAL CIP VALVE	5.000	0.870	4.9	
202		SAMPLE CHAMBER	5.000	2.500	4 .9.,	
33	•	DRAIN VALVE	5.000	2.200	P. 0	
БО	0	HYDROSPÆING TESTER	5.000	0.750	5.3	10380.2
30		AP RUNNING CASE	5.000	2.250	4.1	10382.4
15		JAR	5.000	1.750	5.0	
16	v	VR SAFETY JOINT	5.000	1.000	2.8	
70		OPEN HOLE PACKER	7.500	1.530	5.8	10398.1
18	•	DISTRIBUTOR VALVE	5.000	1.680	2.0	
70		OPEN HOLE PACKER	7.500	1.530	5.8	10406.0
18	0	DISTRIBUTOR VALVE	5.000	1.680	2.0	
70		OPEN HOLE PACKER	7.500	1.530	. 5.8	10413.8
19		ANCHOR PIPE SAFETY JOINT	5.000	1.500	4.3	•
5	川	CROSSOVER	6.000	000.E	1.0	
3 <b>[</b>		DRILL COLLARS	6.500	2.750	122.5	
5		CROSSOVER	6.000	3.000	1.0	•
CON.	TINU	ED				•
		FO	HTDM	ENT DOTO	1	-
		EW	OTLI	ENT DATA		

		_	O.D.	I.D.	LENGTH	DEPTH
20		FLUSH JOINT ANCHOR		2.370	52.0 4.1	10596 .9
	T	OTAL DEPTH .		•		1 <b>05</b> 99 .9

EQUIPMENT DATA

APPENDIX K

SOURCE ROCK ANALYSIS AND PETROLEUM GEOCHEMISTRY



# SOURCE ROCK ANALYSIS AND PETROLEUM GEOCHEMISTRY,

WINDERMERE -2, PEP -111

**OTWAY BASIN** 

MINORA RESOURCES NL



27th July 1989

**Amdel Limited** 

(Incorporated in S.A.) 31 Flemington Street. Frewville, S.A. 5063

Telephone: (08) 372 2700

P.O. Box 114. Eastwood, S.A. 5063

Telex: AA82520

Facsimile: (08) 79 6623

Minora Resources NL GPO Box D164 PERTH WA 6001

Attention: T Scholefield

REPORT F 7565/89

CLIENT REFERENCE:

Fax message from T Scholefield, 10/4/89 and

Data Transmittal from I Copp, 9/5/89

TITLE:

Source rock analysis and petroleum

geochemistry, Windermere -2, PEP -111,

Otway Basin

MATERIAL:

Oil (1 sample), Water (1 sample), Sidewall core (4 samples), Cuttings (13 samples).

LOCALITY:

WINDERMERE -2

**IDENTIFICATION:** 

As in Table 1 of report

DATES RECEIVED:

12 April and 10 May, 1989

WORK REQUIRED:

Water: Water analysis (W2/1)

Oil: Solvent extraction from water (R3.6a). Whole extract GC (R2.1). Liquid chromatography without deasphaltening (R3.8). GC of saturates (R3.9). Isolation and GC-MS of naphthenes (R3.13). Isolation (by TLC) and GC-MS of

aromatics (R3.14).

Cuttings: TOC content and Rock-Eval pyrolysis

(R3.2).

SWC and Selected Cuttings: Vitrinite reflectance. Organic petrology (R3.20).

Pyrolysis-GC of solvent-washed cuttings (R3.19).

Interpretation.

Investigation and Report by: Dr David M McKirdy and Brian L Watson

Dr Brian G Steveson Manager, Petroleum Services Section



### 1. INTRODUCTION

Water, oil and rock samples (sidewall cores, cuttings) from the Early Cretaceous sequence in Windermere -2 were submitted for geochemical and organic petrological analysis (Table 1).

The aims of the investigation were fourfold:

- to evaluate the hydrocarbon source potential of organic-rich sediments within the lower Eumeralla Formation and underlying Crayfish Formation at Windermere -2;
- 2) to determine the type, source affinity and maturity of the Windermere -2 (basal Eumeralla) oil show;
- to compare the Windermere -2 crude with oil recovered from the Heathfield Sandstone Member in Windermere -1 (McKirdy, 1987); and
- to characterise the chemical composition, total dissolved solids, hardness, alkalinity and resistivity/conductivity of water obtained from the Heathfield Sandstone Member during DST 1 of Windermere 2.

Preliminary results were facsimilied to Minora Resources, Perth, in various progress reports dated 13 and 14 April, 16 and 28 June and 17 July.

#### 2. ANALYTICAL METHODS

The analytical procedures were essentially as described for Windermere -1 (McKirdy, 1987) except that, GC-MS analysis of naphthenes and pyrolysis-GC of solvent-washed cuttings were undertaken at Curtin University, Perth.

#### 3. RESULTS

Analytical data are summarised and presented herein as follows:

	<u>Table</u>	<u>Figure</u>	<u>Appendix</u>
Source Rock Analysis			
Formation tops Vitrinite reflectance TOC, Rock-Eval pyrolysis Organic petrology Whole-rock pyrolysis-GC	2 3 4-6 7,8	1 2 - 3	2 - 3 -
Oil Analysis			
C <sub>12+</sub> composition Whole-extract GC GC of saturates GC-MS of naphthenes GC-MS of aromatics	9 - 9 10,11 12	4 5 6,7 8,17 18,19	- - - 4 -
Water Analysis	-	-	5

# (j) amdel

### 4. SOURCE ROCK ANALYSIS

## 4.1 <u>Maturity</u>

The stratigraphy of the Windermere -2 well section is given in Appendix 1. Vitrinite reflectance (VR) data plotted in Figure 1 show that Tertiary and Cretaceous sediments above 2435 metres depth are immature (VR < 0.5%).

The onset of gas and oil generation from Type III kerogen occurs at the following depths within the lower Eumeralla Formation:

<u>Threshold</u>	<u>VR</u> %	<u>Depth</u> m
top of gas window	0.6	2745
top of oil window	0.7	3002

At total depth in Windermere -2 the Crayfish Formation is optimally mature for oil generation (3595 m KB, VR = 0.97%).

Rock-Eval Tmax values on selected samples of the lower Eumeralla and Crayfish Formations (Fig 2) are in broad agreement with measured vitrinite reflectance.

Production index, another maturation indicator, increases steadily from 0.02 (immature) at 1950 metres to 0.20 (mature) at 3415 metres depth (Table 3).

### 4.2 Source Richness

Within the <u>lower Eumeralla Formation</u> both total organic carbon content (TOC) and genetic potential  $(S_1 + S_2)$  increase towards the base of the unit (Table 3) where coaly sediments reflect deposition in a paludal environment. The source richness of this siltstone/shale/coal lithofacies association is good to very good (TOC = 3.45 - 30.6%;  $S_1 + S_2 = 8$ -96 kg hydrocarbons/tonne).

Shale/siltstone from the <u>basal sandstone member</u> of the Eumeralla Formation also has good source richness (TOC = 3.8%;  $S_1 + S_2 = 8$  kg hydrocarbons/tonne), in marked contrast to the underlying <u>Crayfish Formation</u> (TOC < 1%;  $S_1 + S_2 < 1$  kg hydrocarbons/tonne: rating = poor).

### 4.3 Source Quality and Kerogen Type

Rock-Eval hydrogen indices in the range  $\rm HI=218-280$  reflect the presence in the lower Eumeralla Formation of moderate quality, oil and gas-prone, Type II-III kerogen (Fig 2). Petrographic examination of three high-graded lower Eumeralla samples reveals that their maceral assemblages are dominated by vitrinite.

<u>Depth</u>	V	: ·I : E	<u>HI</u>	Rock Type
2805 - 2810	75-80	: 20 : 15	265	sh, 10-20% coal
2955 - 2960		0 : 10 : 10-15	233	silt/sh, 10-20% coal
3060 - 3065		0 : 10 : 20-25	273	coal, 30-40% sh

Sporinite is the dominant eximite in each case. A similar correlation between vitrinite content and hydrogen index was observed in coal from the lower Eumeralla Formation in Windermere -1 (McKirdy, 1987).

# 6 amdel

Source quality deteriorates downwards through the basal sandstone member of the Eumeralla Formation (HI = 182) and into the upper Crayfish Formation (HI = 85-91). Dispersed organic matter in both of these units is predominantly inertinitic (I = 85-90%: Table 4).

In order to further assess their oil-generative potential, coal-rich cuttings from 3060-3065 metres depth in Windermere -2 were analysed by pyrolysis-GC. The pyrolysate has a low gas: oil ratio ( $C_{1.5}:C_{5.31}\simeq 1:3:$  Table 8) consistent with the moderately oil-prone character indicated by Rock-Eval pyrolysis. However, close inspection of the P-GC trace (Fig 3) reveals a number of features which together suggest the potential for generations of gas and condensate-type liquids only, viz.

- a dominance of condensate-range components ( $C_5 C_{14} = 55\%$  of total pyrolysate),
- 2) a low proportion of  $C_{15+}$  components (21% of total pyrolysate),
- a high abundance of aromatic compounds (eg. benzene, toluene,  $\underline{m}$  +  $\underline{p-xylene}$ , naphthalene, methylnaphthalenes, dimethylnaphthalenes) relative to aliphatic components, and
- 4) high alkane/alkene ratios in the  $C_{13+}$  range.

### 5. OIL GEOCHEMISTRY

### 5.1 General Characteristics

In view of its mode of recovery (extracted from DST 2A water sample by shaking with dichloromethane), the Windermere -2 oil cannot be compared with the Windermere -1 (DST 1) crude in terms of its physical properties (specific gravity, viscosity and pour point). Nevertheless, the two oils ( $C_{12+}$  fraction) do have similar paraffinic bulk compositions (Table 9, Fig 4) and both are moderately waxy (Fig 5; McKirdy, 1987, Fig 1).

The enhanced concentration of the  $C_{25}$  n-alkane in the Windermere -2 whole-oil chromatogram (Fig 5) is not repeated in the saturates chromatogram (Fig 6), and may be due to coelution of an aromatic compound.

### 5.2 Maturity and Migration

Maturation-dependent ratios based on isoprenoid alkane, sterane and triterpane biomarkers (Table 10) and triaromatic hydrocarbons (Table 12) concur in highlighting the normal maturity of the Windermere -2 crude. Its MPI-derived maturity (VR $_{\rm calc}$  = 0.97%) represents the maturation level of its source rock at the time of primary migration. Comparison of its VR $_{\rm calc}$  value with the present vitrinite reflectance of the host reservoir (VR $_{\rm meas}$  = 0.79%) confirms that the oil is appreciably out-of-place in terms of maturity.

The marked maturity difference between the Windermere -1 (Heathfield) and Windermere -2 (basal Eumeralla) oils, clearly evident from parameters 4, 6, 9, 10, 12, 16 and 17 (Table 10: see also Fig 7), is consistent with the latter's origin from a second, more deeply buried source rock.

Unlike the Windermere -1 (Heathfield) crude which originated more or less  $\underline{in}$   $\underline{situ}$  (McKirdy, 1987), the Windermere -2 (basal Eumeralla) oil does display some biomarker evidence of long-distance migration (parameter 6, Table 10). Another migration-sensitive parameter, the  $C_{29}$  diasterane/sterane ratio (parameter 7,



Table 10) is anomalously low, but this may simply reflect the coaly nature of its source rock.

### 5.3 Source Affinity

The terrestrial source affinity of the Windermere -2 oil is evident from aspects of its  $C_{12+}$  composition (Fig 17). The oil originated from higher plant remains ( $C_{29}/C_{27}$  sterane > 1.50 which were deposited in a partly oxic aquatic environment (pr/ph > 2). This primary land plant detritus was reworked (degraded) by aerobic bacteria (and ?fungi) during early diagenesis. Bacteria were the precursors of the  $C_{27}$ - $C_{35}$  hopanes found in the oil (m/z 191, Fig 13). These hopanes (pentacyclic triterpanes), representing a primary input of bacterial lipids to the source material, in turn underwent yet further bacterial degradation to drimanes (bicyclic sesquiterpanes) prior to burial of the organic-rich sediment below the zone of microbiological activity. This accounts for the low hopane/sterane ratio and high drimane/hopane ratio of the Windermere -2 oil (Table 11).

The  $C_{27}$ - $C_{29}$  sterane and diasterane distributions of the Windermere -2 oil are dominated by  $C_{29}$  homologues of higher plant origin (Fig 8). This is a characteristic feature of most Australian non-marine crude oils (see e.g. Vincent et al., 1985; Philp and Gilbert, 1986).

The oil's diterpane distribution (Figs 15, 16) is dominated by the  $C_{18}$  -  $C_{20}$  labdanes (bicyclic) and the  $C_{19}$  -  $C_{20}$  isopimaranes (tricyclic). These diterpenoid alkanes are derived from resins of the type synthesized by Araucariacean conifers (kauri pines: Alexander et al., 1988). As in the Lindon -1 (Pebble Point) and Windermere -1 (Heathfield) oils, the tetracyclic diterpanes (beyerane, phyllocladane, kaurane) are subordinate. This feature distinguishes these Otway Basin oils from the Gippsland Basin crude oils examined by Alexander et al., (1988).

#### 6. CONCLUSIONS

- 1. Tertiary and Cretaceous sediments above 2435 metres depth in Windermere 2 are thermally immature (VR < 0.5%).
- 2. Maturation thresholds for the onset of hydrocarbon generation from resinite-poor terrestrial organic matter in the Windermere -2 Early Cretaceous sequence are located within the lower Eumeralla Formation, as follows:

	<u>VR</u> %	<u>Depth</u> m
top of gas window	0.6	2745
top of oil window	0.7	3002

The Crayfish Formation has attained optimal maturity for oil generation at total depth in Windermere -2 (3595 m, VR = 0.97%).

3. Organic-rich sediments (TOC = 3.5 - 31%;  $S_1 + S_2 = 7.7 - 96$  kg hydrocarbons/tonne; HI = 218-280) occur throughout the lower Eumeralla Formation. Vitrinite-rich coals at the base of this unit (2985-3080)

# **G**amdel

metres depth) contain gas and condensate-prone Type II-III kerogen that is initially mature for hydrocarbon generation (VR = 0.75 - 0.80 %).

- 4. Cuttings from the underlying upper Crayfish Formation are organically lean (TOC < 0.9%,  $S_1$  +  $S_2$  < 1 kg hydrocarbons/tonne). Their kerogen is inertinite-rich (I = 85-90% of DOM) and dry gas-prone (HI < 100).
- 5. Trace amounts of paraffinic, moderately waxy oil were recovered with water during a drill-stem test (DST 2A, 3174-3230.7 m) of the basal sandstone member of the Eumeralla Formation.
- 6. Like the paraffinic crude from the stratigraphically higher Heathfield sandstone member in Windermere -1, this Windermere -2 oil is of terrestrial (land plant) origin. However, the two Windermere oils differ in terms of:
  - 1) Their maturity ( $VR_{calc} = 0.97\%$ , Windermere -2 cf. 0.57%, Windermere -1), and
  - Specific aspects of their biomarker geochemistry (notably  $C_{29}/C_{27}$  sterane,  $C_{30}$  hopane/ $C_{29}$  sterane and drimane + homodrimane/ $C_{30}$  hopane ratios),

and therefore appear to have originated from different Cretaceous source rocks.

7. The most likely source of the Windermere -2 oil show is the superjacent coal of the lower Eumeralla Formation, with the actual source kitchen being located basinward of the Windermere -2 well locality.

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## TABLE 1

## SAMPLES SUBMITTED FOR GEOCHEMICAL ANALYSIS, WINDERMERE -2

Sample Type	Test	Depth m	Unit
Water	DST 1	1775.2 - 1802.3	Heathfield sst. member, Eumeralla Formation
Oil and Water	DST 2A	3174.0 - 3230.7	Basal sst. member, Eumeralla Formation
Sidewall cores	# 24 # 19 # 13 # 9	1876 ) 2352 ) 2697 )	Lower Eumeralla Formation
Cuttings		1950 - 1955 ) 2735 - 2740 ) 2805 - 2810 ) 2955 - 2960 ) 3060 - 3065 ) 3075 - 3080 )	Lower Eumeralla Formation
		3220 - 3225 ) 3245 - 3250 ) 3335 - 3340 )	Basal sst. member, Eumeralla Formation
		3415 - 3420 ) 3505 - 3510 ) 3565 - 3570 )	Crayfish Formation

( 4



TABLE 2

## SUMMARY OF VITRINITE REFLECTANCE MEASUREMENTS, WINDERMERE -2

Depth (m)	Mean Maximum Reflectance	Standard Deviation	Range	Number of Determinations
1076		0.06	0.26 - 0.43	6
1876	0.34		0.37 - 0.63	27
2352	0.50	0.07	0.37 - 0.03	
2697	0.55	0.05	0.42 - 0.73	19
2805 - 2810	0.77«(0.70)	0.07	0.61 - 0.91	33 -
2955 - 2960	0.78«(0.74)	0.09	0.62 - 0.94	13
3015	0.87«(0.78)	0.09	0.72 - 1.04	17
3245 - 3250	0.79	0.07	0.66 - 0.91	15
3335 - 3340	0.91	0.09	0.77 - 1.07	11
3505 - 3510	0.81*(0.89)	0.07	0.69 - 0.91	34

Influenced by reworked vitrinite Influenced by carved cuttings Preferred Value

<sup>()</sup> 

AMDEL

					Rock-Eva	l Pyrolys	sis			01	/01/80
Client:	MINORA RES	OURCES NL									
Well:	WINDERMERE	:-2									
Depth (m)	T Max	51	97	53	\$1+\$2 :	PI	92/93	PC	TOC	HI	10
1950	429	0.18	7.54	1.58	7.72	0.02	4.77	0.64	3.45	218	45
2735	434	0.86	17.12	0.94	17.98	0.05	18.21	1.49	7.05	242	13
2805	434	1.17	22.07	0.58	23.24	0.05	38.05	1.93	8.30	265	6
2955	440	2.50	24.02	0.79	26.52	0.09	30.40	2.21	10.30	233	7
2985	440	7.43	59.54	1.48	66.97	0.11	40.22	5.58	21.20	280	6
3060	444	11.95	83.70	1.55	95.65	0.12	54.00	7.97	30.60	273	5
3075	444	11.35	83.40	1.25	94.75	0.12	66.72	7.89	30.50	273	4
3220	443	0.81	6.93	0.35	7.74	0.10	19.80	0.54	3.80	182	9
3415	444	0.17	0.68	0.47	0.85	0.20	1.44	0.07	0.74	91	63
3505	444	0.11	0.73	0.30	0.84	0.13	2.43	0.07	0.85	85	35

( 4



PERCENTAGE OF VITRINITE, INERTINITE AND EXINITE IN
DISPERSED ORGANIC MATTER, WINDERMERE-2

TABLE 4

Depth		Percentage of	
(m)	Vitrinite	Inertinite	Exinite
1876	5	95	<5
2352	5	85	10
2697	5	85 - 90	5 - 10
2805 - 2810	65	20	15
2955 - 2960	75 - 80	10	10 - 15
3015	5	90	5
3060 - 3065	65 - 70	10	20 - 25
3245 - 3050	5	90	5
3335 - 3340	5	85 - 90	5 - 10
3505 - 3510	<5	85	10
3565 - 3570	<5	85 - 90	5 - 10



TABLE 5

ORGANIC MATTER TYPE AND ABUNDANCE,
WINDERMERE-2

Depth (m)	Estimated DOM (%)	Volume of Exinites	Exinite Macerals
1876	≈0.5	Vr	lipto, spo, cut
2352	0.5-1	Ra	lipto, lama, spo, cut, res
2697 cg	≈ <b>1</b>	Ra	lipto, lama, bmite spo, cut, res, ?oil.
2805 - 2810	5-10	Co-Ab	spo, lipto, cut, res, lama.
2955 - 2960	5-10	Co	spo, cut, lipto, lama, bmite, res, ?oil.
3015	0.5-1	Ra- <b>V</b> r	lipto, lama, spo, ?oil.
3060 - 3065	>30	Ab	spo, lipto, sub, res, lama, bmite, cut, exs
3245 - 3250	0.5-1	Ra-Vr	lipto, lama, cut.
3335 - 3340	0.5-1	Ra	bmite, lipto, cut, lama.
3505 - 3510	≈ <b>0.</b> 5	Ra	bmite, lipto.
3565 - 3570	<b>≈0.5</b>	Ra	bmite, lipto.



TABLE 6

EXINITE MATERIAL ABUNDANCE AND FLUORESCENCE CHARACTERISTICS,

WINDERMERE-2

Depth (m)	Exinite Macerals	Lithology/Comments
1876	<pre>lipto(Vr;mY-mO), spo(Vr;mO), cut(Tr;mO)</pre>	Siltstone.
2352	<pre>lipto(Ra;mY-mO), lama(Ra;mO-dO), spo(Ra-Vr;mO-dO), cut(Vr;mO-dO), res(Tr;mO).</pre>	Shale; some exinites are oxidised.
2697	<pre>lipto(Ra;mO-dO), lama(Ra-Vr;mO-dO), bmite(Ra-Vr;dB), spo(Ra-Vr;mO-dO), cut(Vr;mO-dO), res(Tr;mO), ?oil(Tr;iY).</pre>	Siltstone; ?oil is commonly associated with bituminite. Some exinites appear to be slightly oxidised.
2805	<pre>spo(Co-Ab;mO-dO), lipto(Sp-Co;mO-dO), cut(Ra;mO-dO), res(Ra;mY-dO), lama (Ra;mO-dO).</pre>	Chiefly shale, 10-20% coal (clarite, duroclarite); some coals contain up to 25% exinite.
2955	<pre>spo(Sp-Co;m0-d0), cut(sp-Co;m0-d0), lipto(Sp;m0-d0); ?lama(Ra;m0), bmite (Ra;d0), res(Vr;m0), sub(Vr;nof1), ?oil(Tr;iG).</pre>	Chiefly siltstone and shale, 10-20% coal (duro-clarite and clarite); some coals contain up to 25% exinite. Oil generally occurs in the siltstones.
3015	<pre>lipto(Ra-Vr;mO), ?lama(Vr;mO-dB), spo(Tr;mO), ?oil(Tr;iY-iG).</pre>	Shale.
3065	<pre>spo(Ab;mO-dO), lipto(Ab;dO), sub(Co-Ab; nofl),res(Co;dO-nofl), lama(Sp;mO), bmite(Sp;dB), cut(Ra;dO-dB), exs(Ra;mO-dB).</pre>	Chiefly coal, 30-40% shale.
3245	<pre>lipto(Ra-Vr;m0), ?lama(Vr;d0), cut(Tr;d0).</pre>	Shale; some organic rich cavings contain 10-20% exinite.
3335	<pre>bmite(Ra;d0), lipto(Ra;m0), cut(Vr;d0), lama(Vr;m0).</pre>	Shale with minor coaly stringers.
3505	<pre>bmite(Ra-Sp;d0), lipto(Vr;m0-d0).</pre>	Siltstone.
3565	<pre>bmite(Ra;dO-dB), lipto(Ra;mO-dO).</pre>	Shale.

### KEY TO DISPERSED ORGANIC MATTER DESCRIPTIONS

## HACERAL GROUPS

## EXINITE HACERALS

V	Vitrinite
I	Inertinite
E	Exinite

spo Sporinite cut Cutinite Resinite res Suberinite sub Liptodetrinite lipto Fluorinite fluor Terpenite terp Exsudatinite exs Phytoplankton phyto Telalginite tela lama Lamalginite bmite Bituminite bmen Bitumen thuc Thucholite

## ABUNDANCE (by vol.)

Ma	Major	>15%
АЬ	Abundant	2-15%
Со	Common	1-2%
Sp	Sparse	0.5-1%
Ra	Rare	0.1-0.5%
٧r	Very Rare	20.1%
Tr	Trace	<0.1

## FLUORESCENCE COLOUR AND INTENSITY

6	Green	i	Intense
Υ	Yellow	m	Moderate
0	Orange	d	Dul 1
В	Brown	nof1	No Visible Fluorescence

7 TABLE ALKANE AND ALKENE COMPONENT ANALYSIS FROM PYROLYSIS-6C

Well name: UNDISCLOSED

Date: 1989

Sample:	3065
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Carbon No.	Carbon NoAlkane + Alker		ne		-A] kane			-Alkene		Alkane/Alkene
Cat non 140.	A	В	£	A	В	C	A	В	С	
i	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2	nd	nd	nd	nd	nd	nd	nd	nd	n <b>đ</b>	nd
3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5	2.209	1.8489	0.0604	1.467	1.2279	0.0401	0.742	0.6211	0.0203	1.98
6	1.267	1.0605	0.0347	0.500	0.4185	0.0137	0.767	0.5420	0.0210	0.65
7	1.073	0.8981	0.0293	0.583	0.4880	0.0159	0.490	0.4101	0.0134	1.19
8	1.062	0.8889	0.0290	0.502	0.4202	0.0137	0.560	0.4687	0.0153	0.90
9	0.988	0.8270	0.0270	0.478	0.4001	0.0131	0.510	0.4269	0.0139	0.94
10	1.193	0.9985	0.0326	0.736	0.6160	0.0201	0.457	0.3825	0.0125	1.61
11	1.995	1.6698	0.0546	0.351	0.2938	0.0096	1.644	1.3760	0.0450	0.21
12	0.584	0.4888	0.0160	0.257	0.2151	0.0070	0.327	0.2737	0.0089	0.79
13	1.417	1.1860	0.0388	1.221	1.0220	0.0334	0.196	0.1641	0.0054	6.23
14	1.638	1.3710	0.0448	1.638	1.3710	0.0448	nd	nd	nd	nd
15	2.072	1.7343	0.0567	1.570	1.3141	0.0429	0.502	0.4202	0.0137	3.13
16	1.595	1.3350	0.0436	1.398	1.1701	0.0382	0.197	0.1649	0.0054	7.10
17	1.153	0.9651	0.0315	0.975	0.8161	0.0267	0.178	0.1490	0.0049	5.48
18	1.110	0.9291	0.0304	0.922	0.7717	0.0252	0.188	0.1574	0.0051	4.90
19	0.688	0.5759	0.0188	0.578	0.4838	0.0158	0.110	0.0921	0.0030	5.25
20	0.617	0.5164	0.0169	0.451	0.3775	0.0123	0.166	0.1389	0.0045	2.72
21	0.453	0.3792	0.0124	0.400	0.3348	0.0109	0.053	0.0444	0.0014	7.55
22	0.277	0.2318	0.0076	0.230	0.1925	0.0063	0.047	0.0393	0.0013	4.89
23	0.234	0.1959	0.0064	0.204	0.1707	0.0056	0.030	0.0251	0.0008	6.80
24	0.154	0.1289	0.0042	0.137	0.1147	0.0037	0.017	0.0142	0. <b>0</b> 005	8.06
25	0.129	0.1080	0.0035	0.104	0.0870	0.0028	0.025	0.0209	0.0007	4.16
26	0.065	0.0544	0.0018	0.055	0.0460	0.0015	0.010	0.0084	0.0003	5.50
27	0.048	0.0402	0.0013	0.048	0.0402	0.0013	nd	nd	n <b>d</b>	nd
28	0.020	0.0167	0.0005	0.020	0.0167	0.0005	nd	nd	nd	nd
29	0.014	0.0117	0.0004	0.014	0.0117	0.0004	nd	nd	nd	nd
30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
31	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

nd = no data

= % of S2

= mg/g Rock = (mg/g Rock)/TOC

TABLE 8 PARAMETER SUMMARY FOR PYROLYSIS GAS CHROMATOGRAPHY

Well name: UNDISCLOSED

Date: 1989

Sample: 3065

Parameter						
rat ameter	A	В	С	D		
C1-C4 abundance (all compounds) C5-C8 abundance (all compounds) C5-C8 abundance (alkanes+alkenes) C9-C14 abundance (all compounds) C9-C14 abundance (alkanes+alkenes) C15-C31 abundance (all compounds) C15-C31 abundance (all compounds) C5-C31 abundance (all compounds) C5-C31 abundance (alkanes+alkenes) C5-C31 alkane abundance C5-C31 alkane abundance C5-C8 alkane/alkene C9-C14 alkane/alkene C15-C31 alkane/alkene C15-C31 alkane/alkene C5-C31 alkane/alkene C5-C31 alkane/alkene C5-C31 alkane/alkene C5-C31 alkane/alkene	24.18 13.95 5.61 40.95 7.82 20.92 8.63 75.82 22.06 14.84 7.22	20.239 11.676 4.696 34.275 6.541 17.510 7.222 63.461 18.460 12.420 6.040	0.661 0.382 0.153 1.120 0.214 0.572 0.236 2.074 0.603 0.406 0.197	1.193 1.494 4.666 2.056 0.242 0.758 0.365		
R PI x PC x TOC	29.65	24.818	O.GII	30.35		

nd = no data = % of S2 Α mg/g Rock В **==** 

(mg/g Rock)/TOC C 200

= (no units) D

C(C1-C4)+(Proportion alkenes x (C5-C31))] N.B. C1-C4 and C5-C31 are for all compounds R

PI = Production index = Pyrolysable carbon PC S2 = Rock-Eval S2 value TOC = Total Organic Carbon

TABLE 9

COMPARATIVE OIL ANALYSES, WINDERMERE -1 & 2

Well & Test	Depth m	Formation	C <sub>12+</sub> Composition N + Iso Naph Arom Res Asph	Alkane Ratios Np/Pr Pr/Ph Pr/n-C <sub>17</sub> Ph/n-C <sub>18</sub>	Ph/n-C <sub>18</sub>
Windermere -1 DST -1	1791-1858	Eumeralla (Heathfield sst mbr)	54.1 29.2 8.4 7.6 0.07	0.25 6.1 1.14	0.17
Windermere -2 DST -2A		3174-3230.7 Eumeralla (basal sst mbr)	48.9 30.7 15.9 4.5	0.33 5.7 0.86	0.14

<sup>\*</sup> Data from McKirdy (1987)

# BIOMARKER PARAMETERS OF SOURCE, MATURITY, MIGRATION AND BIODEGRADATION IN OILS FROM WINDERMERE -1 & 2

Well & Formation	Test & Depth (m)			S	Steranes	Si		Í			Terpanes	ies			A	Acyclic Alkanes	Alkar	es
rameter		1 2	2	က	4		9	7	ω	6	10	11	- 1	13	14	15	16	17
Windermere -1 Eumeralla (Heathfield sst member)**	DST 1 1791-1838	ı	6.8	- 6.8 11.1 0.82 1.1	0.82		0.90 0.57	0.57	0.08 3.7 0.05 1.4 0.17 0.04	3.7	0.05	1.4	0.17	0.04	6.1	6.1 0.43 1.1 0.17	1.1	0.17
Windermere -2 Eumeralla (basal sst member)	DST 2A 3174-3230.7	1	3.7	3.7 4.6 0.97 1.3	0.97		1.4 0.49	0.49	0.25 1.2 0.24 1.4 0.08	1.2	0.24	1.4	0.08	ı	5.7	5.7 0.55 0.86 0.14	0.86	0.14

See key (next page) for derivation and specificity of each parameter Data from McKirdy (1987)

KEY TO BIOMARKER PARAMETERS OF SOURCE, MATURITY, MIGRATION AND BIODEGRADATION

•

	KEY TO BIOMARKER PARAMETERS OF SOURCE, MATURITY, MIGRATION AND BIODEGRADATION	
Parameter	* Derivation	Specificity
1	C27 : C28 : C29 5a(H)14a(H)17a(H) 20R steranes	Source
2	$C_{29}$ 5 $\alpha(H)14\alpha(H)17\alpha(H)$ 20R sterane / $C_{27}$ 5 $\alpha(H)14\alpha(H)17\alpha(H)$ 20R sterane	Source
က	$C_{29}$ 138(H)17 $\alpha$ (H) 20R diasterane / $C_{27}$ 138(H)17 $\alpha$ (H) 20R diasterane	Source
7	$C_{29}$ 5a(H)14a(H)17a(H) 20S sterane / $C_{29}$ 5a(H)14a(H)17a(H) 20R sterane	Maturity, Biodegradation
5	C2, 138(H)17 $\alpha$ (H) 20S diasterane / C2, 138(H)17 $\alpha$ (H) 20R diasterane	Maturity
9	C <sub>29</sub> 5a(H)14b(H)17b(H) 20R sterane / C <sub>29</sub> 5a(H)14a(H)17a(H) 20R sterane	Maturity, Migration
7	C <sub>29</sub> 13 $\beta$ (H)17 $\alpha$ (H) 20R+20S diasteranes / C <sub>29</sub> 5 $\alpha$ (H) steranes	Migration, Source
80	C30 pentacyclic terpane/C30 17α(H)21β(H) hopane	Source
6	C2, 17 $\alpha$ (H)-22,29,30-trisnorhopane / C2, 18 $\alpha$ (H)-22,29,30-trisnorhopane (T $_{ m m}/T_{ m s}$ )	Maturity, Source
10	T <sub>S</sub> / C <sub>30</sub> 17α(H)21β(H) hopane	Maturity
11	C <sub>32</sub> 17α(H)218(H) 22S homohopane / C <sub>32</sub> 17α(H)218(H) 22R homohopane	Maturity
12	C <sub>30</sub> 17 $\beta$ (H)21 $\alpha$ (H) moretane / C <sub>30</sub> 17 $\alpha$ (H)21 $\beta$ (H) hopane	Maturity
13	$C_{29}$ 17 $\alpha(H)$ -25-norhopane / $C_{29}$ 17 $\alpha(H)$ -30-norhopane	Biodegradation
14	pristane / phytane	Source
15	2,6,10-trimethyltridecane / pristane	Maturity
. 16	pristane / n-heptadecane	Source, Biodegradation, Maturity
17	phytane / n-octadecane Source	Source, Biodegradation, Maturity

<sup>\*</sup> Ratios calculated from peak areas as follows:

Parameters 1-6 m/z = 217 mass fragmentogram Parameter 7 m/z = 217, 259 mass fragmentograms Parameters 8-13 m/z = 191 mass fragmentogram Parameters 14-17 capillary gas chromatogram of alkanes or whole oil/extract



## TABLE 11

## SUPPLEMENTARY SOURCE-DEPENDENT BIOMARKER RATIOS IN OILS FROM WINDERMERE -1 AND 2

Well and Formation	Test and Depth (m)	C <sub>30</sub> Hopane C <sub>29</sub> Steranes	$C_{15}$ , $C_{16}$ Drimanes $C_{30}$ Hopane	$C_{20}$ Isopimarane 16 $oldsymbol{eta}$ H-Phyllocladane
	<u>-</u>		( હ	
Windermere -1 Heathfield sst	DST 1	4.4	0.49	6.0
member Eumeralla Fm**	1791-1838		; ;	
Windermere -2 Basal sst mbr, Eumeralla Fm	DST 2A 3174-3230.7	0.33	23.1	2.5
* Parameter		18	19	20

## \* Measured from mass fragmentograms as follows:

Parameter 18 m/z 191, 217 Parameter 19 m/z 123, 191 Parameter 20 m/z 123

\*\* Data from McKirdy (1987)

TABLE 12

## OIL MATURITY BASED ON AROMATIC HYDROCARBON DISTRIBUTIONS \*

## WINDERMERE -1 & 2

Well & Test	Depth	MPI	MPR	MPDF	DNR	(a)	(q)	(a) (b) (c) (d) (e) (f)	alc (d)	(e)	(f)
Windermere -1 DST 1**	1791-1838	0.49	0.81 nd	þu	pu	0.70	0.70 N/A	0.85	N/A	0.85 N/A 0.57 nd	pu
Windermere -2 DST 2A	3174-3230.7	1.07	1.04	1.04 0.511 4.39	4.39	1.04	1.04 N/A	96.0	1.09	0.96 1.09 0.97 0.98	0.98

See key (next page) for determination of listed parameters
= Data from McKirdy (1987)
= Not determined
A = Not applicable
= Preferred value

## KEY TO AROMATIC MATURITY INDICATORS

Methylphenanthrene index (MPI), methylphenanthrene ratio (MPR), dimethylnaphthalene ratio (DNR) and calculated vitrinite reflectance ( $VR_{\text{calc}}$ ) are derived from the following equations (after Radke and Welte, 1983; Radke *et al.*, 1984):

	MOX		1.5 (2-MP + 3-MP)
	MPI	=	P + 1-MP + 9-MP
:	VR <sub>caic</sub> (a)	=	0.6 MPI + 0.4 (for VR < 1.35%)
	VR <sub>calc</sub> (b)	=	-0.6 MPI + 2.3 (for VR > 1.35%)
	MPR	=	2-MP 1-MP
	VR <sub>calc</sub> (c)	=	$0.99 \log_{10} MPR + 0.94 (VR = 0.5-1.7\%)$
	DNR	=	2,6-DMN + 2,7-DMN 1,5-DMN
	VR <sub>calc</sub> (d)	=	0.046  DNR + 0.89  (for VR = 0.9-1.5%)
Where	P 1-MP 2-MP 3-MP 9-MP 1,5-DMN 2,6-DMN 2,7-DMN		phenanthrene 1-methylphenanthrene 2-methylphenanthrene 3-methylphenanthrene 9-methylphenanthrene 1,5-dimethylnaphthalene 2,6-dimethylnaphthalene 2,7-dimethylnaphthalene

Peak areas measured from m/z 156 (dimethylnaphthalene), m/z 178 (phenanthrene) and m/z 192 (methylphenanthrene) mass fragmentograms of diaromatic and triaromatic hydrocarbon fraction isolated by thin layer chromatography.

Recalibration of the methylphanthrene index using data from a suite of Australian coals has given rise to another equation for calculated vitrinite reflectance (after Boreham  $et\ al.$ , 1988):

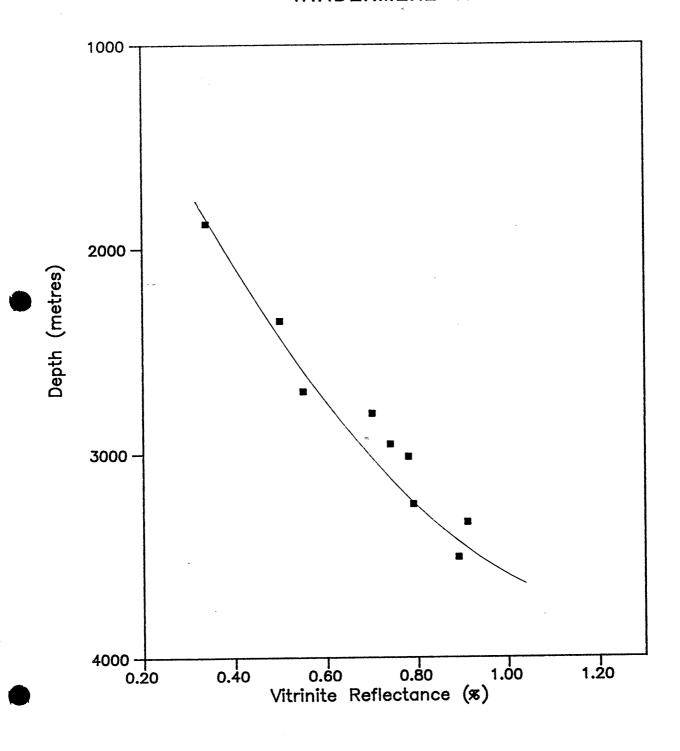
$$VR_{calc}$$
 (e) = 0.7 MPI + 0.22 (for VR < 1.7%)

The methylphenanthrene distribution ratio (MPDF) and calculated vitrinite reflectance  $VR_{calc}$  (f) is derived from the following equation (after Kvalheim *et al.*, 1987):

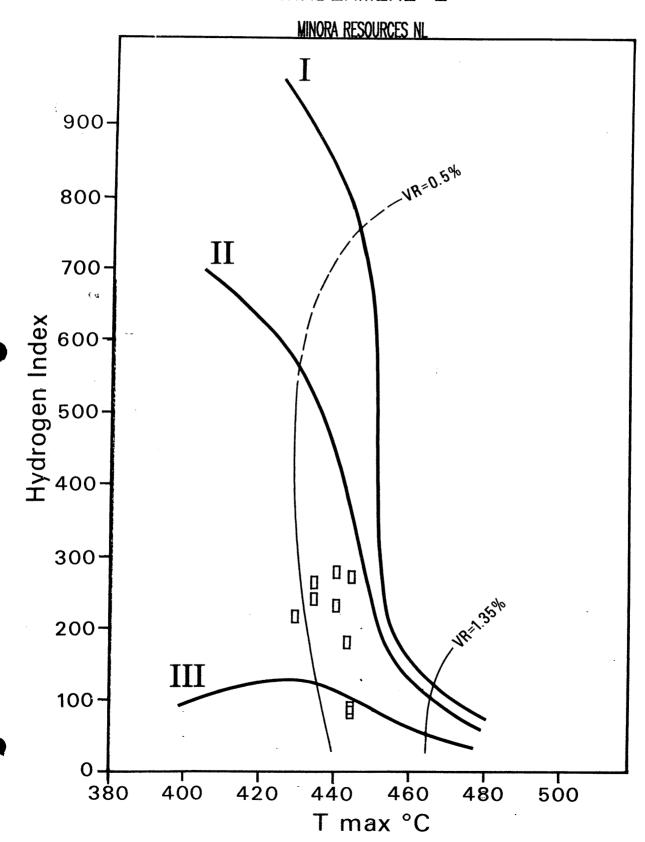
MPDF = 
$$\frac{(2-MP + 3-MP)}{(2-MP + 3-MP + 1-MP + 9-MP)}$$

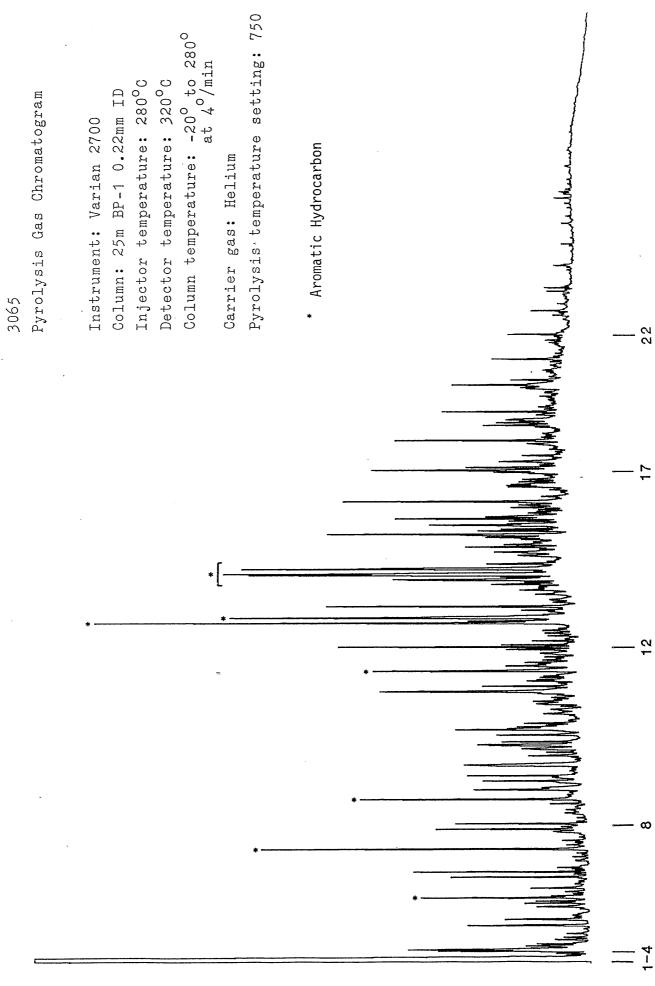
$$VR_{calc} (f) = -0.166 + 2.242 MPDF$$

## VITRINITE REFLECTANCE VERSUS DEPTH WINDERMERE-2



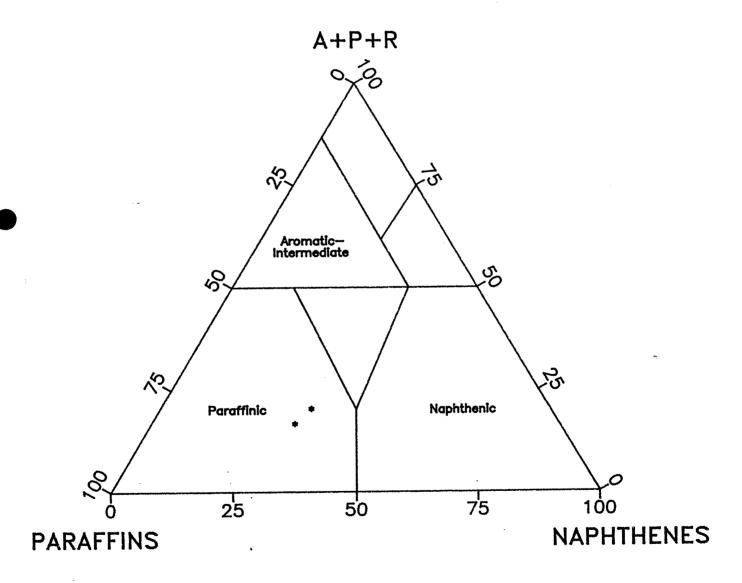
## WINDERMERE-2



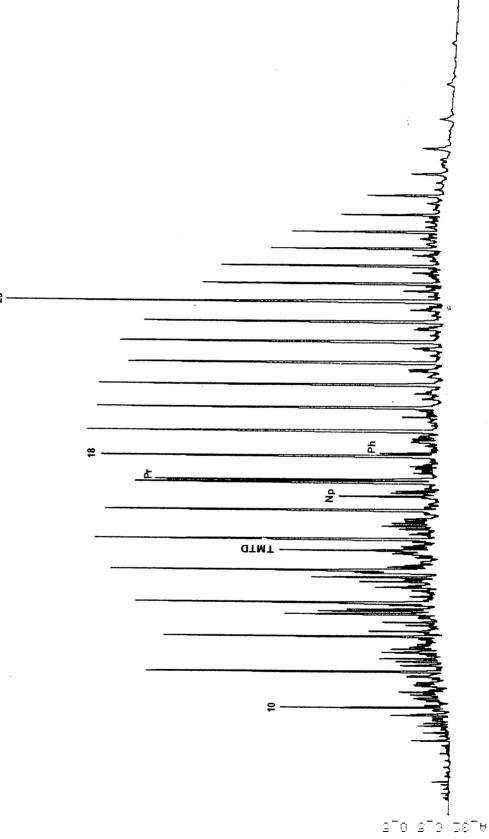


CARBON NUMBER

## WINDERMERE-1&2



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GC of Saturated Hydrocarbons

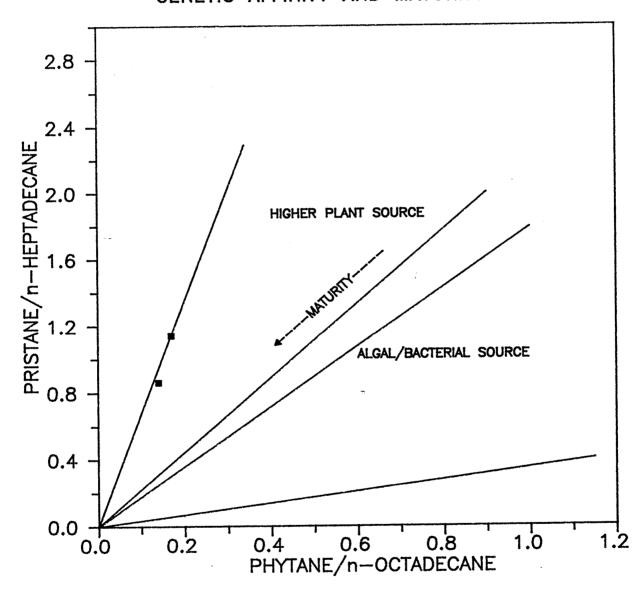
WINDERMERE -2

FIGURE

DST 2A

S\_0 S\_3 28\_A +

WINDERMERE-1&2
GENETIC AFFINITY AND MATURITY



## (j) amdel

## KEY TO AROMATIC MATURITY INDICATORS

Methylphenanthrene index (MPI), methylphenanthrene ratio (MPR), dimethylnaphthalene ratio (DNR) and calculated vitrinite reflectance ( $VR_{calc}$ ) are derived from the following equations (after Radke and Welte, 1983; Radke *et al.*, 1984):

			1.5 (2-MP + 3-MP)
	MPI	=	P + 1-MP + 9-MP
	VR <sub>calc</sub> (a)	=	0.6 MPI + 0.4 (for VR < 1.35%)
•	VR <sub>calc</sub> (b)	=	-0.6 MPI + 2.3 (for VR > 1.35%)
	MPR	=	2-MP 1-MP
	VR <sub>calc</sub> (c)	=	$0.99 \log_{10} MPR + 0.94 (VR = 0.5-1.7\%)$
	DNR	=	$\frac{2,6-\text{DMN} + 2,7-\text{DMN}}{1,5-\text{DMN}}$
	VR <sub>calc</sub> (d)	=	0.046  DNR + 0.89  (for VR = 0.9-1.5%)
Where	P 1-MP 2-MP 3-MP 9-MP 1,5-DMN 2,6-DMN 2,7-DMN	= = = = = = =	phenanthrene 1-methylphenanthrene 2-methylphenanthrene 3-methylphenanthrene 9-methylphenanthrene 1,5-dimethylnaphthalene 2,6-dimethylnaphthalene 2,7-dimethylnaphthalene

Peak areas measured from m/z 156 (dimethylnaphthalene), m/z 178 (phenanthrene) and m/z 192 (methylphenanthrene) mass fragmentograms of diaromatic and triaromatic hydrocarbon fraction isolated by thin layer chromatography.

Recalibration of the methylphanthrene index using data from a suite of Australian coals has given rise to another equation for calculated vitrinite reflectance (after Boreham et al., 1988):

$$VR_{calc}$$
 (e) = 0.7 MPI + 0.22 (for VR < 1.7%)

The methylphenanthrene distribution ratio (MPDF) and calculated vitrinite reflectance  $VR_{calc}$  (f) is derived from the following equation (after Kvalheim et al., 1987):

MPDF = 
$$\frac{(2-MP + 3-MP)}{(2-MP + 3-MP + 1-MP + 9-MP)}$$

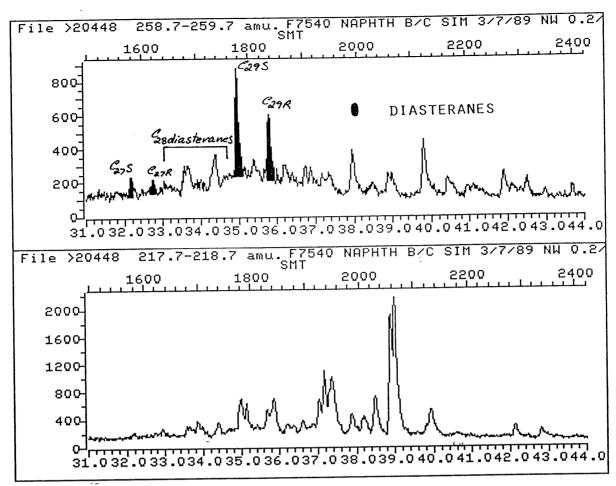
$$VR_{caic} (f) = -0.166 + 2.242 MPDF$$

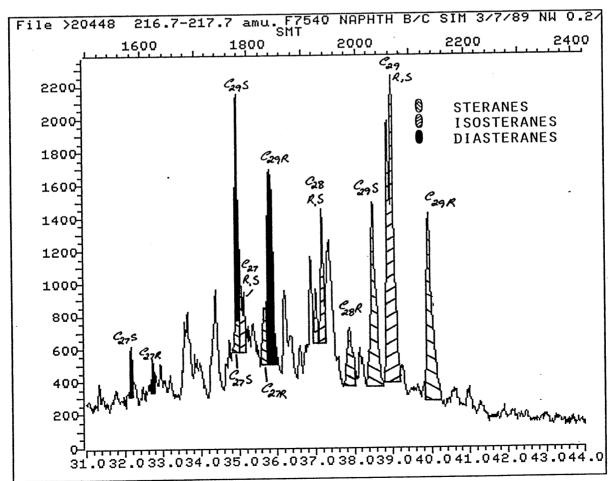


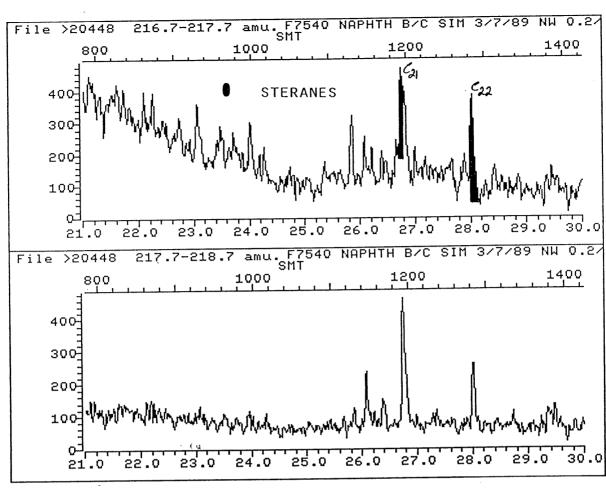
FIGURES 8 - 16

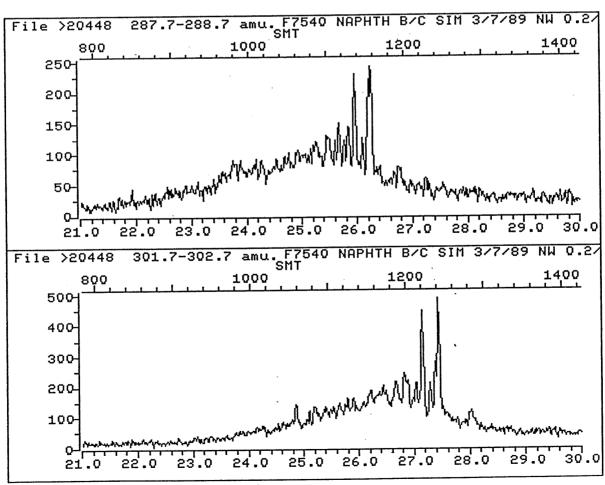
## MASS FRAGMENTOGRAMS OF NAPHTHENES IN WINDERMERE -2, DST 2A, OIL SHOW

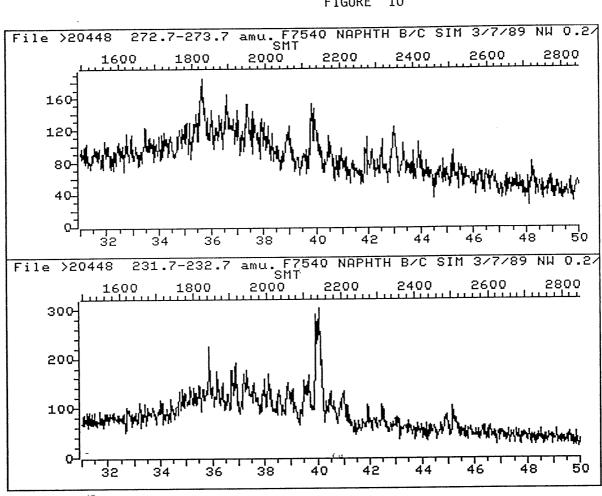
Figs 8,9	m/z	217, 259	Steranes, diasteranes
Figs 10	m/z	231	4-methyl steranes
Figs 11	m/z m/z	83 183	Alkylcyclohexanes Isoprenoid alkanes
Figs 12,13	m/z	191	Tricyclic & Tetracyclic Terpanes
Fig 14	m/z	123	Drimanes, rearranged drimanes
Fias 15.16	m/z	123	Diterpanes

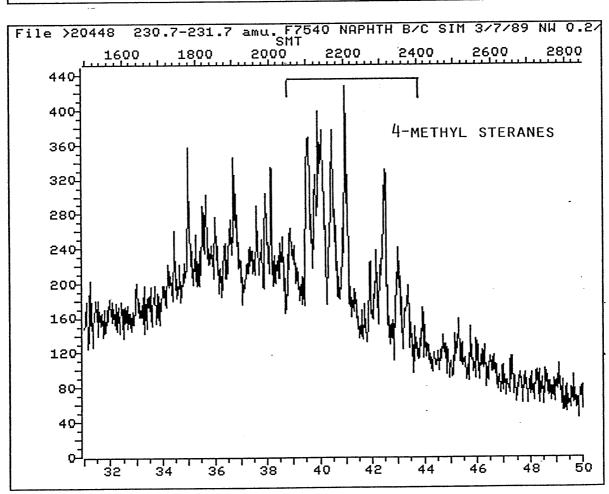


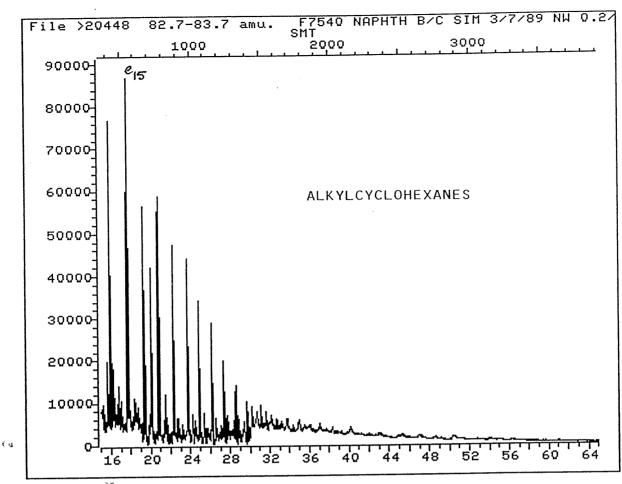


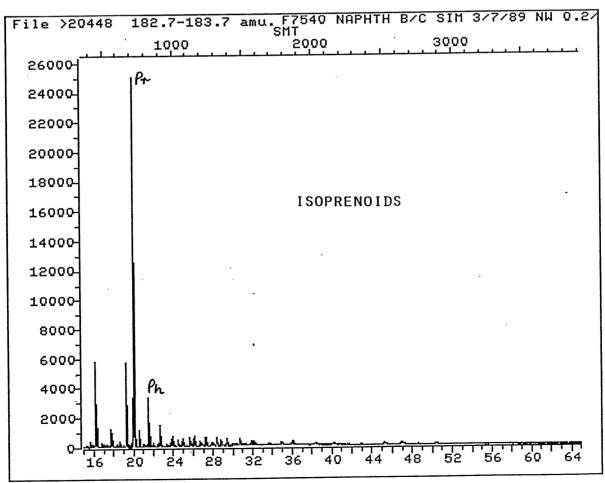


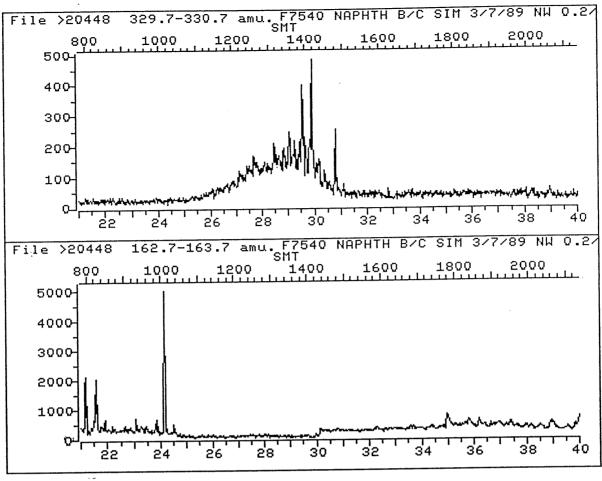


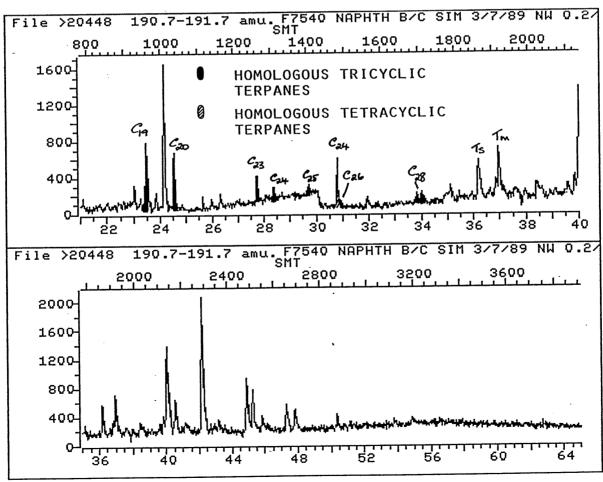


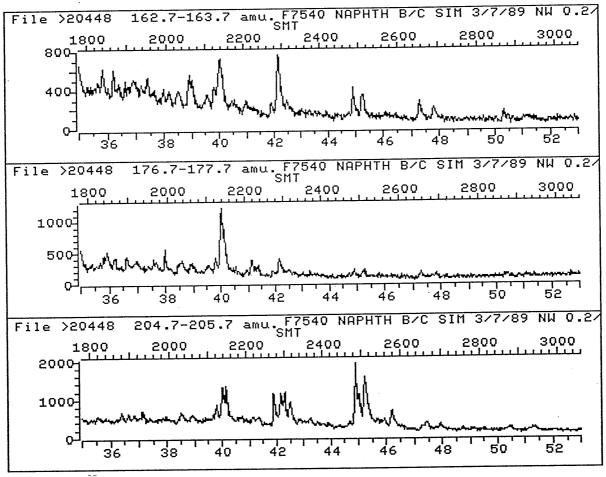


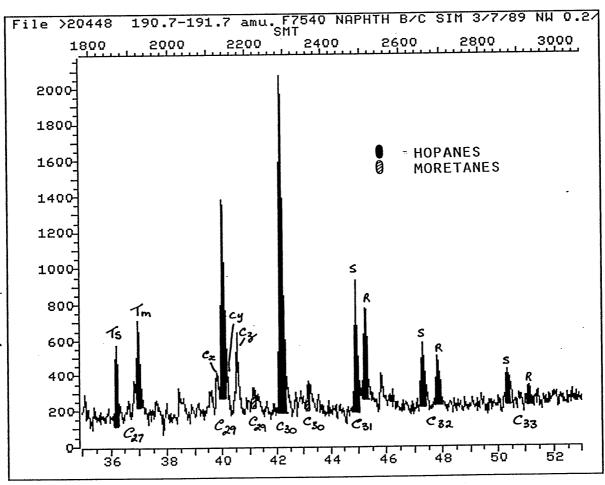


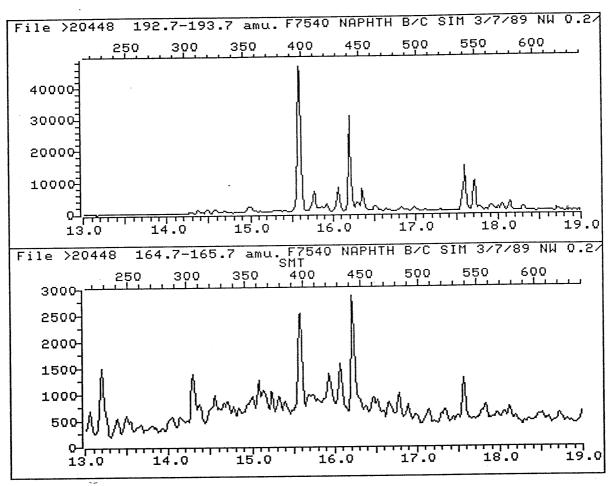


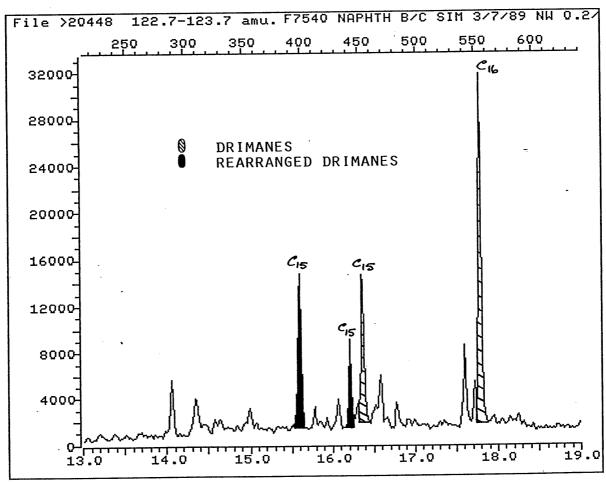


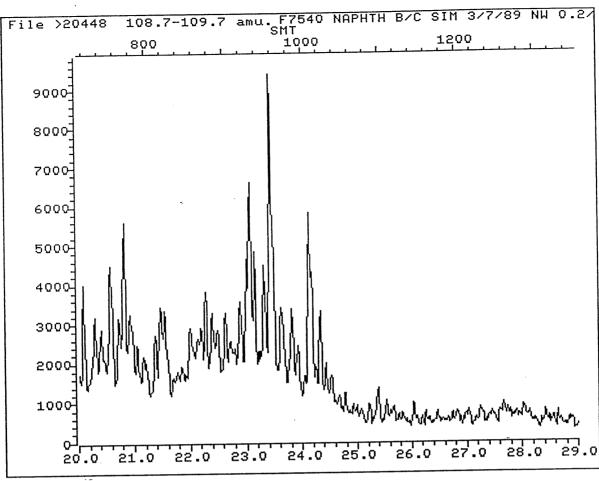


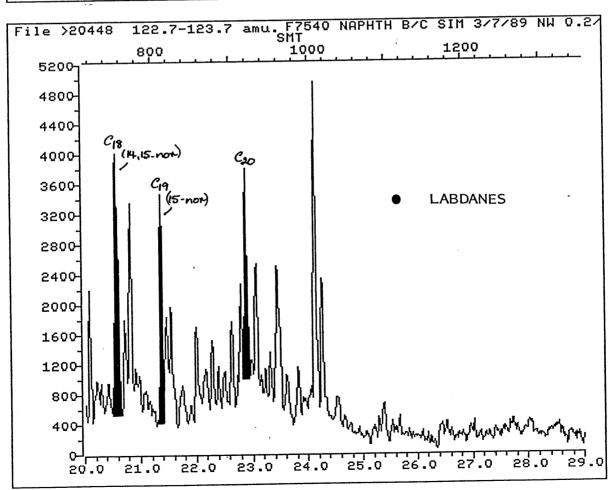


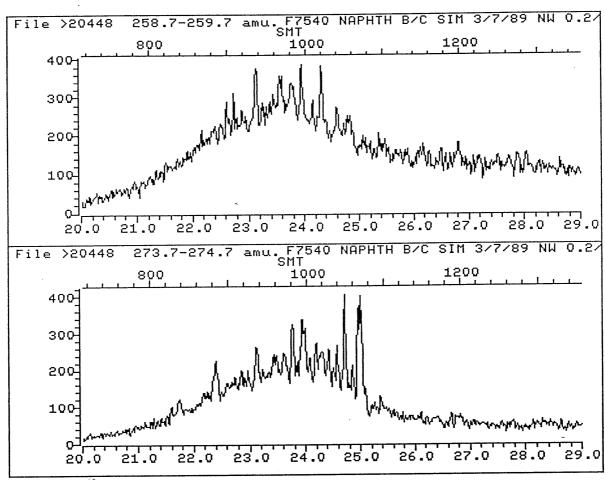


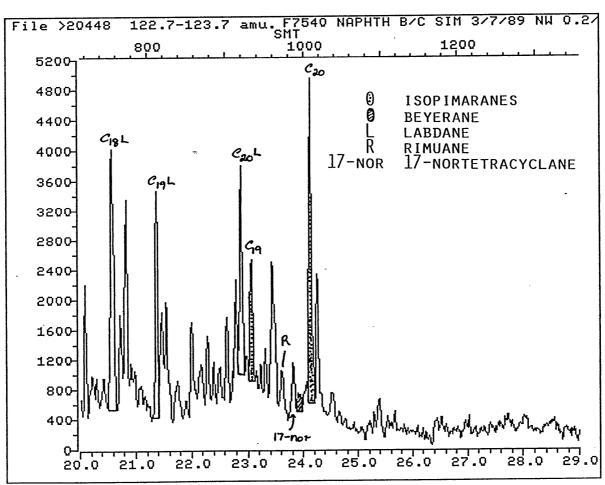




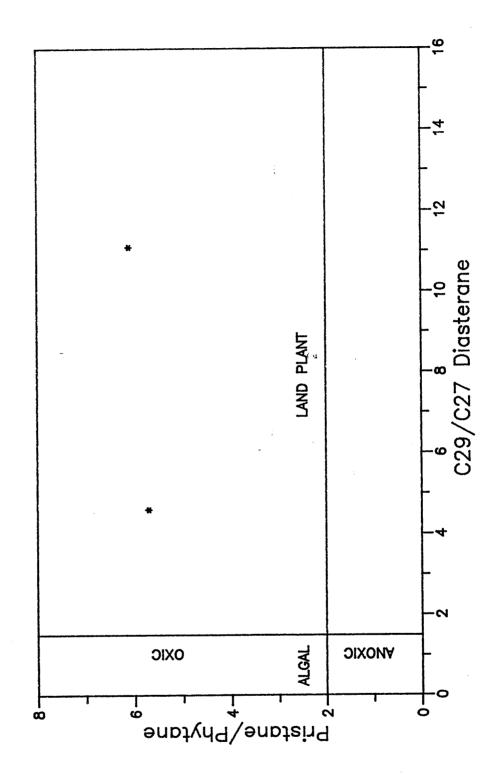








WINDERMERE-1&2 OIL SOURCE AFFINITY





## **FIGURES** 18, 19

## MASS FRAGMENTOGRAMS OF AROMATIC HYDROCARBONS IN WINDERMERE -2, DST 2A, OIL SHOW

Fig 18 m/z 178 + 191 + 192 + 205 + 206

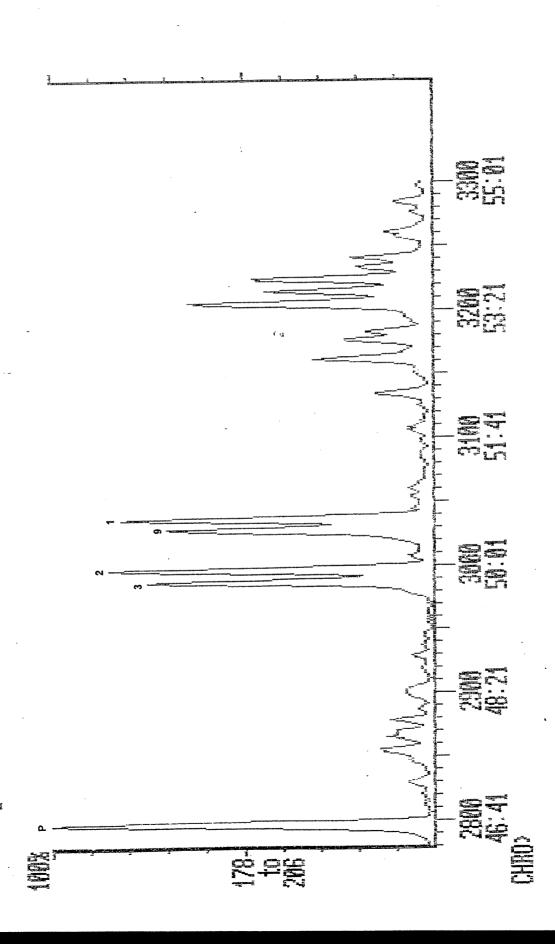
phenanthrene, methylphenanthrenes, dimethylphenanthrenes

Fig 19 m/z 156 + 169 + 170

dimethylnaphthalenes, trimethylnaphthalenes

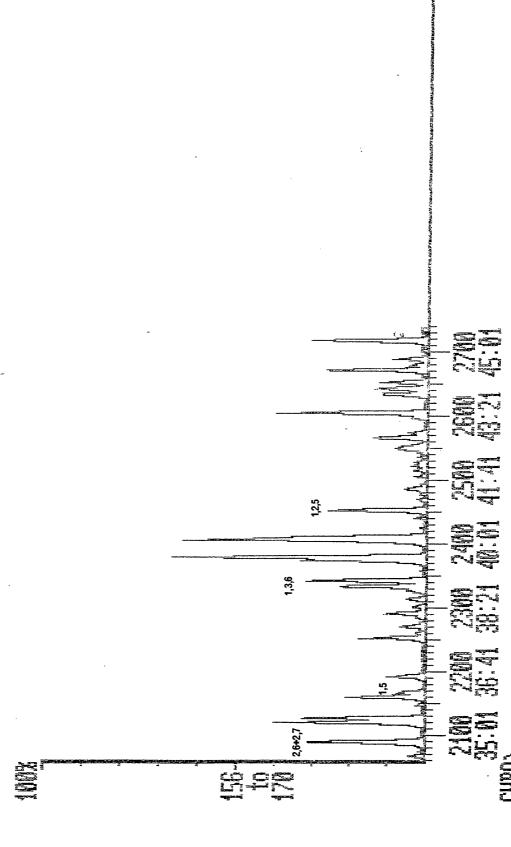
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# APPENDIX 1

# FORMATION TOPS, WINDERMERE -2

Unit	Depth (KB) metres
Gellibrnad Marl	100 357
Clifton Fm	425
Dilwyn Fm Pember Mudstone	667.2
Pebble Point Fm	715.5
Paaratte Fm	750
Belfast Mudstone	950
Eumeralla Fm	
- Upper	1009.3
- Middle	1170
<ul> <li>Heathfield sst Mbr</li> </ul>	?1671
- Lower	1806.6
- Basal sst Mbr	?3187
Crayfish Fm	?3359
TD	3595



APPENDIX 2

HISTOGRAMS OF VITRINITE REFLECTANCE MEASUREMENTS, WINDERMERE -2

Well Name:

WINDERMERE-2

Depth:

1876 m

# Sorted List

-0.26

0.30

0.32

0.32

0.43

0.43

Number of values=

6

Mean of values

0.34

Standard Deviation

0.06

# HISTOGRAM OF VALUES

Reflectance values multiplied by 100

26-28 \*

29-31 \*

32-34 \*\*

35-37

38-40

41-43 \*\*

Well Name:

WINDERMERE-2

Depth:

2352 m

## Sorted List

0.37	0.48	0.53
0.39	0.49	0.54
0.40	0.49	0.54
0.40	0.49	0.58
0.41	0.51	0.61
0.42	0.51	0.62
0.46	0.52	0.63
0.46	0.53	
0.47	0.53	
0.47	0.53	

Number of values=

27

Mean of values Standard Deviation

0.50

n 0.07

# HISTOGRAM OF VALUES Reflectance values multiplied by 100

37-39	**
40-42	****
43-45	
46-48	****
49-51	****
52-54	****
55-57	**
58-60	*
61-63	***

Well Name:

WINDERMERE-2

Depth:

2697 m

## Sorted List

0.56
0.56
0.58
0.60
0.61
0.63
0.65
0.70
0.73

Number of values= 19

Mean of values 0.55 Standard Deviation 0.09

## HISTOGRAM OF VALUES Reflectance values multiplied by 100

42-44 \*\*\* 45-47 -\* 48-50 \*\*\* 51 - 53\* 54-56 \*\* 57-59 \*\*\* 60-62 \*\* 63-65 \*\* 66-68 69-71 72-74

Well Name:

WINDERMERE-2

33

Depth:

2805-2810 m

## Sorted List

0.61	0.73	0.80	0.86
0.65	0.74	0.80	0.87
0.67	0.74	0.80	0.91
0.68	0.74	0.81	
0.68	0.75	0.82	
0.69	0.76	0.82	
0.71	0.76	0.82	
0.71	0.79	0.83	
0.73	0.79	0.84	
0.73	0.80	0.86	

Number of values=

Mean of values 0.77 Standard Deviation 0.07

# HISTOGRAM OF VALUES Reflectance values multiplied by 100

61-63 \* 64-66 \* 67-69 \*\*\*\* 70-72 \*\* 73-75 \*\*\*\*\* 76-78 \*\* 79-81 \*\*\*\*\* 82-84 \*\*\*\* 85-87 \*\*\* 88-90 91-93 \*

Well Name:

WINDERMERE-2

Depth:

2955-2960

## Sorted List

0.62 0.87 0.67 0.91 0.69 0.93 0.71 0.76 0.76 0.79

0.81 0.82 0.84

Number of values=

13

Mean of values 0.78 Standard Deviation 0.09

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

62-64 \* 65-67 \* 68-70 \* 71-73 \* 74-76 \*\* 77-79 \* 80-82 \*\* 83-85 \* 86-88 \* 89-91 \* 92-94 \*

Well Name:

WINDERMERE-2

Depth:

3015 m

## Sorted List

0.72	0.91
0.74	0.92
0.75	0.95
0.80	0.97
0.80	0.97
0.82	0.97
0.82	1.04
0.85	
0.87	
0.91	

Standard Deviation

Number of values 17
Mean of values 0.87

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

0.09

72-74 \*\* 75-77 \* 78-80 \*\* 81-83 \*\* 84-86 \* 87-89 \* 90-92 \*\*\* \* 93-95 \*\*\* 96-98 99-101 102-104 \*

Well Name: WINDERMERE-2

Depth: 3245-3250 m

## Sorted List

0.66 0.82 0.70 0.82 0.72 0.87 0.73 0.90 0.74 0.91 0.76 0.76

0.79 0.80 0.81

Number of values=

Mean of values 0.79 Standard Deviation 0.07

HISTOGRAM OF VALUES Reflectance values multiplied by 100

15

66-68 \* 69-71 \* 72-74 \*\*\* 75-77 \*\* 78-80 \*\* 81-83 \*\*\* 84-86 87-89 \* \*\* 90-92

Well Name: WINDERMERE-2 Depth: 3335-3340 m

# Sorted List

0.77 1.07 0.82 0.84 0.87 0.88 0.89 0.89 0.90 1.03 1.04

Number of values= 11

Mean of values 0.91 Standard Deviation 0.09

# HISTOGRAM OF VALUES Reflectance values multiplied by 100

77-79 \* 80-82 \* 83-85 \* 86-88 \*\* 89-91 \*\*\* 92-94 95-97 98-100 101-103 104-106 \* 107-109

Well Name:

WINDERMERE-2

Depth:

3505-3510 m

## Sorted List

0.69	0.75	0.83	0.88
0.70	0.76	0.84	0.90
0.71	0.76	0.84	0.91
0.71	0.78	0.85	0.91
0.72	0.81	0.86	
0.73	0.81	0.87	
0.74	0.81	0.87	
0.75	0.81	0.87	
0.75	0.83	0.87	
0.75	0.83	0.88	

Number of values=

34

Mean of values

0.81

Standard Deviation

0.07

## HISTOGRAM OF VALUES

Reflectance values multiplied by 100

69-71 \*\*\*\*
72-74 \*\*\*
75-77 \*\*\*\*\*\*
78-80 \*
81-83 \*\*\*\*\*\*
84-86 \*\*\*\*
87-89 \*\*\*\*\*\*

\*\*\*

90-92



APPENDIX 3

PHOTOMICROGRAPHS OF DISPERSED ORGANIC MATTER, WINDERMERE -2

#### PE907892

This is an enclosure indicator page. The enclosure PE907892 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907892 has the following characteristics:

ITEM\_BARCODE = PE907892
CONTAINER\_BARCODE = PE902151

NAME = SEM Core Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = SEM Core Photographs Plate 1 & 2

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

 $DATE_RECEIVED = 9/11/89$ 

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

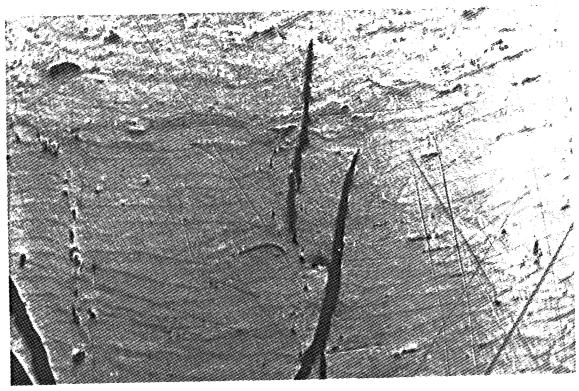
CONTRACTOR = Amdel

CLIENT\_OP\_CO = Minora Resources NL

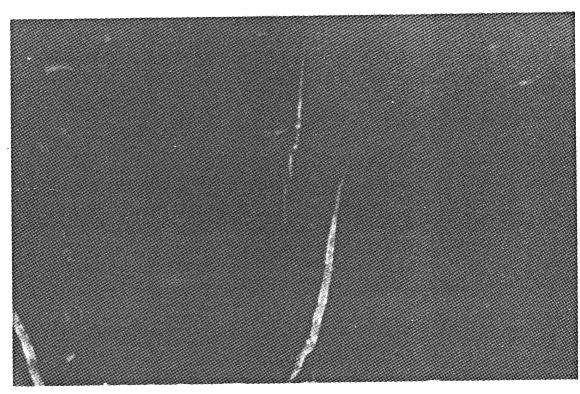
(Inserted by DNRE - Vic Govt Mines Dept)







Reflected Light Plate 1: 3060 - 3065 m Exsudatinite (primary oil; black veins) occurs with suberinite (moderate grey) in this vitrinite (light grey) rich shale. Field Dimension: 0.26 x 0.18 mm



Fluorescence Mode Plate 2: Same field as above Exsudatinite and liptodetrinite have a moderate orange fluorescence whilst suberinite fluorescence is notably "dull".

#### PE907893

This is an enclosure indicator page. The enclosure PE907893 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907893 has the following characteristics:

ITEM\_BARCODE = PE907893
CONTAINER\_BARCODE = PE902151

NAME = SEM Core Photograph

BASIN = OTWAY
PERMIT = PEP 111
TYPE = WELL

SUBTYPE = CORE\_PHOTO

DESCRIPTION = SEM Core Photographs Plate 3 & 4

(Enclosure from Appendix

G--Petrological Report--of Well Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

DATE\_RECEIVED = 9/11/89

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR = Amdel

CLIENT\_OP\_CO = Minora Resources NL

(Inserted by DNRE - Vic Govt Mines Dept)



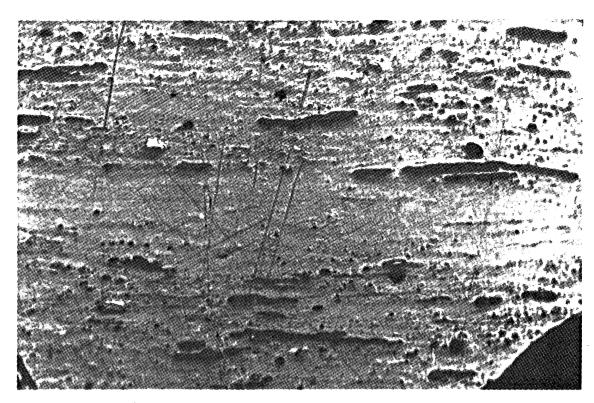


Plate 3: 3060-3065~m Reflected Light This is a more typical field of view of this vitrinite rich coal. Field Dimension: 0.26~x~0.18~mm

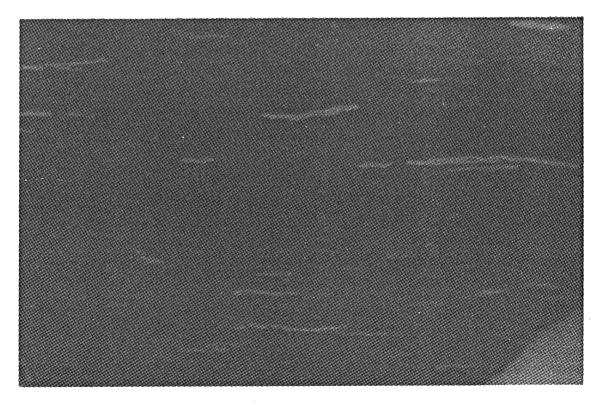


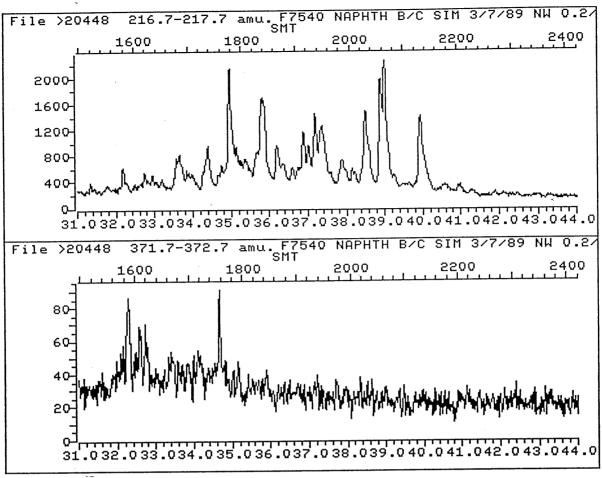
Plate 4: Same field as above Fluorescence Mode The majority of the eximite in this coal consists of sporinite and liptodetrinite.

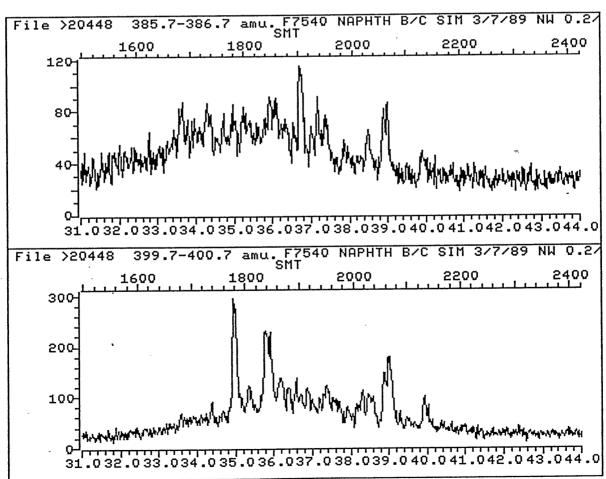


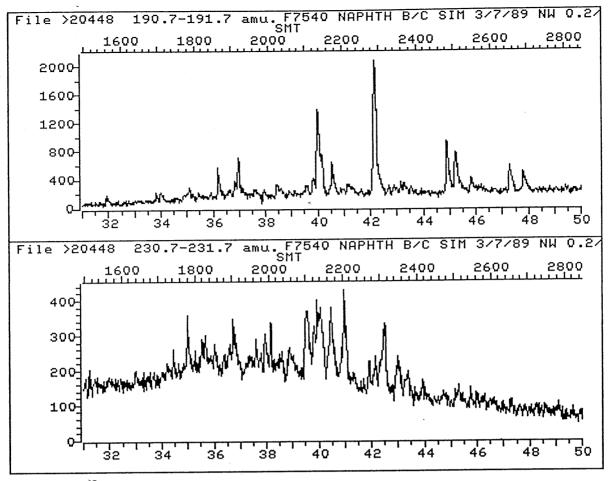
# APPENDIX 4

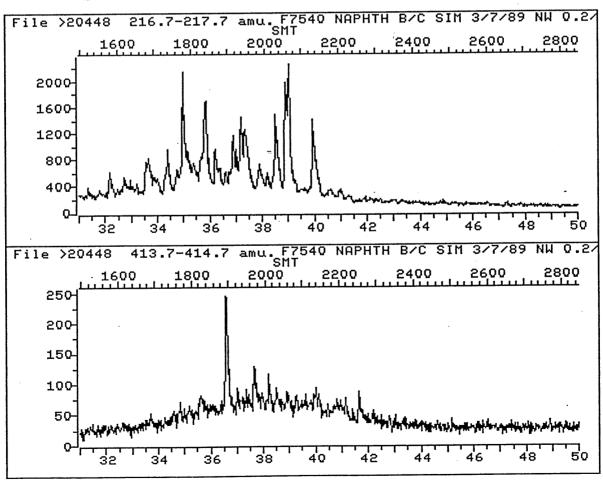
OTHER MASS FRAGMENTOGRAMS OF NAPHTHENES IN OIL

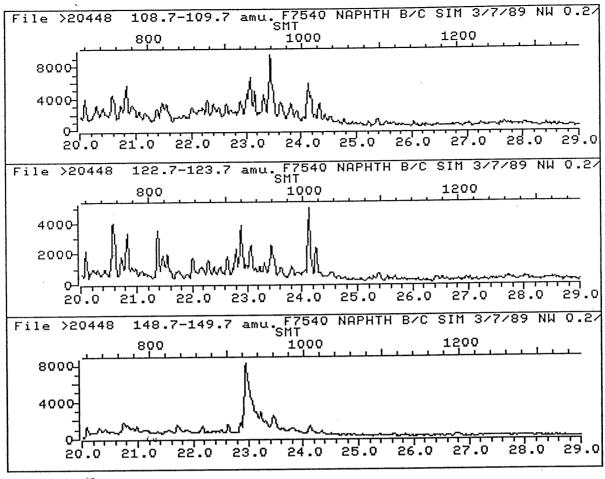
FROM WINDERMERE -2, DST 2A

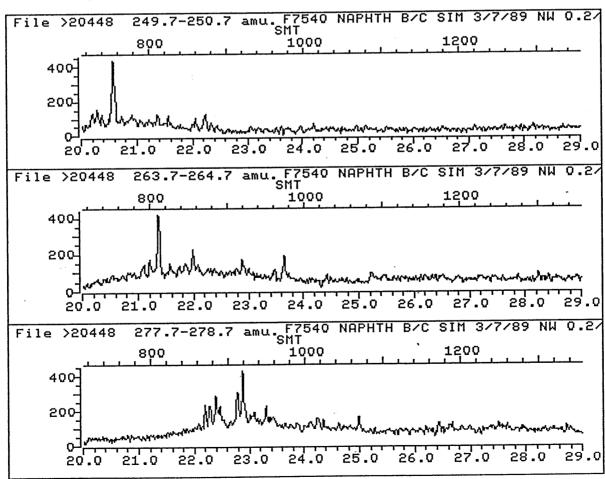


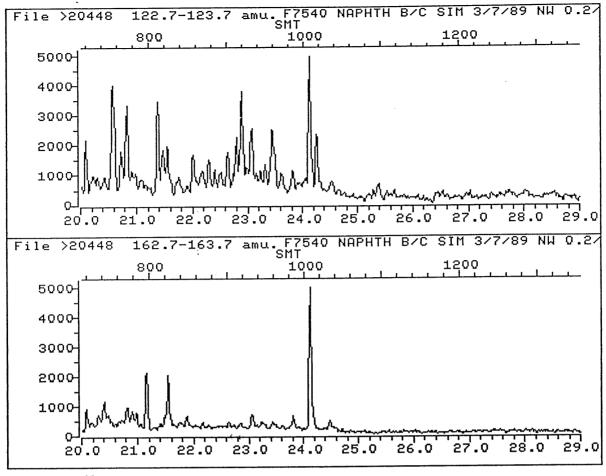


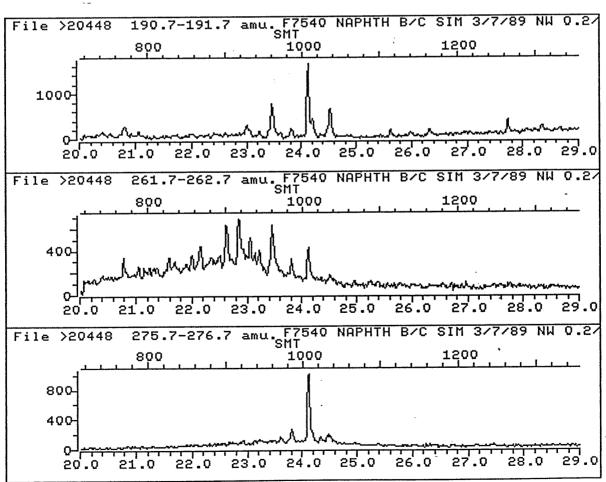


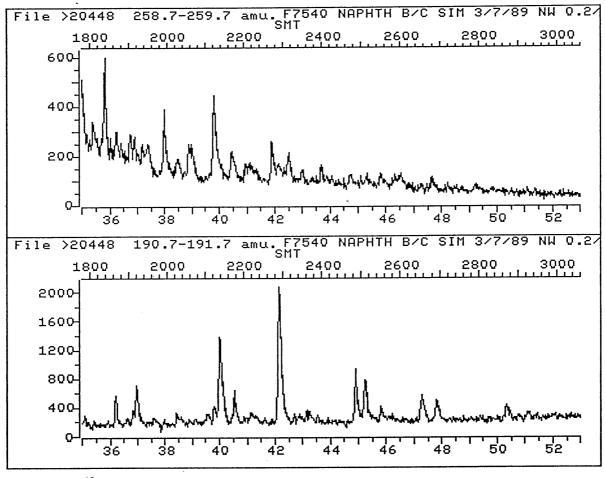


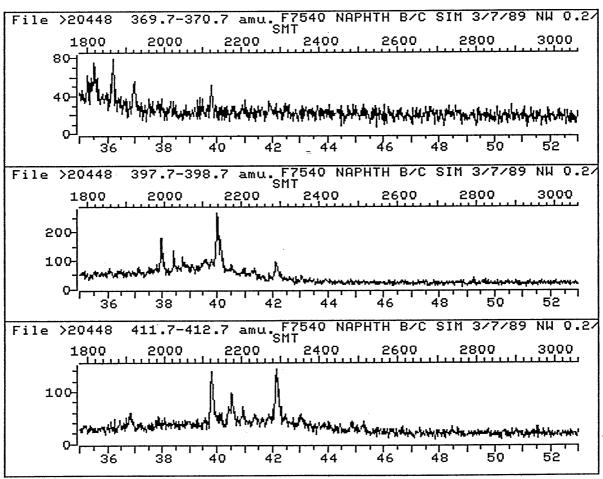














APPENDIX 5

WATER ANALYSIS, WINDERMERE -2, DST 1

Sample ID. WINDERMERE 2 DST 1

1	Chemical Composition			Derived Data	·
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		mg/L	me/L	 	mg/L
Cations   Calcium   Magnesium   Sodium   Potassium	(Ca) (Mg) (Na) (K)	3877.0 2.0 3172.0 1322.0	0.165 137.973	Total Dissolved Solids A. Based on E.C. B. Calculated (HCO3=CO3)	24350 21413
Anions Hydroxide Carbonate Bi-Carbonate Sulphate	(OH) (CO3)	322.8 128.0		Total Hardness Carbonate Hardness Non-Carbonate Hardness Total Alkalinity (Each as CaCO3)	9689 290 9399 290
Chloride	(Cl)	12750	359.145	Totals and E	Balance
   Nitrate	(NO3)	0.6	0.010	Cations (me/L) 365.4 Diff= Anions (me/L) 367.1 Sum = 7	1.70 32.52
Other Analyse	<b>95</b>			ION BALANCE (Diff*100/Sum) =  Sodium / Total Cation Ratio  Remarks	0.23%
1 1 1 1 1				RECOVERED 299M OF MUD&MUDDY WATER	
	(E.C) 5/cm at 25		7.0 33400		
Resistivity (	Ohm.M at 2	5°C	0.299	Note: mg/L = Milligrams per me/L = MilliEqivs.per	

Name:	
Address:	

MR B.WATSON

PETROLEUM SERVICES

AMDEL LTD ADELAIDE

Formation Type Point

HEATHFIELD MBR

Time Interval

SAMPLE CHAMBER

Geologist

Date Collected

Date Received Collected by

20-3-89 12-4-89 D.A.SHORT Depth

1775.2-1802.3M

APPENDIX L
PALYNOLOGY

# PALYNOLOGY OF MINORA WINDERMERE-2

ONSHORE OTWAY BASIN, VICTORIA

BY

ROGER MORGAN
Box 161
MAITLAND 5573
(088) 322795
Fax (088) 322658

# PALYNOLOGY OF MINORA WINDERMERE-2

# ONSHORE OTWAY BASIN, VICTORIA

## BY

# ROGER MORGAN

	CONTENTS	PAGE
I	SUMMARY	3
ΙΙ	INTRODUCTION	4
III	PALYNOSTRATIGRAPHY	5
IV	CONCLUSIONS	11
V	REFERENCES	12
	FIGURE 1. ZONATION SUMMARY  FIGURE 2. MATURITY PROFILE, MINORA WINDER  APPENDIX I PALYNOMORPH DISTRIBUTION DATA  - SPORES AND POLLEN	MERE-2
•	- DINOFLAGELLATES	

### I SUMMARY

- 1000-20m (cutts): upper <u>T.pachyexinus</u> Zone: Santonian: nearshore marine (<u>I.cretaceum</u> Zone): immature (minor Otway Group components at 1010-20m presumed reworked)
- 1090-1200m (cutts) : <u>P.pannosus</u> Zone : Late Albian: probably non-marine : marginally mature
- 1290-1490m (cutts): upper <a href="C.paradoxa">C.paradoxa</a> Zone: mid Albian : non-marine: marginally mature
- 1650m (cutts)-1748 (core) : lower <u>C.paradoxa</u> Zone : mid Albian : non-marine : early mature
- 1825m (cutts)-2007m (swc) : <u>C.striatus</u> Zone : early Albian : non-marine : early mature
- 2240m (swc)-3290m (cutts)(3200m swc) : C.hughesi Zone :
  Aptian : non-marine : mature 2240-3200m, peak
  mature 3245-3290m
- 3335m (cutts)-3570m (cutts): F.wonthaggiensis Zone: late Neocomian: non-marine, some lacustrine influence: peak mature.

Breakdown is fairly straight forward; cuttings are generally fairly clean of downhole contamination. Sampled section comprised a condensed Sherbrook Group, normal Eumeralla Formation and a thin section of Crayfish Formation. Top Crayfish unconformity is expected in or near the gap 3290 to 3335m. The intra Eumeralla unconformity is expected in or near the gap 1748-1825m.

#### II INTRODUCTION

Ed Kopson of Minora Resources submitted 25 samples (14 cuttings, 10 swcs and 1 conventional core) after well completion. These were in addition to 7 "hot" cuttings samples submitted in 3 groups during drilling, to help locate top Crayfish Formation and therefore TD, ahead of the logs. Results were submitted as available and this report details the final interpretation of results from these samples.

Palynomorph occurrence date are shown as Appendix I and form the basis for the assignment of the samples to seven spore-pollen units of Santonian to late Neocomian age. The Cretaceous spore-pollen zonation is essentially that of Playford and Dettmann (1969), but has been significantly modified and improved by various authors since, and most recently discussed in Helby et al. (1987) as shown on figure 1.

Cretaceous dinoflagellates are seen in only a few samples, and are discussed within the recent zonation framework of Helby et al. (1987), as on figure 1.

Maturity data are generated in the form of Spore Colour Index and plotted in figure 2. The oil window corresponds to spore colours of light-mid brown (2.7) to dark brown (3.6) and vitrinite reflectances of 0.6% to 1.3% respectively. Geological factors and kerogen factors can modify this window in a minor way, and instrumental geochemistry offers more quantitative and repentable measurements.

	AGE	SPORE - POLLEN ZONES	DINOFLAGELLATE ZONES		
	Early Oligocene	P. tuberculatus			
	Late Eocene	upper N. asperus	P. comatum		
		middle N. asperus	V. extensa		
	Middle Eocene	lower N. asperus	D. heterophlycta		
	Wilddle Locelle	P. asperopolus	W. echinosuturata W. edwardsii		
2	,	upper M. diversus	W. thompsonae W. ornata		
Tertiary	Early Eocene	middle M. diversus	W. waipawaensis		
T 9	Larry Locone	middle M. diversus	W. hyperacantha		
<u>~</u>		lower M. diversus	yv. nyperacantha		
Early		upper L. balmei	A. homomorpha		
	Paleocene	lower L. balmei-	E. crassitabulata		
			T. evittii		
		T. longus	· M. druggii		
	Maastrichtian	1. Tongus			
JS	Campanian	T. IIIIei	l-korojonense		
Cretaceous	Jampaman	N. senectus	X. australis		
tac	_		N. aceras		
Ö	Santonian	T. pachyexinus	l. cretaceum O. porifera		
1 1	Coniacian				
Late	Turonian "	C. triplex	C. striatoconus		
	**		P. infusorioides		
	Cenomanian	A. distocarinatus			
	Late	P. pannosus			
	Albian Middle	upper C. paradoxa			
	Early	lower C. paradoxa	-		
Sn.	Lany	C. striatus .			
Cretaceous	A-4:	upper C. hughesi	,		
Cret	Aptian	Aptian lower C. hughesi			
Early	Barremian				
Ea	Hauterivian	F. wonthaggiensis			
	Valanginian	upper C. australiensis	-		
	Berriasian	lower C. australiensis			
Juras.	Tithonian	R. watherocensis			

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-	` <b>&gt;</b>	7(	PTT		immature					•	pos	t mature	OIL
	GE	ZONE	yellow yellow					light	brow	'n	ırk ·	black	COLOUR
			DEPTH(thous.m)	0.5	1,0	1.5	2,0	2.5	3.0	3,5		0 4,5 5,0	: TAI
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			5 <sup>.</sup>										

FIGURE 2 MATURITY PROFILE, WINDERMERE 2

### III PALYNOSTRATIGRAPHY

A. 1000-20m (cutts): upper <u>T.pachyexinus</u> Zone (I.cretaceum Zone)

These two cuttings samples are assigned to the Tricolporites pachyexinus Zone of Santonian age on the presence of T.pachyexinus (=T.apoxyexinus) The upper half of the without younger indicators. zone is clearly indicated by the scarcity of Amosopollis cruciformis and the dinoflagellate data. Cuticle and inertinite dominate the residues and Proteacidites spp. are the dominant spore-pollen taxa. Age significant taxa include Australopollis obscuris, Clavifera triplex, Ornamentifera sentosa, Phyllocladidites mawsonii and Tricolpites confessus. Minor Paleogene caving (Nothofagidites emarcidus) is seen in both samples. Minor Albian Otway Group reworking (A.spinulosus, C.paradoxa) and minor Permian and Triassic reworking are seen at 1010-20m only.

Dinoflagellates comprise 50 % of palynomorphs and are quite diverse (15-20) species). Nearshore environments are therefore indicated.

Heterosphaeridium heteracanthum is dominant, but the co-occurence of Isabelidinium belfastense with I.cretaceum, Odontochitina porifera and Hexagonifera glabra indicates the upper part of the I.cretaceum Dinoflagellate Zone.

Palynomorphs are colourless, indicating immaturity for hydrocarbon generation.

These features are normally seen in the marine Sherbrook Group.

# B. 1090-1200m (cutts): P.pannosus Zone

Assignment to the Phimopollenites pannosus Zone is indicated at the top by youngest Coptospora paradoxa in situ and Pilosisporites grandis, along with a vast influx of spores and pollen. At the base, oldest P.pannosus indicates the assignment, but this may be slightly too low, if caving has occurred, Caving in these 3 cuttings samples appears to be minor, with caved Late Cretaceous taxa comprising only about 2% of the assemblage. The assemblage is dominated by Cyathidites and Stereisporites with high diversity. Trace Triassic reworking was seen at 1150-60m only.

Non-marine environments are considered most likely, as all of the marine elements are probably caved from the late Cretaceous. The abundant and diverse spores and pollen, and high cuticle and tracheid contents also support a non-marine provenance.

Light brown spore colours indicate marginal maturity for oil, but immaturity for gas/condensate. N.P. These features are normally seen in the topmost Eumeralla Formation.

#### C. 1290-1490m (cutts): upper C.paradoxa Zone

Assignment to the upper <u>Coptospora paradoxa</u> Zone is indicated at the top by the absence of <u>P.pannosus</u> and youngest consistent <u>P.grandis</u>. The base is defined by oldest <u>P.grandis</u> and the absence of older markers. Common taxa are <u>Cyathidites</u> and <u>Stereisporites antiquasporites</u>. <u>Foraminisporis</u>

asymmetricus and <u>Crybelosporites striatus</u> are consistent at 1290-1300m (cutts), and <u>Triporoletes radiatus</u> is consistent at 1480-90m (cutts). Late Cretaceous caving is minor, less than 1%.

Non-marine environments are indicated by the dominant cuticle and tracheid, common and diverse spores and pollen, and absence of in situ marine indicators. Minor lacustrine influence is suggested by the freshwater algal forms <a href="Botryococcus">Botryococcus</a> at 1480-90m and <a href="Schizosporis">Schizosporis</a> at 1290-1300m.

Light brown spore colours indicate marginal maturity for oil, and immaturity for gas/condensate.

These features are usually seen in the mid Eumeralla Formation.

D. 1650 (cutts)-1748m (core) : lower C.paradoxa Zone

Assignment to the lower <u>Coptospora paradoxa</u> Zone is indicated at the top by youngest <u>Coptospora striata</u> (1650-60m, cutts) and youngest <u>Dictyotosporites</u> <u>speciosus</u> (1748m, core 1). <u>Cyathidites</u> and <u>Falcisporites</u> are common in both samples, with <u>Cicatricosisporites australiensis</u> and <u>Triporoletes radiatus</u> consistent at 1650-60m (cutts). Only a trace of Late Cretaceous caving was seen.

Non-marine environments are indicated by the dominant cuticle and tracheid fragments, the common and diverse spores and pollen, and the absence of in situ marine indicators.

Light to mid brown spore colours indicate early

maturity for oil generation and early marginal maturity for gas/condensate.

These features are normally seen at the base of the mid Eumeralla Formation, directly above the mid Eumeralla unconformity.

E. 1825m (Cutts)-2007m (swc) : C.striatus Zone

These three samples are assigned to the Crybelosporites striatus Zone at the top on the absence of younger indicators and at the base on oldest C.striatus. Youngest consistent Pilosisporites spp. (P.notensis and P.parvispinosus) occur at 1825-30m (cutts.). Cyathidites spp. and Cicatricosisporites spp. are common throughout, with Stereisporites antiquasporites also common at 1825-30m. Cuticle and spores and pollen dominate the residues, and amorphous sapropel at 1825-30m suggests good source potential. Trace quantities of Late Cretaceous forms are caved into the cuttings.

Non-marine environments are indicated by the lack of marine taxa, the common and diverse spores and pollen, and common plant debris.

Light to mid brown spore colours indicate early maturity for oil generation and early marginal maturity for gas/condensate.

These features are normally seen in the mid Eumeralla Formation.

F. 2240m (swc)-3290m (cutts) : C.hughesi Zone

These ten samples (3 cuttings and 7 swcs) are

assigned to the Cyclosporites hughesi Zone at the top on youngest C.hughesi and at the base on the lack of older indicators. Assignment to 3200m at least is confirmed by oldest P.notensis in the deepest swc. Within the interval, youngest Cooksonites variabilis at 2526m (swc) implies that 2240m belongs to the upper C.hughesi Zone and 2526-3290 to the lower C.hughesi Zone. thicknesses appear unusual, and reworking of C.variabilis may be responsible, causing an apparently thicker lower C.hughesi Zone at the expense of the upper C.hughesi Zone. Alternatively, the subdivision may be valid : log correlation may throw light on the matter. Also within the interval, oldest consistent F.asymmetricus (2240m) and acmes of P.notensis (2930 m and 3167-3200m) may have correlative potential. Cyathidites, and Falcisporites tend to be the most common taxa throughout.

Non-marine environments are indicated by the absence of saline indicators, dominant spore/pollen with subordinate plant debris (tracheid and cuticle).

Mid brown spore colours indicate maturity for oil throughout, with mid to dark brown colours below 3200m indicating peak maturity for oil generation. The section 2240 to 2800m is marginally mature for gas/condensate, with 2800m-3200m mature for gas/condensate.

These features are normally seen in the lower Eumeralla Formation including any basal Eumeralla sands.

G. 3335m (cutts)-3570m (cutts): F.wonthaggiensis Zone

Assignment to the Foraminisporis wonthaggiensis Zone is indicated at the top by youngest Microfasta evansii. The usual base range criteria cannot be used since no sidewall cores were recovered below 3200m. The younger taxa are seen in these cuttings but are presumed caved. At least some specimens are obviously caved, due to their lighter spore colours. The base of the interval is not clearly defined, but M.evansii is consistent to the base. Regionally, M.evansii is very rarely seen in the next older zone, the C.australiensis Zone. The whole interval is therefore assigned to the F.wonthaggiensis Zone.

Non-marine environments with some lacustrine influence is indicated by the common and diverse spores and pollen, abundant plant debris, and lack of saline indicators.

Peak maturity for oil is indicated by the mid-dark brown spore colours, which also indicate maturity for gas/condensate generation.

These features are usually seen in the Crayfish or Pretty Hill Formation.

### IV CONCLUSIONS

- A. The sampled section appears to consist of an incomplete and condensed Sherbrook Group, a thick and complete Eumeralla Formation, and a short drilled section of Crayfish Formation. Three major regional unconformities appear to be present at the mid Cretaceous (in the gap 1020 to 1090m), intra Eumeralla (in the gap 1748 to 1825m) and top Crayfish (in the gap 3290 to 3335m. Caving or reworking may have confused interpretation somewhat, and these unconformities may be nearby and not exactly in these gaps.
- B. The section appears to be peak mature for oil below about 3200m.

### V REFERENCES

Dettmann, M.E. and Playford, G. (1969) Palynology of the Australian Cretaceous: a review <u>In</u> Stratigraphy and Palaeontology. Essays in honour of Dorothy Hill <u>K.S.W. Campbell Ed.</u> ANU Press, Canberra 174-210.

Helby, R.J., Morgan, R.P. and Partridge, A.D. (1987) A palynological zonation of the Australian Mesozoic

Ass. Australas. Palaeontols. Mem 4, 1-94.

### PE907894

This is an enclosure indicator page. The enclosure PE907894 is enclosed within the container PE902151 at this location in this document.

The enclosure PE907894 has the following characteristics:

ITEM\_BARCODE = PE907894

CONTAINER\_BARCODE = PE902151

NAME = Range Chart

BASIN = OTWAY

PERMIT = PEP 111

TYPE = WELL

SUBTYPE = DIAGRAM

DESCRIPTION = Range Chart of Graphic Abundances by

Lowest Appearances (Enclosure from Appendix L--Palynology--of Well

Completion Report vol.2) for

Windermere-2

REMARKS =

DATE\_CREATED =

 $DATE\_RECEIVED = 9/11/89$ 

 $W_NO = W992$ 

WELL\_NAME = Windermere-2

CONTRACTOR =

CLIENT\_OP\_CO = Minora Resources NL

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX M
WELL LOCATION SURVEY PLAN

### PAUL CROWE LAND SURVEYORS

Paul D. Crowe, B. App. Sci. (Surv.), L. S., M.I.S.

64 Thompson Street, HAMILTON 3300 Telephone (055) 72 4795

April 6, 1989.

56 Kepler Street, WARRNAMBOOL 3280 Telephone (055) 61 1500

Hamilton

office

Attention: Mr. Bruce McElhinney, Minora Resources N.L. 55 St. Georges Terrace, Perth. 6000.

Dear Bruce,

Re: Windermere No. 2.

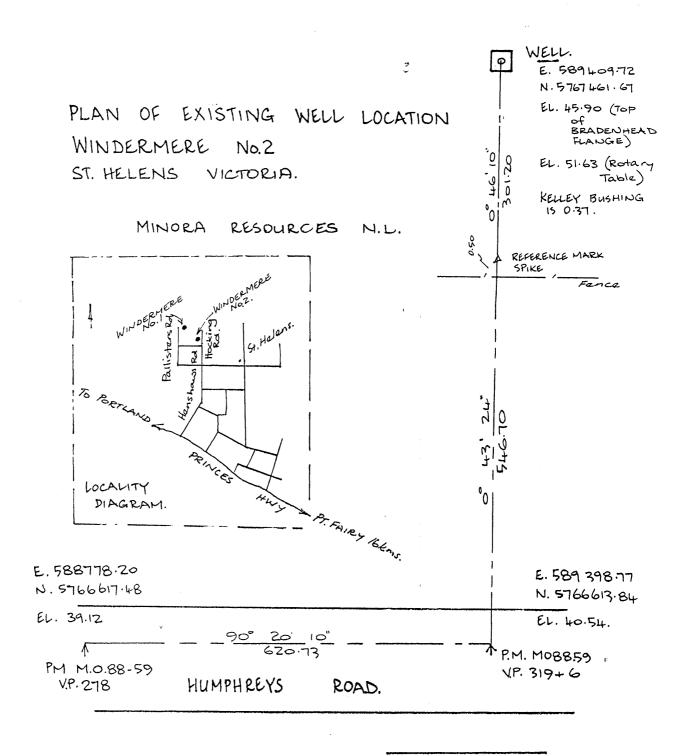
Following instructions from Mr. Juris Ozolins, I have carried out a survey to confirm the actual location of the Windermere No. 2 Well.

Please find enclosed a plan showing the connections from existing permanent marks.

Co-ordinates and elevations are indicated on the Plan.

Yours faithfully,

PAUL D. CROWE.



PAUL CROWE
LAND SURVEYORS
GU THOMPSON ST.
HAMILTON 3300
Ph. 055-724795

30-3-1989

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APPENDIX N
WELL VELOCITY SURVEY

### **Velocity Data**



WELL VELOCITY SURVEY

WINDERMERE #2

PEP 111

**VICTORIA** 

for

MINORA RESOURCES NL.

recorded by

VELOCITY DATA PTY. LTD.

processed by

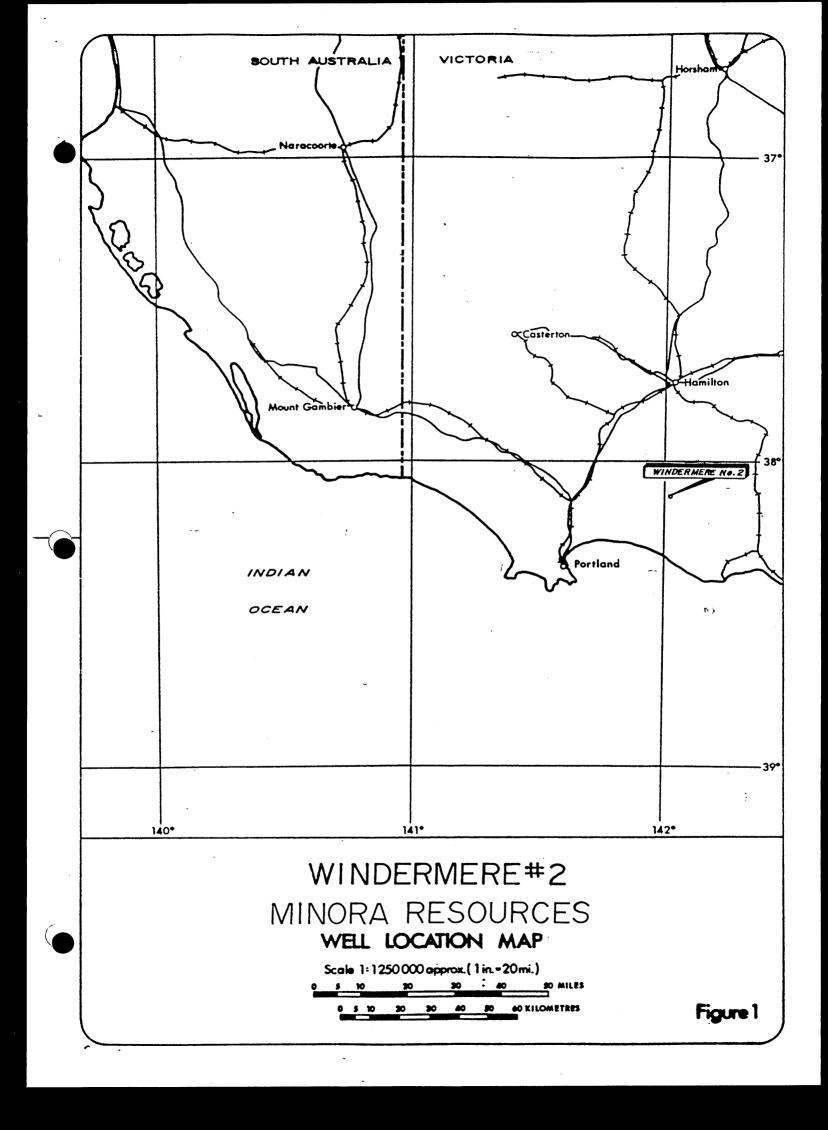


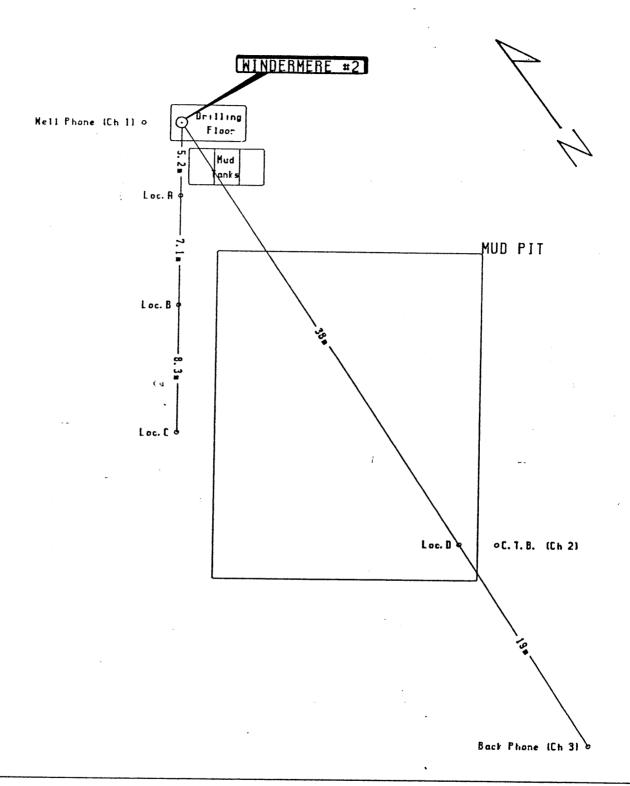
**Integrated Seismic Technologies** 

Brisbane, Australia June 28, 1989.

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### WINDERMERE #2

MINORA RESOURCES NL SHOT POINT LOCATION SKETCH



### SUMMARY

Velocity Data Pty Ltd conducted a velocity survey for Minora Resources NL in the Windermere No.2 well PEP 111 Victoria, Australia. The survey was carried out on the 17th April 1989.

The results of the survey, which are considered to be reliable, have been used to calibrate the sonic log.

Explosives were used as an energy source with shots being fired in the mud pit.

### GENERAL INFORMATION

Name of Well : Windermere #2

Location (Figure 1) : PEP 111

Coordinates : Latitude 038 14' 11"

: Longitude 142 01' 18"

Date of Survey : 17th April 1989.

Wireline Logging : Gearhart DDL#3

Weather : Fine

Operational Base : Brisbane

Operator : N. Delphos

Shooter : J. Brown

Client Representative : Mr D. Short.

### **EQUIPMENT**

Downhole Tool

Veldata Camlock 100 (90 mm)

### Sensors:

6 HSI 4.5 Hz 215 ohm, high temperature (300 degrees F) detectors connected in series parallel. Frequency response 8-300 Hz within 3 dB.

### Preamplifier:

48 dB fixed gain. Frequency response 5-200 Hz within 3 dB.

### Reference Geophone

Mark Products L1 4.5 Hz

### Recording Instrument

VDLS 11/10 software controlled digital recording system utilizing SIE OPA-10 floating point amplifiers for digital recording and SIE OPA-4 amplifiers for analog presentation. The system includes a DEC LSI-11 CPU, twin cassette tape unit and printer.

### RECORDING

Energy Source : Explosive, AN-60

Shot Location : Mud pit

Charge Size : 0.25 to 3 (125 grm) sticks

Average Shot Depth : 2.0 metre

Average Shot Offset : 38 metres

Recording Geometry : Figure 2

Shots were recorded on digital cassette tape. Printouts of the shots used are included with this report. (Enclosure 2)

The sample rate was 1 ms with 0.5 ms sampling over a 200 ms window encompassing the first arrivals. The scale of the graphic display varies with signal strength and is noted on each playout.

The times were picked from the printouts using the numerical value of the signal strength. (Enclosure 2)

### PROCESSING

### Elevation Data

Elevation of KB : 51.6 metres above sea level

Elevation of Ground : 46.1 metres above sea level

Elevation of Seismic Datum : 0.0 metres above sea level

Depth Surveyed : 3586.0 metres below KB

Total Depth : 3595.3 metres below KB

Depth of Casing : 1865.5 metres below KB

Sonic Log Interval : 15.1 to 3591.7 metres below KB

### PROCESSING

ť es

### Recorded Data

Number of Shots Used : 36

Number of Levels Recorded : 30

Data Quality : Fair

Noise Level : Low

Rejected Shots : 5

### Correction for Instrument Delay and Shot Offset

The 'corrected' times shown on the calculation sheet have been obtained via:

- (i) Subtraction of the instrument delay (4msec) from the recorded arrival times
- (ii) geometric correction for non-verticality of ray paths resulting from shot offset.
- (iii) shot static correction to correct for the depth of shot below ground level at the well head using a correction velocity of 1100.0m/sec
  - (iv) readdition of the instrument delay (4msec).

### Correction to Datum

As no checkshot was actually taken at the requested datum of 51.6 metres below KB it was necessary to include a dummy value at this level. The value was calculated using the average time at 52.0m combined with a calculation involving the interval velocity at this level. This value is 29.5 msec and is the effective datum correction.

### PROCESSING

### Calibration of Sonic Log - Method

Sonic times were adjusted to checkshot times using a linear correction of the sonic transit times.

These differences arise as the sonic tool measures the local velocity characteristics of the formation with a high frequency signal, whereas the downhole geophone records the bulk velocity character using a signal of significantly lower frequency.

### Calibration of Sonic Log - Results (Enclosure 1)

The discrepancies between shot and sonic interval velocities were generally small. The largest adjustment was 18.64 us/m on the interval 367 to 426 metres below KB.

In aggregate, the shot and sonic interval times differed by 6.0 msec over the logged portion of the well.

### PROCESSING

Trace Playouts (Figure 4)

Figure 4A is a plot of all traces used. No filter or gain recovery has been applied.

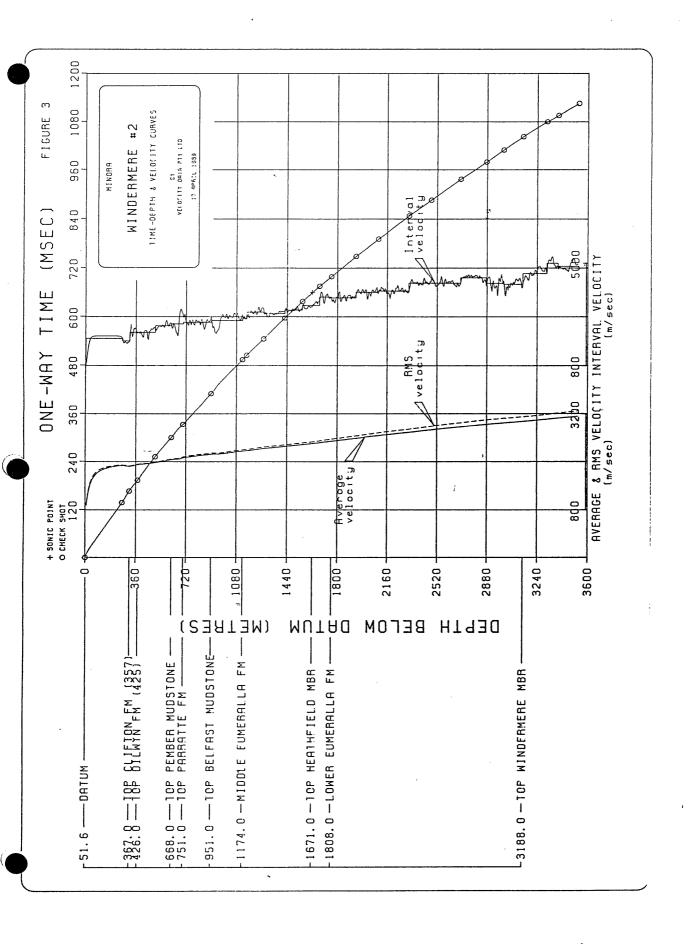
Figure 4B is a plot to scale in depth and time of selected traces. No filter or gain recovery has been applied.

Figure 4C is a plot to scale in depth and time of selected traces with a 5 Hz - 40 Hz filter and a gain recovery function of t\*\*2 applied.

Figures 4D is a plot of selected surface traces. No filter or gain recovery has been applied.

Geoffrey Bell

Geophysical Analyst.



### Company: MINDRA Lompany: MINDRA Well: WINDERMERE #2 Elevations: Datum : 46.1 Shot data: Location Elevation Offset A 40.1 5.2 B 40.1 12.3 C 40.1 20.6 39.9 38.0 VELOCITY DATA PTY LTD

## Page 1 WELL SURVEY CALCULATIONS

Latitude : 038 14 11 Longitude : 142 01 19 46.1 Kelly : 51.6

Survey date : 17-APR-89 Survey units : METRES Times in milliseconds. Rig identification : A.T.C.02 Energy source : AN60 Logger : GEARHART DLL #3

Near surface velocity fbr shot statics: 1100 Instrument delay: 4.0 ms

## SHOT CALCULATIONS

						ב מ			0.7				1
Shot	Geophone Kelly	depth Datum	Shot	Shot Depth	Record .	- Carr	TIMES Avg.	TIMES	Check shot interval Distance Time	interval - Time	V Average -	Velocities RMS Interval	nterval
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44	0 0 0 0 2 5 0 2 5 0 0 0	0.0	T C	0.2	24.0	29.5	30.0	0.5	0,542	7 721	0.008	0.008	1909.9
37	315.0	263.4	Α.	2.0	161.5	167.7	167.7	138.2	52.0	28.7	1905.9	1907.1	1811.8
70P 28 13	TOP CLIFTON FM (357) 36 367.0 315.	315.4	Ω	2.0	190.0	196.4	196.4	166.9	0	27.3	1889.8	1891.1	2169.1
10P DI	TOP DILWYN FM (425) 35 426.0 374	374.4	Ω	2.0	217.0	223.6	223.6	194.1		i û	1928.9	1932.4	
34	552.0	500.4	A	2.0	275.0	281.8	281.8	252.3	116.0	38.£ 47.6	1983.4	1988.5	2437.0
10P P8	TOP PEMBER MUDSTONE	110NE 616.4	A	2.0	322.5	329.4	329.4	299.9			2055,4	2066.2	1 1040
70P PE	TOP PEBBLE POINT	ਜ 664.34	Ω	2.0	341.5	348.5 N/U	_		2.09	7.			0./057
10P P/	TOP PARRATTE FM 31 751.0	699.4	Α	2.0	355.5	362.5	362.5	333.0	o o	4	2100.3	2114.2	7,772
70P 86	TOP BELFAST MUDSTONE 30 951.0 899.	STONE 899.4	A	2.0	433.0	440.1	440.1	410.6	) () ) ()		2190.5	2209.2	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
UPPER 28	UPPER EUMERALLA UNC 28 1010.0 958	958.4	. <b>A</b>	2.0	445.5	452.6 N/U	_		2.577	· •			2
MIDDLE 27	MIDDLE EUMERALLA FM 27 1174.0 1122	A FM 1122.4	. A	2.0	517.0	524.2	524.2	494.7			2268.8	2290.4	

## Page WELL SURVEY CALCULATIONS

Survey date : 17-APR-89 Survey units : METRES Times in milliseconds. Rig identification : A.T.C.02 Energy source : ANGO Logger : GEARHART DLL #3 Near surface velocity for shot statics: 1100 Instrument delay: 4.0 ms Latitude : 038 14 11 Longitude : 142 01 19 51.6 46.1 Kelly t Company: MINORA

Well: WINDERMERE #2

Well: WINDERMERE #2

Elevations: Datum : 0.0 Ground: 46.1

Shot data: Location Elevation Offset
A 40.1 5.2
B 40.1 12.3
C 40.1 20.6
39.9 38.0

## SHOT CALCULATIONS

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Average .	2268.8	2279.0	2331.7	2383.5	2428.1	2475.0	2513.5	2583.7	2649.7		2731.1	2793.9	2869.5	2935.3	2971.9	3008.8		3063.6
interval Time	-		2 i	D 10	0. 0.	37.6	) i	u. Y4	u. 24 r	) ;	38.9	i 0		0.07	) in (	, w	3	
Check shot interval Distance Time	- F		117.7	0.101	0.621	123.0	3 !	0.//1	162.0	2	160.0	) N	0.612	0.001	138.0	173.0	2.7.7	
Below datum	494.7	505.7	545.7	597.2	637.7	675.3	8.869	748.3	8.062		847.8	886.0	936.9	978.9	1008.9	1042.4		1079.9
TIMES	524.2	535.2	575.2	626.7	667.2	704.8	728.3	777.8	820.3	٦/	877.3	915.5	966.4	1008.4	1038.4	1071.9	n/1	1109.4
- Corr.	524.2	535.2	575.2	626.7	667.1 667.3	704.8	728.3	777.8	820.3	842.8 N/U	877.3	915.7	966.4	1001.0 1008.4	1031.0 1038.4	1064.5 1071.9	1083.4 N/U	1102.0 1109.4 1102.0 1109.4
(	517.0	528.0	568.0	619.5	660.0	697.5	721.0	770.5	813.0	835.5	870.0	908.5 908.0	959.0	1001.0	1031.0	1064.5	1076.0	1102.0
Shot Depth	2.0	2.0	2.0	2.0	1.8	2.0	2.0	2.0	2.0	2.0	2.0	1.8	2.0	2.0	2.0	2.0	2.0	000
Shat	ρ	Ω	Ω	Ω	88	<b>Q</b>	Ω	A	Α.	Α.	A	AA	a	Ω	Ω	Ω	A	99
a depth Datum	A FM 1122.4	1152.5	1272.4	1423.4	1548.4	1671.4	A FM 1756.4	1933.4	2095.4	2191.4	2315.4	2475.4 2475.4	2688.4	2873.4	2998.4	MBR 3136.4	3183.4	3308.4
Geophone depth Kelly Datum	E EUMERALLA FM 1174.0 1122.4	1204.1	1324.0	1475.0	1600.0	1723.0	EUMERALLA FM 1808.0 175	1985.0	2147.0	2243.0	2367.0	2527.0	2740.0	2925.0	3050.0	TOP WINDERMERE	3235.0	3360.0
Shot	MIDDLE 27	23	38	23	7 <b>7</b> 7	23	LOWER 22	23	50	18	17	P 9	ũ	14	13	TOP W	11	e 01

Page 3 WELL SURVEY CALCULATIONS

Latitude : 038 14 11 Longitude : 142 01 19

Survey date : 17-APR-89 Survey units : METRES Times in milliseconds.

46.1 Kelly: Company: MINDRA

Elevations: Datum : 0.0 Ground: 46.1
Shot data: Location Elevation Offset
A 40.1 12.3
B 40.1 12.3
C 40.1 20.6
39.9 38.0

Rig identification: A.T.C.02
Energy source: AN60
Logger: GEARHART DLL #3
Near surface velocity
for shot statics: 1100
Instrument delay: 4.0 ms

SHOT CALCULATIONS

	Interval		5000.0	4866.7
	Velocities	3063.6 3181.3	3091.9 3215.3	3139.2 3270.1
	Average	3063.6	3091.9	3139.2
	interval Time		16.0	30.0
)	Check shot interval Distance Time		80°0	146.0
	- TIMES	1079.9	1095.9	1125.9
	TIMES	1109.4 1079.9	1125.4	1155.4
	(	1102.0 1109.4 1109.4 1079.9 3063.6 3181.3	1118.0 1125.4	1148.0 1155.4
	Shat Depth	2.0	2.0	2.0
	Shot Locn	Q	Ω	Q
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	Geophon Kelly -	10 3360.0 3308.4	3440.0	3586.0
	Shot	10	7	Þ

# WELL SURVEY CALCULATIONS Page 4

Company : MINDRAMERE #2
Well : WINDERMERE #2
Elevations : Datum : 46.1 Kelly : 51.6

Survey date : 17-APR-89 Survey units : METRES Times in milliseconds.

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52.0 0.4	30.0	0°0	0.4 0.5	ហ				
315.0 263.4	167.7	138.2	263.0 137.7	7				
Car, an worth 2 dot		1	52.0 28.7	7				
367.0 315.4	196.4	166.9						
TOP TILLIVN EM (425)		==	59.0 27.2		28.3	-18.64	-1.1	-1.1
426.0 374.4	223.6	194.1	•••					
552.0 500.4	281.8	252.3	126.0 58.2		57.9	2.38	٥٠٤	-0-8
THO TOUR ADAMS OF		•	116.0 47.6	47.7	.7	-0.86	-0.1	6.0-
668.0 616.4	329.4	299.9						
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TOP BELFAST MUDSTONE 951.0 899.4	440.1	410.6		٠	<u>,</u>		!	) •
			223.0 84.1	1 87.3	m	-14.35	-3.2	-7.5
MIDDLE EUMERALLA FM			i					
1174.0 1122.4	524.2	494.7						
1204.1 1152.5	535.2	505.7	30.1 if.0	10.5	iņ.	16.61	0.0	-7.0
1324.0 1272.4	575.2	545.7	119.9 40.0	0 40.1	۳.	-0.83	-0.1	-7.1
1475.0 1423.4	626.7	597.2	151.0 51.5	3 49.1	.1	15.89	2.4	-4.7
1600.0 1548.4	667.2	637.7	125.0 40.5	38.2	r.	18.40	2.3	-2.4
	704.8	675-3	123.0 37.6	5 35.4	4.	17.89	2.2	-0.2
			85.0 23.5	5 22.9	o.	7.06	9.0	0.4
1808.0 1756.4	728.3	8.869						
1985.0 1933.4	8.777	748.3	177.0 49.5	5 48.4	4	6.21	1.1	1. 10.

WELL SURVEY CALCULATIONS
Latitude ( 038 14 11 Survey o

Survey date : 17-APR-89 Survey units : METRES Times in milliseconds.

Page 5

Latitude : 038 14 11 Longitude : 142 01 19 51.6 Company : MINDRA
Well : WINDERMERE #2
Elevations : Datum : 0.0 Ground : 46.1 Kelly :

SONIC DRIFT

Geophor Kelly	Geophone depth Kelly Datum		shot times - Below datum	Check shot interval Distance Time	rval Sonic		Interval sonic drift usec/m msec	Cumulative drift msec
1985.0	1985.0 1933.4	777.8	748,3			ي جدد جمه جمه عمد عمد جمه جمه جمه جمه بعد سن حمد		-
				162.0 42.5	5 42.6	-0.62	-0.1	1,4
2147.0	2095.4	820.3	790.8					
				220.0 57.0	.0 54.9	9.55	2.1	ณ พ
2367.0 2315.4	2315.4	877.3	847.8					
				160.0 38.2	38.6	-2.50	4.0-	r. M
2527.0	2475.4	915.5	. 0.488					
				213.0 50.9	.9 49.0	8.92	1.9	0.0
2740.0	2688.4	966.4	936.9					
				185.0 42.0	.0 41.2	4.32	8.0	თ. "რ
2925.0	2873.4	1008.4	978.9					
				125.0 30.0	30.0	00.00	0.0	တ္က
3050.0	2998.4	1038,4	1008.9					
				138.0 33.5	5 33.0	3.62	0,5	6.4
TOP WINDERMERE	: MBR							
3188.0	3136.4	1071.9	1042,4		<b>(</b> g			
•				172.0 37.5		3.49	9.0	6.9
3360.0	3308.4	1109.4	1079.9				1	
				80.0	16.6	-7.50	9-0-	6.3
3440.0	3388.4	1125.4	1095.9				1	
				146.0 30.0	30.3	-2,05	5,0	6.0
3586.0	3534.4	1155.4	1125.9					

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# WELL SURVEY CALCULATIONS Page &

Company: MINDRA Latitude: 038 14 11 Well: WINDERMERE #2 Longitude: 142 01 19 Elevations: Datum: 0.0 Ground: 46.1 Kelly: 51.6

Survey date : 17-APR-89 Survey units : METRES Times in milliseconds.

## SONIC CALIBRATION

، علم وي چل چل ساء حق دمه چي ډيو خي ايش کا حظ هن خط خي څخ څخ هي ريش ييه ريت هند هند هن ويم رهر							
Geophone depth Kelly Datum	Interval Distance	Original sonic times Interval Cumulative	Adjusted Interval	sonic times Calibrated	Average	Velocities RMS	Interval
DATUM 51.6 0.0						1 1 1 1 1 1 1 1	
	0.4						800.0
52.0 0.4	i i				0.008	800.0	1
315.0 263.4	763.0				1905.9	1907.1	1909.9
3	92.0		•				1811.8
36/.0 315.4	59.0	28.3	27.2		1387.8	1891.1	2169.1
TOP DILWYN FM (425)			ļ i		( ( i		
478.0 3/4.4	126.0	57.9	- 8	174.1	1,728.9	1932.4	2164.9
552.0 500.4	0 711	86.2	7 28	252.3	1983.4	1988.5	
TOP PEMBER MUDSTONE		•	· •				0.1047
668.0 616.4	۲ 0	133.9	!*	299.9	2055.4	2066.2	200
TOP PARRATTE FM	200	0.40	1.00				9./057
751.0 699.4	000	168.2	ļ	333.0	2100.3	2114.2	11
TOP BELFAST MUDSTONE	0.002	0.4.	0.//				8.1/67
951.0 899.4		248.0		410.6	2190.5	2209.2	i
MIDDIE EIMEROII O EM	223.0	87.3	84.1				2651.6
1174.0 1122.4	;	335,3	•	494.7	2268.8	2290.4	
1204.1	30.1	10.5	11.0	7.	0 07.00	04026	2736.4
	119.9	40.1	40.0		22/1.0	2.1002	2997.5
1524.0 1272.4	i.	385.9	ŭ	545.7	2331.7	2359.1	0 0400
1475.0 1423.4	•	435.0	) • •	597.2	2383.5	2413.9	7.757.7
1600.0 1548.4	125.0	38.2 473.2	<b>40</b> 10.	637.7	2428.1	2462.0	3086.4
2	71.0	20.9	22.2				3202.5
10F HEHINFIELD MBK 1671.0 1619.4	9	494.1		629.9	2454.1	2490.5	
A. 1731 O. FCT!	0.26	14.3	10.4	¥ 34.7	2475	0.00	3370.0
	85.0	22.9	23.5		0.57	77450	3617.0
LOWER EUMERALLA FM 1808.0 1756.4	į	531.5	i C	8.869	2513.5	2558.9	i i
1985.0 1933.4	2.77	579.9	U. 12	748.3	2583.7	2638.3	20/00

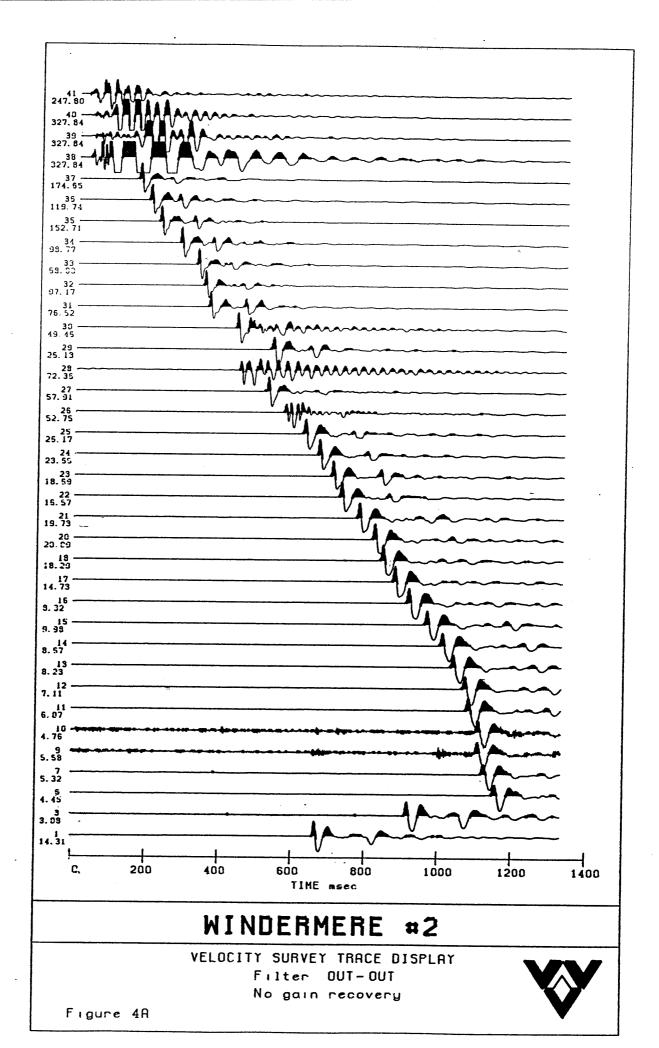
## Page 7 WELL SURVEY CALCULATIONS

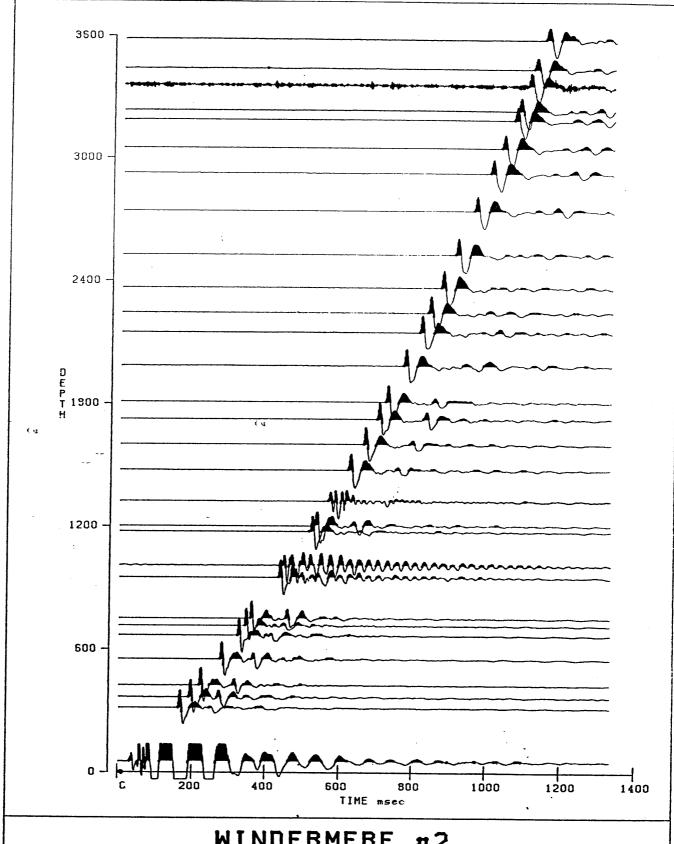
Survey date : 17-APR-89 Survey units : METRES Times in milliseconds.

Company : MINDERMERE #2
Well : WINDERMERE #2
Elevations : Datum : 0.0 Ground : 46.1 Kelly : 51.6

	•		SONIC CALIBRATION	TION			
Geoph Kelly	Geophone depth Kelly Datum	Interval Distance	Original sonic times Interval Cumulative	Adjusted sonic times Interval Calibrated	Average	Velocities	Interval
1985.0	1985.0 1933.4	0 077	579.9	748.3	2583.7	2638.3	
2147.0	2095.4	162.0	622.5	42.5	2649.7	2714.3	3811.8
2367.0	2315.4	220.0	54.9 677.4	57.0	2731.1	2806.0	3859.6
2527.0	2475.4	160.0	38.6 716.0	38.2	9.2627	7,979,7	4188.5
2740.0	2688.4	213.0	49.0	50.9	2849 1	0 00	4184.7
2925.0	2873,4	185.0	41.2	42.0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 00 0	4404.8
3050.0	2998.4	125,0	30.0	30.0	0.00		4166.7
TOP WINDERMER	E MBR	138.0	33.0	33.5	27/1.7	3080°Z	4119.4
3188.0 313	3136.4	172-0	2.4.9	1042.4	3008.8	3119.0	1
3360.0	3308.4		906.1	1079.9	3063.6	3181.4	4586.7
3440.0	3388.4	94,0	922.7	1095.9	3091.9	3215.3	0.0005
3586.0	3534.4	9	953.0	1125.9	3139.2	3270.1	4866.7

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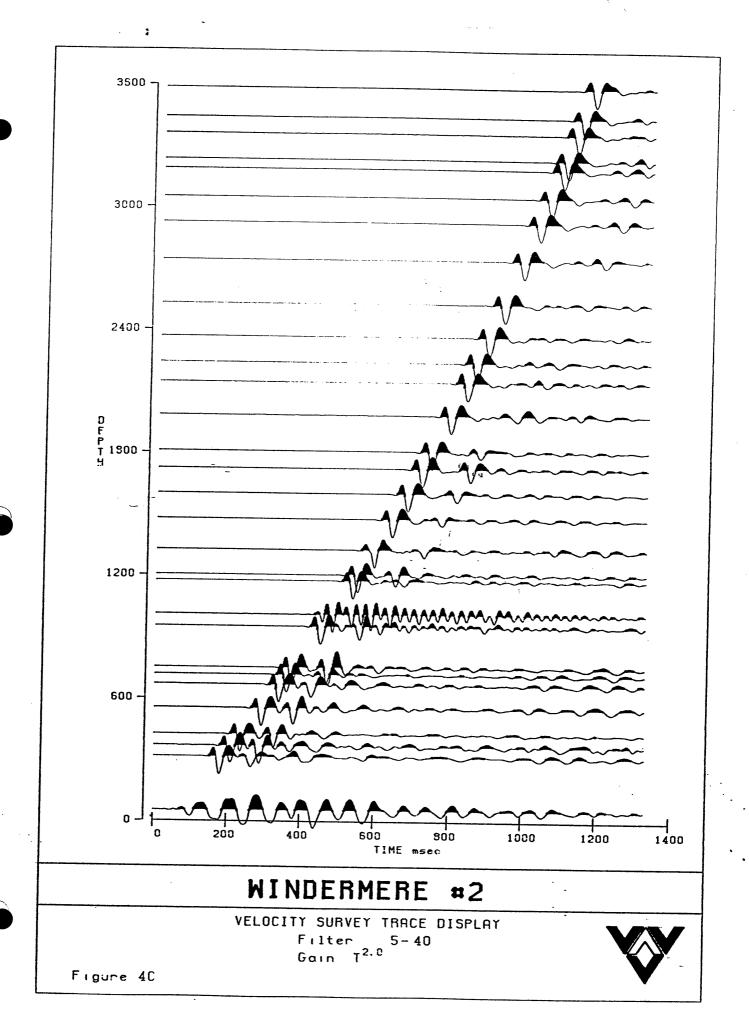


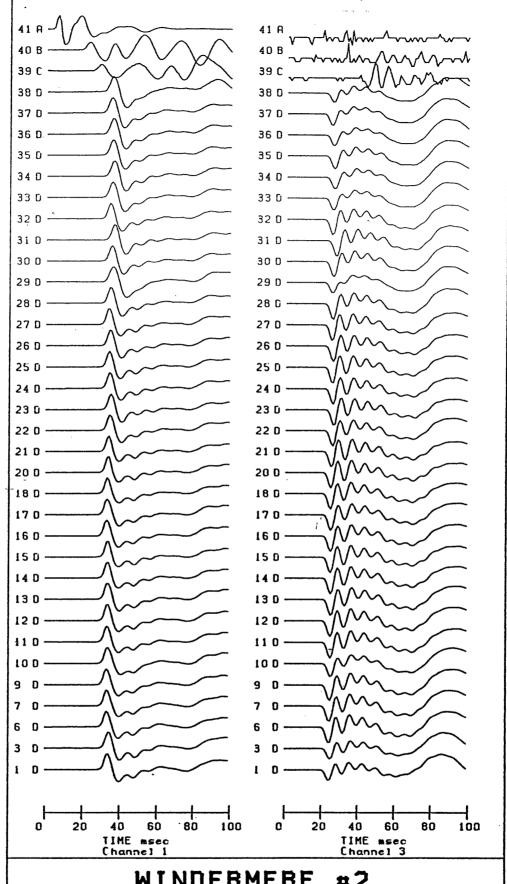
### WINDERMERE

VELOCITY SURVEY TRACE DISPLAY Filter OUT-OUT No gain recovery



Figure 4B





### WINDERMERE

VELOCITY SURVEY TRACE DISPLAY Auxiliary channels Filter OUT-OUT



Figure 40

Well: WINDERMERE #2 Client: MINORA Survey units: METRES Datum: 0.0

Calibrated sonic interval velocities used from 265.0 to 3530.0

		One-way					One-way	VE	LOCITIE	S
	Depth	time(ms)	Average	RMS Ir	nterval	Depth	time(ms)	Average	RMS In	terval
	5.0	5.5	914	914	914	205.0	108.9	1883	1906	2013
	10.0	9.7	1033	1042	1189	210.0	111.4	1886	1908	2013
	15.0	13.2	1141	1160	1439	215.0	113.8	1889	1911	2013
	20.0	16.2	1234	1264	1637	220.0	116.3	1891	1913	2012
	25.0	19.0	1314	1352	1778	225.0	118.8	1894	1915	2012
	30.0	21.7	1383	1426	1871	230.0	121.3	1896	1917	2011
	35.0	24.3	1441	1488	1929	235.0	123.8	1878	1919	2009
	40.0	26.8	1491	1540	1964	240.0	126.3	1901	1921	2005
	45.0	29.4	1533	1583	1984	245.0	128.8	1702	1922	1999
	50.0	31.9	1570	1619	1997	250.0	131.3	1904	1923	1988
	55.0	34.4	1601	1650	2004	255.0	133.8	1905	1924	1970
	60.0	36.8	1629	1677	2008	260.0	136.4	1906	1925	1940
	65.0	39.3	1653	1700	2010	265.0	138.6	1913	1924	1889
	70.0	41.8	1674	1720	2011	270.0	141.5	1908	1920	1705
	75.0	44.3	1673 (4	1737	2012	275.0	144.3	1905	1917	1751
	80.0	46.8	1710	1753	2013	280.0	147.2	1903	1914	1778
7	85.0	49.3	1725	1767	2013	285.0	150.0	1900	1911	1771
	90.0	51.8	1739	1780	2013	290.0	152.9	1896	1908	1708
	95.0	54.2	1752	1791	2013	295.0	155.9	1893	1904	1701
	100.0	56.7	1763	1801	2013	300.0	158.7	1870	1901	1752
	105.0	59.2		,1811	2013	305.0	161.6	1887	1898	1707
	110.0	61.7	1783	1819	2013	310.0	164.4	1886	1897	1819
	115.0	64.2	1792	1827	2013	315.0	167.2	1884	1895	1780
	120.0	66.7	1800	1835	2013	320.0	169.5	1888	1899	2156
	125.0	69.1	1808	1841	2013	325.0	171.4	1897	1909	2716
	130.0	71.6	1815	1847	2013	330.0	173.8	1899	1912	2085
	135.0	74.1	1822	1853	2013	335.0	176.4	1899	1912	1887
	140.0	76.6	1828	1859	2013	340.0	178.7	1902	1915	2136
	145.0	79.1	1834	1864	2013	345.0	180.9	1908	1921	2370
	150.0	81.6	1839	1868	2013	350.0	183.2	1911	1924	2155
	155.0	84.0	1844	1873	2013	355.0	185.2	1917	1930	2460
	160.0	86.5	1849	1877	2013	360.0	187.4	1921	1935	2264
	165.0	89.0	1854	1881	2013	365.0	189.7	1924	1938	2191
	170.0	91.5	1858	1885	2013	370.0	192.1	1926	1939	2052
	175.0	94.0	1862	1888	2013	375.0	194.4	1929	1943	2228
	180.0	96.5	1866	1892	2013	380.0	196.7	1932	1946	2142
	185.0	98 <b>.</b> 9	1870	1895	2013	385.0	199.0	1934	1948	2141
	190.0	101.4	1873	1898.	2013	390.0	201.4	1936	1950	2090
	195.0	103.9	1877	1901	2013	395.0	203.7	1940	1953	2255
À	200.0	106.4	1880	1903 -	2013	400.0	206.0	1942	1955	2111
							<b>-</b>	- · · <del>-</del>		

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Well: WINDERMERE #2 Survey units : METRES

Client : MINORA Datum: 0.0

Datum	One-way	VE	ELOCIT	[ES	Datum	One-way	VE	וחרזד	IES
Depth	time(ms)	Average	RMS 1	[nterval	Depth	time(ms)	Average	RMS	Interval
		_			•			,,,,	111/621 491
405.0	208.5	1942	1956	2019	605.0	295.4	2048	2067	2501
410.0	211.1	1942	1956	1937	610.0	297.3	2052	2070	
415.0	213.6	1942	1956	1951	615.0	299.3	2055	2073	
420.0	215.9	1945	1958	2183	620.0	301.6	2056	2075	
425.0	218.2	1948	1961	2240	625.0	303.6	2058	2077	
		•							
430.0	220.4	1951	1964	2241	630.0	305.6	2062	2081	2598
435.0	222.6	1954	1967	2240	635.0	307.6	2064	2083	
440.0	224.9	1957	1970	2251	640.0	309.7	2066	2086	2377
445.0	227.5	1956	1969	1890	645.0	311.9	2068	2087	
450.0	230.3	1954	1967	1754	650.0	314.3	2068	2087	2074
455.0	232.6	1956	1970	2245	655.0	316.6	2069	2088	2188
460.0	234.8	1959	1972	2210	660.0	319.3	2067	2086	1887
465.0	237.1	1961	1975	2233	665.0	321.4	2069	2087	2288
470.0	239.2	1965	1978	2321	670.0	323.2	2073	2092	2835
475.0	241.4	1968	· 1.981	2316	675.0	324.9	2078	2098	2955
480.0	243.6	1970	1984	2262	680.0	326.5	2083	2104	3167
485.0	245.8	1974	1987	2320	685.0	328.1	2088	2110	3120
490.0	247.9	1977	1991	2376	690.0	329.7	2093	2116	2998
495.0	250.0	1980	1994	2357	695.0	331.4	2097	2121	2953
500.0	252.1	1983	1998	2338	700.0	333.2	2101	2125	2764
					•				
505.0	254.4	1985	1999	2180	705.0	335.1	2104	2129	2768
510.0	256.6	1987	2002	2270	710.0	336.7	2108	2134	2960
515.0	258.7	1991	2005	2371	715.0	338.6	2142	2137	2712
520.0	260.8	1994	2008	2372	720.0	340.6	2114	2140	2511
525.0	262.9	1997	2012	2469	725.0	342.5	2117	2142	2555
						•			
530.0	265.0	2000	2015	2382	730.0	344.5	2119	2145	2509
535.0	267.0	2004	2019	2440	735.0	346.6	2121	2146	2402
540.0	269.1	2007	2022	2370	740.0	348.6		2149	2554.
545.0	271.2	2010	2025	2392	745.0	350.4		2152	2721
550.0	273.2	2013	2029	2473	750.0	352.3	2129	2155	2610
555.0	275.2	2017	2033	<i>2</i> 506	755.0	354.5	2130	2156	2336
560.0	277.3	2019	2035	2359	760.0	356.4	2133	2159	2641
565.0	279.5	2022	2038	2369	765.0	358:2	2136	2162	2718
570.0	281.5	2025	2041	2423	770.0	360.1	2138	2165	2581
575.0	283.4	2029	2046	2613	775.0	362.1		2167	2510
500 A	205 0	0077	00E4			•			
580.0	285.2	2033	2051	2753	780.0	364.2		2168	2359
585.0 590.0	287.2	2037	2054	2497	785.0	366.1		2170	2622
595.0	289.3	2040	2057	2471	790.0	368.0		2174	2723
600.0	291.4	2042	2060	2389	795.0	369.9		2176	2587
000.0	293.4	2045	2063	2500	800.0	371.9	2151	2178	2535

Well: WINDERMERE #2 Client: MINORA Survey units: METRES Datum: 0.0

T) m.h	<b>O</b>					_			
Datum	One-way			ES	Datum	One-way			IES
Depth	time(ms)	Average	RMS I	nterval	Depth	time(ms)	Average	RMS	Interval
805.0	373.7	2154	2181	2714	1005.0	453.2	2218	2246	2817
810.0	375.6	2156	2183	2605	1010.0	454.8	2221	2249	
815.0	377.6	2158	2186	2571	1015.0	456.6	2223	2252	2719
820.0	379.6	2160	2187	2485	1020.0	458.5	2225	2253	2686
825.0	381.7	2162	2189	2432	1025.0	460.3	2227	2256	2774
	•								
830.0	383.5	2165	2192	2792	1030.0	462.0	2229	2258	2907
835.0	385.4	2167	2194	2627	1035.0	463.8	2232	2261	2902
840.0	387.4	2168	2195	2414	1040.0	465.5	2234	2263	2790
845.0	389.5	2169	2197	2411	1045.0	467.3	2236	2266	2807
850.0	391.8	2169	2196	2175	1050.0	469.1	2238	2268	2743
855.0	393.8	2171	2198	2493	1055.0	470.9	2240	2270	2700
860.0	395.9	2172	2199	2413	1060.0	472.7	2243	2273	2798
865.0	397.7	2175	2202	2734	1065.0	474.3	2245 2245	2276	2913
870.0	399.6	2177	2204	2657	1070.0	474.3			3011
875.0	401.5	2179	2207	2625	1075.0	477.8	2248	2278	2893
0,010	402.0	2.17	2207	2023	10/3.0	4//.5	2250	2281	2815
680.0	403.4	2181	2208	2562	1080.0	479.6	2252	2283	2809
885.0	405.4	2183	2211	2611	1085.0	481.3	2254	2286	3004
890.0	407.3	2185	2213	2641	1090.0	483.0	2257	2288	2926
895.0	409.2	2187	2215	2604	109510	484.8	2259	2290	2710
900.0	410.8	2191	2219	3025	1100.0	486.6	2260	2292	2730
905.0	412.8	2192	2220	2563	1105.0	488.6	2262	2262	5400
710.0	415.1	2192	2220	2156	1110.0	490.4	2263	2293 2295	2622
915.0	417.0	2174	2222	2569	1115.0	492.2	2266	2297	2660
720.0	419.2	2195	2222	2332	1120.0	493.9	2268	2300	2891 2924
925.0	421.6	2194	2221	2075	1125.0	495.7	2269	2300	2724 2730
676.6			+		: *				
930.0	423.9	2194	2221	2180	1130.0	497.5	2271	2303	2783
935.0	426.3	2194	2221	2110	1135.0	499.2	2273	2305	2866
940.0	428.5	2194	2221	2217	1140.0	501.1	2275	2307	2669
945.0	430.8	2194	2221	2215	1145.0	502.9	2277	2309	2749
950.0	433.0	2194	2221	2261	1150.0	504.8	2278	2310	2733
955.0	435.2	2195	2221	2295	1155.0	506.5	2280	2312	2883
960.0	437.1	2196	2223	2525	1160.0	508.2		2315	2870
965.0	438.9	2198	2225	2780	1165.0	510.0		2317	2848
970.0	440.8	2201	2228	2731	1170.0	511.9		2318	2668
975.0	442.5	2203	2230	2823	1175.0	513.6		2320	2895
	•			-			an de 14° (d)		2070
980.0	444.2	2206	2234	2971	1180.0	515.2		2323	3175
985.0	446.0	2207	2236	2359	1185.0	516.9	2293	2326	2926
990.0	447.8	2211	2239	2748	1190.0	518.6	2295	2328	2973
995.0	449.6	2213	2241	2829	1195.0	520.3		2330	2948
1000.0	451.4	2215	2243	2719	1200.0	522.0	2299	2332	2877

Well: WINDERMERE #2 Client: MINORA
Survey units: METRES Datum: 0.0

Datum	One-way	VE	LOCITIE		Datum	C	4.15		
Depth	time(ms)				Depth	One-way	VE	LUCIII	ES
		· · · · · · · · · · · · · · · · · · ·	MIIO 11	1551 497	pehcu	time(ms)	Average	RMS I	nterval
1205.0	523.7	2301	2335	2945	1405.0	591.1	2377	2415	3023
1210.0	525.3	2303	2337	3139	1410.0	592.8	2379	2417	3012
1215.0	527.0	2306	2340	2987	1415.0	594.4	2380	2417	
1220.0	528.7	2308	2342	2867	1420.0	596.1			2995
1225.0	530.4	2309	2344	2895	1425.0		2382	2421	3073
		2007	2044	2073	1423.0	597.7	2384	2423	2994
1230.0	532.1	2311	2346	2961	1430.0	599.2	2386	2426	3324
1235.0	533.6	2314	2349	3339	1435.0	600.9	2388	2428	3062
1240.0	535.2	2317	2352	3083	1440.0	602.6	2390	2429	2916
1245.0	536.9	2319	2354	2980	1445.0	604.2	2371	2431	3021
1250.0	538.6	2321	2356	2979	1450.0	605.9	2393	2433	
					1400.0	000.7	2070	2433	3037
1255.0	540.2	2323	2359	3068	1455.0	607.5	2395	2435	3089
1260.0	541.8	2326	2362	3224	1460.0	609.2	2397	2437	3028
1265.0	543.4	2328	2364	3153	1465.0	610.8	2398	2438	3021
1270.0	544.9	2331	2367	3175	1470.0	612.5	2400	2440	3029
1275.0-	546.6	2333	2369	2784	1475.0	614.1	2402	2442	3089
						014.1	2402	2442	2003
1280.0	548.3	2334	2371	2922	1480.0	615.6	2404	2444	3212
1285.0	550.0	2336	2373	2963	1485.0	617.3	2406	2446	3026
1290.0	551.7	2338	2375	2985	1490.0	618.9	2407	2448	3030
1295.0	553.5	2340	2377	2796	1495.0	620.6	2409	2450	
1300.0	555.2	2341	2378	2827	1500.0	622.2	2411		3041
				2027	1000.0	022.2	2411	2452	3177
1305.0	557.1	2343	2380	2753	1505.0	623.8	2413	2453	3052
1310.0	558.9	2344	2381	2787	1510.0	625.3	2415	2456	3362
1315.0	560.6	2346	2383	2841	1515.0	626.9	2417	2458	3151
1320.0	562.3	2348	2385	3028	1520.0	628.5	2419	2460	3134
1325.0	564.0	2349	2387	2929	1525.0	630.2	2420	2461	2917
						00012	2420	2401	2717
1330.0	565.7		2389	2945	1530.0	631.8	2422	2463	3073
1335.0	567.4		2390	2920	1535.0	633.4	2423	2465	3084
1340.0	569.1	2355	2392	2888	1540.0	635.0	2425	2467	3116
1345.0	570.9	2356	2393	2843	1545.0	636.6	2427	2469	3113
1350.0	572.6	2358	2395	2906	1550.0	638.1	2429	2471	3351
•						<del></del>			5501
1355.0	574.3	2359	2397	2919	1555.0	639.6	2431	2473	3342
1360.0	576.0	2361	2399	2894	1560.0	641.2	2433	2475	3147
1365.0	577.7	2363	2400	2935	1565.0	642.8	2435	2477	3106
1370.0	579.4		2402	2954	1570.0	644.4	2436	2479	3121
1375.0	581.1		2404	2984	1575.0	646.0	2438	2481	
		<b></b>	_ · - · -		-0.010	340 a Q	£400	Z401	3140
1380.0	582.9		2405	2853	1580.0	647.6	2440	2482	3097
1385.0	584.4		2408	3241	1585.0	649.2		2484	3149
1390.0	586.1	2371	2410	2398	1590.0	650.7		2487	3311
1395.0	587.8		2412	3022	1595.0	652.3		2488	3163
1400.0	589.4		2413	3003	1600.0	653,8		2490	3247
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Well: WINDERMERE #2 Survey units : METRES

Client : MINORA Datum : 0.0

Datum	One-way	UI	FLOCITI	[ES	Datum	Gw			
Depth	time(ms)			Interval		One-way		LUCII	IES
•		riverage	I MIG I	uraisar	Depth	time(ms)	Average	RMS	Interva
1605.0	655.4	2449	2492	3144	1805.0	712.7	2532	2587	3503
1610.0	657.0	2451	2494	3256	1810.0	714.1	2535	2590	
1615.0	658.5	2452	2496	3182	1815.0	715.3	2533 2537	2593	
1620.0	660.1	2454	2498	3214	1820.0	716.8	2537 2539	2595 2595	
1625.0	661.6	2456	2500	3412	1825.0	718.2			
				Section 100 mass	a waren a w	/10.2	2541	2597	3422
1630.0	663.1	2458	2502	3214	1830.0	719.7	2543	2599	3455
1635.0	664.6	2460	2505	3336	1835.0	721.0	2545	2601	
1640.0	666.1	2462	2507	3463	1840.0	722.5	2547	2604	
1645.0	667.5	2464	2509	3396	1845.0	723.8	2549	2606	
1650.0	669.0	2466	2512	3456	1850.0	725.2	2551	2609	
1655.0	670.5	2468	2514	3293	1855.0	726.6	oee7		
1660.0	672.0	2470	2516	3362	1860.0	728.0	2553 2555	2611	3609
1665.0	673.4	2472	2519	3516	1865.0	728.0 729.5	2555 2557	2613	
1670.0	674.9	2474	2517 2521	3360	1870.0		2557 2550	2615	
1675.0	676.3	2477	2523	3599	1875.0	,730.8	2559	2617	
			شاكن	JU77	18/3.0	732.2	2561	2619-	3629
1680.0	677.6	2479	2527	3921	1880.0	733.6	2563	2622	3752
1685.0	678.9	2482	2530	3795	1885.0	734.9		2624	3/32 3682
1690.0	680.2	2484	2533	3684	1890.0	736.3		2626	აიგ∠ 3582
1695.0	681.6	2487	2536	3776	1895.0	737.6		2629	3825
1700.0	683.1	2487	2538	3246	1900.0	739.1		2631	3396 3396
						, , , , ,	20/1	Z001	2010
1705.0	684.6	2491	2540	3366	1905.0	740.4	2573	2633	3693
1710.0	686.1	2492	2542	3401	1910.0	741.8		2635	3657
1715.0	687.4	2495	2545	3761	1915.0	743.2		2637	3587
1720.0	688.8	2497	2547	3655	1920.0	744.6		2639	3538
1725.0	690.1	2500	2550	3750	1925.0	746.0		2641	3677
1730.0	691.4	2502	2553	3701	1930.0	747.3	2582	OLAR	7/1/
1735.0	692.8	2504	2556	3599	1935.0	747.3 748.7		2644	3660 3707
1740.0	694.2	2506	2558	3593	1940.0	748.7 750.0		2646	3707
1745.0	695.6	2503	2560	3515	1945.0			2648	3817
1750.0	697.1	2511	2563	3530	1950.0	751.3		2651	3926
		•	£ 4/44	3330	1700.0	752.6	2591	2654	3926
1755.0	698.4	2513	2565	3754	1955.0	753.9	2593	2656	3791
1760.0	699.9		2567	3355	1960.0	755.2		2659	3821
1765.0	701.3		2570	3436	1965.0	756.5		2661	3757 ·
1770.0	702.7	2519	2572	3603	1970.0	757.9		2663	3737 3728
1775.0	704.2		2574	3399	1975.0	759.1		2666	3728 3884
4700 A							£6\4	2000	7004
1780.0	705.7		2576	3328	1980.0	760.4	2604	2663	3909 °
1785.0	707.2		2578	3402	1985.0	761.7		2671	3933
1790.0	708.6		2580	3615	1990.0	763.0	•	2673	3761
1795.0	710.0		2583	3582	1995.0	764.4		2676	3715
1800.0	711.3	2531	2585	3649	2000.0	765.6		2678	3921
					<del></del>			2070	0/21

Well: WINDERMERE #2 Client: MINDRA Survey units: METRES Datum: 0.0

Calibrated sonic interval velocities used from 265.0 to 3530.0

Depth time(ms) Average RNS Interval  2005.0 764.7 2614 2681 3928 2205.0 819.4 2691 2767 3890 2010.0 768.2 2617 2683 3958 2210.0 820.7 2693 2769 3737 2015.0 769.7 2618 2685 3291 2215.0 822.0 2695 2771 3858 2020.0 771.1 2620 2687 3657 2220.0 823.3 2697 2773 3896 2020.0 771.1 2620 2687 3657 2220.0 823.3 2697 2773 3896 2025.0 772.4 2622 2689 3849 2225.0 824.5 2699 2776 4030  2030.0 773.7 2624 2691 3780 2235.0 825.8 2700 2778 3926 2035.0 775.0 2626 2693 3776 2235.0 827.0 2703 2780 4187 2040.0 776.4 2627 2695 3519 2240.0 829.2 2705 2783 4038 2045.0 777.7 2629 2697 3815 2245.0 829.5 2706 2785 3796 2050.0 779.0 2651 2700 3903 2250.0 830.8 2708 2787 3911  2055.0 780.3 2634 2702 3844 2255.0 832.1 2710 2789 3824 2060.0 781.6 2636 2705 3769 2260.0 833.4 2712 2791 3716 2065.0 782.9 2638 2707 3733 2265.0 834.7 2714 2793 3993 2070.0 784.2 2640 2709 3604 2270.0 835.9 2716 2795 4051 2075.0 786.5 2642 2711 3893 2275.0 837.2 2717 2797 3734  2080.0 786.8 2644 2714 3818 2280.0 838.5 2719 2799 3779 2070.0 780.1 2646 2716 4178 2285.0 839.8 2721 2801 3898 2095.0 790.7 2650 2721 3722 229510 842.4 2724 2805 3668 2100.0 792.0 2652 2723 3790 2305.0 845.0 2728 2803 3766 2110.0 792.0 2652 2723 3790 2350.0 845.0 2728 2803 3766 2110.0 797.0 2650 2721 3722 229510 842.4 2724 2805 3668 2110.0 797.0 2650 2721 3722 229510 842.4 2724 2805 3668 2110.0 797.0 2660 2735 3909 2325.0 850.2 2733 2814 4029 2125.0 800.9 2666 2735 3909 2325.0 850.2 2733 2814 4029 2125.0 800.9 2666 2735 3909 2325.0 850.2 2735 2816 4092 2135.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2145.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2165.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2165.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2165.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2165.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2165.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2165.0 800.9 2666 2735 3842 2335.0 852.5 2739 2822 4233 2165.0 800.9 2666 2735 3842 2335.0 853.6 2741 2824 4277 2145.0 803.4 2670 2744 4062 2355.0 854.6 2743	Datum	One-way	VE	LOCITI	ES	Datum	One-way	VF	LOCITI	ES
2005.0 766.9 2614 2681 3928 2205.0 819.4 2691 2767 3880 2010.0 768.2 2617 2683 3958 2110.0 820.7 2693 2769 3737 2015.0 769.7 2618 2685 3958 2210.0 822.0 2695 2771 3889 2020.0 771.1 2620 2687 3657 2220.0 823.3 2697 2773 3926 2020.0 772.4 2622 2689 3649 2225.0 824.5 2699 2776 4030 2035.0 772.4 2622 2689 3649 2225.0 824.5 2699 2776 4030 2035.0 775.0 2626 2693 3776 2235.0 827.0 2703 27560 4187 2040.0 776.4 2627 2695 3519 2240.0 828.2 2705 2763 4038 2045.0 777.7 2629 2697 3815 2245.0 829.5 2706 2768 3796 2050.0 777.0 2631 2700 3903 2250.0 820.5 2706 2768 3796 2050.0 777.0 2631 2700 3903 2250.0 830.8 2708 2767 3911 2055.0 760.3 2634 2705 3964 2255.0 832.1 2710 2769 3624 2060.0 781.6 2636 2705 3964 2255.0 832.1 2710 2769 3624 2060.0 781.6 2636 2705 3969 2200.0 833.4 2712 2791 3916 2065.0 762.9 2638 2707 3733 2265.0 834.7 2714 2793 3993 2070.0 782.9 2638 2707 3733 2265.0 837.2 2716 2795 4051 2075.0 785.5 2642 2711 3893 2275.0 837.2 2717 2797 3734 2080.0 789.4 2648 2719 3604 2270.0 835.9 2716 2795 4051 2075.0 789.3 2644 2714 3818 2280.0 835.9 2712 2795 4051 2075.0 789.4 2648 2719 3767 2290.0 841.1 2723 2803 4048 2095.0 790.7 2650 2721 3722 2295.0 847.7 2724 2805 3648 2100.0 792.0 2652 2723 3950 2300.0 843.7 2712 2803 4048 2095.0 790.7 2650 2721 3722 2295.0 847.7 2724 2805 3648 2100.0 792.0 2652 2723 3950 2300.0 843.7 2724 2805 3648 2100.0 792.0 2652 2723 3950 2300.0 843.7 2724 2805 3648 2100.0 794.6 2666 2735 3949 2355.0 850.2 2735 2814 4029 2135.0 800.9 2666 2735 3842 2355.0 851.3 2737 2810 3782 2135.0 800.9 2666 2735 3842 2355.0 851.3 2737 2810 3782 2135.0 800.9 2666 2735 3842 2355.0 851.3 2737 2810 4248 2150.0 804.7 2672 2744 3062 2355.0 866.8 2743 2824 4275 2150.0 804.7 2672 2744 3060 2355.0 866.0 2735 2814 4029 21350.0 800.9 2666 2735 3842 2355.0 851.3 2737 2819 4248 2150.0 804.7 2672 2744 3062 2355.0 851.3 2737 2819 4248 2150.0 804.7 2672 2744 3062 2355.0 851.3 2737 2819 4248 2150.0 804.7 2672 2744 3062 2355.0 851.3 2737 2819 4248 2150.0 804.7 2672 2744 3060 2355.0 856.0 2735 2824 4178 2150.0 804.7 2672 2744 3062		-								
2010.0 748.2 2617 2683 3758 2210.0 820.7 2673 2769 3737 2015.0 769.7 2618 2685 3291 2215.0 822.0 2695 2771 3858 2020.0 771.1 2620 2687 3657 2220.0 823.3 2697 2773 3926 2025.0 772.4 2622 2689 3849 2225.0 824.5 2699 2776 4030 2035.0 775.0 2626 2693 3776 2225.0 824.5 2699 2776 4030 2035.0 775.0 2626 2693 3776 2235.0 827.0 2703 2760 4187 2045.0 776.4 2627 2695 3519 2240.0 828.2 2705 2763 4038 2045.0 777.7 2627 2697 3815 2245.0 827.0 2703 2760 4187 2045.0 777.7 2627 2697 3815 2245.0 827.5 2706 2768 3796 2050.0 779.0 2631 2700 3903 2250.0 830.8 2708 2787 3911 2055.0 780.3 2634 2702 3846 2255.0 832.1 2710 2789 3824 2065.0 780.3 2634 2707 3733 2265.0 832.1 2710 2789 3824 2065.0 782.9 2638 2707 3733 2265.0 834.7 2714 2793 3993 2075.0 784.2 2640 2709 3804 2270.0 835.9 2716 2799 3779 2085.0 784.2 2640 2711 3893 2275.0 857.2 2717 2797 3734 2080.0 784.2 2640 2711 3893 2275.0 857.2 2717 2797 3734 2080.0 789.4 2648 2719 3764 4178 2285.0 839.8 2721 2801 3898 2095.0 790.7 2650 2721 3722 2290.0 841.1 2723 2803 4048 2095.0 790.7 2650 2721 3722 2290.0 841.1 2723 2803 4048 2095.0 790.7 2650 2721 3722 2290.0 841.1 2723 2803 4048 2095.0 790.7 2650 2721 3722 2290.0 841.1 2723 2803 4048 2190.0 792.0 2652 2723 3750 2300.0 843.7 2726 2807 3912 2105.0 793.2 2654 2727 3714 2310.0 846.4 2729 2810 3782 2115.0 794.6 2654 2727 3714 2310.0 845.4 2729 2810 3782 2115.0 797.0 2660 2732 4016 2320.0 845.7 2731 2812 3760 2120.0 797.0 2660 2732 4016 2320.0 845.7 2731 2812 3760 2120.0 797.0 2660 2732 4016 2320.0 888.9 2733 2814 4029 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 804.7 2672 2744 3062 2335.0 851.3 2737 2819 4248 2135.0 800.9 2664 2737 3744 2330.0 853.4 2741 2824 277 2145.0 808.7 2672 2746 3795 2350.0 856.0 2745 2829 4178 2155.0 804.7 2672 2744 3062 2335.0 853.4 2749 2833 4198 2155.0 804.7 2672 2746 3795 2350.0 856.0 2745 2829 4178 2155.0 804.7 2672 2764 3795 2350.0 856.0 2745 2829 4178 2155.0 804.7 2672 2764 3795 2350.0 856.0 2745 2829 4178 2155.0 804.7 2672 2746 3795 2350.0 856.0 2745 2829 4178 2155.0 804.7 2672 2746 379	•		•			•				
2015.0 769.7 2618 2685 3291 2215.0 822.0 2697 2771 3888 2020.0 771.1 2620 2687 3657 2220.0 823.3 2697 2773 3826 2025.0 772.4 2622 2689 3849 2225.0 824.5 2699 2776 4030 2030.0 773.7 2424 2622 2689 3849 2225.0 824.5 2699 2776 4030 2030.0 775.0 2626 2693 3776 2235.0 827.0 2703 2780 4187 2040.0 776.4 2627 2695 3519 2240.0 828.2 2705 2783 4038 2045.0 777.7 2627 2695 3519 2240.0 828.2 2705 2783 4038 2045.0 777.7 2627 2695 3519 2240.0 828.2 2705 2783 4038 2045.0 777.7 2627 2695 3519 2240.0 828.2 2705 2783 4038 2045.0 777.7 2627 2695 3815 2245.0 829.5 2706 2785 3796 2050.0 777.0 2631 2700 3903 2255.0 830.8 2708 2787 3911 2055.0 780.3 2634 2702 3846 2255.0 832.1 2710 2789 3824 2060.0 781.6 2636 2705 3769 2260.0 833.4 2712 2791 3916 2065.0 781.6 2636 2705 3769 2265.0 832.1 2710 2789 3893 2070.0 781.6 2636 2709 3804 2270.0 835.9 2716 2795 4051 2075.0 785.5 2642 2711 3893 2275.0 837.2 2711 2797 3734 2080.0 786.8 2644 2714 3818 2280.0 835.5 2719 2799 3779 2085.0 789.0 2646 2716 4178 2285.0 839.8 2721 2801 3898 2090.0 789.4 2648 2716 4178 2285.0 841.1 2723 2803 4048 2090.0 789.4 2648 2717 3767 2290.0 841.1 2723 2803 4048 2090.0 790.7 2650 2721 3722 2295.0 842.4 2724 2805 5668 2100.0 792.0 2652 2723 3750 2300.0 845.7 2726 2807 3712 2760 2110.0 794.6 2656 2727 3714 2710 2753 2816 4092 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 804.7 2672 2744 3082 2355.0 850.2 2735 2816 4092 2125.0 804.7 2672 2744 3082 2355.0 851.3 2737 2819 4248 2135.0 800.9 2664 2737 4036 2330.0 851.3 2737 2819 4248 2135.0 800.9 2664 2739 3842 2335.0 850.2 2735 2816 4092 2125.0 804.7 2672 2744 3082 2335.0 850.2 2735 2816 4092 2125.0 804.7 2672 2744 3082 2335.0 851.3 2737 2819 4248 2135.0 800.9 2666 2732 3749 2350.0 851.3 2737 2819 4248 2135.0 800.9 2666 2732 3749 2350.0 851.3 2735 2822 4423 2140.0 802.2 2668 2742 3759 3842 2335.0 852.5 2739 2822 4423 2140.0 802.2 2668 2742 3759 3842 2335.0 852.5 2739 2822 4423 2150.0 803.4 2670	2005.0	766.9	2614	2681	3928	2205.0	819.4	2691	2767	3680
2020.0 771.1 2620 2687 3657 2220.0 823.3 2697 2773 3926 2025.0 772.4 2622 2689 3849 2225.0 824.5 2699 2776 4030 2030.0 773.7 2622 2689 3849 2235.0 824.5 2699 2776 4030 2035.0 775.0 2626 2693 3776 2235.0 827.0 2703 2780 4187 2040.0 775.0 2626 2693 3776 2235.0 827.0 2703 2780 4187 2040.0 776.4 2627 2695 3519 2240.0 828.2 2705 2783 4038 2045.0 777.7 2629 2697 3815 2245.0 829.5 2706 2785 3796 2050.0 779.0 2631 2700 3903 2250.0 830.8 2708 2787 3911 2055.0 780.3 2634 2702 3846 2255.0 832.1 2710 2789 3824 2060.0 781.6 2636 2705 3749 2260.0 833.4 2712 2791 3916 2065.0 782.9 2638 2707 3733 2265.0 833.4 2712 2791 3916 2065.0 782.9 2638 2707 3733 2265.0 837.2 2716 2795 4051 2075.0 785.5 2642 2711 3893 2275.0 837.2 2717 2797 3734 2080.0 786.8 2644 2714 3818 2280.0 838.5 2719 2799 3779 2085.0 786.0 2644 2716 4178 2265.0 837.2 2717 2797 3734 2095.0 790.7 2650 2721 3722 229510 842.4 2724 2805 3668 2100.0 792.0 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 790.7 2650 2721 3722 229510 842.4 2724 2805 3668 2100.0 792.0 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 793.2 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 793.2 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 797.0 2650 2721 3722 229510 842.4 2724 2805 3668 2100.0 794.6 2656 2727 3714 2310.0 846.4 2729 2810 3782 2115.0 793.3 2662 2735 3909 2305.0 845.0 2728 2808 3766 2120.0 797.0 2660 2732 4016 2320.0 848.9 2733 2814 4029 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 804.7 2672 2746 3795 2350.0 854.8 2731 2822 4423 2140.0 802.2 2648 2742 3795 2340.0 853.6 2741 2824 4277 2145.0 804.7 2672 2746 3795 2350.0 854.8 2733 2822 4423 2140.0 802.2 2648 2742 3795 3340.0 853.6 2741 2824 4277 2155.0 804.7 2672 2746 3795 2350.0 854.8 2733 2812 4099 2125.0 804.7 2672 2746 3795 2350.0 854.8 2733 2826 4178 2150.0 804.7 2672 2746 3795 2350.0 854.8 2733 2824 4178 2155.0 804.7 2677 2752 3749 2350.0 856.0 2735 2838 4195 2155.0 804.0 2679 2744 4062 2345.0 854.8 2749 2833 4195 2155.0 804.0 805.6 2751 2844 4	2010.0	768.2	2617	2683	3958	2210.0	820.7	2693	2769	3737
2020.0 771.1 2620 2687 3657 2220.0 823.3 2697 2773 3926 2025.0 772.4 2622 2689 3849 2225.0 824.5 2699 2776 4030 2030.0 773.7 2622 2689 3849 2235.0 824.5 2699 2776 4030 2035.0 775.0 2626 2693 3776 2235.0 827.0 2703 2780 4187 2040.0 775.0 2626 2693 3776 2235.0 827.0 2703 2780 4187 2040.0 776.4 2627 2695 3519 2240.0 828.2 2705 2783 4038 2045.0 777.7 2629 2697 3815 2245.0 829.5 2706 2785 3796 2050.0 779.0 2631 2700 3903 2250.0 830.8 2708 2787 3911 2055.0 780.3 2634 2702 3846 2255.0 832.1 2710 2789 3824 2060.0 781.6 2636 2705 3749 2260.0 833.4 2712 2791 3916 2065.0 782.9 2638 2707 3733 2265.0 833.4 2712 2791 3916 2065.0 782.9 2638 2707 3733 2265.0 837.2 2716 2795 4051 2075.0 785.5 2642 2711 3893 2275.0 837.2 2717 2797 3734 2080.0 786.8 2644 2714 3818 2280.0 838.5 2719 2799 3779 2085.0 786.0 2644 2716 4178 2265.0 837.2 2717 2797 3734 2095.0 790.7 2650 2721 3722 229510 842.4 2724 2805 3668 2100.0 792.0 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 790.7 2650 2721 3722 229510 842.4 2724 2805 3668 2100.0 792.0 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 793.2 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 793.2 2652 2723 3790 2300.0 843.7 2726 2807 3912 2105.0 797.0 2650 2721 3722 229510 842.4 2724 2805 3668 2100.0 794.6 2656 2727 3714 2310.0 846.4 2729 2810 3782 2115.0 793.3 2662 2735 3909 2305.0 845.0 2728 2808 3766 2120.0 797.0 2660 2732 4016 2320.0 848.9 2733 2814 4029 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 804.7 2672 2746 3795 2350.0 854.8 2731 2822 4423 2140.0 802.2 2648 2742 3795 2340.0 853.6 2741 2824 4277 2145.0 804.7 2672 2746 3795 2350.0 854.8 2733 2822 4423 2140.0 802.2 2648 2742 3795 3340.0 853.6 2741 2824 4277 2155.0 804.7 2672 2746 3795 2350.0 854.8 2733 2812 4099 2125.0 804.7 2672 2746 3795 2350.0 854.8 2733 2826 4178 2150.0 804.7 2672 2746 3795 2350.0 854.8 2733 2824 4178 2155.0 804.7 2677 2752 3749 2350.0 856.0 2735 2838 4195 2155.0 804.0 2679 2744 4062 2345.0 854.8 2749 2833 4195 2155.0 804.0 805.6 2751 2844 4	2015.0	769.7	2618	2685	3291	2215.0	822.0	2695		
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2085.0 788.0 2646 2716 4178 2285.0 839.8 2721 2801 3898 2090.0 789.4 2648 2719 3767 2290.0 841.1 2723 2803 4048 2095.0 790.7 2650 2721 3722 2295.0 842.4 2724 2805 3668 2100.0 792.0 2652 2723 3950 2300.0 843.7 2726 2807 3912 2105.0 793.2 2654 2725 4009 2305.0 845.0 2728 2808 3766 2110.0 794.6 2656 2727 3714 2310.0 846.4 2729 2810 3782 2115.0 795.8 2658 2730 4070 2315.0 847.7 2731 2812 3760 2120.0 797.0 2660 2732 4016 2320.0 848.9 2733 2814 4029 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2130.0 797.5 2664 2737 4036 2330.0 851.3 2737 2819 4248 2135.0 800.9 2666 2739 3842 2335.0 852.5 2739 2822 4423 2140.0 802.2 2668 2742 3795 2340.0 853.6 2741 2824 4277 2145.0 803.4 2670 2744 4062 2345.0 854.8 2743 2826 4178 2150.0 804.7 2672 2746 3795 2350.0 856.0 2745 2829 4109 2155.0 806.0 2674 2748 3789 2355.0 857.2 2747 2831 4263 2160.0 807.4 2675 2750 3747 2360.0 858.4 2749 2833 4198 2165.0 808.7 2677 2752 3749 2355.0 859.6 2753 2838 4195 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 863.2 2757 2843 4138 2165.0 808.7 2677 2752 3749 2355.0 853.2 2757 2843 4138 2165.0 808.7 2677 2752 3749 2355.0 859.6 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 863.2 2757 2843 4138 2165.0 808.7 2677 2752 3749 2355.0 863.2 2757 2843 4138 2165.0 808.7 2677 2752 3749 2355.0 859.6 2753 2838 4195 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 862.0 2755 2840 4275 2180.0 815.5 2686 2757 3424 2380.0 863.2 2757 2843 4138 2165.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2195.0 815.5 2686 2757 3424 2380.0 863.2 2757 2843 4138 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2195.0 815.5 2686 2761 3769 2395.0 866.8 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195	2080.0	786.8	2644	2714	3818	2280.0	838.5	2719	2799	3779
2090.0 789.4 2648 2719 3767 2290.0 841.1 2723 2803 4048 2095.0 790.7 2650 2721 3722 2295.0 842.4 2724 2805 3668 2100.0 792.0 2652 2723 3950 2300.0 843.7 2726 2807 3912 2105.0 793.2 2654 2725 4009 2305.0 845.0 2728 2808 3766 2110.0 794.6 2656 2727 3714 2310.0 846.4 2729 2810 3782 2115.0 795.8 2658 2730 4070 2315.0 847.7 2731 2812 3760 2120.0 797.0 2660 2732 4016 2320.0 848.9 2733 2814 4029 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2130.0 799.5 2664 2737 4036 2330.0 851.3 2737 2819 4248 2135.0 800.9 2666 2739 3842 2335.0 852.5 2739 2822 4423 2140.0 802.2 2668 2742 3795 2340.0 853.6 2741 2824 4277 2145.0 803.4 2670 2744 4062 2345.0 854.8 2743 2826 4178 2150.0 804.7 2672 2746 3795 2350.0 856.0 2745 2829 4109 2155.0 806.0 2674 2748 3789 2355.0 857.2 2747 2831 4263 2150.0 807.4 2675 2750 3747 2360.0 858.4 2749 2833 4198 2165.0 808.7 2677 2752 3749 2365.0 859.6 2755 2836 4095 2170.0 810.0 2679 2754 3747 2350.0 863.2 2755 2836 4095 2170.0 810.0 2679 2754 3747 2350.0 863.2 2755 2840 4275 2160.0 808.7 2672 2756 3845 2375.0 859.6 2751 2836 4095 2170.0 810.0 2679 2754 3747 2350.0 859.6 2751 2836 4095 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 862.0 2755 2840 4275 2180.0 812.8 2682 2757 3424 2380.0 863.2 2757 2843 4138 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2180.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2180.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2180.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2180.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2185.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195	2085.0	788.0	2646	2716						
2095.0       790.7       2650       2721       3722       2295.0       842.4       2724       2805       3668         2100.0       792.0       2652       2723       3950       2300.0       843.7       2726       2807       3912         2105.0       793.2       2654       2725       4009       2305.0       845.0       2728       2808       3766         2110.0       794.6       2656       2727       3714       2310.0       846.4       2729       2810       3782         2115.0       795.8       2658       2730       4070       2315.0       847.7       2731       2812       3760         2120.0       797.0       2660       2732       4016       2320.0       848.9       2733       2814       4029         2125.0       798.3       2662       2735       3909       2325.0       850.2       2735       2816       4092         2130.0       799.5       2664       2737       4036       2330.0       851.3       2737       2819       4248         2135.0       800.9       2666       2739       3842       2335.0       852.5       2739       2822       4273	2090.0	789.4	2643							
2100.0       792.0       2652       2723       3950       2300.0       843.7       2726       2807       3912         2105.0       793.2       2654       2725       4009       2305.0       845.0       2728       2808       3766         2110.0       774.6       2656       2727       3714       2310.0       846.4       2729       2810       3782         2115.0       795.8       2658       2730       4070       2315.0       847.7       2731       2812       3760         2120.0       797.0       2660       2732       4016       2320.0       848.9       2733       2814       4029         2125.0       798.3       2662       2735       3909       2325.0       850.2       2735       2816       4092         2130.0       799.5       2664       2737       4036       2330.0       851.3       2737       2819       4248         2135.0       800.9       2666       2739       3842       2335.0       851.3       2737       2819       4428         2135.0       800.9       2664       2739       3842       2335.0       852.5       2739       2822       4423	2095.0	790.7								
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2110.0       794.6       2656       2727       3714       2310.0       846.4       2729       2810       3782         2115.0       795.8       2658       2730       4070       2315.0       847.7       2731       2812       3760         2120.0       797.0       2660       2732       4016       2320.0       848.9       2733       2814       4029         2125.0       798.3       2662       2735       3909       2325.0       850.2       2735       2816       4092         2130.0       799.5       2664       2737       4036       2330.0       851.3       2737       2819       4248         2135.0       800.9       2666       2739       3842       2335.0       852.5       2739       2822       4423         2140.0       802.2       2668       2742       3795       2340.0       853.6       2741       2824       4277         2145.0       803.4       2670       2744       4062       2345.0       854.8       2743       2826       4178         2150.0       804.7       2672       2746       3795       2350.0       857.2       2747       2831       4263	2105.0	793.2	2654	2725	4009	2305.0	845.0	2728	2808	3766
2115.0 795.8 2658 2730 4070 2315.0 847.7 2731 2812 3760 2120.0 797.0 2660 2732 4016 2320.0 848.9 2733 2814 4029 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2125.0 798.3 2662 2737 4036 2330.0 851.3 2737 2819 4248 2135.0 800.9 2666 2739 3842 2335.0 852.5 2739 2822 4423 2140.0 802.2 2668 2742 3795 2340.0 853.6 2741 2824 4277 2145.0 803.4 2670 2744 4062 2345.0 854.8 2743 2826 4178 2150.0 804.7 2672 2746 3795 2350.0 856.0 2745 2829 4109 2155.0 806.0 2674 2748 3789 2355.0 857.2 2747 2831 4263 2160.0 807.4 2675 2750 3747 2360.0 858.4 2749 2833 4198 2165.0 808.7 2677 2752 3749 2365.0 859.6 2751 2836 4095 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 862.0 2755 2840 4275 2180.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195	2110.0	794.6	2656							
2120.0 797.0 2660 2732 4016 2320.0 848.9 2733 2814 4029 2125.0 798.3 2662 2735 3909 2325.0 850.2 2735 2816 4092 2130.0 799.5 2664 2737 4036 2330.0 851.3 2737 2819 4248 2135.0 800.9 2666 2739 3842 2335.0 852.5 2739 2822 4423 2140.0 802.2 2668 2742 3795 2340.0 853.6 2741 2824 4277 2145.0 803.4 2670 2744 4062 2345.0 854.8 2743 2826 4178 2150.0 804.7 2672 2746 3795 2350.0 856.0 2745 2829 4109 2155.0 806.0 2674 2748 3789 2355.0 857.2 2747 2831 4263 2160.0 807.4 2675 2750 3747 2360.0 858.4 2749 2833 4198 2165.0 808.7 2677 2752 3749 2365.0 859.6 2751 2836 4095 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 862.0 2755 2840 4275 2180.0 812.8 2682 2757 3424 2380.0 863.2 2757 2843 4138 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195	2115.0									
2125.0       798.3       2662       2735       3909       2325.0       850.2       2735       2816       4092         2130.0       799.5       2664       2737       4036       2330.0       851.3       2737       2819       4248         2135.0       800.9       2666       2739       3842       2335.0       852.5       2739       2822       4423         2140.0       602.2       2668       2742       3795       2340.0       853.6       2741       2824       4277         2145.0       303.4       2670       2744       4062       2345.0       854.8       2743       2826       4178         2150.0       804.7       2672       2746       3795       2350.0       856.0       2745       2829       4109         2155.0       806.0       2674       2748       3789       2355.0       857.2       2747       2831       4263         2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095	2120.0									
2130.0 799.5 2664 2737 4036 2330.0 851.3 2737 2819 4248 2135.0 800.9 2666 2739 3842 2335.0 852.5 2739 2822 4423 2140.0 802.2 2668 2742 3795 2340.0 853.6 2741 2824 4277 2145.0 803.4 2670 2744 4062 2345.0 854.8 2743 2826 4178 2150.0 804.7 2672 2746 3795 2350.0 856.0 2745 2829 4109 2155.0 806.0 2674 2748 3789 2355.0 857.2 2747 2831 4263 2160.0 807.4 2675 2750 3747 2360.0 858.4 2749 2833 4198 2165.0 808.7 2677 2752 3749 2365.0 859.6 2751 2836 4095 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 862.0 2755 2840 4275 2180.0 812.8 2682 2757 3424 2380.0 863.2 2757 2843 4138 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195										
2135.0       800.9       2666       2739       3842       2335.0       852.5       2739       2822       4423         2140.0       802.2       2668       2742       3795       2340.0       853.6       2741       2824       4277         2145.0       803.4       2670       2744       4062       2345.0       854.8       2743       2826       4178         2150.0       804.7       2672       2746       3795       2350.0       856.0       2745       2829       4109         2155.0       806.0       2674       2748       3789       2355.0       857.2       2747       2831       4263         2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138										4072
2135.0       800.9       2666       2739       3842       2335.0       852.5       2739       2822       4423         2140.0       802.2       2668       2742       3795       2340.0       853.6       2741       2824       4277         2145.0       803.4       2670       2744       4062       2345.0       854.8       2743       2826       4178         2150.0       804.7       2672       2746       3795       2350.0       856.0       2745       2829       4109         2155.0       806.0       2674       2748       3789       2355.0       857.2       2747       2831       4263         2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138	2130.0	799.5	2664	2737	4036	2330.0	851.3	2737	2819	4248
2140.0       602.2       2668       2742       3795       2340.0       853.6       2741       2824       4277         2145.0       603.4       2670       2744       4062       2345.0       854.8       2743       2826       4178         2150.0       804.7       2672       2746       3795       2350.0       856.0       2745       2829       4109         2155.0       806.0       2674       2748       3789       2355.0       857.2       2747       2831       4263         2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2175.0       811.3       2681       2756       3845       2375.0       862.0       2757       2843       4138         2185.0       814.2       2684       2759       3680       2385.0       864.4       2759       2845       4073										
2145.0       803.4       2670       2744       4062       2345.0       854.8       2743       2826       4178         2150.0       804.7       2672       2746       3795       2350.0       856.0       2745       2829       4109         2155.0       806.0       2674       2748       3789       2355.0       857.2       2747       2831       4263         2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2175.0       811.3       2681       2756       3845       2375.0       862.0       2755       2840       4275         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138         2185.0       814.2       2684       2759       3680       2385.0       864.4       2759       2845       4073										
2150.0       804.7       2672       2746       3795       2350.0       856.0       2745       2829       4109         2155.0       806.0       2674       2748       3789       2355.0       857.2       2747       2831       4263         2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2175.0       811.3       2681       2756       3845       2375.0       862.0       2755       2840       4275         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138         2185.0       814.2       2684       2759       3680       2385.0       864.4       2759       2845       4073         2190.0       815.5       2686       2761       3769       2390.0       865.6       2761       2847       4108										
2155.0 806.0 2674 2748 3789 2355.0 857.2 2747 2831 4263 2160.0 807.4 2675 2750 3747 2360.0 858.4 2749 2833 4198 2165.0 808.7 2677 2752 3749 2365.0 859.6 2751 2836 4095 2170.0 810.0 2679 2754 3747 2370.0 860.8 2753 2838 4195 2175.0 811.3 2681 2756 3845 2375.0 862.0 2755 2840 4275 2180.0 812.8 2682 2757 3424 2380.0 863.2 2757 2843 4138 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195										
2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2175.0       811.3       2681       2756       3845       2375.0       862.0       2755       2840       4275         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138         2185.0       814.2       2684       2759       3680       2385.0       864.4       2759       2845       4073         2190.0       815.5       2686       2761       3769       2390.0       865.6       2761       2847       4108         2195.0       816.7       2688       2763       4012       2395.0       866.8       2763       2849       4195					4,,,	200010	000.0	2,40		4107
2160.0       807.4       2675       2750       3747       2360.0       858.4       2749       2833       4198         2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2175.0       811.3       2681       2756       3845       2375.0       862.0       2755       2840       4275         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138         2185.0       814.2       2684       2759       3680       2385.0       864.4       2759       2845       4073         2190.0       815.5       2686       2761       3769       2390.0       865.6       2761       2847       4108         2195.0       816.7       2688       2763       4012       2395.0       866.8       2763       2849       4195	2155.0	806.0	2674	2748	3789	2355.0	857.2	2747	2831	A263
2165.0       808.7       2677       2752       3749       2365.0       859.6       2751       2836       4095         2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2175.0       811.3       2681       2756       3845       2375.0       862.0       2755       2840       4275         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138         2185.0       814.2       2684       2759       3680       2385.0       864.4       2759       2845       4073         2190.0       815.5       2686       2761       3769       2390.0       865.6       2761       2847       4108         2195.0       816.7       2688       2763       4012       2395.0       866.8       2763       2849       4195										
2170.0       810.0       2679       2754       3747       2370.0       860.8       2753       2838       4195         2175.0       811.3       2681       2756       3845       2375.0       862.0       2755       2840       4275         2180.0       812.8       2682       2757       3424       2380.0       863.2       2757       2843       4138         2185.0       814.2       2684       2759       3680       2385.0       864.4       2759       2845       4073         2190.0       815.5       2686       2761       3769       2390.0       865.6       2761       2847       4108         2195.0       816.7       2688       2763       4012       2395.0       866.8       2763       2849       4195										
2175.0     811.3     2681     2756     3845     2375.0     862.0     2755     2840     4275       2180.0     812.8     2682     2757     3424     2380.0     863.2     2757     2843     4138       2185.0     814.2     2684     2759     3680     2385.0     864.4     2759     2845     4073       2190.0     815.5     2686     2761     3769     2390.0     865.6     2761     2847     4108       2195.0     816.7     2688     2763     4012     2395.0     866.8     2763     2849     4195										
2180.0 812.8 2682 2757 3424 2380.0 863.2 2757 2843 4138 2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195										
2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195		<del></del>			~~~					/-
2185.0 814.2 2684 2759 3680 2385.0 864.4 2759 2845 4073 2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195	2180.0	812.8	2682	2757	3424	2380.0	863:2	2757	2843	4138
2190.0 815.5 2686 2761 3769 2390.0 865.6 2761 2847 4108 2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195										
2195.0 816.7 2688 2763 4012 2395.0 866.8 2763 2849 4195										
	2200.0	318.0		2766	3919	2400.0	868.0	2765	2851	4152

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Well : WINDERMERE #2 Survey units : METRES

Client : MINORA

Datum : 0.0

						•				
	Datum	One-way	VE	LOCITI	ES	Datum	One-way	VE	LOCIT	IES
	Depth	time(ms)	Average	RMS 1	Interval	Depth	-			Interval
						•		<b>3</b>		
	2405.0	869.2	2767	2854	4148	2605.0 <	916.8	2842	2939	4291
	2410.0	870.5	2769	2856	3992	2610.0	918.0	2843	2941	
	2415.0	871.7	2770	2858	4134	2615.0	919.2	2845	2943	
	2420.0	372.9	2772	2860	4271	2620.0	920.3	2847	2945	
	2425.0	874.0	2775	2863	4478	2625.0	921.5	2849	2948	
										4020
	2430.0	875.2	2777	2865	4312	2630.0	922.7	2850	2950	4240
	2435.0	876.4	2779	2867	4138	2635.0	923.8	2852	2952	4354
	2440.0	877.5	2781	2870	4269	2640.0	925.1	2854	2953	3977
	2445.0	878.7	2782	2872	4245	2645.0	926.3	2856	2955	4210
	2450.0	879.9	2784	2874	4112	2650.0	927.5	2857	2957	4023
		_, , , ,		2074	74.44	200010	727.0	2037	2737	4023
	2455.0	881.1	2786	2876	4143	2655.0	928.7	2859	2959	4066
	2460.0	882.3	2788	2878	4121	2660.0	930.0	2860	2960	3977
	2465.0	883.5	2790	2880	4203	2665.0	931.2	2862	2962	
	2470.0	384.7	2792	2883	4207	2670.0	932.4	2864		4174
	2475.0	885.9	2794	2885	4233	2675.0	933.7		2964	4216
			2,,4	2000	4200	20/3.0	733.7	2865	2966	3891
	2480.0	887.0	2796	2888	4521	2680.0	934.9	2047	2010	847/
	2485.0	888.2	2798	2890	4313	2685.0	936.1	2867 2868	2968	4176
	2490.0	889.3	2800	2892	4339	2690.0	937.3		2969	4141
	2495.0	890.5	2802	2894	4285	2695.0	938.4	2870	2971	4133
	2500.0	891.7	2804	2897	4160	2700.0	939.5	2872	2973	4431
			2004	20//	4100	2700.0	737.3	2874	2975	4425
	2505.0	392.9	2805	2899	4132	2705.0	940.7	2875	2977	4260
	2510.0	894.2	2807	2900	3980	2710.0	941.8		2980	4597
	2515.0	895.4	2809	2902	4074	2715.0	942.9		2982	4400
	2520.0	896.6	2811	2904	4068	2720.0	944.0		2984	4482
	2525.0	897.8	2812	2906	4134	2725.0	945.2		2986	4320
			_			=	,4012	2000	2700	4320
	2530.0	399.1	2814	2908	4018	2730.0	946.3	2885	2989	4627
	2535.0	900.2	2816	2910	4267	2735.0	947.4		2991	4395
	2540.0	901.4	2818	2912	4225	2740.0	948.6		2993	4406
	2545.0	902.6	2820	2915	4293	2745.0	949.7		2995	4541
	2550.0	903.7	2822	2917	4465	2750.0	950.8		2997	4495
										4470
	2555.0	904.9	2824	2919	4329	2755.0	951.9	2894	2999	4436
•	2560.0	906.1	2825	2921	4198	2760.0	953.0		3001	4416
-	2565.0	907.3	2827	2923	3981	2765.0	954.1		3004	4541
	2570.0	908.5	2829	2925	4038	2770.0	955.2		3006	4477
	2575.0	909.7	2831	2927	4378	2775.0	956.4		3008	4370
	-			•		• •	<del>-</del> •			<del></del>
	2580.0	910.8	2833	2929	4412	2780.0	957.5	2903	3010	4513
	2585.0	912.0	2834	2931	4177	2785.0	958.6		3012	4487
	2590.0	913.2	2836	2933	4118	2790.0	959.8		3014	4387
~	2595.0	714.4	2838	2935	4223	2795.0	960.9		3016	4461
	2600.0	915.6		2937	4238	2800.0	962.0		3018	4555
								<del>-</del>		

well : WINDERMERE #2
Survey units : METRES
Calibrated carri

Client : MINORA Datum : 0.0

Datum	One-way	VE	LOCITI	ES	Datum	One-way	VF	וחכנד	IES
Depth	time(ms)	Average	RMS I	nterval	Depth	time(ms)			Interva)
					·				
2805.0	963.1	2912	3020	4431	3005.0	1010.5	2974	3088	3965
2810.0	964.2	2914	3023	4529	3010.0	1011.9	2975	2088	
2815.0	965.4	2916	3024	4307	3015.0	1013.3	2975	3089	3656
2820.0	966.5	2918	3026	4349	3020.0	1014.5	2977	3090	4063
2825.0	967.6	2920	3029	4599	3025.0	1015.7	2978	3092	4205
						•			
2830.0	968.7	2921	2020	4373	3030.0	1017.0	2979	3093	3767
2835.0	969.9	2923	3032	4394	3035.0	1018.2	2981	3095	4231
2840.0	971.0	2925	3034	4452	3040.0	1019.5	2982	3096	3846
2845.0	972.2	2927	3036	4374	3045.0	1020.7	2983	3097	4191
2850.0	973.4	2923	3028	4126	3050.0	1021.9	2985	3098	4081
2855.0	974.5	2930	3040	4254	3055.0	1023.1	2986	7100	4000
2860.0	975.7	2931	3042	4253	3060.0	1024.3	2786 2987	3100	4228
2865.0	976.9	2933	3043	4370	3065.0	1025.6	2787 2989	3101 3103	4078
2870.0	978.0	2934	3045	4264	3070.0	1025.7	2707 2990		4087
2875.0	979.3	2936	3046	3896	3075.0	1027.9	2991	3104	4348
			4.040	0070	0070.0	102/27	2771	3106	4112
2880.0	980.5	2937	3048	4278	3080.0	1029.1	2993	3107	4154
2885.0	981.6	2939	3050	4337	3085.0	1030.3	2994	3107	4347
2890.0	782.8	2941	3052	4479	3090.0	1031.4	2996	3111	4362
2895.0	983.9	2942	3054	4350	3095.0	1032.6	2997	3112	4375
2900.0	985.0	2944	3056	4525	3100.0	1033.8	2999	3114	4201
								0114	4201
2905.0	986.2	2946	3057	4109	3105.0	1034.9	3000	3115	4268
2910.0	987.5	2947	3059	3985	3110.0	1036.1	3002	3117	4367
2915.0	988.8	2943	3060	3707	3115.0	1037.2	3003	3119	4441
2920.0	990.0	2950	3062	4312	3120.0	1038.4	3005	3120	4328
2925.0	991.2	2951	2063	4210	3125.0	1039.5		3122	4211
						•	±	=======================================	
2930.0	992.4	2952	3064	3963	3130.0	1040.8	3007	3123	3829
2935.0	993.7	2954	3066	4055	3135.0	1042.1	3008	3124	4108
2940.0	995.0	2955	3067	3887	3140.0	1043.2	3010	3126	4264
2945.0	996.2	2956	3069	4078	3145.0	1044.4		3127	4329
2950.0	997.4	2958	3070	4200	3150.0	1045.5		3129	4342
2955.0	998.8	2958	3071	3455	3155.0	1046.6	3014	3131	4560
2960.0	1000.0		3072	4098		1047.8	3016	3132	4411
2965.0	1001.2		3074	4411	3165.0	1048.9	3017	3134	4468
2970.0	1002.3		3076	4377	3170.0	1050.0	3019	3136	4363
2975.0	1003.5	2965	3077	4175	3175.0	1051.2	3020	3137	4252
2980.0	1004.7	2966	3079	4356	3180.0	1052.4	3022	3139	4302
2985.0	1005.7		3081	4655	3185.0	1053.5		3140	4502 4526
2990.0	1006.9		3083	4273	3190.0	1054.6		3142	4661
2995.0	1008.1		3084	4069	3195.0	1055.6		3144	4613
3000.0	1009.2		3086	4541	3200.0	1056.8		3146	4489
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Well : WINDERMERE #2 Survey units : METRES Client : MINORA
Datum : 0.0

Calibrated sonic interval velocities used from

265.0 to 3530.0

Datum	One-way	VEI	LOCIT	IES	Datum	One-way	VFI	OCIT	IES
Depth	time(ms)				Depth	time(ms)			
		_			•		-		
3205.0	1057.9	3030	3147		3370.0	1092.1	3086	3214	4881
3210.0	1059.0	3031	3149		3375.0	1093.1	3087	3215	4652
3215.0	1060.1	3033	3151		3380.0	1094.2	3089	3217	4943
3220.0	1061.2	3034	3153	4657	3385.0	1095.2	3091	3219	4937
3225.0	1062.2	3036	3155	4702	3390.0	1096.3	3092	3221	4632
7070 0	10/7 7	7070	7157	45.45	7705 0	4007.7	700	7007	
3230.0	1063.3	3038	3157		3395.0	1097.3	3094	3223	
3235.0	1064.4	3039	3159		3400.0	1098.3	3096	3225	
3240.0	1065.5	3041	3160		3405.0	1099.4	3097	3227	4677
3245.0	1066.5	3043	3162		3410.0	1100.4	3099	3229	
3250.0	1067.5	3044	3165	4891	3415.0	1101.4	3101	3231	4783
3255.0	1068.5	3046	3167	4854	3420.0	1102.5	3102	3232	4754
3260.0	1069.6	3048	3169		3425.0	1102.5	3104		4703
3265.0	1070.6	3046 3050	3171	4747 4723	3430.0	1103.5		3234	
3270.0	1070.8	3030 3051	3173				3105	3236	4791
					3435.0	1105.6	3107	3238	4725
3275.0	1072,47	3053	3174	4638	3440.0	1106.7	3108	3240	4891
3280.0	1073.8-	3055	3176	4664	3445.0	1107.8	3110	3241	4609
3285.0	1074.9	3056	3178		3450.0	1108.8	3111	3243	4723
3290.0	1076.0	3058	3180	4566	3455.0	1109.9	3113	3245	4762
3295.0	1077.0	3057	3182	4779	3460.0	1111.0	3114	3246	4570
3300.0	1078.0	3061	3184	4897	3465.0	1112.0	3116 -	3248	4782
7705 0	1076	7017	7404	A	7476 6				
3305.0	1079.1	3063	3186	4578	3470.0	1113.1	3118	3250	4737
3310.0	1080.2	3064	3187	4555	3475.0	1114.1		3252	4961
3315.0	1081.2	3066	3189	4959	3480.0	1115.1		3254	5046
3320.0	1082.2	3068	3192	5130	3485.0	1116.0		3256	5038
3325.0	1083.2	3070	3194	5096	3490.0	1117.0	3124	3258	5021
3330.0	1084.1	3072	3196	5170	3495.0	1118.0	3126	3260	5176
3335.0	1085.2		3198	4989	3500.0	1119.0		3262	5176
3340.0	1086.1	3075	3201	5182	3505.0	1119.9		3264	5274
3345.0	1087.1		3203	5253	3510.0	1120.9		3266	4921
3350.0	1088.0	3079	3205	5223	3515.0	1122.0		3268	4914
	<b></b>	· ·				· ·			~ · · ·
3355.0	1089.0		3208	5036	3520.0	1123.0	3135	3270	4918
0.0822	1090.0	3083	3210	5002	3525.0	1124.0		3272	4920
3365.0	1091.0	3084	3212	4843	3530.0	1125.0	3138	3274	4922



# Velocity Data Pty Ltd

WELL VELOCITY SURVEY

CLIENT : MINORA
WELL IDENTIFICATION : WINDERMERE #2
SURVEY DATE : 17-APR-89
SURVEY TIME : 13:28:08
SURVEY UNITS : METRES
AUTHORITY TO PROSPECT : PEP 111

WELL LATITUDE : 038 14 11 WELL LONGITUDE : 142 01 19

KELLY ELEVATION : 51.6 GROUND ELEVATION : 46.1

WEATHER & FINE

ENERGY SOURCE : ANGO

CLIENT REP : MR.D. SHORT OBSERVER : N DELFOS SHOOTER : J.BROWN RIG IDENTIFICATION : A.T.C.02 CASING DEPTH : 314.4 LOGGING UNIT : GEARHART DLL #3

RECORDING INSTRUMENTS : VDLS11/10 SYSTEM DELAY TIME 4 MSEC.

SHOT i Time 13:39:08 Level: 1600.0 Shot location: D Shot depth: 1.8 Charge size: 1.0 No. surface samples: 128 Down hole sample nos: 362 400 646 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 947mV

AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 2431mV

- Jums

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

Date maximum (mV) : down hole channel - 14.2

1 Level 1600.0 FIRST ARRIVAL PLOT - Shot

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)	Well phone data	***	*	*	*	*	<b>*</b> 3	* *	*	*	*	*	*	*	* *		*	*	*	*:	* :	<b>*</b> *	* *	*	*	*	<b>3</b> ¢ 1	* *	* *	*	*	* .		•			••	· ·					•••		•	
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SHOT 3 Time 14:01:58 Level: 2527.0 Shot location: D Shot depth: 1.8 Charge size: 1.0 No. surface samples: 128 Down hole sample nos: 611 400 397 Sample rates: 500 1000 usec Delay: 0

AUX, CHANNEL 1 Max, 1015mV



AUX, CHANNEL 2 Max, 9995mV

AUX. CHANNEL 3 Max. 2627 mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel -

3.092

**(** 9

3 Level 2527.0 FIRST ARRIVAL PLOT - Shot

Well phone data	******	-
Value uV	1 0 0 4 4 1 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2/36.
Sample time	00000000000000000000000000000000000000	

SHOT & Time 14:28:02 Level: 3586.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 809 400 199 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 3003mV



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 5195mV

- Alleman

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 4.452

Level Ą Well phone data Shot 1 ARRIVAL PLOT Value uV 171. 338. 560. 847. 1313. 1313. 1313. 2281. 2281. 2281. 2281. 2281. 2367. 3167. 3159. 2724. 1423. 1423. 1423. 1666. -2924. -2924. -2924. -2936. -4062. -4062. -4062. -4062. -4062. -4062. FIRST 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.01 0.25.0 1140.0 1142.0 1142.0 1144.0 1144.0 1144.0 1144.0 1144.0 1144.0 1152.0 1152.0 1153.0 1153.0 1165.0 1165.0 1165.0 1165.0 1165.0 Sample

3586.0

SHOT 7 Time 14:35:58 Level: 3440.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 783 400 225 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 2959mV

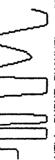


AUX, CHANNEL 2 Max, 9995mV

AUX. CHANNEL 3 Max. 5063mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel -

I

3440.0 FIRST ARRIVAL PLOT - Shot

phone data	*********	* 
Well ph		*
		*
Value uV	117. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153. 153.	-184. -784. -1481. -2184. -3307. * -3794. *
Sample time	11022 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1113750 1113750 1113850 114850 144250 144250

SHOT 9 Time 14:42:12 Level: 3360.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 768 400 240 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 2827mV

AUX. CHANNEL 2 Max. 9995mV

4428mV AUX. CHANNEL 3 Max.

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

I I judden monder of I for the

5.483 Data maximum (mV) : down hole channel -

(j) Shot ARRIVAL PLOT FIRST

3360.0

Well phone data Value uV -80. -887. -887. -887. -258. -258. -258. -226. -226. -226. -226. -340. -340. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3414. -3 Sample 1086.5 1086.5 1087.0 1087.0 1088.5 1089.5 1089.5 1090.0 1091.5 1092.0 1092.5 1093.50 1093.50 1094.60 1094.60 1094.60 1095.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.60 1005.6

SHOT 10 Time 14:47:02 Level: 3360.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 768 400 240 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 2172mV



AUX. CHANNEL 2 Max. 9995mV

3921mV AUX. CHANNEL 3 Max.



AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

wheelperflithmente

Data maximum (mV) : down hole channel -

Level 3360.0 FIRST ARRIVAL PLOT - Shot 10

Well phone data

Value uV

Sample time

*	*					*	*	*	*						*	*	*	*				*	*		;	*	<b>*</b>	<i>i</i> *	*	-							3			*	*								
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																																												*	*	*			
493.	119.	-316.	-466.	-519.	-283.	324.	548.	698.	490.	-37.	513.	-767.	-632.	÷	309.	637.	634.	309.	.459.	-571.	.636. .66	180.	545.	-197.	.//7.	105.	• • • •	. 700	1526.	886.	1463.	2054.	3424.	3637.	2784.	2031.	3247.	••••	1611.	803.	450.	-46.	-1088.	791.	-1796.	-2059.	3056. *	-3804. *	654. *
0.980	086.5	087.0	087.5	0	សុ	0.680	089.5	0.060	090.5	091.0	091.5	0	092.5	0.550	093	24	460	1095.0	095.5	0.960	0.7.60	0.000	2,445		0.101	0.2011		0 4077	106.0	107.0	108.0	109.0	110.0	0	112.0	0.511	0.411	0000	110.0	111	118	119.0	120.0	121.0	122.0	123.0	o ·	1125.0	o

SHOT 11 Time 14:54:33 Level: 3235.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 746 400 262 Sample rates: 500 1000 usec Delay: 0

2978mV AUX. CHANNEL 1 Max.

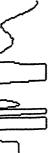


AUX, CHANNEL 2 Max. 9995mV

4546mV AUX. CHANNEL 3 Max.



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Date meximum (mV) : down hole channel -

11 Level 3235.0 FIRST ARRIVAL PLOT - Shot

Well phone data	*  **  **  **  **  *  *  *  *  *  *  *
Value uV	-34 -34 -42 -43 -43 -43 -43 -43 -43 -43 -43 -43 -43
Sample time	1066.0 1065.0 1065.0 1065.0 1065.0 1065.0 1065.0 1065.0 1065.0 1077.0 1077.0 1085.0 1085.0 1085.0 1085.0

SHOT 12 Time 14:59:07 Level: 3188.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 d No. surface samples: 128 Down hole sample nos: 737 400 271 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 3208mV

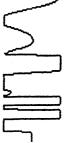


AUX. CHANNEL 2 Max, 9995mV

AUX. CHANNEL 3 Max. 4941mV



X. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) & down hole channel - 7.113

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3188.0 4 FIRST ARRIVAL PLOT - Shot

1	Well phone data	*	*	*	*	*:	<b>*</b> :	<b>*</b> * 1	* *	k ab	* *	• <b>*</b> •	*	*	*	*	*:	<b>*</b> 4	: *	*	*	*	*	*	a≱ 3	je aj	ir ai	; <b>k *</b>	*	*	*	*	*	** *	*	*		<b>~n</b>	-	*** *	••	•		• ••		*	*
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	Sample time	1048.0	1048.5	1049.0	•	1000		1001	1052,0	1052.5		1003.0	1054.0	1054.5	1090,0	000	0.0001 1.0001		1057.5	1058.0	1058.5	1059.0	1059.5	1060.0	1060.0	1061	1062.0	1062.5	1063.0	1063.5	1064.0	1064.5	1066.0	1067.0	1068.0	1069.0	1070.0	1071.0	10/2.0	1078.0	274.0	1076.0	1077.0	1078.0	073	•	1031,0

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SHOT 13 Time 15:07:45 Level: 3050.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 712 400 296 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max.





AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel -

8.194

3056mV

AUX. CHANNEL 2 Max. 9995mV

4843mV

AUX. CHANNEL 3 Max.

FIRST ARRIVAL PLOT - Shot 13 Level 3050.0

phone data	* * * * * * * * * * * * * * * * * * *	<b>∞ ຄ</b> ຄ
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SHOT 14 Time 15:15:29 Level: 2925.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 690 400 318 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 3476mV

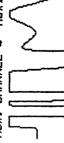


AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 5376mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel -

2925.0 Level 14 FIRST ARRIVAL PLOT - Shot

PLUI - Shot 14	Well phone data		*	*	*	* *	<b>*</b> *	· *	*	*	*	* 1	r ≱	<b>k ≭</b> k	*	*	<b>**</b> 3	k #	: <b>*</b>	*	*	*:	*:	* *	k ak	*	*	*	a≱e a¥	k *	*	*	: *	* *	*	*	*	*	<b></b>	*** •		••	•	1	
]       	Value vo		-14,	-25.	-34.	-39.			တ	15.	10.	-7.		-60.	-63.	-54.	-000-	-29.	-25.	-26.	-29.	-34.	-41.		-57.	-54,	-45.	-33.	· / 1	26.	56.	100.	148.	281	408.	580.	810.	1206.	1593.	2056. 2056.	.0/67	3727	4242.	4832.	5403.
ה מ ב ב	Sample time	984.0	984.5	985.0	968.5	786.0 984.0	987.0	987.5	988.0	୬୫୫.ଜ	989.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	991.0	991.5	992.0	942.5	994,0	994.0	994.5	995.0	995.5	2.00	446.0	8.766	998.0	88°88°8	0.666	5,444	1000.5	1001.0	1001.5	1002.0	1003.0	1003,5	1004.0	1004.5	1005,0	1005.5	1006.0	1000.0	1007	1008.0	1008.5	1009.0

SHOT 15 Time 15:23:34 Level: 2740.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 656 400 352 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 3701mV



AUX. CHANNEL 2 Max. 9995mV

∫ AUX. CHANNEL 3 Max. 5678mV

( g



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) ( down hole channel -

FIRST ARRIVAL PLOT - Shot is Level 2740.0

	Well phone data	15 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20 and 20	* **	*	*	*	*	*	*	*	*	*	*	<b>≱</b> ¢ 3	r a	k apk	: *	*	*	*	*	a≱c :	<b>4</b> € 3	* *	* <b>*</b>	: <b>*</b>	*	*	*:	*	* *	: **	*	*	*	*	*	*	; *	*	•		n day	the statement	į.		77.		
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•	Sample time	942.0	942.5	943.0	943.5	944.0	944.5	945.0	945.5	946.0	946.5	947.0	747. 0.000	0 40 0 0 40 0 0 10 0	949.0	949.5	950.0	950.5	951.0	4000 1000 1000 1000 1000 1000 1000 1000	2.7C1	055		954.0	954.5	945.0	9000°0	956.0	956.5	27.70	958,0	958.5	959.0	959.5	960.0	760.0	961.0	C C C C C C C C C C C C C C C C C C C	942 R	0 200	963.5	964.0	964.5	965.0	965.5	•	966.5		

SHOT 16 Time 15:33:38 Level: 2527.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 611 400 397 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 3344mV



AUX. CHANNEL 2 Max. 9995mV

j AUX. CHANNEL 3 Max. 5166mV

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel -

2527.0 FIRST ARRIVAL PLOT - Shot 16 Level

Well phone data	***************	** ** ** ** ** **
Value uV	28. 33. 33. 33. 33. 33. 33. 33. 33. 33. 3	2636. 3262. 3892. 4612. 5333. 6003.
Sample time	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	218 218 218 218 218 218 218 218 218 218

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SHOT 17 Time 15:42:16 Level : 2367.0 Shot location : D Shot depth : 2.0 Charge size : 3.0 No. surface samples : 128 Down hole sample nos : 573 400 435 Sample rates : 500 1000 usec Delay : 0

AUX. CHANNEL 1 Max. 3437mV



AUX. CHANNEL 2 Max. 9995mV

AUX, CHANNEL 3 Max. 5185mV

AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

14.727 Data maximum (mV) : down hole channel -

Level 2367.0 FIRST ARRIVAL PLOT - Shot 17

Well phone data	********	*
Value uV	និះ	25. 208. 420. 593. 1166. 2309. 3112. 3942. 5052. 6293. 10295. 13567.
Sample	47888888888888888888888888888888888888	8479 870 870 871 871 872 873 873 873 873 873 873 873 873 873 873

SHOT 18 Time 15:56:27 Level: 2243.0 Shot location: D Shot depth: 2.0 Charge size: 3.0 No. surface samples: 128 Down hole sample nos: 541 400 467 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 3989#V



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 5776mV



AUX, CHANNEL 4 Max, 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 18,289

2243.0 18 Level FIRST ARRIVAL PLOT - Shot

Well phone data	*	*	*	*	*	*	*	*	*	*	*		*	*	<b>*</b> :	<b>*</b> :	* :	<b>k</b> 1	<b>#</b> 1	k a	je i	ak a	<b>k</b> :	* *	<b>k</b> :	* 1	k w	;	: <b>*</b>	*	*	*	<b>≱</b> ≉ 1	* ~	k *	* ***	*	*	*	*	*	•••	•		~~	** ·		<b></b>	
Value uV		19.	6.	• •		, so.	41.	444.	00	30.	19.	12.	77	14.		. 0	47	, M		• o		W 40		 	° 6	87.	74.	68.	67.	71.	78.	86.	117.	13.7 13.0	2121	280.	424.	638.	950.	1551.	2191.	3044.	3942.	5173.	6613.	8194.	) )	201	13337.
Sample time	818.0	818.5	819.0	819.5	820.0	820.0	-	821.0	822.0	822.5			0.428		0 10 00 0 10 00 0 10 00		0.40.0 20.00	0.728	20.70 R. 708	828.0	0100 0000	829.0	4 600	830.0	1 to 0	831.0	831.5	832.0	832.5	833.0	833,5	834.0	000 000 000 000 000 000 000 000 000 00	8000 8000 8000 8000 8000 8000 8000 800	836.0	836.5	837.0	837.5	838,0	800 800 81 81 81 81	839.0	839.5	840.0	840.5	841.0	841.5	842.0	0.142	G45.0

SHOT 20 Time 16:08:43 Level: 2147.0 Shot location: D
Shot depth: 2.0 Charge size: 3.0
No. surface samples: 128 Down hole sample nos: 515 400 493
Sample rates: 500 1000 usec Delay: 0

4072mV AUX. CHANNEL 1 Max.



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 6191mV



AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

20.090 Data maximum (mV) & down hole channel -

2147.0 FIRST ARRIVAL PLOT - Shot 20 Level

phone data	***************************************	*	*	*	*	*	*	* :	* :	* 4	k nj	× *	. *	*	*	*	*	*	ak a	k a	* *	< *	: *	*	*	*	; *	*:	<b>*</b> *	k :4	< <b>*</b>	*	*	*	*	*	k *	*	*				***				
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Sample time	796.0	796.	797	797.	798	7.48	, 65 67 7	, cc		200	801	802	802,	803,	803	804	808	e con	804.0	908	807	807	808.0	808	809	808	810.			812	812.5	813.	813,	814	200		816.	816.	817.	817.	818	818.5	819.	819.	820	820	821,

SHOT 21 Time 16:19:26 Level: 1985.0 Shot location: D Shot depth: 2.0 Charge size: 2.0 No. surface samples: 128 Down hole sample nos: 468 400 540 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 3422mV

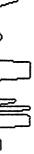


AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 4824mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) ( down hole channel - 19.810

1985.0 FIRST ARRIVAL PLOT - Shot 21 Level

	Well phone data	·	*	*	anje s	* *	*	*	*	*	* :	* *	<b>*</b> *	*	*	<b>*</b>	, <b>k</b> a	* *	· *	*	*	aple s	<b>k</b> 3	* *	*	*	*	* *	* <b>*</b>	: *	*	*	*	*	*	*			••	<b>~~</b> .	** (				on on
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	time time	754.0	754.5	755.0	784	756.5	757.0	787.5	758.0	758.5	7.40	760.0	760.5	761.0	761.5	762.0	744.0	763.5	764.0	764.5	765.0	765.5	766.5	767.0	767.5	768.0	768.5	769.0	770.0	770.5	771.0	771.5	7.7.5	773.0	773.5	774.0	774.5	775.0	775.5		7,00,0	777	778.0	778.5	779.0

SHOT 22 Time 16:27:56 Level: 1808.0 Shot location: D
Shot depth: 2.0 Charge size: 1.0
No. surface samples: 128 Down hole sample nos: 416 400 592
Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1796mV

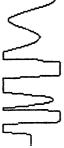


AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 2661mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 16.528

1808.0 N FIRST ARRIVAL PLOT - Shot

phone data	*:	* :	* *	- *	*	*	*	*	ak ≯e	k »k	· *	-*	*	*	*:	* *	k ×	* *	: *	*	*	*	*	*:	*:	; * *	: *	ÿ <b>←</b> *	*	*	*-	* *	*	*	*	*	*	*			-				
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																•																	-												
Value uV	-31.	° 00'	-17.	-14.	-14.	-16.	-24.	-36.	-44.	. 68-	-71,	-69-	-62.	-57.	-48.	. O. M.	• 02 02 1	-43.	-46.	-45.	-41.	-37.	-33.	-31.	-30.	-10.	-7-	. 00	25.	54.	112.	, 100 100 100 100 100 100 100 100 100 100	518.	835.	1428.	2096.	2736.	58/2.	4574 4574	8144.	9805.	11476.	.13026.	14377.	15888.
Sample	704.0	7.407	705.5	706.0	706.5	707.0	707.5	708.0	/08.0 0.007	709.5	710.0	710.5	711.0	711.5	712.0	717.0	7.55.C	714.0	714.5	715.0	715.5	716.0	716.3	717.0	0.77	718.0	719.0	719.5	720.0	720.5	721.0	722.0	722.5	723.0	723.5	724.0	7.24.3	0.027 0.027	724-0	726.5	727.0	727.5	728.0	728.5	729.0

SHOT 23 Time 16:35:15 Level: 1723.0 Shot location: D Shot depth: 2.0 Charge size: 1.0 No. surface samples: 128 Down hole sample nos: 394 400 614 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1919mV



AUX. CHANNEL 2 Max. 9995mV

2734mV AUX. CHANNEL 3 Max.



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) & down hole channel -

FIRST ARRIVAL PLOT - Shot 23 Level 1723.0

Well phone data	*********************	*
Value uV	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	4062. 5513. 7204. 9084. 11075. 13096. 17128.
Sample time	680.00	701.5 702.0 702.5 703.0 704.0 704.5

SHOT 24 Time 16:43:33 Level: 1600.0 Shot location: D Shot depth: 2.0 Charge size: 1.0 No. surface samples: 128 Down hole sample nos: 362 400 646 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1879mV



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 2856mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Date meximum (mV) : down hole channel - 23.

23.972

FIRST ARRIVAL PLOT - Shot 24 Level 1600.0

phone data	* * * * * * * * * * * * * * * * * * *	
Well pho		
Value UV	11. 22. 25. 25. 25. 25. 25. 25. 25. 25. 25	7665. 1486. 14807. 18409. 22491. 23532. 23572.
Semple	6444.0 6444.0 6444.0 6444.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0 6446.0	665.5 665.5 666.5 667.0 668.0 668.0

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SHOT 25 Time 16:52:15 Level: 1475.0 Shot location: D Shot depth: 2.0 Charge size: 1.0 No. surface samples: 128 Down hole sample nos: 327 400 681 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1962mV

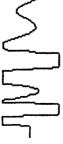


AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 2793mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Date maximum (mV) : down hole channel - 26.17

1475.0 FIRST ARRIVAL PLOT - Shot 25 Level

Well phone data		ik s	* *	*	*	*	*	*	*:		<b>د بد</b>	*	*	*	ak a	k *	*	*	*	*	*	*	*	*:	* :	; * 4	k <b>a</b>	k ak	*	*	*	* -	k 1	*	*	*	*	•••	చించి .	***	•••	a a		-	
·						•																,																							
Value uV	8		° °	-13.	-17.	-21.	-25.	-28.	000 0100	12/4		10.	20.	25.	525		-	5	ທຸ	6-	-14.	-13	-19.	1 20	-10°	101	1	-16.	-21.	-13.	27.	101.	200	771.	1498.	2329.	3482.	4742.	6493.	8524 .	10/45.	15277	18129.	19890.	21450.
Sample	602.0	0.709	603.5	604.0	604.5	605.0	605.5	0.908	909°	607.50 607.50	608.0	808	603	9.609°	610.0	611.0	611,5	612.0	612.5	613.0	613.5	614.0	614.5	615.0	010.0	610.0	417.0	617.5	618.0	618.5	619.0	619.5	420 B	621.0	621.5	622.0	622.5	623.0	623.5	624.0	624.U	625 8. 15. 6.	626.0	626.5	

SHOT 26 Time 16:58:37 Level: 1324.0 Shot location: D Shot depth: 2.0 Charge size: 1.0 No. surface samples: 128 Down hole sample nos: 283 400 725 Sample rates: 500 1000 usec Delay: 0

س. لانتا

1865mV AUX. CHANNEL 1 Max.



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 2749mV

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel -

1324.0 FIRST ARRIVAL PLOT - Shot 26 Level

-OT - Shot 26	Well phone data		k ak	*	*:	* *	¢ *≉¢	*	*:	<b>*</b> * 3	* *	*	* 1	* *	*	*	ade à	k	: *	*	*	* *	k *	· *	*	* *	k ak	*	* -	*	*	*	*			***		ca ca				•••
HRKIVEL F	Value uV	114.	91.	61.	. 23. - An	-147.	-257.	-305.	1460.	1001.	-251,	-132.		25.	49.	.96	172.	400.	420.	423.	450.	166.	-223.	-353,	-612.	-632.	-652.	-476.	58. 805	1413.	2386.	3587.	4,04. 6653.	8694.	11125.	13867.	18169.	24092.	26493.	27974.	22404	<b>†</b> 1
N L	Sample	550,0	551,0	100 i		9994.0	8664.8	554.0	0004 0004 000 000	> 60 00 00 00 00 00 00 00 00 00 00 00 00 0	556.0	526.5	557.0	528,0	558,5	559.0	329, ta	560.5	561.0	561.5	262.0	00Z-0	563.5	564.0	564.5	0 00 00 0 00 00 0 00 00	566.0	566.5	567.0	568.0	568,5	569,0	570.0	570.5	571.0	0,170	0.272	573.0	573.5	574.0	0/4.U	> > > >

SHDT 27 Time 17:04:10 Level: 1174.0 Shot location: D Shot depth: 2.0 Charge size: 1.0 No. surface samples: 128 Down hole sample nos: 237 400 771 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1865mV



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 2778mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Date meximum (mV) : down hole channel - 57.9

1174.0 Level FIRST ARRIVAL PLOT - Shot 27

Well phone data	* * * * * * * * * * * * * * * * * * *	
Value uV	31, 57, 57, 50, 50, 50, 50, 50, 50, 50, 50	
Sample time	228 228 228 228 228 228 228 228 228 228	

Down hole sample nos : 183 400 825 Shot location : D SHOT 28 Time 17:10:50 Level: 1010.0 Shot depth: 2.0 Charge size: 0.5 No. surface samples: 128 Down hole sar Sample rates: 500 1000 usec Delay:

AUX. CHANNEL 1 Max. 1240mV



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max.

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel -

- Mymmmm

1010.0 Ø FIRST ARRIVAL PLOT - Shot

. PLOT - Shot 28 -	Well phone data	**	*	* *	× **	ak a	* *	*	* *	k *	*	ady: 1	ir ai	*	*	agk a	k a	k ak	*	*	aşk xi	de al	; * **	*	*	* *	k ape	*	*	**************************************	***	*	-	•• •				*** (F			• •••		
	Value uV	615. 488.	371.	139.	49.	-118.	-397.	-543	-693.	-734.	-719.	-687.	-607.	-578.	-265,	-571.	-637	-687.	-747.	-617.	-0490	.066	-1010.	-1023.	-995,	-943.	-801.	-558.	259.	520.	4112.	6993.	10865.	17849.	29574.	35017.	39499.	41580.	41820.	34434	27173.	يدي خور هي دور جين جين وي جين وي جين وي وي وي وي وي وي وي وي وي	
	Sample time	428.0	429.0	429.5	430.5	431.0	432.0	432.5	488.0 488.0		•	445.0 545.0			437.0	437.5		439.0	439.5	440.0	440.0	441.5	442.0	442.5	443.0	443.5	444.5	445.0	445.5	446.0				448.5			•	451.0			453.0		

SHOT 29 Time 17:18:04 Level: 1204.1 Shot location: D Shot depth: 2.0 Charge size: 0.5 No. surface samples: 128 Down hole sample nos: 247 400 761 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 771mV



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 1806mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 26.133

FIRST ARRIVAL PLOT - Shot 29 Level 1204.1

44	Well phone data	*	*	*	*	*:	<b>*</b> €3	: <b>k</b> 3	k	< x	c *	*	*	*	*	*	*	*	*	*:	*:	* *	k a	k #	: *	: *	*	*	*	*	*	*	<b>)</b>	je P	* •	*	*	*	*	••	•	****	***	**	••	en-cu	***	***	~~
		) and sent date and was sent and the side that the same was then and the side side and and																																								•							
	Value uV	-29.	-31.	128.		117.	00	-17.	-12.	ö	ω	16.	21.	23.	23.	23.	33		. 0	21		23.53	17.	4.	-11.	-23.	-31.	-29.	113	16.	79.	1/0.	443.	688	1146.	1628.	2276.	3069.	3932.	5082	6383.	7844.	9395	11005.	12626.	14217.	4 1	1//69.	18769.
	Sample time	512.0	512.5	010.0	7 7 7 1	0.14.0 0.14.0	515,0	B. 10.00	516.0	516.5	517.0	517,E	518,0	018,0	519.0	017,0	0.020	324.0	721.0	522.0	522.5	523.0	523.5	524.0	524.5	525.0	523.5	526.0	526.5	227.0	527.5	3,00°E	529,0	529,8	530.0	530,8	531,0	531,5	532.0	552.5	533,0	533,5	534.0	534.5	מים מים מים	000	0.000	0000	

SHOT 30 Time 17:24:59 Level: 951.0 Shot location: D Shot depth: 2.0 Charge size:1.0 No. surface samples: 128 Down hole sample nos: 164 400 844 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1225mV



AUX. CHANNEL 2 Max. 9995mV

AUX, CHANNEL 3 Max.



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

John Johnson Data maximum (mV) : down hole channel -

50.505

951.0 30 Level FIRST ARRIVAL PLOT - Shot

Well phone data	**********************	
Value uV	45. 56. 57. 73. 74. 71. 72. 52. 62. 73. 80. 82. 72. 72. 72. 73. 83. 74. 74. 75. 190. 350. 350. 350. 350. 350. 350. 350. 35	49384. 50505. 49464.
Sample	414 414 414 414 414 414 414 414 414 414	440.0 440.5 441.0

90 400 918 Shot location ( D SHOT 31 Time 17:32:27 Level: 751.0 Shot loved to the shot depth: 2.0 Charge size: 0.5
No. surface samples: 128 Down hole sample nos: Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1118mV



AUX. CHANNEL 2 Max. 9995mV

2016mV AUX. CHANNEL 3 Max:



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) 1 down hole channel --

751.0 FIRST ARRIVAL PLOT - Shot 31 Level

Well phone data	and see that the least also have the least that the see that the see that the see that the see that the see the	*:	1 * *	* *	*	*	*	<b>*</b> 1	* <b>*</b>	· *	*	*	*	*	<b>*</b> :	* *	k *	<b>∶</b> **	*	*	*	*	*:	* *	<b>k</b> 4	* ***	*	*	*.	*:	**	* <b>*</b>	*	*	*	<del>-</del>		**	**	**	** '	•••	make d	••	in a	•
Value uV		-1/-	9.	16.	20.	21.	, c	12.	* M	1.20	-46.	-60.	-67.		-0.4°	-00-	140.	-32.	-25,	1.10.	٠٥.	*	10.	· M	11.	-16.	-15.	u.	31.	141.	507.	2186.	4062.	7414.	12846.	23652.	33736.	45262.	56788.	67713.	74276.	/651/.	74356.	000	37627. A70A3	****
Sample time	340.0	ņ	341.0	342.0	342,5	343,0	0.040	•	20	, IO	0	ស		ព្	0.00	3 0		350.0			331.5	352.0	352.5	00000 450000		354.5				336.5		N			ញ :		ស	Q i	ម្ចា	o i		Ç I		, H	345 O 045	?

SHOT 32 Time 17:37:43 Level: 716.0 Shot location: D Shot depth: 2.0 Charge size: 0.5 No. surface samples: 128 Down hole sample nos: 77 400 93! Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 1313mV

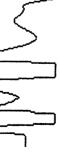


AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 2104mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 97.16

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716.0 FIRST ARRIVAL PLOT - Shot 32 Level

Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Value  Va	Well phone data	************	*  *  *  *  *  *  *  *  *  *  *  *  *
777 77 77 77 77 77 77 77 77 77 77 77 77	alue uV	44.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.	527. 527. 527. 547. 68.
	Sample V. time	ဝေသးဝသမေသမေသမေသသမေသသမေသသမေသ် မော်လုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံဆုံလုံသည်။	inionionionionio

SHOT 33 Time 17:41:52 Level: 668.0 Shot location: D Shot depth: 2.0 Charge size: 0.25 No. surface samples: 128 Down hole sample nos: 59 400 949 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 825mV



AUX. CHANNEL 2 Max. 9995mV

} AUX. CHANNEL 3 Max. 1377mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 68.83

668.0 FIRST ARRIVAL PLOT - Shot 33 Level

	*
	* * ( g
æ	** ** ** ** ** ** ** ** ** ** ** ** **
Well phone data	* * * * * * * * * * * * * * * * * * *
Well	•
Value uV	1110. 1118. 1118. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117. 1117.
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Shot location : D		<b>5</b> : 15 400	
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		Down hole sample nos :	Delay t
552,0	o.	hole	> 0
	Ze : 1	DOWN	Del
SHOT 34 Time 17:46:36 Level:	Shot depth : 2.0 Charge size : 1.0	128	Sample rates : 500 1000 usec
ie 17:46	2.0	mples :	2000
Tin	••	in the	es S
34	depth	SUPFAC	le rat
SHOT	Shot	Š	Sago

266

AUX, CHANNEL 1 Max, 310mV



AUX. CHANNEL 2 Max. 9995mV

AUX, CHANNEL 3 Max, 1191mV

- And

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 98.768

552.0 Level FIRST ARRIVAL PLOT - Shot 34

Well phone data	* *************************************
Value uV	88. 88. 557. 77. 77. 57. 58. 88. 88. 88. 88. 88. 88. 88
Sample time	8889 6899 6999 6999 6999 6999 6999 6999

0 400 1008 Shot location : D SHOT 35 Time 17:52:12 Level: 426.0 Shot lo Shot depth: 2.0 Charge size: 0.25
No. surface samples: 128 Down hole sample nos: Sample rates: 500 1000 usec Delay: 0

859ªV

AUX. CHANNEL 1 Max.

AUX. CHANNEL 2 Max. 9995mV

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AUX. CHANNEL 3 Max. 1274mV

AUX. CHANNEL 4 Max. 10000mV

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 155.596

426.0 Ŋ FIRST ARRIVAL PLOT - Shot

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Well phone data	د بياه ويود بينه وياه ويته هيته هيته هيته يته يته ويته ويته	*	.*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	: *	*	*	*	*	*	*	*	<b>*</b> :	<b>k</b> 1	* 4		: *	*	*		• ••	• ••	•	, <b></b>		• •••	•		**
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Value uV		-18,	-90-	-43,	-52°	1991 1	-54.	-52,	-54.	-60.	-71.	-75.	-73.	-69-	-99-	-36-	-57.	-29.	-28,	-54.	-43.	-26.	4	11.	16.	11,	ກໍ	-100 000	-22.	-18,	ကို	• ·	21.	41.	82.	107	702	1751	3544	6263.	11476.	23812.	37698.	55667.	79319.	102210.	126142.	142470.	152715.	155596.	150634.
Sample time		200.0	200.5	201.0	201,5	202.0	202,5	203.0	203.5	204.0	204.5	205.0	205,5	206.0	206.5	207.0	207.5	208.0	208.5	209.0	209.5	210.0	210.5	211.0	211,5	212.0	212.5	213.0	213,5	214.0	214.5	215.0	215,5	216.0	710,0	217.0	218.0	218.0	219.0	219.5	220.0	220.5	221.0	221.5	222.0	222.5	223.0	223.5	224.0	224.5	225.0

SHOT 36 Time 17:55:40 Level: 367.0 Shot location: D
Shot depth: 2.0 Charge size: 0.25
No. surface samples: 128 Down hole sample nos: 0 400 1008
Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 590mV



AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 1279mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier



Data maximum (mV) : down hole channel - 120.459

367.0 FIRST ARRIVAL PLOT - Shot 36

phone data	*******	* * * * * * * * * * * * * * * * * * *
Well pho		
:		
Value uV	115. -15. -17. -272. -272. -272. -272. -154. -154. -123. -118. -53.	24. 25. 16. 34. 34. 34. 34. 36. 37. 105. 380. 380. 380. 380. 380. 380. 380. 380
Sample	7471 777 777 777 777 777 777 77 77 77 77 7	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000

SHOT 37 Time 17:59:34 Level: 315.0 Shot location: D Shot depth: 2.0 Charge size: 0.25 No. surface samples: 128 Down hole sample nos: 0 400 100G Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 649mV

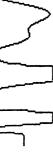


AUX. CHANNEL 2 Max. 9995mV

AUX. CHANNEL 3 Max. 1362mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) ( down hole channel - 177.207

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315.0 

FIRST	ARRIVAL	PLOT	Ö	Shot	84	
Sample time	Value uV		Well	phone	data	
	267.			*		İ
	350.			*		
	376.			*		
	260.			*	i	
	13.			*		
	-87.			*		
	, 100, 100,			* *		
	220.			k *		
	286.			*		
	248.			*		
	.00			*		
	-288.			*		
	-399			*:		
	- T 4 7 -			*:		
	-288.			* *		
	-60.			*		
	162.			*		
	325.			*		
	573,			*		
	864.			*		
	1228.			*		
	1451.			* *		
	1321			k 3	-	
	1041.			* *		
	795.			*		
	480.			*	i	
	187.			*		
159.0	43.	,		* :		
				* *		
	-523.			* *	1	
	-565,			*		
	-253.			*		
	668.			* -		
	6123.			* 		
	11055.				. *	
	21811.			• ••	*	
	33576.				*	
	48944.					
	71715.			••		
Ī	74566.					
167.0	143270.					
	60879.					
o,	-0			<b></b>		
	7720					
. 0.	<b>\</b>			• <b>-</b>		

SHOT 38 Time 18:09:51 Level: 52.0 Shot location: D Shot depth: 2.0 Charge size: 0.1 No. surface samples: 128 Down hole sample nos: 0 400 1008 Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 292mV



AUX. CHANNEL 2 Max. 5727mV

AUX. CHANNEL 3 Max. 1108mV



AUX. CHANNEL 4 Max. 10000mV



WELL PHONE CHANNEL - floating point amplifier



Data maximum (mV) : down hole channel - 327.840

38 Level 52.0 FIRST ARRIVAL PLOT - Shot

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phone data	*****************
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Value uV	-336. -1961. -1961. -1961. -1961. -1366. -1366. -2646. -2646. -276. -277. -404. -277. -404. -277. -404. -277. -404. -277. -404. -277. -404. -277. -404. -277. -404. -277. -404. -277. -404. -276. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1752. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -1753. -175
Sample	42444444444444444444444444444444444444

Shot location : C SHOT 39 Time 18:13:16 Level: 52.0 Shot loc Shot depth: 0.2 Charge size: 0.DET No. surface samples: 128 Down hole sample nos: Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 688mV

AUX. CHANNEL 2 Max. タタタ5mV

AUX. CHANNEL 3 Max.

AUX. CHANNEL 4 Max. 48mV

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 327.840

FIRST ARRIVAL PLOT - Shot 39

0.20

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ሱ የ	d at																		*		*	*	<b>*</b>	* ;	<b>#</b> 3	*	*	*	*	-				*		3	*	; *	*			*	•		·		
Shot t	Well phone	*	*	*	* 1	* *	*	*	*	*	*	*:	<b>‡</b> €3	k <b>*</b>	*	*	*	*		•	••	•		•	•			**	***	*			*		••	**	<b></b>				<b>.</b>	• •	*	••	Ξ.	**	· · · · · · · · · · · · · · · · · · ·
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r T	Value uV	381.	194.	13	1301.	408	-679	-702.	-798.	-909-	-949	-487	-720.	-645	-460	-122.	299.	625.	1143.	1745.	2969.	2202	/184.	6465	4047	6443	8684.	8994.	8684.	-1047.	-26333.	-36783	-11766.	14167.	33496.	26573,	14497.	5522.	2000	20777	31615	12186.	-5243.	-15488.	1026.	42101.	*******
	Sample time	10.0	11.0	12.0	0.01	12,0	16.0	17.0	18.0	19.0	20.0	23.0	0.44.0	24.0	25.0	26.0	27.0	28.0	29.0	0.00	0 0 0 43 0	2,1	0,00	0.4	200	32.0	38.0	39.0	40.0	41.0	42.0	20.00	0,04	46.0	47.0	48.0	49.0			24.0	0.45	55,0	26.0	57.0	58.0	0,04	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

Shot location ( B Down hole sample nos ( Delay ( SHOT 40 Time 18:15:40 Level: 52.0
Shot depth: 0.2 Charge size: 0.DET
No. surface samples: 128 Down hole sam
Sample rates: 500 1000 usec Delay:

AUX. CHANNEL 1 Max. 771mV

AUX. CHANNEL 2 Max. 9341mV

AUX. CHANNEL 3 MAX. 19mv

AUX. CHANNEL 4 Max. 48mV

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WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 327.840

077 FIRST ARRIVAL PLOT - Shot 40 Level

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		*
ne data	**	* * * *
Well phone data	****	* * *
-		* *
es:	i   -   -	* * *
Value uV	421. 426. 427. 436. 1101. 1101. 1273. 1274. 1274. 1274. 1289. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159. 159.	-6193. -12286. -2064. 6393. 8864. 9695. 6737. 8864. -26334. -12926. 25252. 25252. 26133. 18849. 26133. 18849. 2603. -26031. -26031. -26031. -26031. -26031.
Sample time	8 6 0111 11 11 11 11 11 11 11 11 11 11 11 1	0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.

Shot location : A SHOT 41 Time 18:17:16 Level: 52.0 Shot loc Shot depth: 0.2 Charge size: G.DET No. surface samples: 128 Down hole sample nos: Sample rates: 500 1000 usec Delay: 0

AUX. CHANNEL 1 Max. 10000mV

AUX. CHANNEL 2 Max. 9995mV

19mV Lypyllm, run-m-m-un AUX. CHANNEL 3 Max.

39mV AUX. CHANNEL 4 Max.

among the phase of the same

WELL PHONE CHANNEL - floating point amplifier

Data maximum (mV) : down hole channel - 247.801

4 Shot l

0.80

Well phone data FIRST ARRIVAL PLOT Value uV -22251. 1364. 12656. 4282. -720. 22971. 40100. 35938. 35938. 56227. 66514. 68146. -2169. -2319. -2269. -1236. -1343. -5673. -21050. -1566. 14927 -40860. -77538. -80199. -73796. -90604. -129347. -121339. -95247. -1051. -1943. Sample time

APPENDIX O SURVEY DATA

# WINDERMERE #2 SURVEY DATA

### DATADRIL

MINORA RESOURCES NL WINDEMERE #2 VICTORIA

16th MARCH 1989

SINGLE SHOT DATA

File Name: WIND2SUR

# \*\*\* RECORD OF SURVEY \*\*\*

Calculated by DATADRIL's CADDS System

Radius of Curvature Method All Angles are Decimal

MEASURED	INCL	DRIFT	COURSE	TOTAL	TOT		CLOS	BURE	DOGLES
DEPTH	ANGLE	AZIMUTH	LENGTH	VERTICAL	RECTANGULAR	COORDINATES	DISTANGE	AZIMUTH	SEVERITY
(M)	(DEG)	(DE6)	(M)	DEPTH	(M	)	(M)	(DEG)	(DEG/30 M
. 0.00	0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00	0.00
94.00	.25	275.00	94.00	94.00	.02 N	.20 N	.21	275.00	.08
186.00	.50	349.00	92.00	186.00	.39 N	/ .62 ₩	.74	302.34	.16
328.00	0.00	0.00	142.00	328.00	1.00 N	.74 W	1.25	323.56	.11
376.00	0.00	0.00	48.00	396.00	1.00 N	.74 W	1.25	323.56	0.00
462.00	.50	36.00	66.00	462.00	1.23 N	.57 W	1.36	335.21	.23
585.00	.50	2.00	123.00	584.99	2.23 N	.23 ₩	2.25	354.23	.07
720.00	.25	333.00	135.00	719.99	3.09 N	.42 W	3.12	352.34	.07
852.00	.50	34.00	132.00	851.98	3.91 N	.35 ₩	3.92	354.87	.10
975.00	.50	130.00	123.00	974.98	4.02 N	.60 E	4.07	8.47	.18
1098.00	.50	104.00	123.00	1097.98	3.54 N	1.55 E	3.86	23.61	.05
1180.00	.50	58.00	82.00	1179.97	3.65 N	2.24 E	4.28	31.49	.14
1309.00	1.00	48.00	129.00	1308.96	4.41 N	3.74 E	5.78	40.25	.12
1461.00	.25	28.00	152.00	1460.95	5.50 N	4.95 E	7.40	41.95	.15
1585.00	0.00	0.00	124.00	1584.95	5.74 N	5.07 E	7.66	41.46	.06
1728.00	0.00	0.00	143.00	1727.95	5.74 N	5.07 E	7.66	41.46	0.00
1802.00	.50	97.00	74.00	1801.95	5.70 N	5.39 E	7.85	43.41	.20
1850.00	1.00	117.00	48.00	1849.94	5.52 N	5.99 E	8.14	47.35	.35
1936.00	.50	105.00	86.00	1935.94	5.12 N	7.04 E	8.70	53.99	.18
2089.00	.75	92.00	153.00	2088.93	4.87 N	8.69 E	9.96	60.73	.06
2245.00	1.50	61.00	156.00	2244.90	5.58 N	11.63 E	12.90	64.38	.18

### DATADRIL

### MINORA RESOURCES NL WINDEMERE #2

VICTORIA

MEASURED DEPTH (M)	INCL ANGLE (DEG)	DRIFT AZIMUTH (DEG)	COURSE Length (M)	TOTAL VERTICAL DEPTH	T O T RECTANGULAR ( (M)			CLO: Distange (m)	GURE AZIMUTH (DEG)	DOGLEG SEVERITY (DEG/30 M:
9900 00	. 55	38.00	53.00	2257.88	6.40 N	12.59 E		14.12	63.07	.34
2298.00	1.25			2441.81	9.69 N	15.50 E		18.28	58.00	.21
2442.00	2.25	45.00	144.00				•			
2542.00	2.00	49.00	100.00	2541.74	12.22 N	18.21 E		21.93	56.15	.09
2588.00	2.00	41.00	46.00	2587.72	13.35 N	19.35 E		23.51	55.39	.18
2699.00	2.00	44.00	111.00	2698.65	16.21 N	21.96 E		27.30	53.58	.03
2878.00	2.00	56.00	179.00	2877.54	20.21 N	26.74 E		33.52	52.91	.07
3045.00	4.00	48.00	167.00	3044.30	24.31 N	34.44 E		42.16	54.79	.37
3169.00	5.00	55.00	124.00	3167.92	28.94 N	42.97 E		51.81	56.04	.34
3324.00	6.00	3.00	155.00	3322.20	41.49 N	49.93 E		64.92	50.27	.95

BOTTOM HOLE CLOSURE:

64.92 Meters at 50.27 Degrees

NOTE: (a) Insufficient Wireline on drum to run Survey's below 3324m.

- (b) Survey's dropped at TD and on subsequent wiper trips were misruns due to the film being exposed to elevated temperatures for an excessive amount of time.
- (c) Max.depth of dipmeter was 3200m.

## ELIPSE OF UNCERTAINTY

### Sii DATADRIL Division of Smith International, Inc.

MINORA RESOURCES NL WINDEMERE #2 VICTORIA

16th MARCH 1989

SINGLE SHOT DATA

File Name: WIND2SUR

# \*\*\* ELLIPSE INPUT PARAMETERS \*\*\*

Depth	Measured	Survey	Relative	Misalignment	True	Reference	Drillstring	Gyrocompass /Decembes
94 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 9.00000 186 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1.00000 0.00000 328 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 1.00000 0.00000 328 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 376 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 376 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 376 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 3720 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 3720 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 377 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 377 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 377 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 177 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 177 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1180 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1309 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1309 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1535 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1535 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1535 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 17728 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 17728 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 17728 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 17728 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 17728 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1.00000 0.00000 17728 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 1.00000 0.00000 0.00000 1.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000			Depth	(Degrees)	Inclination	Error	Magnetization	(Degrees)
94 'Foor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 186 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 328 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 396 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 462 'Foor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 585 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 720 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 852 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 975 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1098 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1180 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1180 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1180 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1399 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1461 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1385 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1585 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1585 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1895 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 1.00000 0.00000 1890 'Poor' Magnetic 10000 30000 20000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000			10000	00005	. 20000	0.00000	1.00000	0.00000
186		•					1.00000	0.00000
186						0:00000	1.00000	0.00000
S28			= = :				1.00000	0.00000
1000   3000   2000   0.0000   1.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.00000   0.0000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.							1.00000	0.00000
1000   30000   20000   0.00000   1.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0							1.00000	0.00000
S85		•				*		0.00000
Tool		•						0.00000
S52		•					******	
Poor   Magnetic   10000   30000   20000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.000000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0		_						
1098		<del>-</del>						
180		'Poor' Magnetic						
1309	1180	•					*	
1461	1309	'Poor' Magnetic						
1585   Poor' Magnetic   10000   30000   20000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   1.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.000000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.000000   0.00000   0.00000   0.00000   0.00000   0.00000   0.000000   0.00000   0.000000   0.000000   0.000000   0.000000   0.000000	1461	'Poor' Magnetic				• • • • • •		
1728	1585	_						
1802	1728	'Poor' Magnetic						
1850         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           1936         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2089         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2245         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2278         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2542         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2588         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2699         'Foor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3045         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3169         'Poor' Magne	1802	'Poor' Magnetic						
1936 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.000000 2245 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000 0.00000 2245 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000	1850	'Poor' Magnetic	.10000					
2087         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2245         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2278         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2442         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2542         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2588         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2697         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2878         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3045         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3169         'Poor' Magne	1936	'Poor' Magnetic	.10000					
2245         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2278         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2442         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2542         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2588         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2699         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2878         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3045         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3169         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000	2089	'Poor' Magnetic						
2278         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2442         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2542         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2588         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2699         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2878         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3045         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3169         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000		'Poor' Magnetic	.10000		· ·			
2442         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2542         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2588         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2699         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2878         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3045         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3169         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000		'Poor' Magnetic	.10000					• • • • • •
2542         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2588         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2699         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           2878         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3045         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000           3169         'Poor' Magnetic         .10000         .30000         .20000         0.00000         1.00000         0.00000			.10000				*	
2588       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000         2697       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000         2878       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000         3045       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000         3169       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000		•	.10000	.30000				
2699       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000         2878       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000         3045       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000         3169       'Poor' Magnetic       .10000       .30000       .20000       0.00000       1.00000       0.00000		•	.10000	.30000				
2878 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000 3045 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000 3169 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000 0.00000			.10000	.30000	.20000			
3045 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000 3169 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000 0.00000			.10000	.30000				
3169 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000 0.00000		-	.10000	.30000				
TARRA TARRA TARRA A ANDRO 1 HIBBE U. UUUUU				.30000	.20000			
3324 'Poor' Magnetic .10000 .30000 .20000 0.00000 1.00000		•	.10000	.30000	.20000	0.00000	1.00000	0.00000

### Sii DATADRIL Division of Smith International, Inc.

MINORA RESOURCES NL WINDEMERE #2 VICTORIA

16th MARCH 1989

SINGLE SHOT DATA

File Name: WIND2SUR

## \*\*\* CALCULATED ELLIPSE PARAMETERS \*\*\*

Measured	Survey	r Center	Ellips	e Center	Alpha	Alpha	Axis	Beta	Beta	Axis
Depth	N/S	E/₩	N/S	E/W	(Degrees)	Normal	Perp.	(Degrees)	Normal	Perp.
0.00	0.00	0.00	0.00	0.00	0.00	0.0	. 0.0	0.00	0.0	0.0
94.00	.02	20	.02	20	.02	.5	.5	.12	.5	9.4
186.00	.39	62	.39	62	.14	1.0	1.0	.19	1.0	18.6
328.00	1.00	74	1.00	74	07	1.7	1.7	.13	1.7	32.8
394.00	-1.00	74	1.00	74	07	2.1	2.1	.11	2.1	39.6
462.00	1.23	57	1.23	57	02	2.4	2.4	.07	2.4	46.2
585.00	2.23	23	2.23	23	01	3.1	3.1	.02	3.1	58.5
720.00	3.09	42	3.09	42	01	3.8	3.8	.03	3.8	72.0
852.00	3.91	35	3.91	35	0.00	4.5	4.5	.02	4.5	85.2
975.00	4.02	.60	4.02	.60	.01	5.1	5.1	04	5.1	97.5
1098.00	3.54	1.55	3.54	1.55	.04	5.8	5.8	08	5.7	109.8
1180.00	3.65	2.24	3.65	2.24	.07	6.2	6.2	11	6.2	118.0
1309.00	4.41	3.74	4.41	3.74	.25	6.7	6.9	16	6.9	130.9
1461.00	5.50	4.95	5.50	4.95	.29	7.7	7.7	19	7.6	146.1
1585.00	5.74	5.07	5.74	5.07	.23	8.3	8.3	18	8.3	158.5
1728.00	5.74	5.07	5.74	5.07	.23	9.1	9.1	17	9.0	172.8
1802.00	5.70	5.39	5.70	5.39	.54	9.5	9.5	17	9.4	160.2
1850.00	5.52	5.99	5.52	5.99	35	9.7	9.7	19	9.7	185.0
1936.00	5.12	7.04	5.12	7.04	09	10.1	10.2	21	10.1	193.4
2089.00	4.87	8.69	4.87	8.69	05	10.9	11.0	24	10.9	208.9
2245.00	5.58	11.63	5.58	11.63	05	11.8	11.8	30	11.8	224.5
2298.00	6.40	12.59	6.40	12.59	05	12.0	12.1	31	12.0	229.8
2442.00	9.69	15.50	9.69	15.50	09	12.8	12.9	36	12.8	244.2
2542.00	12.22	18.21	12.22	18.21	10	13.4	13.4	41	13.3	254.2
2588.00	13.35	19.35	13.35	19.35	11	13.6	13.7	43	13.6	258.8
2699.00	16.21	21.96	16.21	21.96	13	14.2	14.3	47	14.1	269.9
2878.00	20.21	26.74	20.21	26.74	13	15.2	15.3	53	15.1	287.8
3045.00	24.31	34.44	24.31	34.44	11	16.1	16.3	65	15.9	304.4
3169.00	28.94	42.97	28.94	42.98	10	16.8	17.1	, <b></b> 78	16.6	316.8
3324.00	41.49	49.93	41.49	49.93	21	17.9	18.1	86	17.4	332.3

17 APR 1989 @ 16:43

MINORA RESOURCES NL WINDEMERE #2 VICTORIA

# DATADRIL

### ELLIPSE OF CERTAINTY

Parameters for a Magentic Survey:

Relative Depth (Mtrs): .18888
Misalignment (degrees): .38888
True Inclination (degrees): 28888
Reference Error (degrees): 8.88888
D/S Magnetization (degrees): 1.88888

SCALE: 12 MTRS/INCH

MD: 3324.00 TVD: 3322.20 + SURVEY: 41.49 N, 49.93 E x ELLIPSE: 41.49 N, 49.93 E flipha: -.21 Degrees Normal fix1s: 17.89 Mtrs

Perp. fixis: 18.11 Mtrs
Beta: -.86 Degrees
TVD fixis: 17.41 Mtrs

