WCR VOL 1

SWEETLIPS-1

W1003

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

68 PAGES

WELL COMPLETION REPORT

SWEETLIPS-1 & ST1

VOLUME I

BASIC DATA

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

GIPPSLAND BASIN

VICTORIA

ESSO AUSTRALIA LTD

Compiled by:
A. Clare

November 1989

SWEETLIPS-1 & ST1

WELL COMPLETION REPORT

VOLUME 1: BASIC DATA

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1. WELL DATA RECORD

SWEETLIPS-1 & ST1

LOCATION	:	Latitude : 38^0 05' 47.30" South Longitude : 148^0 02' 08.66" East X = 590817.0 E Y = 5782960.0 S Map Projection: UTM Zone 55 Geographical Location: Bass Strait, Victoria Field: Sweetlips
PERMIT	:	Vic/~~L10~~ L-10
ELEVATION	:	21m
WATER DEPTH	:	52m
TOTAL DEPTH	:	1870.0mMD (Driller), 1869.5m (Logger) - S1 1728.0mMD (Driller), 1722.0m (Logger) - S1(ST1)
PLUG BACK TYPE	:	Cement Plug
REASONS FOR PLUGGING BACK	:	Plug and Abandon
MOVE IN	:	23/07/89 1700 hours
SPUDDED	:	26/07/89 0930 hours
REACHED T.D.	:	17/08/89 0415 hours
START SIDETRACK	:	11/08/89 0415 hours
END SIDETRACK	:	19/08/89 0830 hours
RIG RELEASED	:	22/08/89 0800 hours
OPERATOR	:	Esso Resources Australia Limited
PERMITTEE OR LICENCEE	:	Esso Australia Limited and BHP Petroleum Pty Ltd.
ESSO INTEREST	:	50%
OTHER INTEREST	:	BHP Petroleum Pty Ltd.: 50%
CONTRACTOR	:	South Seas Drilling Company
RIG NAME	:	Southern Cross
EQUIPMENT TYPE	:	Semisubmersible
TOTAL RIG DAYS	:	30.09 (S1=21.91, S1(ST1)=8.18)
DRILLING AFE NO.	:	239008 (segment 05)
TYPE COMPLETION	:	Plug and Abandon
WELL CLASSIFICATION	:	Before Drilling: New Field Wildcat After Drilling: Plugged & Abandoned

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SWEETLIPS-1 FINAL WELL REPORT

Operations Summary

1. MOVING/MOORING

After bolstering the No. 2 anchor at the Blackback-1 location, the Southern Cross was towed by the MV Lady Penelope to the Sweetlips-1 location. Because of broken pendant lines trailing on anchors Nos. 2 and 4, it was necessary to proceed via a route which did not cross any pipelines. This resulted in a tow distance of 51nm instead of the planned 37nm direct route. Anchor No. 8 was dropped at Sweetlips-1 at 1700 hours July 23, 1989, thus completing the tow in 11.25 hours at an average speed of 4.5 kts.

After dropping anchor No. 8, the standard amounts of chain (2000ft) and wire (1000ft) were run and the rig was pulled into position at what was believed to be the wellhead marker buoy. The remaining anchors, except for No. 2, were then run during the night. All mooring legs were run with the standard amounts of chain and wire, except for No. 4, which still had an additional 450ft section of chain installed from Blackback-1. The next morning, it was discovered that the rig had overshot the location. While attempting to move the rig ± 250m towards the called location, it was also discovered that several of the secondary anchors were out of position. After surveying the anchor pattern to determine required adjustments, however, operations were suspended for 19.25 hours due to weather (30kt winds, 20ft seas). Anchors Nos. 3 and 7 were then picked up and reset and anchor No. 2 was run. Total time for the anchor running operation was 47.75 hours, with 32.75 hours of NPT including the weather related downtime.

The rig was moved towards the called location and all anchors were load tested to 200 kips. After ballasting down and pretensioning all mooring lines to 80 kips, the TGB was run to about 5m off bottom. The RCV 150 was then run to observe the landing of the TGB. However, the RCV tilt control failed requiring the RCV to be pulled blind into its' cage. During this operation, however, the RCV tether broke and the vehicle floated to the surface, where it was retrieved with the rig's rescue boat (see EFR No. 1). After repairing a short in the rig TV system, the subsea TV was run and the TGB was landed at a seafloor depth of 73m RKB. The rig position was determined to be 5.4m on a bearing of 217° from the called location.

2. DRILLING OPERATIONS

a) 26" Hole/20" Casing

After setting the TGB, the 26" bit/26" hole opener BHA was made up and stabbed into the TGB, thus spudding the Sweetlips-1 well at 0930 hours July 26, 1989. The 26" hole was drilled from 73m to 195m, at an average ROP of 14.8 mph, using seawater and high viscosity gel slugs to clean the hole. After sweeping the hole with 100 bbls of high viscosity mud, a Totco was dropped and the bit was pulled to the seafloor. The Totco was a misrun and the bit was RIH. After washing out 14m of fill, another Totco was dropped and the bit was pulled to the seafloor. The Totco was again a misrun, the bit was RIH and the interval 154-195m was reamed.

A 200 bbl high viscosity pill was then spotted and a Totco was run on wireline ($^3/_4°$). The bit was then POOH to 115m, where an additional 100 bbls of high viscosity mud was spotted. At this time, the bit was pulled above the seafloor and 12.75 hours were spent waiting on the 30" x 20" wellhead adapter bushing to be delivered to the rig. While waiting, a wiper trip was run. No drag or fill was encountered and the drillstring was POOH to run casing.

Eight joints of 20", 94 ppf, X-56, LS casing, plus a crossover joint (129 ppf, LS x ALT-2) and the 24" pile joint/18$^3/_4$" Vetco SG-5 wellhead assembly were then run, with the 20" shoe at 190m. Due to problems experienced with cement backflow through the float shoe on Blackback-1, a float collar was run one joint above the shoe. The casing was cemented to the seafloor, using a drillpipe stinger, with a lead slurry of 750sx of Class "G" cement plus 2.2% prehydrated gel and a tail slurry of 500sx of Class "G" neat cement.

The BOP stack was run and landed and the shear rams, wellhead connector and casing were tested to 500psi.

b) <u>17$^1/_2$" Hole/ 13$^3/_8$" Casing</u>

A 17$^1/_2$" bit and pendulum BHA were then picked up and RIH to the float collar at 180m. The float collar and 20" casing shoe were drilled and the 17$^1/_2$" hole was drilled from 195m to 795m, at an average ROP of 19.2 mph, using a seawater/gel mud system. A Totco was dropped and the bit was POOH to the 20" casing shoe. Maximum drag while POOH was 50 kips at 624-596m. The Totco was recovered (1°) and the bit was RIH. After washing out 10m of fill, a 100 bbl high viscosity pill was pumped. An additional 100 bbl high viscosity pill was also pumped down the kill line to increase the carrying capacity in the riser. This was designed to help remove any debris in the wellhead sealing area and was implemented due to problems experienced with energizing the 13$^3/_8$" packoff on the Mulloway-1 well. The drillstring was then POOH and the BHC/GR/CAL log was run.

The wearbushing was pulled and 63 joints of 13$^3/_8$", 54.5 ppf, K-55, BTC casing, plus the casing hanger pup joint (68 ppf, K-55) were run and landed with the shoe at 783m. Prior to cementing, an additional 80 bbl high viscosity pill was pumped down the kill line, while also circulating conventially. The casing was then cemented in place with 1100sx of Class "G" neat cement. The estimated TOC was calculated to be at 283m based on an average hole diameter of 18" as per the caliper log. The top plug was bumped and the pressure was increased to 1500 psi to test the casing.

An attempt was then made to energize the 13$^3/_8$" Vetco SG5-LT packoff assembly, which had been run with the casing hanger in the one trip mode. However, full torque (16,000 ft-lbs) was reached with two full turns remaining for complete make up. The packoff was backed out and retrieved; however, the 1$^3/_4$" metal ring below the packoff element was not recovered. After running the mill and flush tool to wash out the seal area, two unsuccessful attempts were made to engage an emergency packoff in the casing hanger threads. An attempt was then made to run the casing hanger running tool to unseat the hanger and flush the landing shoulder. However, the running tool would not pass below the ball joint. After waiting on weather for 2.75 hours (40kt winds, 20ft seas @ 230°), the subsea TV was run to check the riser/BOP alignment since the AIM (Automatic Inclination Measurement) unit was not operational. However, the TV power pack failed and 9.50 hours were spent attempting to repair the unit. By this time, an RCV crew was mobilized to the rig, the RCV was jumped and the rig was moved to align the riser and BOP.

Two more unsuccessful attempts were then made to engage the emergency packoff, then the shear rams were closed and an injection rate was established into the annulus (1100 psi breakdown pressure, injection rate = 3.6 bpm @ 1000 psi). The casing hanger running tool was then RIH and the casing hanger was engaged with a make up torque of 8000 ft-lbs. The casing was picked up and additional mud was injected (4.4 bpm @ 1000 psi) to flush the landing shoulder. The casing was set back down and the running tool was backed out with only 2000 ft-lbs of torque. The emergency packoff was then run and successfully energized and pressure tested to 200/1500 psi, along with the BOP stack and the choke manifold was tested to 200/5000 psi. Total NPT attributed to the packoff assembly problem was 30.00 hours.

c) <u>Original $12^1/_4$" Hole</u>

An HP11J bit and pendulum BHA were then RIH to the top of the float collar, where a Phase I PIT was run to 1500 psi. The float collar/float shoe were drilled out and 3m of new hole was drilled to 798m. A Phase II PIT was then conducted to leakoff at 830psi (15.3 ppg EMW).

The $12^1/_4$" hole was then drilled from 798m to 1512m in one bit run, at an average ROP of 19.5 mph. While drilling this section, the mud system was gradually conditioned and the mud weight was increased to 9.5 ppg at about 1400m. Drilling detergent was also added to the mud system to help control "gumbo" related problems seen on offset wells in the Lakes Entrance formation. Lithology in this section graded from the Gippsland Limestone to the claystone/siltstone formations of the Lakes Entrance and on to the Top of Latrobe Coarse Clastics (picked at 1510m about 11m low to prognosis). After experiencing a drill break at 1509-1512m, the bit run was terminated in order to core after observing fluorescence in the cuttings.

A $12^1/_4$" core bit and core barrel, with the stabilizers turned down to 12" OD, were then picked up and RIH. A total of three cores were then cut over the interval 1512-1554m, using one core bit, at an overall average ROP of 3.8 mph. Core recoveries were 74%, 91% and 81%, respectively, and the core bit was graded as 20% worn after cutting Core No. 3. Maximum gas recorded while coring was 385 units of trip gas at 1518.5m. Normal drag was encountered while POOH after Cores Nos. 2 and 3; however, 120 kips overpull was recorded while POOH after the core barrel jammed when 7m of Core No.1 had been cut. Upon POOH, one joint of drillpipe was laid down due to a washout located 2ft from the top of the box.

After coring a HP51A bit and the Teleco MWD tool were picked up and RIH. The core hole was then reamed while logging the section with the MWD tool. The interval 1554-1870m was then drilled through sandstone/siltstone/coal formations in one bit run, at an average ROP of 9.4 mph. Due to high torque, which caused intermittent rotary stalling, the bit run was terminated at 1870m, or about 30m short of the programmed TD. The hole was circulated clean and the drillstring was POOH to log. However, after pulling 10 stands, maximum overpull of 100 kips was recorded and the well was trying to swab. Therefore, the bit was run back to bottom and the hole was circulated clean. Maximum gas of 390 units was recorded on bottoms up; however, the agitator on the gas trap was later found to be broken, leading to the belief that actual gas was much higher than recorded. Drag of up to 50 kips was experienced while POOH and the bit was found to be $^3/_{16}$" undergauge.

After rigging up Schlumberger, electric logs were run as follows:

Run No. 1 = DLL/MSFL/LDL/CNL/BHC/SP/GR/CAL
Run No. 2 = RFT/GR (40 pressure pretests, 5 samples attempted/3 successful/2 seal failures)
Run No. 3 = SHDT/GR
Run No. 4 = WSS
Run No. 5 = CST/GR (60 cores shot, 56 recovered)

Due to tight spots encountered over the interval 1518-1834m while running log No. 1, a wiper trip was run prior to running RFT's. A bit was RIH and a tight spot was tagged at 1825m. The interval 1829-1870m was then reamed and the hole was circulated clean. On bottoms up, gas units were off scale (± 1450 units). Drag of up to 30 kips was experienced while POOH. A total of 10 hours of NPT were required to run the wiper trip. Additionally, 5 hours of NPT were recorded due to packer failures when attempting to take RFT samples in tight formations.

Based on the logs, hydrocarbons were indicated in the Top of Latrobe reservoir, with a gas cap at 1510-1561m and an oil zone at 1561-1565m. However, because of a lithology change, the oil zone terminated in a siltstone and an oil/water contact could not be positively identified. A geological target located 15m downdip and ± 350m due south of the original wellbore was selected as a site where the suspected OWC could be encountered in a clean sandstone; therefore, the decision was made to sidetrack the well.

Prior to sidetracking, open-ended drillpipe was RIH to 1600m and a 140m balanced cement plug (P&A Plug No. 1) was set across the Top of Latrobe using 335 sx of Class "G" cement with 0.2% HR6L retarder mixed in freshwater. The plug was later tagged at 1467m and the pipe was pulled up to 910m to set a sidetrack plug, thus completing operations in the original 12 $^{1}/_{4}$" hole.

d) <u>Sidetrack 12 $^{1}/_{4}$" Hole</u>

Sidetracking operations began at 0415 hours August 11, 1989 when a densified (16.2 ppg), balanced cement plug (Sidetrack Plug No. 1) was set at 910m using 410sx of Class "G" neat cement. The program called for the cement top to be bought up to about 760m (i.e., about 23m above the $13^{3}/_{8}$" casing shoe at 783m) so that welding operations on a skidable BOP test stump could be completed in the moonpool area with no open hole exposed.

After laying down drillpipe and testing the BOP stack, an HP11J bit was made up below a $9^{1}/_{2}$" Nortrak steerable motor assembly and RIH. The TOC was tagged at 780m and cement was drilled to 799m, where the Teleco MWD surface computer malfunctioned. Cement was then drilled to 818m while attempting to orient the Nortrak motor. However, because the MWD computer could not decode the pulses from the tool, the bit was pulled up inside the casing shoe while troubleshooting the computer. A total of 5.75 hours were then spent waiting on parts and repairing the computer.

When repairs on the Teleco computer were completed, the bit was run back to 818m, the Nortrak was oriented and the kickoff was begun. The sidetrack hole was then drilled to 1036m MD with the Nortrak in the oriented mode, at an average ROP of 12.5 mph. The bit was POOH on hours (20.25) and graded 2-4-I. At the end of this bit run, the hole angle had built to 13.9° and the azimuth was turned from 325° to 179°.

Because the previous Nortrak assembly did not build angle as fast as desired (1.8°/30m actual vs. 2.5°/30m programmed), a more aggressive steerable assembly was built. The $9^1/_2$" Nortrak (DTU = 0.59°) was replaced with an 8" Nortrak (DTU = 0.66°) and a $10^5/_8$" stabilizer was replaced with a $9^7/_8$" stabilizer. The assembly was RIH above a S11J bit and the kickoff was continued. The interval 1036-1123m MD was drilled in the oriented mode, then rotation was combined with oriented drilling as required for directional control. After drilling to 1424m MD, the bit run was terminated after 28.75 hours. The ROP achieved while rotating showed a substantial improvement over the ROP while sliding, with an average ROP for the bit run of 13.5 mph. While in the oriented mode, the rate of build was as high as 3.5°/30m and at the end of the bit run, the hole angle had built to 38.4°, down from the maximum hole angle reached at 1288m MD of 39.7°. Also, while drilling this section, the mud system was converted to a ± 7% KCL system at 1278m MD by diluting with a 20% KCL premix. This was designed to provide additional hole stability through the Lakes Entrance formation in the directional hole as evidenced on Blackback-1.

Due to a slight change in the target area, requiring a drop in hole angle, the $9^5/_8$" stabilizer above the Nortrak motor was replaced with a $12^1/_8$" stabilizer and the 8" Nortrak was rerun above a S11JC bit (center nozzle blanked off). The assembly was RIH and the interval 1424-1672m MD was drilled at an average ROP of 8.0 mph. Rotation was alternated with oriented drilling as required to a depth of 1601m MD, then the remainder of the interval was drilled in the rotating mode. A slight build up of native clays was experienced while drilling the Lakes Entrance. However, the magnitude of the build up was much less than in the vertical section, indicating that the KCL was successfully inhibiting the clays. While drilling this section a maximum gas peak of 221 units was recorded at 1621m MD and the Top of Latrobe Coarse Clastics was picked at 1619m MD (1517m TVD). Upon POOH, the bit was found to be completely worn out and was graded 8-8-$^3/_8$" . At the end of this bit run, the hole angle had decreased to 30.1°, indicating a drop rate of 1.1°/30m for the BHA.

Since the target area had been sucessfully penetrated, the steerable assembly was laid down and a rotary assembly consisting of a $12^1/_4$" near bit stabilizer, MWD tool and 12" stabilizer, was picked up. The assembly was RIH above a S13G bit and undergauge hole was reaned from 1647m MD to TD. The $12^1/_4$" sidetrack hole was then drilled to a final TD of 1728m MD (1611m TVD) at an average ROP of 4.9 mph. The final survey at 1683m MD showed that the hole angle had dropped to 29.7°, indicating a drop rate of 0.4°/30m for the BHA.

It had been planned to drill to ± 1750m MD; however, due to an ROP decrease, the bit run was terminated. Since sufficient rat hole had been drilled to allow log evaluation of the Top of Latrobe and since there were no plans to set $9^5/_8$" casing, it was also decided to terminate the well. After circulating up a sample for geological evaluation, a wiper trip was made to the $13^3/_8$" casing shoe, encountering 80 kips overpull. The drillstring was then RIH to bottom and the hole/mud was circulated and conditioned. Maximum gas recorded on bottoms up was 60 units with 0.8% CO_2. Tight hole (100 kips overpull) was worked at 1687-1710m MD, then the drillstring was POOH to log.

After rigging up Schlumberger, electric logs were run as follows:

Run No. 1 = DLL/MSFL/LDL/CNL/SP/GR/CAL
Run No. 2 = RFT/GR (16 pressure pretests, 1 sample run)
Run No. 3 = BHC/GR/CAL

Based on the logs, a gas oil contact was picked at the same depth as in the original hole (i.e., 1561m TVD). An OWC was picked at 1565m TVD.

3. PLUG & ABANDONMENT

After completing final logs, open-ended drillpipe was RIH to 1720m MD and a 150m balanced cement plug (P & A Plug No. 2) was set across the Top of Latrobe using 450sx of Class "G" neat cement with 0.2% HR6L retarder mixed in freshwater. After tagging the plug at 1550m MD, operations on the sidetrack portion of the hole ended at 0830 hours August 19, 1989. In total, 8.18 days were required to drill, evaluate and abandon the sidetrack hole.

The pipe was then pulled up to 830m MD and a 100m balanced cement plug (P & A Plug No. 3) was set across the $13^3/_8$" casing shoe using 300sx of Class "G" neat cement mixed in seawater. The plug was later tagged at 726m and pressure tested to 1500 psi.

Schlumberger was rigged up and a $13^3/_8$" EZSV bridge plug (P & A Plug No. 4) was set at 700m. The $13^3/_8$" casing was then cut at 162m using a Pengo explosive cutter. Schlumberger was rigged down, the wearbushing was pulled and a spear was run. Seven joints of casing and a stub were then pulled and laid down.

Open-ended drillpipe was RIH, the EZSV was tagged and a 50m balanced cement plug (P & A Plug No. 5) was set from 700m to 650m using 125sx of Class "G" neat cement mixed in seawater. The pipe was pulled up and a 90m balanced cement plug (P & A Plug No. 6) was set across the $13^3/_8$" casing stub, from 190m to 100m, using 415sx of Class "G" neat cement mixed in seawater. While laying down drillpipe, Plug No. 6 was pressure tested to 500 psi.

The inner barrel of the slip joint was then pinned closed and the BOP stack and riser were pulled. A mechanical cutter was RIH and the 20" casing was cut at 84m or $\pm$ 1m below the pile joint assembly ALT-2 connector. An $18^3/_4$" wellhead running tool and bumper sub were then run and the wellhead, PGB and TGB were retrieved and laid down.

4. PULLING ANCHORS

After the rig was deballasted from drilling draft (48ft) to transit draft (21ft), anchor pulling operations began. While drilling Sweetlips-1, new 2000ft sections of primary service chains had been received and were installed in the chain lockers. Therefore, as the MV's Lady Caroline and Lady Diana retrieved the eight anchors, the old chains were buoyed off and wet stowed for later recovery and the anchors were installed on the new chains. The total anchor recovery time was 23 hours. Of this time, an estimated 10.25 hours were required to change out the chains.

Under tow by the Lady Caroline, the rig departed for the Seahorse tubing spool installation location at 0800 hours August 22, 1989.

Because of the failure of the RCV 150 vehicle (see EFR No. 2), a seabed survey was not conducted prior to departing the Sweetlips-1 location.

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SWEETLIPS-1 FINAL WELL REPORT
CASING DATA

OD (In.)	WEIGHT (LB/FT)	GRADE	CONNECTION	LENGTH (M)	SHOE DEPTH (mMD-RKB)	CENTRALIZER POSITION	REMARKS
20	94	X-56	LS	12.80	190	NONE	FL SHOE/FL COLLAR JOINT
20	94	X-56	LS	83.17		1 ACROSS COLLAR	7 INTERMEDIATE JOINTS
20	129	X-56	LS x ALT-2	11.71		NONE	CROSSOVER JOINT
24	670	----	ALT-2	11.64		NONE	PILE JOINT: VETCO SG-5
				119.32			
13-3/8	54.5	K-55	BTC	12.39	783	NONE	FLOAT SHOE JOINT
	54.5	K-55	BTC	11.79		1 ACROSS COLLAR	FLOAT JOINT
	54.5	K-55	BTC	11.86		NONE	FLOAT COLLAR JOINT
	54.5	K-55	BTC	671.04		1 ACROSS FIRST SEVEN COLLARS	60 INTERMEDIATE JOINTS
	68	K-55	BTC	3.50		NONE	CASING HANGER PUP JOINT -CSG HANGER: SG-5, TYPE T (LOCK RING REMOVED) -PACK-OFF ASSY: SG-5
				710.58			

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CEMENT DATA

DATE (1989)	TYPE JOB	INTERVAL (mMD-RKB)	TYPE CEMENT	VOLUME (SX)	SLURRY WEIGHT (PPG)	ADDITIVES	MIX WATER	REMARKS
28-Jul	20" PRIMARY LEAD	190-73	CLASS "G"	750	13.2	2.2% PHG	FW	CEMENT THROUGH DP STINGER. CEMENT VOLUME AS PER PROGRAM TO PROVIDE 200% EXCESS ABOVE GAUGE HOLE VOLUME W/ TOC @ SEAFLOOR.
28-Jul	20" PRIMARY TAIL		CLASS "G"	500	15.8	----	SW	
31-Jul	13-3/8" PRIMARY	783-283	CLASS "G"	1100	15.8	----	SW	CMT VOLUME BASED ON 18" AVG. HOLE DIAMETER PER THE CALIPER LOG. BUMPED PLUG W/ 1500 PSI.
10-Aug	P & A PLUG No.1	1600-1467	CLASS "G"	335	15.8	0.2% HR6L	FW	SET TO COVER HYDROCARBON ZONES IN THE TOP OF LATROBE @ 1509 - 1564m. TAGGED WITH 15 KIPS.
11-Aug	SIDETRACK PLUG No.1	910-780	CLASS "G"	410	16.2	----	FW	SET PLUG TO ALLOW SIDETRACKING BELOW THE 13-3/8" CASING SHOE FOR GEOLOGICAL PURPOSES.
19-Aug	P & A PLUG No.2	1720-1550	CLASS "G"	450	15.8	0.2% HR6L	FW	SET TO COVER HYDROCARBON ZONES IN THE TOP OF LATROBE IN THE SIDETRACK HOLE. TAGGED WITH 15 KIPS.
19-Aug	P & A PLUG No.3	830-726	CLASS "G"	300	15.8	----	SW	SET ACROSS 13-3/8" CASING SHOE @ 783m. TAGGED WITH 15 KIPS, TESTED TO 1500 PSI.

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CEMENT DATA

DATE (1989)	TYPE JOB	INTERVAL (mMD-RKB)	TYPE CEMENT	VOLUME (SX)	SLURRY WEIGHT (PPG)	ADDITIVES	MIX WATER	REMARKS
20-Aug	P & A PLUG No.5	700-650	CLASS "G"	125	15.8	----	SW	SET ABOVE EZSV BRIDGE PLUG (P & A PLUG No. 4) @ 700m.
20-Aug	P & A PLUG No.6	190-100	CLASS "G"	415	15.8	----	SW	SET ACROSS 13-3/8" CASING STUB @ 162m. TESTED TO 500 PSI.

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

SWEETLIPS-1 & ST1

SWEETLIPS-1

INTERVAL (m)	TYPE
795 - 1870	Cutting samples - 4 sets of washed and oven dried and 1 set of bagged air dried cuttings. Samples from 795 - 1410 at 30m intervals. Samples from 1410 - 1870 and 5m intervals.
795 - 1870	Unwashed composite tinned samples for geochemistry collected at 30m/15m intervals.
1512.0 - 1518.5	Core #1 (Fibreglass Sleeved). Cut: 6.5m Rec: 4.81m (74%).
1518.5 - 1537.0	Core #2 (Fibreglass Sleeved). Cut: 18.5m Rec: 16.84m (91%).
1537.0 - 1554.0	Core #3 (Fibreglass Sleeved). Cut: 17.0m Rec: 13.77m (81%).
1849 - 1433	Sidewall Cores, Shot 60. Rec: 56, Bought: 56.

SWEETLIPS-1 ST1

INTERVAL (m)	TYPE
800 - 1728	Cutting samples - 4 sets of washed and oven dried and 1 set of bagged air dried cuttings. Samples from 800 - 1400 at 30m intervals. Samples from 1400 - 1728 and 5m intervals.
800 - 1728	Unwashed composite tinned samples for geochemistry collected at 30m/15m intervals. No cores or sidewall cores on sidetrack 1.

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6. WIRELINE LOGS AND SURVEYS
SWEETLIPS-1 & ST1

TYPE AND SCALE		FROM	TO
SWEETLIPS-1			
	SUITE 1		
BHC-CAL-GR	1:200 1:500	791.0 -	191.0
	SUITE 2		
DLL-MSFL-GR-SP-AMS	1:200 1:500	1865.0 -	782.0
BHC-GR-CAL	1:200 1:500	1842.5 -	782.0
LDL-CNL-GR	1:200 1:500	1859.5 -	1400.0
RFT (HP GAUGE PRETESTS)	(40 Pretests/3 samples)	1627.0 -	1512.5
SHDT-GR	1:200	1850.0 -	1400.0
WSS (CHECKSHOT)		1850.0 -	800.0
CST-GR (SIDEWALL CORES)	(60 Shots)	1849.0 -	1433.0
SWEETLIPS-1 ST1			
	SUITE 3		
DLL-MSFL-GR-SP-AMS	1:200 1:500	1716.0 -	782.0
BHC-GR-CAL	1:200 1:500	1715.0 -	782.0
LDL-CNL-GR	1:200 1:500	1712.0 -	782.0
RFT (HP GAUGE PRETESTS)	(16 Pretests/1 sample)	1705.0 -	1649.0

7. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - SWEETLIPS-1 & ST1

SWEETLIPS-1

TEST & SEAT NO.	DEPTH (METRES) K.B.	CHAMBER	OIL	RECOVERY (LITRES) COND.	GAS	FORMATION WATER	MUD FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE MPaa	Psia	HEWLETT-PACKARD HYDROSTATIC PRESSURE MPaa	Psia	REMARKS
		Litres	Litres	Litres	m^3	Litres	Litres					
1/1	1512.5	Pretest						15.01	2177.85	17.42	2526.80	Good test
1/2	1517.0	Pretest						15.02	2178.62	17.46	2532.47	Good test
1/3	1526.5	Pretest						15.03	2179.82	17.56	2547.11	Good test
1/4	1545.5	Pretest						15.05	2182.93	17.77	2577.04	Good test
1/5	1552.0	Pretest						15.06	2184.20	17.84	2587.40	Good test
1/6	1559.0	Pretest						15.07	2185.47	17.92	2599.30	Good test
1/7	1562.5	Pretest						15.08	2186.96	17.96	2605.59	Good test
1/8	1564.0	Pretest						15.09	2188.54	18.00	2611.43	Good test
1/9	1580.5	Pretest						15.25	2211.56	18.20	2640.53	Good test
1/10	1583.0	Pretest						15.27	2214.78	18.23	2644.95	Good test
1/11	1597.5	Pretest						15.46	2242.97	18.41	2269.77	Good test
1/12	1604.5	Pretest						-	-	18.48	2681.01	Seal failure
1/13	1605.0	Pretest						-	-	18.49	2681.80	Seal failure
1/14	1604.0	Pretest						15.52	2251.92	18.47	2679.74	Good test
1/15	1606.5	Pretest						-	-	18.50	2684.05	Tight - abort
1/16	1606.7	Pretest						-	-	18.50	2683.91	Leaking seal
1/17	1607.0	Pretest						15.56	2256.41	18.51	2684.66	Good test
1/18	1620.5	Pretest						15.73	2281.88	18.66	2706.60	Supercharged
1/19	1627.0	Pretest						15.78	2288.71	18.73	2717.20	Good test
2/20	1561.0	22.7	.001	-	2.854	-	0.6	15.07	2186.55	17.97	2606.50	Good test - sample 1
				(P R E S E R V E D)								
3/21	1563.0	22.7	16.75	-	1.107	-	2.5	15.08	2187.90	18.00	2610.80	Good test - sample 2
				(P R E S E R V E D)								
4/22	1571.0	Pretest						-	-	18.08	2623.04	Seal failure
4/23	1570.5	Pretest						-	-	18.08	2622.62	Seal failure
4/24	1571.5	Pretest						-	-	18.09	2624.11	Seal failure
4/25	1572.0	Pretest						-	-	18.09	2624.38	Seal failure
4/26	1572.5	Pretest						-	-	18.10	2624.80	Seal failure

7. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - SWEETLIPS-1 & ST1

SWEETLIPS-1

TEST & SEAT NO.	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES) OIL	COND.	GAS	FORMATION WATER	MUD FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE MPaa	Psia	HEWLETT-PACKARD HYDROSTATIC PRESSURE MPaa	Psia	REMARKS
		Litres	Litres	Litres	m^3	Litres	Litres					
4/27	1572.2	Pretest						-	-	18.09	2624.17	Seal failure
4/28	1570.8	Pretest						-	-	18.07	2621.70	Seal failure
4/29	1567.5	Pretest						-	-	18.03	2615.53	Seal failure
4/30	1567.3	Pretest						-	-	18.03	2614.96	Seal failure
5/31	1571.0	Pretest						-	-	18.09	2624.51	Seal failure
5/32	1572.0	Pretest						-	-	18.10	2625.77	Seal failure
5/33	1567.5	Pretest						-	-	18.05	2617.73	Seal failure
5/34	1580.5	22.7	-	-	0.026	21.25	-	15.25	2211.65	18.19	2638.50	Good test - sample 3
			-	-	0.017	9.00	-					
6/35	1571.0	Pretest						-	-	18.05	2617.98	Seal failure
6/36	1571.2	Pretest						-	-	18.05	2617.62	Seal failure
6/37	1571.9	Pretest						-	-	18.06	2618.99	Seal failure
6/38	1572.2	Pretest						-	-	18.06	2620.09	Leaking seal
6/39	1567.4	Pretest						-	-	18.01	2612.41	No seal
6/40	1567.6	Pretest						-	-	18.02	2613.55	Seal failure

7. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - SWEETLIPS-1 & ST1

SWEETLIPS-1 ST1

TEST & SEAT NO.	DEPTH (METRES) K.B.	RECOVERY (LITRES) CHAMBER	OIL	COND.	GAS	FORMATION WATER	MUD FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE MPaa	Psia	HEWLETT-PACKARD HYDROSTATIC PRESSURE MPaa	Psia	REMARKS
		Litres	Litres	Litres	m^3	Litres	Litres					
1/1	1649.0	Pretest						15.05	2182.61	17.54	2544.47	Good test
1/2	1659.5	Pretest						15.06	2184.07	17.64	2559.30	Good test
1/3	1664.0	Pretest						15.06	2184.89	17.69	2566.08	Good test
1/4	1667.5	Pretest						15.07	2185.61	17.73	2571.24	Good test
1/5	1669.0	Pretest						15.07	2186.02	17.74	2572.68	Good test
1/6	1672.0	Pretest						15.09	2188.85	17.77	2577.48	Good test
1/7	1674.0	Pretest						15.15	2191.07	17.79	2580.25	Good test
1/8	1676.0	Pretest						15.13	2194.02	17.81	2583.56	Good test
1/9	1680.0	Pretest						15.16	2198.91	17.85	2588.68	Good test
1/10	1683.5	Pretest						15.19	2203.14	17.88	2594.10	Good test
1/11	1686.0	Pretest						15.21	2206.38	17.91	2597.64	Good test
1/12	1689.0	Pretest						15.23	2209.48	17.93	2601.31	Good test
1/13	1691.5	Pretest						15.25	2212.61	17.96	2604.76	Good test
1/14	1702.0	Pretest						15.34	2225.19	18.06	2619.76	Good test
1/15	1705.0	Pretest						15.36	2228.74	18.09	2623.89	Good test
1/16	1676.0	Pretest						-	-	17.81	2582.70	Good test
2/17	1676.0	22.7	TR	-	0.023	22.2	-	15.13	2194.20	17.80	2582.67	Good test - sample 1
		10.4	TR	-	0.020	9.2	-					

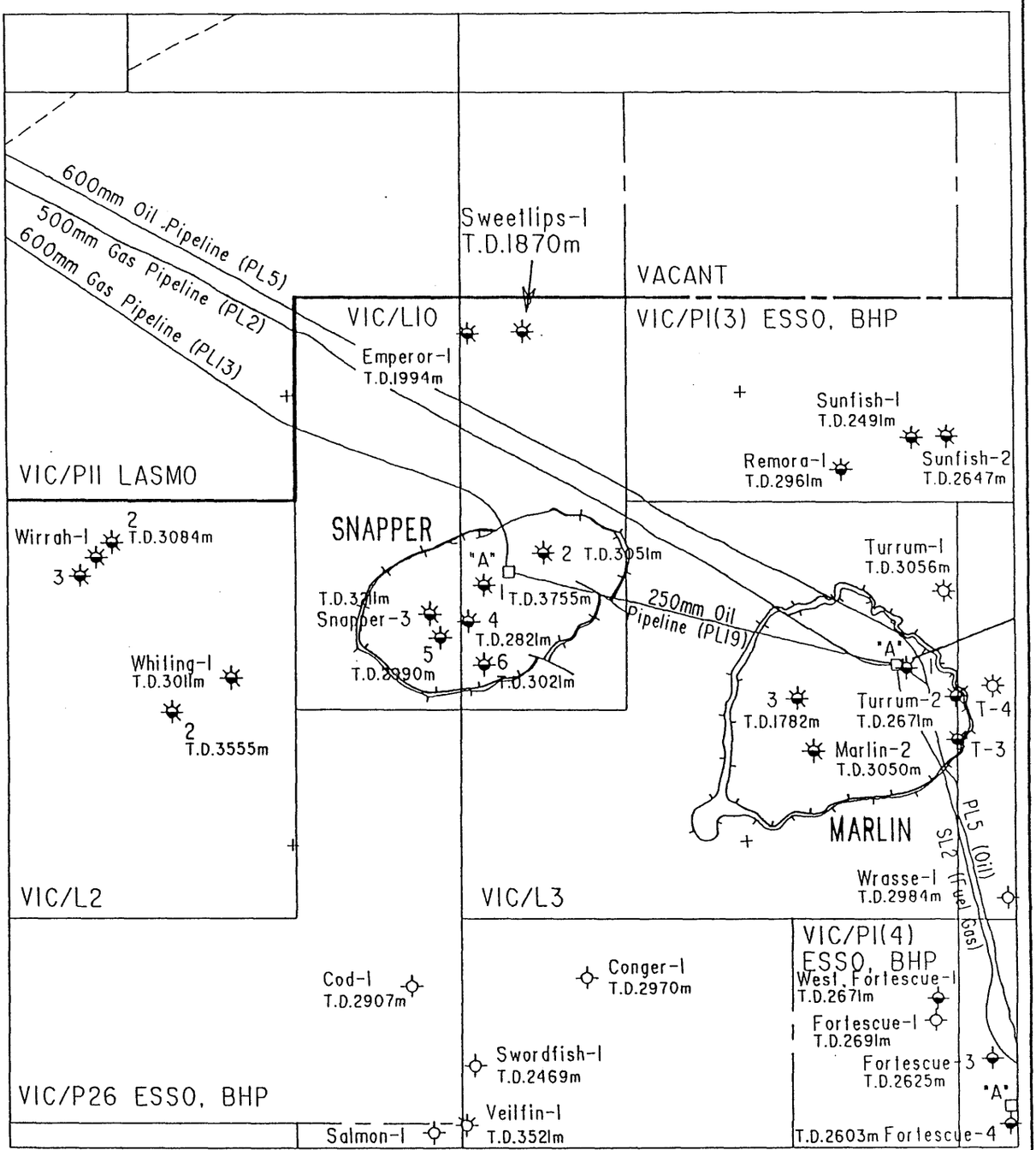
8. TEMPERATURE RECORD - SWEETLIPS-1 & ST1

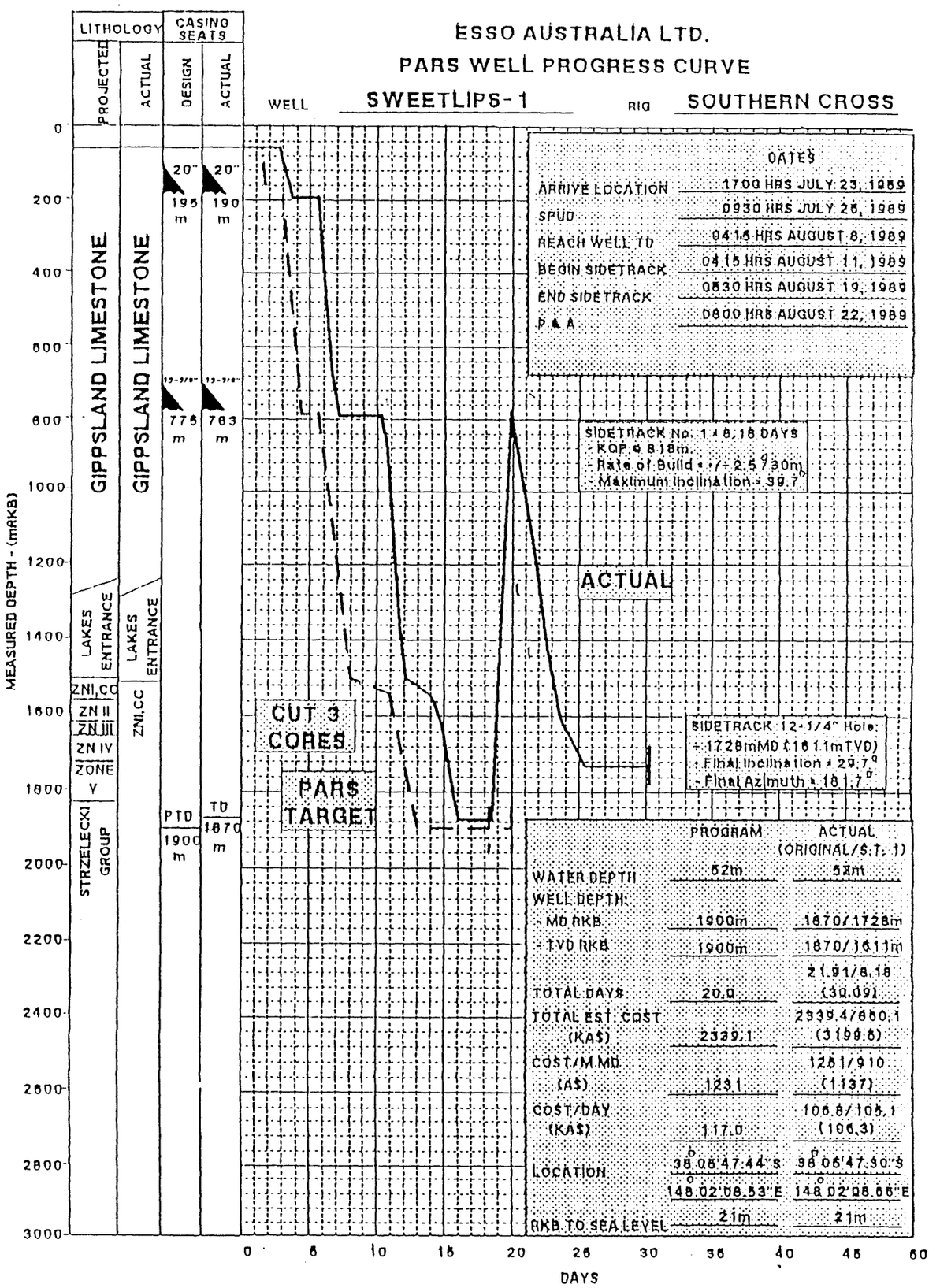
LOGGING RUN	THERMOMETER DEPTH (m)	MAX. RECORDED TEMPERATURE (C°)	CIRCULATION TIME (t_k) (hours)	TIME AFTER CIRCULATION STOPPED (t)	HORNER TEMPERATURE (C°)	GEOTHERMAL GRADIENT (C°/km)
SWEETLIPS-1						
Suite 1						
BHC-CAL-GR	791	42	3 hrs 0 mins	4H 20M(4.33)		
Suite 2						
DLL-MSFL-LDL-CNL-BHC-GR-SP	1865.0	68.3 }	3 hrs 0 mins	11H 45M(11.75) }		
SHDT-GR	1850.0	82.0 }		31H 20M(31.33) }		
RFT-GR (PRE-TEST)	1627.0	82.0 }	3 hrs 40 mins	5H 45M(5.75) }	93.0 °C	47.97°C/Km
WSS	1850.0	82.0 }	(wiper trip)	9H 30M(9.50) }		
CST's	No Thermometers Run					
SWEETLIPS-1 ST1						
Suite 3						
DLL-MSFL-LDL-CNL-GR	1716.0	63.0 }	3 hrs 0 mins	8H 05M(8.08) }		
RFT-GR	1705.0	71.0 }		12H 30M(12.50) }		
BHC-GR-CAL	1715.0	71.0 }		24H 00M(24.00) }	80.9 °C	45.54°C/Km
WSS						
CST's	No Thermometers Run					

FIGURES

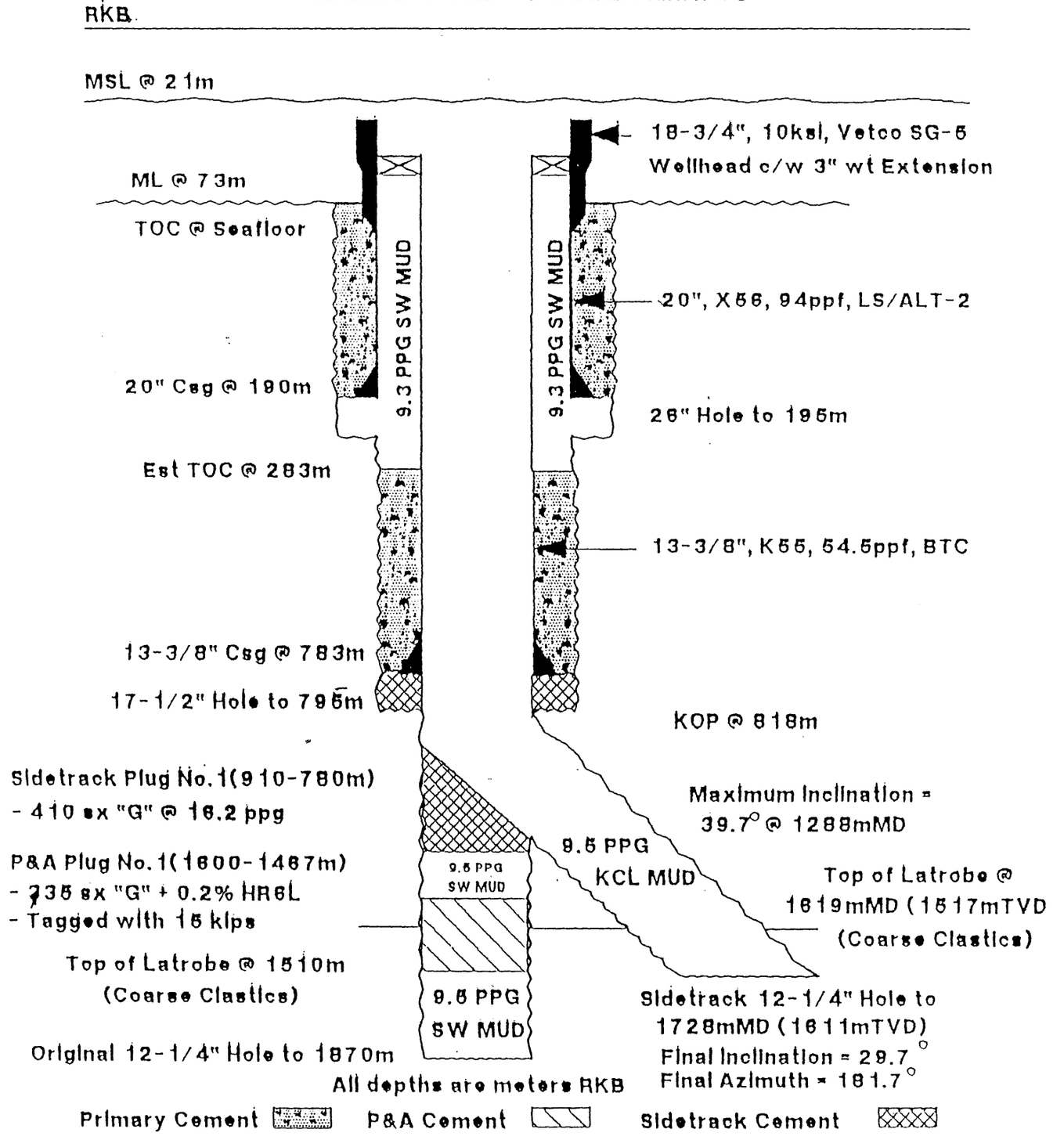
SWEETLIPS-1

LOCATION MAP

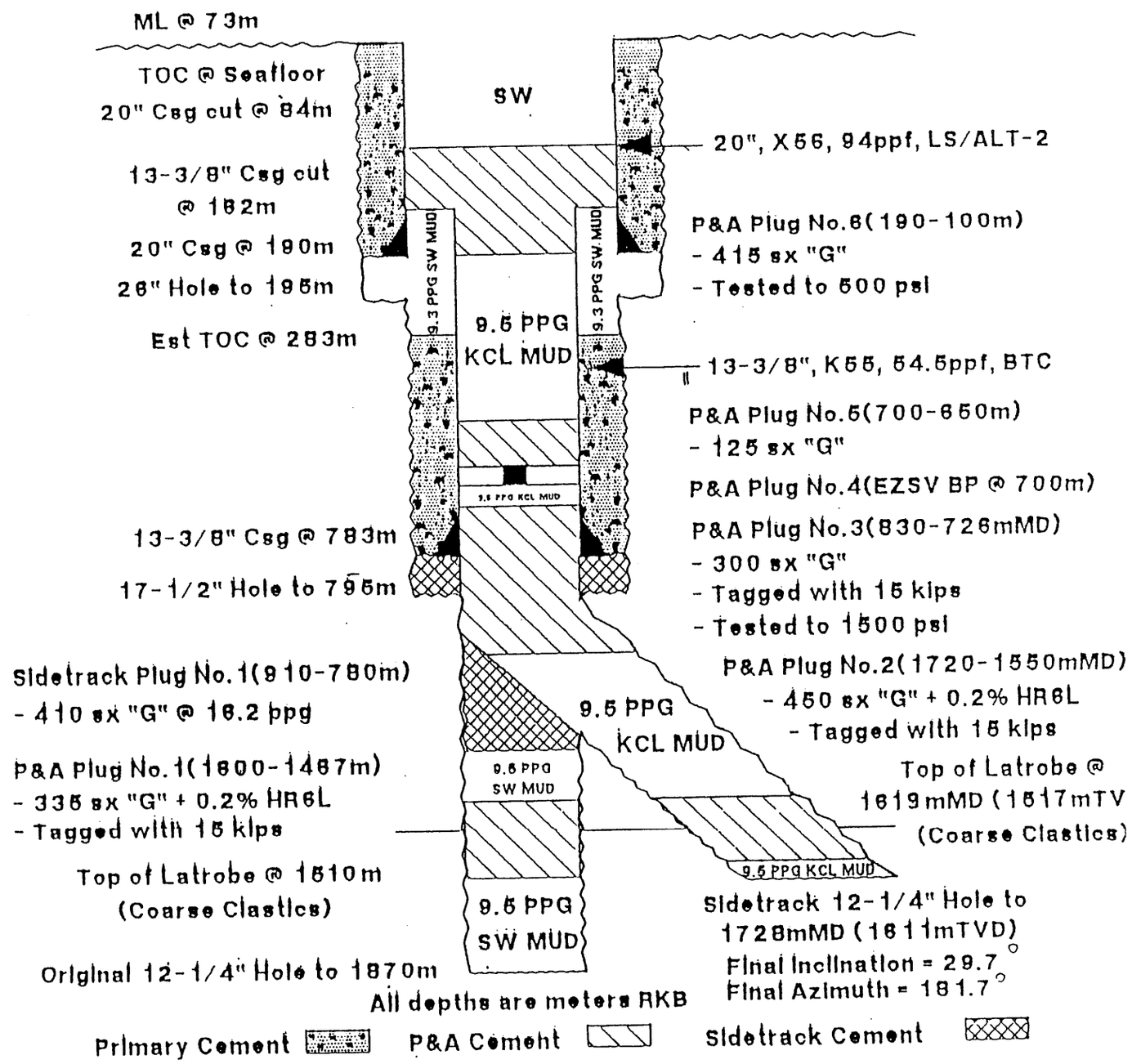



ESSO AUSTRALIA LTD.
PARS WELL PROGRESS CURVE
WELL SWEETLIPS-1
RIG SOUTHERN CROSS
LITHOLOGY
CASING SEATS
PROJECTED
ACTUAL
DESIGN
ACTUAL
GIPPSLAND LIMESTONE
LAKES ENTRANCE
ZNI,CC
ZN II
ZN III
ZN IV
ZONE V
STRZELECKI GROUP
20"
195 m
190 m
775 m
783 m
PTD 1900 m
TD 1870 m
MEASURED DEPTH - (mRKB)
DAYS
DATES
ARRIVE LOCATION 1700 HRS JULY 23, 1989
SPUD 0930 HRS JULY 26, 1989
REACH WELL TD 0415 HRS AUGUST 8, 1989
BEGIN SIDETRACK 0415 HRS AUGUST 11, 1989
END SIDETRACK 0830 HRS AUGUST 19, 1989
P & A 0800 HRS AUGUST 22, 1989
SIDETRACK No. 1 : 8.18 DAYS
- KOP @ 818m.
- Rate of Build = +/- 2.5°/30m
- Maximum Inclination = 39.7°
ACTUAL
CUT 3 CORES
PARS TARGET
SIDETRACK 12-1/4" Hole:
- 1728mMD (1611mTVD)
- Final Inclination = 29.7°
- Final Azimuth = 181.7°
PROGRAM
ACTUAL (ORIGINAL/S.T. 1)
WATER DEPTH 52m 52m
WELL DEPTH:
- MD RKB 1900m 1870/1728m
- TVD RKB 1900m 1870/1611m
TOTAL DAYS 20.0 21.91/8.18 (30.09)
TOTAL EST. COST (KA$) 2539.1 2939.4/880.1 (3199.6)
COST/M MD (A$) 1291 1281/910 (1137)
COST/DAY (KA$) 117.0 106.8/105.1 (106.3)
LOCATION 38°06'47.44"S 148°02'08.53"E 38°06'47.30"S 148°02'08.66"E
RKB TO SEA LEVEL 21m 21m

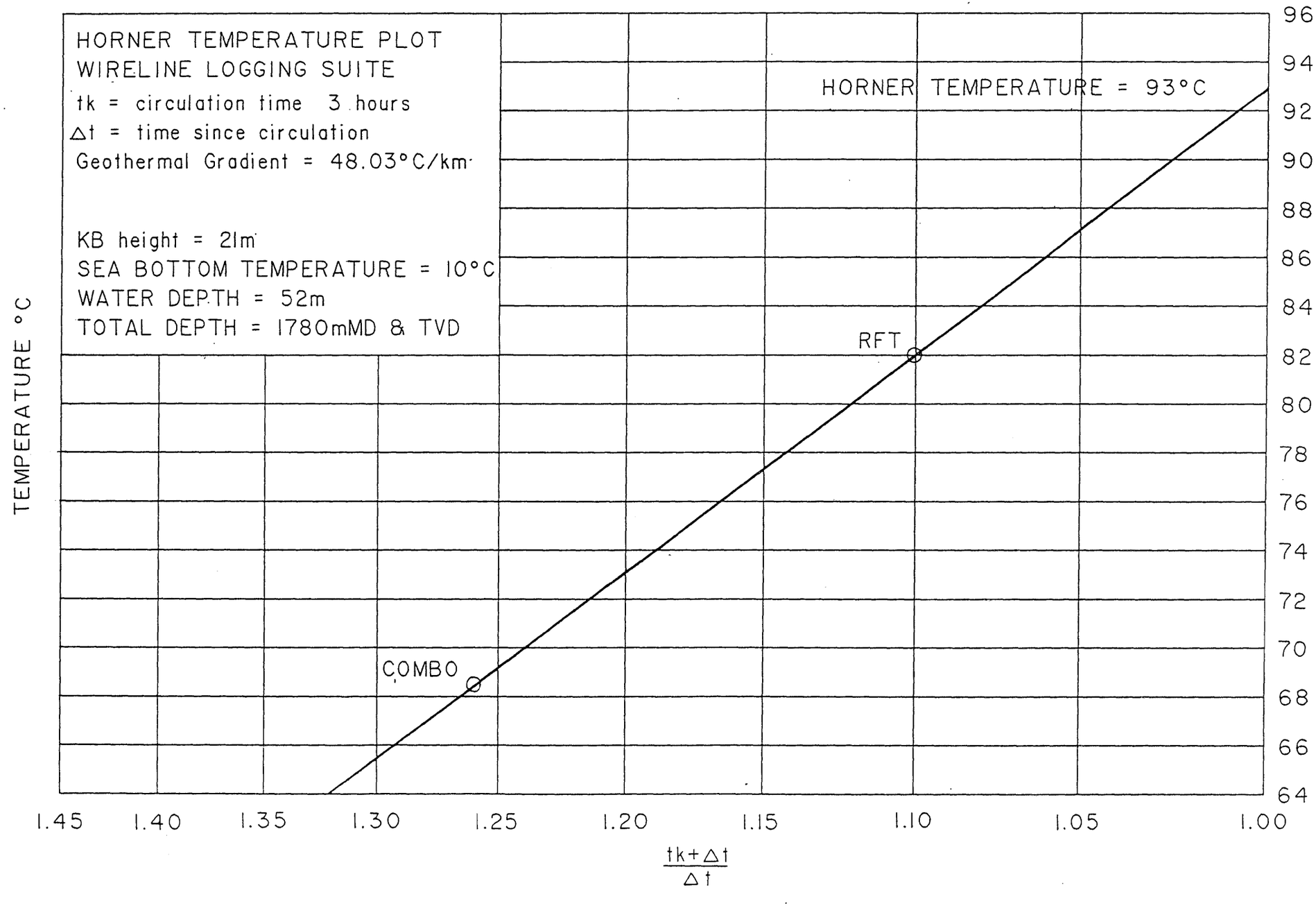
ESSO AUSTRALIA LTD.
SWEETLIPS-1 FINAL WELL REPORT
WELLBORE SCHEMATIC



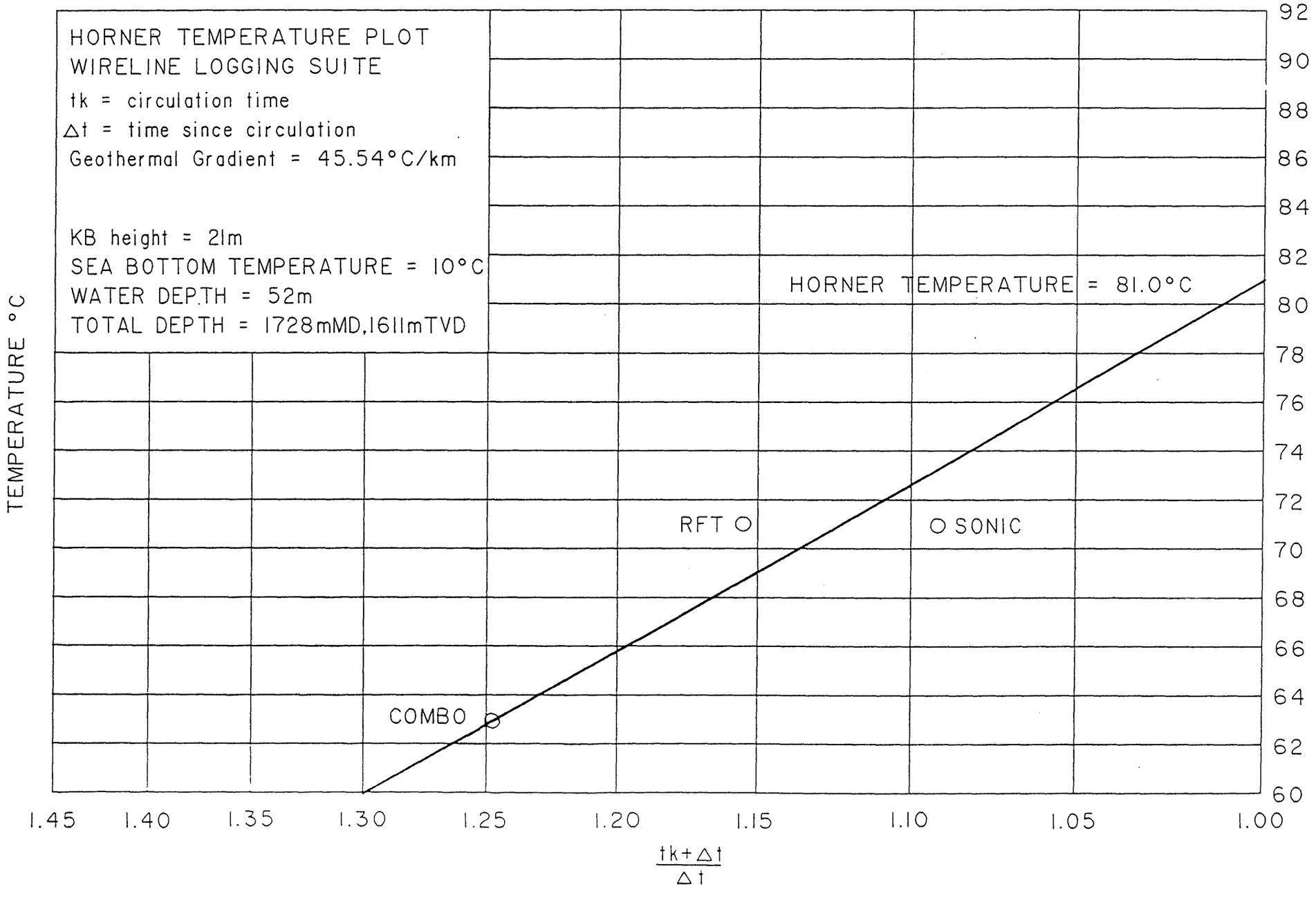
ESSO AUSTRALIA LTD
SWEETLIPS-1 FINAL WELL REPORT
WELLBORE ABANDONMENT SCHEMATIC



SWEETLIPS-1


HORNER TEMPERATURE PLOT
WIRELINE LOGGING SUITE
tk = circulation time 3 hours
Δt = time since circulation
Geothermal Gradient = 48.03°C/km
KB height = 21m
SEA BOTTOM TEMPERATURE = 10°C
WATER DEPTH = 52m
TOTAL DEPTH = 1780mMD & TVD
HORNER TEMPERATURE = 93°C
RFT
COMBO
TEMPERATURE °C
96
94
92
90
88
86
84
82
80
78
76
74
72
70
68
66
64
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
tk+Δt / Δt

SWEETLIPS-1 ST1



APPENDIX 1

Sweetlips-1

Lithology Descriptions

Depth	%	Description
795 - 810	100	LIMESTONE: Light to medium grey, very rarely dark grey, calcilutite to calcisiltite, common to abundant forams and common fossil fragments, trace pyrite, soft to occasionally firm, blocky to subfissile, very poor visual porosity.
810 - 840	100	LIMESTONE: Light to medium grey, as above, common forams, common fossil fragments, soft, subblocky, very poor visual porosity.
840 - 870	100	LIMESTONE: Light to medium grey, predominantly calcisiltite, abundant forams and common fossils, soft, subfissile to blocky, very poor to no visible porosity.
870 - 900	100	LIMESTONE: Light to medium grey, calcisiltite occasionally calcilutite, common to abundant forams and fossil fragments, trace calcite, soft, subfissile to blocky, no visible porosity.
900 - 930	100	LIMESTONE: Light to medium grey, as above, predominantly calcisiltite, occasionally calcarenite (fine, poorly sorted, subrounded to subangular, abundant calcisiltite matrix), trace calcite and pyrite, soft, subfissile to blocky, no visible porosity.
930 - 960	100	LIMESTONE: Light to medium grey, as above, calcisiltite grading in parts to calcarenite and pyrite, abundant forams and common fossil fragments, soft, subfissile to predominantly blocky, no visible porosity.
960 - 990	100	LIMESTONE: Light to medium grey, white, occasionally dark grey, slightly dolomitic, calcisiltite to very fine grained calcarenite (Wackestone grading to Packstone), carbonate clasts are very fine to fine, subangular in a very fine to silty micritic matrix, trace to common fossil fragments including forams, bryozoans and trace corals, trace pyrite nodules, aggregates are moderately hard, blocky.
990 - 1020	100	LIMESTONE: Predominantly medium grey, as above, predominantly calcisiltite, no pyrite.
1020 - 1050	100	LIMESTONE: As above, calcisiltite predominantly, (Wackestone), trace fossil fragments, trace pyrite, soft to firm, blocky.
1050 - 1080	100	LIMESTONE: Light to medium grey, rare dark grey, slightly dolomitic, calcisiltite grading in part to calcarenite (predominantly Wackestone), carbonate clasts are very fine to fine, poorly sorted and angular, set in micritic matrix, trace crystalline calcite clasts, trace fossil fragments, predominant forams, aggregates are soft, blocky.

Sweetlips-1

Lithology Descriptions

Depth	%	Description
1080 - 1110	100	LIMESTONE: As above, trace fossils and pyrite.
1110 - 1140	100	LIMESTONE: Medium grey, dolomitic in parts, calcisiltite grading in parts to calcarenite, common forams, trace other fossil eg shell fragments, micritic matrix, soft, blocky.
1140 - 1170	100	LIMESTONE: Light grey, occasionally medium to dark grey, becoming predominantly calcisiltite(Wackestone), very micritic with minor angular very fine to fine carbonaceous clasts, common forams, trace pyrite.
1170 - 1200	100	LIMESTONE: As above, common fossil fragments including forams, bryozoans, shell fragments, and corals becoming increasingly clayey with depth (Wackestone).
1200 - 1230	100	LIMESTONE: Light to medium grey, predominantly calcareous limestone, calcareous siltstone grading in part to calcarenite (Wackestone to packstone), dolomitic in part, fine carbonaceous clasts associated with common forams and fossil fragments, soft, blocky.
1230 - 1260	100	LIMESTONE: Medium to light grey, occasionally dark grey, calcisiltite (Wackestone), clasts medium to fine, poorly sorted, subangular to subrounded, micritic matrix, common forams, trace fossil fragments (bryozoans and shell fragments), trace pyrite, trace peletal dark green glauconite, soft, blocky.
1260 - 1290	90	LIMESTONE: As above, trace peletal glauconite and associated nodular pyrite, soft, blocky.
	10	LIMESTONE: White to off white, dolomitic in part, calcisiltite (Wackestone), fine glauconite clasts and forams with white calcilutite matrix, common forams, firm, blocky.
1290 - 1320	90	LIMESTONE: (i) Light to medium grey, slightly dolomitic, predominantly calcisiltite (occasionally grading in part to calcarenite), fine to very fine carbonaceous clasts, predominantly subangular in a argillaceous matrix, common forams and fossil fragments, trace disseminated pyrite (occasionally branded associated with fine laminations in limestone), trace glauconite and trace calcareous, soft to firm, blocky.
	10	LIMESTONE: (ii) Off white to medium grey, calcilutite (Wackestone to micritic mudstone), disseminated fine fossil fragments and forams in an argillaceous matrix, trace to common pyrite, trace flaky to occasionally peletal glauconite, firm to occasionally hard, blocky.

Sweetlips-1

Lithology Descriptions

Depth	%	Description
1320 - 1350	100	LIMESTONE: (ii) Light to medium grey, as above, predominantly calcilutite (occasionally calcisiltite) grading in parts to calcareous claystone, common forams, trace fossil fragments, trace pyrite, trace glauconite, very rare disseminated slightly oxidised quartz grains, soft to firm, blocky.
1350 - 1380	100	LIMESTONE: (ii) Light to medium grey, as above, calcilutite (grading in part to calcareous claystone), common to trace forams, trace fossil fragments, firm, blocky.
1380 - 1410	100	LIMESTONE: (ii) As above, calcilutite (calcareous claystone), common forams, firm blocky.
	Tr	CLAYSTONE: White to off white, calcareous to argillaceous, trace pyrite, trace glauconite, very soft subfissile.
1410 - 1415	95	LIMESTONE: (ii) As above, trace forams, trace pyrite, trace glauconite, soft to firm, blocky.
	5	LIMESTONE: (i) Light to medium grey, calcisiltite (Wackestone), disseminated fine calcareous clasts, poorly sorted, subangular, trace forams and fossil fragments, trace pyrite, trace glauconite, soft to firm, blocky.
1415 - 1420	95	LIMESTONE: (ii) As above, trace forams, trace glauconite flaky, soft to firm, blocky.
	5	LIMESTONE: (i) As above, trace forams and fossil fragments, trace bryozoans, soft to firm, blocky.
1420 - 1425	95	LIMESTONE: (ii) As above, trace forams, trace pyrite, trace glauconite, soft to firm, blocky.
	5	LIMESTONE: (i) As above, soft to firm, blocky.
1425 - 1430	100	LIMESTONE: (ii) As above, trace pyrite, trace peletal glauconite, soft to firm, blocky.
1430 - 1435	100	LIMESTONE: Light to medium grey, calcilutite grading in parts to calcareous claystone, common to trace forams, trace pyrite, trace glauconite, soft to firm, blocky.
1435 - 1440	100	LIMESTONE: Medium grey to occasionally light grey, dolomitic limestone, grading to predominantly calcilutite (mudstone), very minor carbonate clasts in a dominant micritic matrix, rare fossils with predominantly forams, rare pellets of glauconite, minor grains of crystalline carbonate, soft to firm, blocky to crumbly.
1440 - 1445	100	LIMESTONE: Generally as above.
1445 - 1450	100	LIMESTONE: Light to medium grey, calcilutite grading to calcisiltite, as above.

Lithology Descriptions

Depth	%	Description
1450 - 1455	100	LIMESTONE: As above, common clasts of angular crystalline carbonate, predominantly calcisiltite grading to calcilutite, minor forams.
1455 - 1460	100	LIMESTONE: As above, trace glauconite and pyrite.
1460 - 1465	100	LIMESTONE: Calcilutite, light grey to medium grey as above, trace common pyrite, common fossil fragments including forams, bryozoans, slightly sticky, soft to firm, blocky.
1465 - 1470	100	LIMESTONE: As above, trace pyrite.
1470 - 1475	100	LIMESTONE: Calcilutite grading to calcisiltite as above, becoming slightly brown/grey in colour.
1475 - 1480	100	LIMESTONE: As above, light to medium grey, occasionally grey/brown, calcilutite grading to calcisiltite, (Mudstone grading to Wackestone), common light brown to buff translucent crystalline carbonate, angular in shape, soft to firm, blocky aggregates.
1480 - 1485	100	LIMESTONE: As above.
1485 - 1490	100	LIMESTONE: Light to medium grey, very slightly dolomitic, predominantly calcilutite grading to calcisiltite (Wackestone), very minor carbonaceous clasts and very fine quartz grains with rare fossil fragments set in a micritic matrix, trace carbonaceous specks, rare pyrite, soft, slightly sticky, blocky.
1490 - 1495	100	LIMESTONE: As above with trace carbonaceous and coaly detrital fragments, generally well rounded.
1495 - 1500	100	LIMESTONE: Medium grey calcilutite grading to calcareous claystone, abundant forams and shelly fragments, trace bryozoans, trace pyrite and rare glauconite, soft to firm, blocky aggregates.
1500 - 1505	100	LIMESTONE: Medium grey, light to medium grey/brown, calcisiltite to calcilutite, trace glauconite, common pyrite, common forams as above.
1505 - 1512	60	LIMESTONE: As above, medium to light grey, calcisiltite, grading to calcilutite, soft to firm, blocky any cavings.
	20	SANDSTONE: Translucent to clear, occasionally white, medium to predominantly coarse, very coarse grained, moderately sorted, subangular to rounded, common bit fractured grains, no visible cement, trace white argillaceous matrix coating some grain, trace glauconite nodules and pyrite coating on grains, loose, very good to good inferred porosity, no fluorescence.

Sweetlips-1

Lithology Descriptions

Depth	%	Description
1505 - 1512 (contd)	20	SANDSTONE: Off white to light brown, occasionally medium brown, very fine to fine, moderately well to well sorted, subrounded, weak silica and slightly calcareous cement, minor light brown to white orange/silty matrix, trace very fine glauconite specks, trace carbonaceous specks, firm to moderately hard, friable, poor visual porosity. FLUOR: Trace dull yellow/green fluorescence, with no cut, no crush cut, - 20-30% dull yellow mineral fluorescence.
1512.0 - 1518.5		Cut Core #1, Cut:6.5m Rec:4.81m (74%) See Core Description for Core 1.
1518.5 - 1537.0		Cut Core #2, Cut:18.5m Rec:16.84m (91%) See Core Description for Core 2.
1537.0 - 1554.0		Cut Core #3, Cut:17.0m Rec:13.77m (81%) See Core Description for Core 3.
1554 - 1560	70	SANDSTONE: (i) (60%) Translucent to white, occasionally clear, rare smokey grey quartz grains, medium to very coarse, predominantly coarse grained, with rare fractured pebble grains, poorly sorted, angular to subrounded, common fractured quartz grains, weak silica cement, no visible matrix, trace muscovite flakes, very good inferred porosity, no fluorescence. (ii) (10%) Light grey/brown, very fine to fine, well sorted, weak to moderate silica cement, trace light brown argillaceous matrix, firm to moderately hard, brittle. poor visual porosity, no fluorescence.
	30	SILTSTONE: 2 types (i) (10%) Medium to dark brown, moderately argillaceous, abundant micromicaceous flakes, slightly carbonaceous, firm subfissile. (ii) (20%) Medium to light grey, very calcareous, slightly glauconite and fossiliferous, cavings, soft to firm, blocky.
1560 - 1565	80	SANDSTONE: (i) (70%) As above, trace pyrite, common muscovite mica flakes, loose, good inferred porosity. FLUOR: Trace dull to moderately bright spotted fluorescence, no cut, occasionally very weak pale yellow crush cut, no ring residue. (ii) (10%) As above, no fluorescence.
	20	SILTSTONE: Type (i) as above.
1565 - 1570	90	SANDSTONE: Clear to translucent, grading medium to very coarse, predominantly coarse grained, moderately well sorted, subangular to rounded, minor bit fractured angular quartz grains, no visible cement, trace white argillaceous matrix, minor muscovite mica flakes, trace pyrite, rare coal and carbonaceous detrital fragments, loose, very good to excellent inferred porosity.

Lithology Descriptions

Depth	%	Description
1565 - 1570 (contd)		FLUOR: Trace dull yellow fluorescence, spotted, no cut, very weak pale slight crush cut, no residue, trace moderately bright to bright yellow mineral fluorescence in parts. CLAYSTONE: White to off white, slightly silty, smooth uniform texture, moderate swelling, soft, slight sticky.
1570 - 1575	70	SANDSTONE: Translucent to clear, coarse to very coarse, occasionally grading to medium grained, generally as above, fair to good inferred porosity. FLUOR: Trace as above.
	10	SILTSTONE: Medium to dark brown, dark brown/black, moderately argillaceous, very carbonaceous, grading to carbonaceous siltstone in parts, trace micromica, rare pyrite.
	10	CLAYSTONE: As above.
	10	COAL: Black, very dull to occasionally subvitreous lustre, uneven to subfissile , brittle, moderately hard to hard.
1575 - 1580	60	CLAYSTONE: White to pale cream, slightly silty in parts, smooth and uniform, as above, trace disseminated very fine sandstone grains (subrounded), trace disseminated very fine carbonaceous flakes, moderately to nonswelling, soft, slightly sticky.
	20	SANDSTONE: (i) Translucent to off white, clear to translucent, coarse to very coarse grained, moderately to poorly sorted, subangular to subrounded, trace to rare quartz overgrowths and associated trace silica cement, rare pyrite, good to very good inferred porosity. FLUOR: Trace moderately bright yellow mineral fluorescence.
	10	SANDSTONE: (ii) Translucent to off white, clear to off white, very fine to medium, predominantly fine grained, generally loose, moderately sorted, subangular to subrounded, predominantly subrounded, trace pyrite, trace argillaceous matrix, moderate to good inferred porosity, no fluorescence.
	5	SILTSTONE: Medium to dark brown, arenaceous to argillaceous, predominantly arenaceous, very rare calcareous cement, predominantly argillaceous matrix, trace disseminated fine sand grains, trace to common carbonaceous flakes, trace to occasionally common fine pyritic grains, trace micromica, hard, blocky.
	5	COAL: Black to dark brown, dull to occasionally subvitreous, predominantly dull, slight silty in parts grading to carbonaceous siltstone, uneven to blocky, brittle, hard.
1580 - 1585	80	CLAYSTONE: White to light brown, predominantly buff, as above, soft, slightly sticky.
	10	COAL: Black to dark brown, as above, trace pyrite, trace siderite associated with partings, hard, brittle, blocky.

Lithology Descriptions

Depth	%	Description
1580 - 1585 (contd)	5	SANDSTONE: (i) As above, trace pyrite, very good inferred porosity, no direct fluorescence, trace yellow mineral fluorescence.
	5	SANDSTONE: (ii) As above, trace white argillaceous matrix associated with rare aggregates, moderate inferred porosity, no fluorescence.
1585 - 1590	40	SANDSTONE: (i) Clear to translucent, clear to off white, predominantly clear, medium to very coarse, predominantly coarse grained, poorly sorted, subangular to subrounded, predominantly subangular, rare pyrite, very good inferred porosity. FLUOR: Trace moderately bright yellow white fluorescence, very weak dull yellow slow diffuse cut, moderately bright fast streaming yellow/white crush cut, thin moderately bright ring residue.
	20	SANDSTONE: (i) Clear to translucent, clear to off white, fine grained, moderately well sorted, subangular to subrounded, trace pyrite, moderate to good inferred porosity, no fluorescence.
	20	CLAYSTONE: White to buff, slightly silty, rare disseminated pyrite, very rare disseminated quartz grains, moderate swelling, soft, sticky.
	10	COAL: Black, occasionally dark brown, dull to occasionally waxy, slightly silty, uneven to subconchoidal, brittle, hard.
	10	SILTSTONE: Medium to dark brown, arenaceous, argillaceous matrix, trace to common disseminated fine grains, trace to common carbonaceous flakes, trace micromica, hard, blocky.
1590 - 1595	30	CLAYSTONE: As above, soft, sticky.
	30	SILTSTONE: Medium brown, as above, common disseminated, fine, subangular sandstone grains, trace carbonaceous flakes, trace to common micromica, hard, blocky.
	20	SANDSTONE: (i) As above, excellent inferred porosity, trace moderately bright yellow fluorescence, weak slow streaming yellow/white cut, dull yellow crush cut, thin yellow ring residue.
	20	SANDSTONE: (ii) As above, trace moderate aggregates with associated argillaceous matrix, moderate inferred porosity, no fluorescence.
	Tr	COAL: As above, common to occasionally abundant pyrite, hard, brittle, blocky, uneven.
1595 - 1600	70	SANDSTONE: (i) As above, very good to excellent inferred porosity, no fluorescence.
	10	SILTSTONE: As above, trace to common pyrite, common disseminated very fine sandstone grains, hard, blocky.
	10	CLAYSTONE: As above, soft, sticky.
	10	COAL: As above, waxy to subvitreous, uneven to occasionally conchoidal, brittle, hard, blocky.

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Lithology Descriptions

Depth	%	Description
1600 - 1605	95	SANDSTONE: (i) White to off white, clear to white, medium to very coarse, predominantly coarse, poorly sorted, subangular to subrounded, predominantly subrounded, trace coarse muscovite, trace pyrite, trace quartz overgrowths, common bit fractured grains, excellent inferred porosity, no fluorescence.
	Tr	SANDSTONE: (ii) As above, common moderate to well cemented aggregates, minor calcareous cement, poor visual porosity, no fluorescence.
	5	COAL: As above, waxy to subvitreous, uneven to subconchoidal, brittle, hard, blocky.
1605 - 1610	100	SANDSTONE: (i) As above, fine to very coarse, predominantly coarse grained, very poorly sorted, subangular to subrounded, as above, excellent inferred porosity, no fluorescence.
	Tr	CLAYSTONE: As above, soft, sticky.
	Tr	SILTSTONE: As above, trace pyrite, common carbonaceous debris, blocky, hard.
1610 - 1615	60	SANDSTONE: White to off white, clear to white, fine to very coarse, predominantly coarse grained, very poorly sorted, subangular to subrounded, predominantly subrounded, trace coarse muscovite, very rare pyrite, common bit fractured grains, clean and loose, excellent inferred porosity, no fluorescence.
	30	COAL: Black to brown/black, predominantly dull, occasionally waxy, slightly silty in parts, uneven to subconchoidal, brittle, blocky, hard.
	10	SILTSTONE: Medium brown, occasionally dark brown, arenaceous with argillaceous matrix, trace to common carbonaceous flakes, common micromica, trace pyrite, hard, blocky.
1615 - 1620	60	SANDSTONE: As above, excellent inferred porosity, no fluorescence.
	20	COAL: As above, trace to common pyrite, blocky, brittle, hard.
	10	SILTSTONE: As above, common micromica, hard blocky.
	10	CLAYSTONE: Buff to very light brown, grading in parts to buff siltstone, trace occasionally common disseminated carbonaceous and very fine sandstone fragments, moderate swelling, soft, sticky.
1620 - 1625	70	SANDSTONE: As above, coarse to very coarse grained, occasionally very coarse and pebbly, very poorly sorted, subangular to subrounded, predominantly subrounded, rare muscovite, clean and loose, excellent inferred porosity, no fluorescence.
	10	COAL: As above, trace pyrite, blocky, brittle, hard.
	10	SILTSTONE: As above, common micromica, common disseminated fine quartz grains and carbonaceous flakes, hard, blocky.
	10	CLAYSTONE: As above, soft, sticky.

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Lithology Descriptions

Depth	%	Description
1625 - 1630	100	SANDSTONE: Clear to translucent, clear to off white, fine to very coarse, predominantly coarse grained, very poorly sorted, subangular to subrounded, predominantly subrounded, occasionally angular, common bit fractured grains, clean and loose, trace pyrite, trace coarse muscovite, excellent inferred porosity, very rare moderately bright yellow white fluorescence, no cut, rare moderately bright yellow white crush cut, thin yellow moderately bright ring residue.
	Tr	COAL: As above, trace silty laminae, blocky, hard.
	Tr	SILTSTONE: As above, common micromica, common disseminated fine quartz and carbonaceous fragments, grading in part to carbonaceous siltstone, hard, blocky.
1630 - 1635	100	SANDSTONE: As above, excellent inferred porosity, no fluorescence.
	Tr	COAL: As above, predominantly dull, unevenly fractured grains, brittle, hard, blocky.
	Tr	SILTSTONE: As above, trace pyrite, grading to carbonaceous siltstone, hard, blocky.
1635 - 1640	90	SANDSTONE: As above, excellent inferred porosity, trace moderately bright yellow/green fluorescence, no cut, trace very dull yellow/green crush cut, very thin yellow/green dull ring residue.
	10	CLAYSTONE: Buff, occasionally light cream to white, grading in part siltstone, very fine disseminated silty clasts and very fine sandstone grains, disseminated fine carbonaceous fragments, soft, sticky.
	Tr	SILTSTONE: As above, hard, blocky.
	Tr	COAL: As above, hard, blocky.
1640 - 1645	100	SANDSTONE: White to off white, clear to white, fine to very coarse, predominantly coarse grained, very poorly sorted, subangular to subrounded dominantly subangular, common bit fractured grains, rare coarse muscovite, trace to occasionally common pyrite, trace light brown argillaceous matrix, generally loose and clean, very good to excellent inferred porosity, no fluorescence.
	Tr	COAL: Black, occasionally dark brown, dull to waxy, occasionally subvitreous, uneven to subconchoidal, trace to common pyrite, trace siderite, brittle, blocky, hard.
	Tr	CLAYSTONE: Off white to buff, grading in parts to buff siltstone, trace carbonaceous fragments and very fine sandstone, soft, sticky,
1645 - 1650	90	SANDSTONE: As above, excellent inferred porosity, no fluorescence.
	10	SILTSTONE: Brown to light brown, arenaceous with argillaceous matrix, trace carbonaceous flakes, common pyrite, common micromica, hard, blocky.

Lithology Descriptions

Depth	%	Description
1645 - 1650 (contd)	Tr	COAL: As above.
	Tr	VOLCANICS: Buff pink to occasionally light green, fine pink k-feldspar laths disseminating a predominantly buff to occasionally light green argillaceous matrix, disseminated very fine light green flakes, trace pyrite, trace very fine disseminated quartz grains, soft to firm, slightly sticky.
1650 - 1655	60	SANDSTONE: Translucent to clear, medium to very coarse, pebbly in parts, very poorly sorted, common bit fractured grains inferred to be subrounded, trace silica cement, minor white to light brown argillaceous matrix, minor muscovite, common pyrite (nodular), predominantly loose, fair inferred porosity. FLUOR: Trace dull yellow and orange mineral fluorescence, no cut, no residue.
	20	VOLCANICS: As above.
	20	SILTSTONE: As above.
	Tr	COAL: As above.
1655 - 1660	70	SANDSTONE: As above.
	20	VOLCANICS: As above, also predominantly buff to very light green, phenocrysts of quartz in very green ground mass of k-feldspar and acicular glass shards, hard to firm, blocky.
	10	SILTSTONE: As above, common carbonaceous laminae and fragments.
1660 - 1665	95	SANDSTONE: Translucent to clear, common milky white, medium to very coarse, predominantly coarse grained, poorly to moderately sorted, subangular to subrounded, minor weak silica cement, trace white argillaceous matrix, rare pyrite and muscovite, predominantly loose, good inferred porosity. FLUOR: Trace (rare grains) very dull yellow mineral fluorescence, no cut, no residue.
	5	SILTSTONE: As above.
1665 - 1670	90	SANDSTONE: As above, increasing dolomitic cement with depth, aggregates have trace argillaceous matrix, hard, brittle, tight to poor visual porosity. FLUOR: Dull yellow orange mineral fluorescence, predominantly loose clean quartz grains with good inferred porosity, no fluorescence.
	10	SILTSTONE: As above.
1670 - 1675	100	SANDSTONE: As above.
	Tr	SILTSTONE: Medium to dark brown, buff, moderately argillaceous, trace carbonaceous flakes and rare thin laminae, firm to moderately hard, subfissile to blocky.
1675 - 1680	100	SANDSTONE: Translucent to white, occasionally clear, medium to very coarse grained, predominantly coarse, poor to moderately sorted, trace to common well dolomitic cemented aggregates, trace silica cement,

Lithology Descriptions

Depth	%	Description
1675 - 1680 (contd)		aggregates have trace white argillaceous matrix, trace pyrite, aggregates (30%) are hard to very hard, brittle, poor to tight visual porosity, trace dull yellow orange mineral fluorescence, majority of sandstone is loose with good inferred porosity, no fluorescence.
	Tr	SILTSTONE: As above.
1680 - 1685	90	SANDSTONE: As above with 30% medium to coarse, dolomitic cemented aggregates, 60% medium to very coarse grained, occasionally pebbly, loose quartz grains, fair to good visual/inferred porosity. FLUOR: Trace dull yellow orange mineral fluorescence.
	10	COAL: Black, dull to subvitreous lustre, uneven fracture, brittle, moderately hard, slightly silty, occasionally grading to carbonaceous siltstone.
1685 - 1690	95	SANDSTONE: As above, 40% aggregates, 55% loose.
	5	COAL: As above.
	Tr	SILTSTONE: As above.
1690 - 1695	100	SANDSTONE: 2 types (i) (50%) Translucent to clear, occasionally white, grading medium to very coarse, predominantly coarse grained, poorly sorted, subrounded occasionally subangular, common angular bit fractured grains, trace weak silica cement, trace white powdery silica matrix on some grains, generally clean, loose, with good inferred porosity, no fluorescence. (ii) (50%) Light grey to off white, translucent grains, fine to coarse, predominantly medium grained, moderately sorted, subangular to subrounded, moderately strong dolomitic cement, trace light grey argillaceous matrix, trace carbonaceous fragments, very hard, brittle, tight to very poor visual porosity. FLUOR: Trace very dull yellow orange mineral fluorescence.
	Tr	SILTSTONE: As above.
1695 - 1700	90	SANDSTONE: 2 types (i) (60%) As above with abundant coarse grained muscovite, good inferred porosity, no fluorescence. (ii) (30%) As above, with trace very dull yellow/orange mineral fluorescence.
	5	SILTSTONE: Very dark brown, occasionally light brown to buff, moderately argillaceous slightly arenaceous, trace carbonaceous flakes and laminae, firm, subfissile.
	5	COAL: Black, dull to subvitreous lustre, uneven fracture, moderately hard to brittle.

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Lithology Descriptions

Depth	%	Description
1700 - 1705	90	SANDSTONE: 2 types (i) (70%) As above, predominantly coarse to very coarse grained, good inferred porosity, no fluorescence. (ii) (20%) As above, trace dull yellow mineral fluorescence.
	5	SILTSTONE: As above.
	5	COAL: As above.
	NB	Washing significant quantity of light grey claystone out of samples.
1705 - 1710	60	SANDSTONE: (i) (50%) Translucent to white, occasionally clear, common frosted coarse to very coarse, occasionally medium grained, poorly to moderately sorted, trace weak siliceous cement, minor white argillaceous matrix, predominantly clean and loose, good inferred porosity, no fluorescence. (ii) (10%) Light grey to off white, as above, fine to medium cemented grained aggregates, strong dolomite cement, tight to very poor visual porosity, no fluorescence.
	30	SILTSTONE: Very dark brown, dark brown/black, occasionally medium grey/brown, moderately argillaceous, slightly arenaceous, trace to common micromicaceous flakes, trace common carbonaceous flakes, grading in parts to carbonaceous siltstone, firm, blocky to subfissile.
	10	COAL: Black, dull, silty as above.
1715 - 1720	70	SANDSTONE: (i) (60%) As above. (i) (10%) As above.
	30	SILTSTONE: As above.
	10	COAL: As above.
	Tr	CLAYSTONE: Light grey to buff, very soluble and dispersive washing out of samples, very soft, slightly sticky.
1720 - 1725	60	SANDSTONE: Translucent, occasionally white and clear, medium to very coarse, predominantly coarse to very coarse grained, subangular, common angular fractured grains, rare subrounded medium to coarse grains, generally no cement, trace dolomitic cemented medium grained aggregates, trace to common white argillaceous matrix, generally loose, aggregates are moderately hard to hard, good inferred porosity, no fluorescence.
	20	SILTSTONE: Medium to dark brown as above, very micromica, abundant carbonaceous flakes and microlaminae, firm, subfissile.
	20	COAL: As above.
1725 - 1730	50	SANDSTONE: As above predominantly coarse to very coarse angular bit fractured grains, good inferred porosity, no fluorescence.

Lithology Descriptions

Depth	%	Description
1725 - 1730 (contd)	40	SILTSTONE: As above, also off white to light grey, very argillaceous, grading to claystone, slightly arenaceous, very carbonaceous with common coal fragments, slightly pyritic, micromicaceous, soft to firm, blocky.
	10	COAL: As above.
1730 - 1735	70	SANDSTONE: Translucent to white, occasionally clear, very coarse to occasionally medium, angular bit fractured grains, poorly sorted, trace silica cement, clean with no visible matrix, clean with trace white argillaceous matrix, loose, trace pyrite, good to fair inferred porosity, no fluorescence.
	30	SILTSTONE: Medium to dark brown, occasionally brown/grey, trace carbonaceous specks and thin discontinuous coaly laminae, grading in parts to carbonaceous siltstone, firm, subfissile.
1735 - 1740	70	SANDSTONE: Very coarse to coarse, occasionally medium grained as above, fair inferred porosity, no fluorescence.
	30	SILTSTONE: As above, also white to off white, very arenaceous, grading to very fine, silty sandstone, abundant micromica flakes, trace carbonaceous fragments, soft to firm, blocky.
1740 - 1745	60	SANDSTONE: Medium to very coarse, predominantly coarse grained as above, predominantly loose, with minor siliceous cemented grained aggregates, aggregates are hard and brittle, trace white argillaceous matrix, fair inferred porosity, no fluorescence.
	40	SILTSTONE: As above.
1745 - 1750	95	SANDSTONE: Translucent to clear, commonly white, medium to coarse, occasionally very coarse grained, moderately sorted, subangular to subrounded, coarse grains are generally angular bit fractured grains, no cement visible, slight silica cement inferred from rare quartz overgrowths, clean with no visible matrix, loose, trace muscovite, good to very good inferred porosity, no fluorescence.
	5	SILTSTONE: As above.
1750 - 1755	95	SANDSTONE: Medium to very coarse, predominantly coarse grained as above, good inferred porosity, no fluorescence.
	5	SILTSTONE: Medium to dark grey and grey/ brown, moderately argillaceous, slightly arenaceous, common carbonaceous specks, thin laminae, common micromica, firm, subfissile.
1755 - 1760	95	SANDSTONE: Translucent to clear, trace white grains, medium to coarse, trace very coarse angular grains, moderately sorted, loose, good inferred porosity, no fluorescence.
	5	SILTSTONE: As above.

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Lithology Descriptions

Depth	%	Description
1760 - 1765	90	SANDSTONE: As above, predominantly coarse, grading from medium to very coarse grained, poorly sorted, angular bit fractured grains, predominantly subangular to subrounded, no cement/matrix, fair to good inferred porosity, no fluorescence.
	10	SILTSTONE: Light grey, light to medium grey/brown, occasionally dark grey/black, common carbonaceous specks and microlaminae, micromica, slight pyritic, firm to moderately hard, blocky to subfissile.
1765 - 1770	95	SANDSTONE: As above, poorly sorted, common bit fractured grains, subangular to subrounded, trace dolomitic cemented medium to fine grained aggregates, trace white argillaceous matrix, aggregates hard, trace pyrite, very rare coarse mica, very good to moderate inferred porosity, no fluorescence.
	5	SILTSTONE: As above, hard, blocky.
1770 - 1775	95	SANDSTONE: As above, generally loose, no observable pyrite, trace muscovite, common to trace very good inferred porosity, no fluorescence.
	5	SILTSTONE: As above, common disseminated very fine quartz grains, trace carbonaceous flakes, trace micromica, hard, blocky.
1775 - 1780	80	SANDSTONE: Clear to translucent, off white, very fine to very coarse, predominantly coarse grained, very poorly sorted, subangular to subrounded, predominantly subrounded, trace to very rare dolomitic cement associated with aggregates, aggregates hard, trace pyrite, trace muscovite, very good inferred porosity to excellent, no fluorescence.
	10	SILTSTONE: As above, trace carbonaceous flakes, trace micromica, hard, blocky.
	10	CLAYSTONE: Off white to light grey, grading in parts to white siltstone, trace to occasionally common disseminated very fine sandstone grains, trace carbonaceous flakes, smooth and uniform, soft, slightly sticky.
1780 - 1785	85	SANDSTONE: As above, excellent inferred porosity, no fluorescence.
	10	SILTSTONE: As above, trace to rare pyrite, hard, blocky.
	5	CLAYSTONE: As above, soft, slightly sticky.
1785 - 1790	80	SANDSTONE: As above, predominantly coarse grained, very poorly sorted, subangular to subrounded, generally loose and very clean, very good inferred porosity, no fluorescence.
	10	SILTSTONE: As above, trace carbonaceous flakes, common disseminated quartz grains, hard blocky.
	10	CLAYSTONE: As above, soft, sticky.

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Lithology Descriptions

Depth	%	Description
1790 - 1795	90	SANDSTONE: Clear to off white, translucent to off white, clean and loose, fine to very coarse, predominantly coarse grained, very poorly sorted, subangular to subrounded, predominantly subangular, trace dolomite cemented aggregates (commonly fine grained), trace white to buff argillaceous matrix, aggregates hard, trace pyrite, trace very coarse muscovite, very good inferred porosity, no fluorescence.
	10	SILTSTONE: Light brown to medium brown, occasionally pale grey/green to occasionally buff pink, arenaceous with light buff to occasionally light grey/green argillaceous matrix, trace pyrite, common disseminated very fine sandstone grains, common dark brown to black carbonaceous fragments, trace dark grey clastics, fine, blocky, hard.
1795 - 1800	90	SANDSTONE: As above, excellent inferred porosity, no fluorescence.
	5	SILTSTONE: As above, occasionally pale green with common to abundant fine disseminated sandstone grains, grading in parts to very fine sandstone, trace buff pink and grey clasts, blocky, hard.
	5	CLAYSTONE: Buff to light brown, grading in parts to arenaceous siltstone, common disseminated very fine sandstone grains, common carbonaceous flakes, soft to firm, slightly blocky.
1800 - 1805	90	SANDSTONE: As above, common buff fine grained well cemented aggregates, trace to common dolomitic cement associated with aggregates, trace to occasionally common pyrite, moderate to good inferred porosity, no fluorescence.
	10	SILTSTONE: As above, common fine disseminated sandstone grains, blocky, hard.
1805 - 1810	80	SANDSTONE: (i) As above, very good inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) Off white to light buff, occasionally very pale green to green/grey, trace to very rare lithic fragments, fine to occasionally very fine, moderately well sorted, subangular to subrounded, common silica cement, trace to common dolomitic cement, trace white to buff argillaceous matrix, very hard, trace to very rare pyrite, very poor porosity, no fluorescence.
	10	SILTSTONE: As above, common disseminated fine sandstone grains, blocky, hard.
	Tr	VOLCANICS: Light green to pale pink/cream, acidic to rhyolitic, crypto- to subcrystalline ground mass, fine laminae of quartz (flow banding), fine pink feldspar laths, trace beta to quartz (square cross-sections), hard, blocky.

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Lithology Descriptions

Depth	%	Description
1810 - 1815	75	SANDSTONE: (i) As above, very good inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) As above, moderately well to well sorted, subangular to subrounded, predominantly subrounded, common siliceous cement, trace to common dolomitic cement, no matrix, very hard, very poor porosity, no fluorescence.
	10	SILTSTONE: As above, blocky, hard.
	5	VOLCANICS: As above, occasionally very dark grey to black (very fine grained, trace fine dark ferro-mag minerals), angular fragmented (shards) in ignimbritic grondmass, trace fine feldspar laths, hard, blocky.
1815 - 1820	60	SANDSTONE: (i) Clear to translucent, clear to off white, loose and clean, fine to very coarse grained, very poorly sorted, subangular to subrounded, predominantly subrounded, no observable cement or matrix, trace very coarse muscovite, excellent inferred porosity, no fluorescence.
	15	SANDSTONE: (ii) Clear to buff, occasionally pale pink and pale green, very fined to medium, predominantly fine, very well sorted, subrounded, common silica cement, trace dolomitic cement, very hard, generally clean, very poor porosity, no fluorescence.
	15	SILTSTONE: Medium grey/brown to brown, occasionally green/grey, arenaceous with argillaceous matrix, trace pyrite, trace carbonaceous flakes, very fine disseminated micromica, hard, blocky.
	5	CLAYSTONE: Light grey to light brown, grading in part to siltstone, trace very fine disseminated quartz grains, trace carbonaceous flakes, firm, very slightly sticky.
	5	VOLCANICS: Buff to very dark grey/black, occasionally light pink and light green, pink feldspar laths, trace acicular texture to acidic fragments, minor flow banding in very fine microcrystalline ground mass, hard, blocky.
1820 - 1825	70	SANDSTONE: (i) As above, excellent inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) As above, occasionally medium pink, medium grained, as above, very poor visual porosity, no fluorescence.
	10	SILTSTONE: As above, hard, blocky.
	10	VOLCANICS: As above, occasionally very dark grey/black with associated black very fine phenocrysts, acidic tufts show good crystal faces to some quartz crystalline, hard, blocky.
1825 - 1830	70	SANDSTONE: (i) As above, excellent inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) As above, common pink aggregates, very poor porosity, no fluorescence.
	15	SILTSTONE: As above, hard, blocky.

Lithology Descriptions

Depth	%	Description
1825 - 1830 (contd)	5	VOLCANICS: As above, common pink feldspar grains, common green chloritized aggregates, trace to common black very hard basic fragments, hard, blocky.
1830 - 1835	70	SANDSTONE: (i) As above, excellent inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) as above, common pink and pale green aggregates, very poor porosity, no fluorescence.
	15	SILTSTONE: As above, hard, blocky.
	5	VOLCANICS: As above, occasionally very cherty (highly siliceous), hard smooth fragments, blocky.
	Tr	COAL: Black to dark brown, grading in parts to carbonaceous silty.
1835 - 1840	60	SANDSTONE: (i) As above, excellent inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) As above, very poor porosity, no fluorescence.
	10	SILTSTONE: As above, hard, blocky.
	15	CLAYSTONE: Buff to medium brown, trace to common fine disseminated quartz grains, trace carbonaceous debris, soft, slightly sticky.
	5	VOLCANICS: As above, common cherty fragments, hard, blocky.
1840 - 1845	50	SANDSTONE: clear to translucent, clear to off white, loose and clean, fine to very coarse, predominantly coarse grained, poorly sorted, subangular to subrounded, trace pyrite, trace very coarse muscovite, excellent inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) Buff to light cream, occasionally pale pink and pale green, very fine to fine grained, well sorted, subrounded, strong silica cement, moderately strong dolomitic cement, very hard, trace pyrite, trace micromica, trace very fine feldspar grains, nil to very poor porosity, no fluorescence.
	20	SILTSTONE: Medium to dark brown, arenaceous with argillaceous matrix, trace to common very fine disseminated quartz grains and very rare disseminated fine feldspar grains, trace pyrite, common carbonaceous flakes, hard, blocky.
	5	COAL: Black to dark brown, grading in parts to carbonaceous siltstone, dull to waxy, predominantly dull, uneven fracture, trace pyrite, trace silty laminae, brittle, hard, blocky.
	5	VOLCANICS: Buff to dark grey/black, occasionally pink and light green, common crystal quartz in fine tuffaceous matrix (beta quartz), trace cherty clasts, trace to common very dark grey very fine ground mass basic clasts, hard, blocky.
1845 - 1850	50	SANDSTONE: (i) As above, excellent inferred porosity, no fluorescence.
	5	SANDSTONE: (ii) As above, very poor porosity, no fluorescence.

Lithology Descriptions

Depth	%	Description
1845 - 1850 (contd)	20	SILTSTONE: As above, hard, blocky.
	20	CLAYSTONE: Buff to medium brown, trace to common fine disseminated quartz grains and feldspar grains, trace carbonaceous flakes, soft, sticky.
	5	VOLCANICS: As above, hard, blocky.
	Tr	COAL: As above.
1850 - 1855	40	SANDSTONE: (i) As above, excellent inferred porosity, no fluorescence.
	5	SANDSTONE: (ii) As above, very poor porosity, no fluorescence.
	30	SILTSTONE: As above, hard, blocky.
	20	CLAYSTONE: As above, soft, slightly sticky.
	5	VOLCANICS: As above, common cherty fragments, hard, blocky.
	Tr	COAL: As above.
1855 - 1860	40	SANDSTONE: (i) As above, excellent inferred porosity, no fluorescence.
	5	SANDSTONE: (ii) As above, trace pyrite, very poor porosity, no fluorescence.
	20	SILTSTONE: As above, hard, blocky.
	30	CLAYSTONE: As above.
	5	VOLCANICS: As above, trace to common very fine pink feldspar grains and medium green grains, hard blocky.
1860 - 1865	30	SANDSTONE: As above, generally loose and clean, excellent inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) As above, very poor porosity, no fluorescence.
	30	SILTSTONE: As above, trace to common feldspar fragments and green phenocryst fragments disseminated, trace carbonaceous flakes, firm to hard, blocky.
	20	CLAYSTONE: As above, soft, slightly sticky.
	5	COAL: As above, brittle, hard, blocky.
	5	VOLCANICS: As above, predominantly highly siliceous.
1865 - 1870	40	SANDSTONE: (i) Clear to translucent, clear to off white grains, loose and clean, fine to very coarse, predominantly coarse grained, subangular to subrounded, predominantly subrounded, excellent inferred porosity, no fluorescence.
	10	SANDSTONE: (ii) Buff to occasionally pale pink and pale green, firm to soft, very fine to fine grained, subrounded, common silica cement, trace dolomitic cement, trace white argillaceous matrix, trace very fine feldspar clasts, very poor visual porosity, no fluorescence.
	30	SILTSTONE: Medium brown, arenaceous with argillaceous matrix, trace volcano clasts debris, common fine sandstone grains (grading in part to very fine sandstone with argillaceous matrix), trace pyrite to occasionally common, trace to common carbonaceous flakes, hard to firm, blocky.

Sweetlips-1

Lithology Descriptions

Depth	%	Description
1865 - 1870 (contd)	15	CLAYSTONE: Light to medium brown, common disseminated fine sandstone grains in argillaceous matrix, trace fine feldspar grains, trace fine green flakes, trace carbonaceous flakes, soft to occasionally firm, blocky, very slightly sticky.
	5	VOLCANICS: Buff to occasionally very dark grey/black, predominantly buff, highly siliceous tuff fragments associated with very fine feldspar clasts, dark grey cherty fragments, hard, blocky.
	Tr	COAL: As above.

Sweetlips-1 (ST-1)

Lithology Descriptions

Depth	%	Description
800 - 830	85	CEMENT
	15	LIMESTONE: Light to medium green/grey, calcisiltite, occasionally calcarenite, common fossil fragments, abundant clay matrix, common forams, blocky, firm to soft.
830 - 860	90	LIMESTONE: As above, trace glauconite nodules, trace quartz grains.
	10	CEMENT
860 - 890	100	LIMESTONE: As above, abundant and various forams, bryozoan fragments, rare quartz grains.
890 - 920	100	LIMESTONE: As above.
920 - 950	100	LIMESTONE: As above.
950 - 980	100	LIMESTONE: As above, becoming more medium grey, argillaceous, blocky to subfissile, firm.
980 - 1010	-	NOT CIRCULATED TO SURFACE.
1010 - 1040	100	LIMESTONE: Light to medium grey, as above, calcarenite to calcisiltite, abundant calcareous forams, abundant fossil fragments (bryozoan), abundant argillaceous matrix, trace quartz grains, blocky, firm to moderately hard.
1040 - 1070	100	LIMESTONE: As above.
1070 - 1100	100	LIMESTONE: As above.
1100 - 1130	100	LIMESTONE: Light to medium grey, calcarenite with abundant argillaceous matrix, trace to common forams, blocky to subfissile, firm.
1130 - 1160	100	LIMESTONE: As above.
1160 - 1190	100	LIMESTONE: As above.
1190 - 1220	100	LIMESTONE: As above, trace pyrite.
1220 - 1250	100	LIMESTONE: As above, rare fine to medium angular quartz grains.
1250 - 1280	95	LIMESTONE: As above.
	5	CLAYSTONE: Cream to light grey, calcareous, trace calcareous veining, disseminated silty quartz grains, slightly swelling, amorphous, soft.
1280 - 1310	100	LIMESTONE: Light to medium grey, as above.
	Tr	CLAYSTONE: As above.
1310 - 1340	100	LIMESTONE: As above.
1340 - 1370	100	LIMESTONE: Light to medium grey, calcisiltite, occasionally calcarenite, abundant forams and fossil fragments, abundant argillaceous matrix, blocky to subfissile, firm to moderately hard.

Sweetlips-1 (ST-1)

Lithology Descriptions

Depth	%	Description
1340 - 1370 (contd)	Tr	CLAYSTONE: As above.
1370 - 1379 Spot sample	100	LIMESTONE: (i) (20%) As above. (ii) (80%) Cream to light grey, micritic, common forams, slightly dolomitic, blocky, hard, abundant orange yellow mineral fluorescence, no cut.
	Tr	CLAYSTONE: As above.
1379 - 1400	100	LIMESTONE: (i) (80%) As above. (ii) (20%) As above, trace glauconite nodules.
1400 - 1405	100	LIMESTONE: (i) (90%) As above. (ii) (10%) As above.
1405 - 1410	100	LIMESTONE: (i) (90%) As above. (ii) (10%) As above.
1410 - 1415	100	LIMESTONE: (i) (95%) As above. (ii) (5%) As above.
1415 - 1420	100	LIMESTONE: (i) (100%) As above. (ii) (Tr%) As above.
1420 - 1430	100	LIMESTONE: Light to medium grey, calcisiltite, grading to calcarenite in parts, abundant argillaceous matrix, common forams and fossil fragments (bryozoan), rare disseminated pyrite, blocky, firm to moderately hard.
1430 - 1440	100	LIMESTONE: As above, abundant argillaceous matrix, grades to calcareous claystone.
	Tr	CLAYSTONE: White to cream, homogeneous, slightly calcareous, slightly swelling, sticky, amorphous, soft.
1440 - 1450	100	CLAYSTONE: As for limestone above, very calcareous, grading to argillaceous limestone, abundant calcareous forams and fossil fragments, rare pyritised fossil fragments, blocky to subfissile, firm to moderately hard.
1450 - 1460	80	CLAYSTONE: As above.
	20	LIMESTONE: Cream to off white, translucent, microcrystalline, slightly dolomitic, blocky, abundant mineral fluorescence, no cut.
1460 - 1470	90	CLAYSTONE: As above, rare calcite prisms.
	10	LIMESTONE: As above.
1470 - 1480	100	CLAYSTONE: As above.
	Tr	LIMESTONE: As above.
1480 - 1490	100	CLAYSTONE: As above.
1490 - 1500	100	CLAYSTONE: As above.
1500 - 1505	100	CLAYSTONE: As above.
1505 - 1510	100	CLAYSTONE: As above, common forams.

Sweetlips-1 (ST-1)

Lithology Descriptions

Depth	%	Description
1510 - 1515	100	CLAYSTONE: As above.
1515 - 1520	100	CLAYSTONE: As above, becoming slight silty.
1520 - 1525	100	CLAYSTONE: As above.
1525 - 1530	100	CLAYSTONE: As above.
	Tr	LIMESTONE: Off white to cream, translucent as above.
1530 - 1535	100	CLAYSTONE: Very calcareous as above.
	Tr	LIMESTONE: As above.
1535 - 1540	100	CLAYSTONE: As above.
	Tr	LIMESTONE: As above.
1540 - 1545	100	CLAYSTONE: As above.
1545 - 1550	100	CLAYSTONE: As above.
1550 - 1555	100	CLAYSTONE: As above, very rare pyrite nodules.
1555 - 1560	100	CLAYSTONE: As above, rare disseminated pyrite , rare muscovite.
1560 - 1565	100	CLAYSTONE: As above.
1565 - 1570	100	CLAYSTONE: As above.
1570 - 1575	100	CLAYSTONE: As above.
1575 - 1580	100	CLAYSTONE: As above.
1580 - 1585	100	CLAYSTONE: As above.
1585 - 1590	100	CLAYSTONE: As above.
1590 - 1595	100	CLAYSTONE: As above, rare pyrite, rare glauconite (cavings).
1595 - 1600	100	CLAYSTONE: As above.
1600 - 1605	100	CLAYSTONE: As above, rare very fine angular quartz grains.
1605 - 1610	100	CLAYSTONE: As above, trace very fine quartz grains, as above.
1610 - 1615	90	CLAYSTONE: As above, trace very fine quartz grains, as above.
Bleeding gas	10	SILTSTONE: Off white to cream, arenaceous with strong dolomitic cement, blocky to sucrosic, very hard.
1615 - 1620	40	CLAYSTONE: As above.
	10	SILTSTONE: As above.
	50	SANDSTONE: Light grey to light brown, very fine grained, well sorted, rounded, loose and clean, pyrite nodules, rare glauconite, rare bit fractured coarse quartz grains, abundant calcareous forams, very good inferred porosity, trace mineral fluorescence, no cut.

Sweetlips-1 (ST-1)

Lithology Descriptions

Depth	%	Description
1622	30	CLAYSTONE: As above.
Spot sample	10	SILTSTONE: As above.
	60	SANDSTONE: Light grey, translucent to clear, very coarse (conglomeratic) bit fractured, moderately sorted, inferred subrounded to rounded, trace muscovite mica, trace glauconite, micropyritic inclusions, loose and clean, very good inferred porosity. FLUOR: 20% Dull orange yellow mineral fluorescence, spotty, no cut.
1624 (Spot sample, Bleeding gas)	80	SANDSTONE: Light grey, clear to translucent, coarse to very coarse bit fractured grains moderately sorted, inferred subrounded to rounded, loose and clean, rare glauconite nodules, no pyrite, very good inferred porosity, no fluorescence.
	10	SILTSTONE: Cream to light grey, arenaceous, calcareous cement, argillaceous matrix, blocky to sucrosic, hard.
	10	CAVINGS: Calcareous, as above, (cavings).
1620 - 1625	60	SANDSTONE: Conglomeratic, as above, rounded to well rounded bit fractured grains, loose and clean, very good inferred porosity, no fluorescence.
	20	SILTSTONE: As above.
	20	CLAYSTONE: Calcareous, as above, (cavings).
1625 - 1630	90	SANDSTONE: As above, very coarse and conglomeratic, occasionally well rounded, subrounded to subangular, loose and clean, excellent inferred porosity, trace mineral fluorescence, no cut or crush cut.
	10	CLAYSTONE: As above, cavings.
1630 - 1635 Bleeding gas	90	SANDSTONE: As above, rare volcanic lithics, no fluorescence.
	5	COAL: Dark brown to black, dull (waxy) to subvitreous, blocky to subconchoidal, moderately hard.
	5	CLAYSTONE: As above.
1635 - 1640	95	SANDSTONE: As above, no fluorescence.
Bleeding gas	5	CLAYSTONE: As above.
1640 - 1645	90	SANDSTONE: As above, common well rounded coarse grey quartz grains, trace calcitic mineral fluorescence.
	5	SILTSTONE: Cream to light grey, arenaceous, laminated (1-3mm), calcareous cement, argillaceous matrix, blocky to sucrosic, hard.
	5	CLAYSTONE: As above, cavings.
1645 - 1650	80	SANDSTONE: As above, medium to very coarse grained, conglomeratic, moderately sorted, rounded to well rounded, loose and clean, common grey quartz grains, rare volcanic lithics, excellent inferred porosity, trace mineral fluorescence, no cut.

Sweetlips-1 (ST-1)

Lithology Descriptions

Depth	%	Description
1645 - 1650 (contd)	10	CLAYSTONE: As above, cavings.
	10	SILTSTONE: As above.
	Tr	COAL: Black to dark brown, dull to subvitreous, subconchoidal, waxy, firm to moderately hard.
1650 - 1655	40	SANDSTONE: As above, medium to very coarse, predominantly medium grained, poorly sorted, subangular to subrounded, loose and clean, good inferred porosity, no fluorescence.
	30	SILTSTONE: As above, plus dark brown carbonaceous flecks, micaceous laminae, rare coal fragments, grading to brown coal in parts, subfissile, firm.
	30	CLAYSTONE: Very calcareous, as above, cavings.
1655 - 1660	40	SANDSTONE: Light grey, clear to translucent, very fine to medium, predominantly fine grained, moderate to poorly sorted, subangular to subrounded, loose and clean, trace muscovite, fair to good inferred porosity, no fluorescence.
	30	SILTSTONE: Predominantly cream, arenaceous, as above, trace brown carbonaceous flecks, as above.
	30	CLAYSTONE: As above, cavings.
	Tr	COAL: As above, cavings.
1660 - 1665	40	SANDSTONE: Very fine to medium, as above, trace siliceous cement, fair inferred porosity, trace calcite mineral fluorescence, no cut.
	20	SILTSTONE: Cream, arenaceous, as above.
	40	CLAYSTONE: As above, cavings.
1665 - 1670	90	CLAYSTONE: As above, cavings.
Poor sample	10	SANDSTONE: As above, coarse bit fractured shards (cavings).
	Tr	SILTSTONE: As above.
1670 - 1675	70	SANDSTONE: Light grey, clear to translucent, medium to coarse grained, abundant bit fractured grains, moderately sorted, subangular to subrounded, loose and clean, trace pyrite, quartz overgrowths, good to very good inferred porosity, trace dull yellow mineral fluorescence, no cut.
	20	CLAYSTONE: As above, cavings.
	10	SILTSTONE: Cream, arenaceous with light grey argillaceous laminae (1-3mm), carbonaceous in parts, micaceous, blocky, firm to moderately hard.
	Tr	COAL: Black to dark brown, dull to subvitreous, silty in parts, blocky, firm.
1675 - 1680	80	SANDSTONE: As above, common quartz overgrowths, trace pyrite cement, trace dull yellow mineral fluorescence, no cut.
	20	CLAYSTONE: As above, cavings.
	Tr	SILTSTONE: As above.

Sweetlips-1 (ST-1)

Lithology Descriptions

Depth	%	Description
1680 - 1685	90	SANDSTONE: As above, medium to very coarse grained, predominantly bit fractured shards, rare siliceous and dolomite cemented aggregates, predominantly loose and clean, rare pyrite, very good inferred porosity, trace dull orange/yellow mineral fluorescence, no cut.
	10	CLAYSTONE: As above, cavings.
	Tr	SILTSTONE: Light to medium brown, arenaceous and carbonaceous, as above.
1685 - 1690	90	SANDSTONE: (i) (60%) As above. (ii) (30%) Light grey to cream, translucent to clear, very fine to coarse, predominantly fine grained, very poorly sorted, matrix supported, subangular to subrounded, strong siliceous and dolomite cement, abundant silty matrix, abundant lithics, trace bitumen staining, trace kaolinite, trace cherty grains, hard to very hard, very poor visual porosity, 20% dull orange yellow dolomitic mineral fluorescence, no cut.
	10	CLAYSTONE: As above, cavings.
	Tr	SILTSTONE: Light grey to light brown, arenaceous, medium to coarse quartz grains, abundant lithics, dolomite cement, blocky to sucrosic, hard.
1690 - 1695	90	SANDSTONE: (i) (50%) As above, medium to coarse grained, loose and clean, as above. (ii) (40%) Very fine to medium, dolomite/silica cement, no visual porosity, as above, 30% mineral fluorescence, as above, no cut.
	10	CLAYSTONE: As above, cavings.
	Tr	SILTSTONE: As above.
1695 - 1700	90	SANDSTONE: (i) (10%) As above. (ii) (80%) As above, very fine to medium grained, as above, trace pyrite, strong dolomite/silica cements, common white argillaceous matrix, trace mica, very poor to no visual porosity, 30% dull yellow/orange mineral fluorescence, as above, no cut.
	10	CLAYSTONE: As above, cavings.
	Tr	SILTSTONE: As above.
	Tr	COAL: Black to dark brown, dull to subvitreous, waxy, blocky to subconchoidal, woody texture in part, silty in part, firm to moderately hard.
1700 - 1705	100	SANDSTONE: (i) (30%) As above. (ii) (70%) As above, 40% mineral fluorescence, no cut.
	Tr	CLAYSTONE: As above, cavings.
	Tr	SILTSTONE: As above.
1705 - 1710	90	SANDSTONE: (i) (40%) As above. (ii) (50%) As above, common muscovite, common large pores (not interconnected), 30% dull mineral fluorescence, as above, no cut.
	10	CLAYSTONE: As above, cavings.

Sweetlips-1 (ST-1)

Lithology Descriptions

Depth	%	Description
1705 - 1710 (contd)	Tr	SILTSTONE: As above, plus trace carbonaceous flecks, grading to coal in part, micaceous, sideritic, blocky, firm to hard.
1710 - 1715	90	SANDSTONE: (i) (40%) As above. (ii) (50%) As above, 20% mineral fluorescence, as above, no cut.
	10	CLAYSTONE: As above.
	Tr	SILTSTONE: As above.
1715 - 1720	90	SANDSTONE: (i) (40%) Medium to coarse grained, loose and clean, as above. (ii) (50%) Very fine to medium grained, dolomite/silica cement, very poor to no visual porosity, 10% dull mineral fluorescence, as above, no cut.
	10	CLAYSTONE: As above, cavings.
	Tr	SILTSTONE: As above, plus carbonaceous, mica as above.
1720 - 1725	90	SANDSTONE: (i) (60%) As above. (ii) (30%) As above, common mica, trace dull orange/yellow mineral fluorescence, no cut.
	10	CLAYSTONE: Very calcareous, as above, cavings.
	Tr	SILTSTONE: As above.
1725 - 1728 TD	80	SANDSTONE: (i) (70%) As above, common quartz overgrowths. (ii) (10%) As above, trace dull mineral fluorescence, no cut.
	10	CLAYSTONE: As above, cavings.
	10	SILTSTONE: As above.

APPENDIX 2

CORE DESCRIPTION

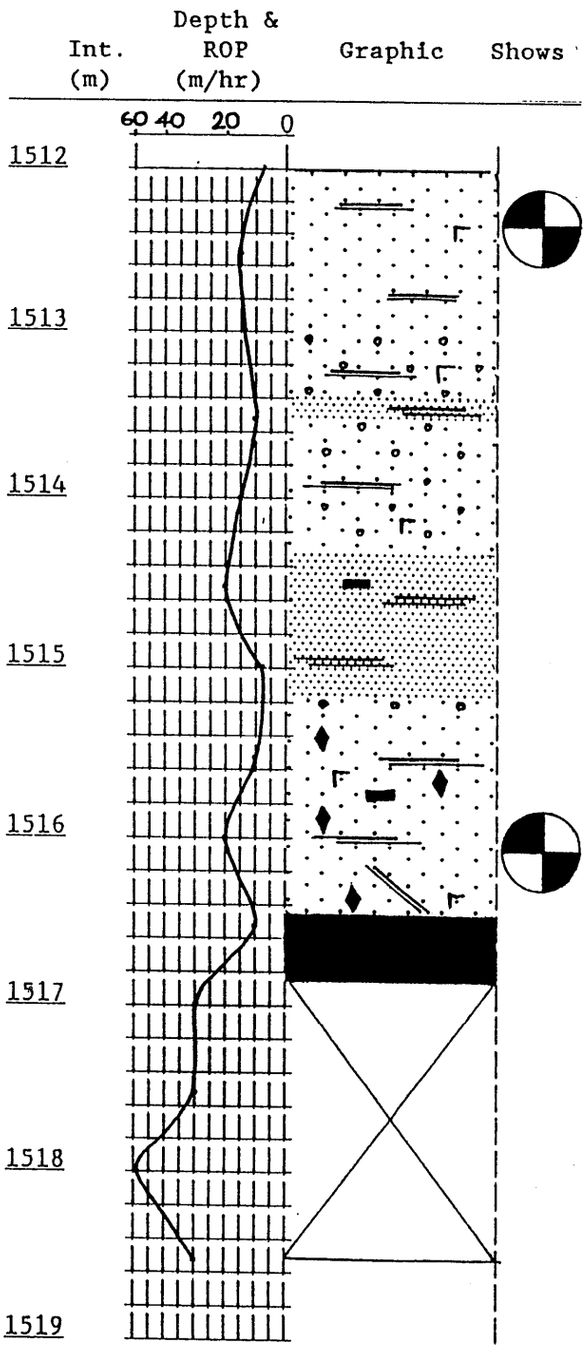
Core No. 1

Interval Cored : 1512-1518.5
Cut : 6.5m
Bit Type : Chris. RC476
Described by : A.Clare
G Smith

Well : Sweetlips-1

Recovered : 4.81m (74%)
Bit Size : $12\frac{1}{4}$"
Date : 05/08/89

Aluminium Sleeved Core



Descriptive Lithology

1512.0-1513.4 SANDSTONE: Light grey to off white, clear to translucent grains, medium to coarse, moderately well sorted, subangular to subrounded, very weak calcareous cement, minor white to light grey argillaceous matrix, trace carbonaceous flecks, trace mica, soft, friable, good visual porosity, FLUORESCENCE: overall very dull green/yellow patchy fluorescence, instant pale yellow/green cut, thin film residue ring, no white light residue visible.

1513.4-1513.54 SANDSTONE: Light grey, translucent grains, fine to rare medium, moderately to well sorted, subrounded, very weak silica and trace calcite cement, minor white argillaceous matrix, abundant white muscovite flecks, trace carbonaceous specks, firm, friable to brittle, fair to good visual porosity, FLUORESCENCE: 60% very dull yellow/ green patchy fluorescence, very slight streaming cut, milky yellow/green C/C, thin film and moderately bright ring residue, no white light residue visible.

1513.54-1514.28 SANDSTONE: Off white to light grey, translucent to clear, medium to very coarse, predominantly very coarse, poor to moderately sorted, subangular to subrounded, very weak calcite cement, off white argillaceous matrix grading to very fine siltstone in part, trace of coal fragments, minor muscovite flecks, very friable, excellent to very good visual porosity, FLUORESCENCE: 60% very dull yellow fluorescence with rare spots of moderately bright fluorescence, moderately streaming yellow/white cut, moderately bright film and ring residue, no white light residue visible.

1514.28-1515.16 SANDSTONE: A/A for described interval 1513.4-1513.54.

1515.16-1516.44 SANDSTONE: light grey to occasionally very light brown, translucent to clear, occasionally smokey grey, poor to moderately sorted, subangular to subrounded, coarse to very coarse, rare medium grains, moderate calcite cement, common light brown to white argillaceous matrix, trace nodular

CORE DESCRIPTION

Core No. 1

Well : Sweetlips-1

Interval Cored : 1512.0-1518.5
Cut : 6.5m
Bit Type : Chris. RC476
Described by : A Clare
G Smith

Recovered : 4.81m (74%)
Bit Size : 12 1/4"
Date : 05/08/89

Fibreglass Sleeved Core

Int. (m)	Depth & ROP (m/hr)	Graphic	Shows	Descriptive Lithology
				1515.16-1516.44 (contd.) pyrite, trace of detrital coal fragments, soft to firm, friable, excellent visual porosity, FLUORESCENCE: 60-70% dull with spotty moderately bright yellow/green fluorescence, weak moderately slow blooming cut, yellow/green milky C/C, thin ring and film residue, no white light residue visible. 1516.44-1516.83 COAL: Black, vitreous to subvitreous, dull silty partings, subconchoidal to conchoidal fracture, moderately hard to hard, brittle.

CORE DESCRIPTION

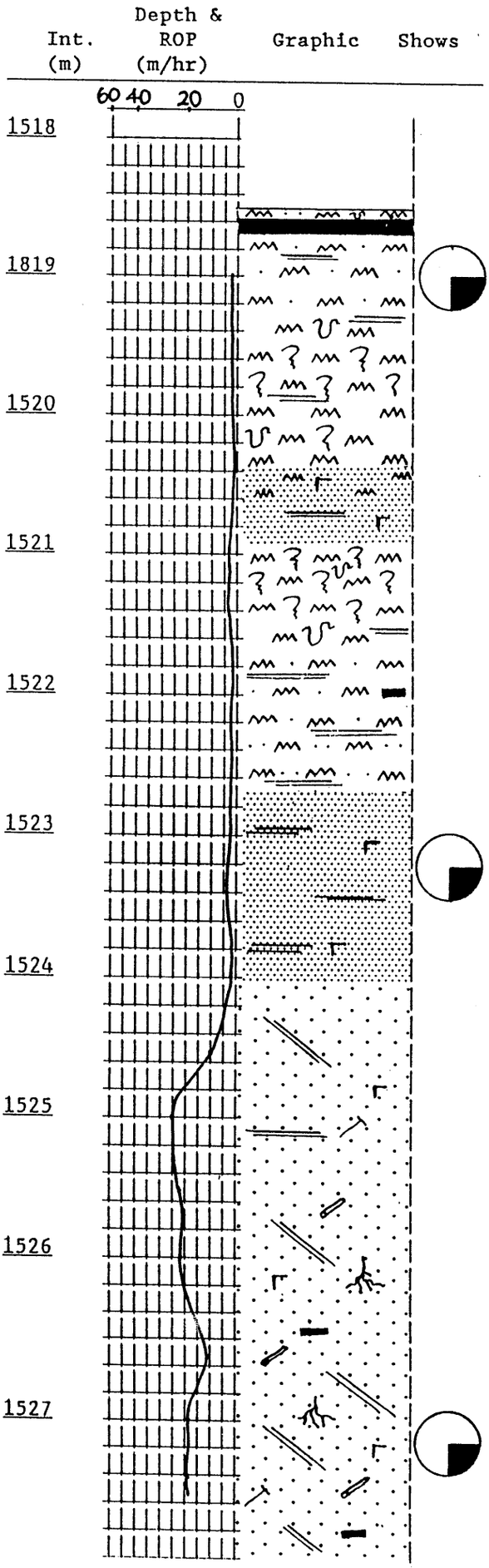
Core No. 2

Interval Cored : 1518.5-1537.0
Cut : 18.5m
Bit Type : Chris. RC476
Described by : A Clare
G Smith

Well : Sweetlips-1

Recovered : 16.84m (91%)
Bit Size : 12 1/4"
Date : 05/08/89

Fibreglass Sleeved Core



Descriptive Lithology

1518.5-1520.33 SILTSTONE: medium grey/ brown, argillaceous to arenaceous, predominantly arenaceous, trace silica cement and strong argillaceous matrix, grading in part to very fine sandstone, abundant muscovite, trace to rare carbonaceous flecks, medium to coarse rare carbonaceous debris, hard, blocky, FLUORESCENCE: no direct fluorescence, no cut, weak yellow/ green crush cut, thin film residue. COAL: Black-dark brown, occasionally medium brown, dull to subvitreous lustre associated with slightly silty and black coal laminae, predominantly dull, slightly silty dark brown laminae, trace fossil fragments, trace crystalline pyrite associated with cleats in coal, brittle hard, trace of organic residue.
1520.33-1520.85 SANDSTONE: Off white to light grey, clear to off white, fine to medium, predominantly fine, moderately well sorted, subangular to subrounded, occasionally angular, weak silica cement, trace to common off white to light brown argillaceous matrix, trace to common muscovite, trace to common carbonaceous flecks, very fine discontinuous carbonaceous laminae, trace of fine feldspar, rare pyrite, hard, blocky, moderate to good visual porosity, FLUORESCENCE: no direct fluorescence visible, very weak and slow diffuse yellow cut, moderately bright milky yellow C/C, thin dull yellow film residue.
1520.85-1522.64 CLAYSTONE: Medium light grey, argillaceous grading in part to very fine arenaceous siltstone,siliceous texture, common micromicaceous flecks, trace to rare carbonaceous flecks, moderate to non-swelling clays, rare pyrite, hard, blocky.
1522.64-1524.00 SANDSTONE: As for description in interval 1520.33-1520.85.
1524.00-1532.17 SANDSTONE: White to off white, occasionally light grey, clear to white grains, medium to very coarse, predominantly medium, occasionally fine, moderately sorted, subangular to subrounded, carbonaceous and micaceous partings, abundant oil

CORE DESCRIPTION

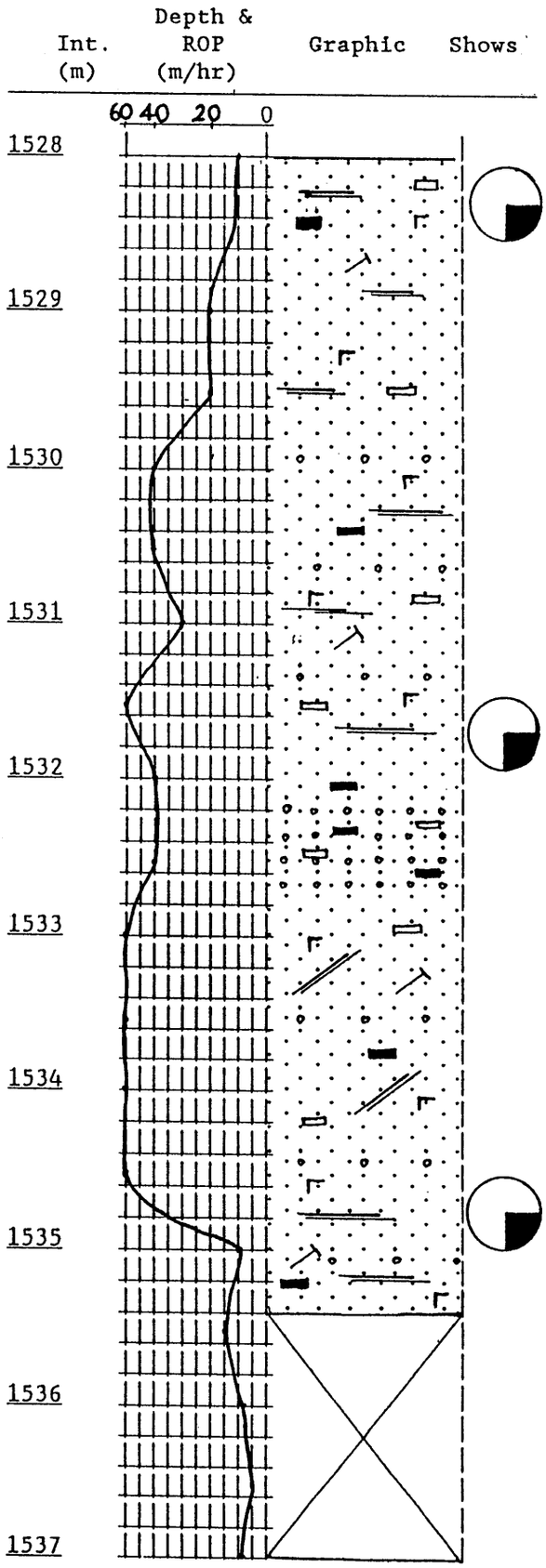
Core No. 2

Interval Cored : 1518.5-1537.0
Cut : 18.5m
Bit Type : Chris. RC476
Described by : G Smith
A Clare

Well : Sweetlips-1

Recovered : 16.84m (91%)
Bit Size : 12 1/4"
Date : 05/08/89

Fibreglass Sleeved Core



Descriptive Lithology

(1524.0-1532.17 cont'd)
staining, moderate hydrocarbon odour, common lithic and coal fragments, friable to firm, very poor to good visual porosity, FLUORESCENCE: trace dull yellow/green patchy fluorescence, no cut, weak dull yellow/green crush cut, thin dull yellow/green ring residue.
1532.17-1532.8 SANDSTONE: light grey/brown, clear to translucent and occasionally milky grains, medium to very coarse, grading to pebbly, very poorly sorted, subrounded to rounded, very weak calcite cement, moderate light brown argillaceous matrix, very fine sandstone matrix in part, trace pyrite, common muscovite, trace feldspar, trace detrital coal fragments, excellent visual porosity, FLUORESCENCE: No direct fluorescence, very weak pale yellow/green cut, instant thick yellow milky crush cut, moderately thick film residue.
1532.8-1535.39 SANDSTONE WITH MINOR VERY FINE SILTSTONE/SANDSTONE INTERLAMINAE: White to light grey, fine to very coarse, predominantly medium, rare very coarse pebbly milky white grains, poor to moderately sorted, subangular to subrounded, trace very weak silica cement, minor white argillaceous matrix, generally very clean, trace muscovite flecks, rare carbonaceous fragments, soft, friable, very good to excellent visual porosity, FLUORESCENCE: No direct fluorescence, very weak yellow/green instant cut, instant weak yellow/green crush cut, thin film residue.

CORE DESCRIPTION

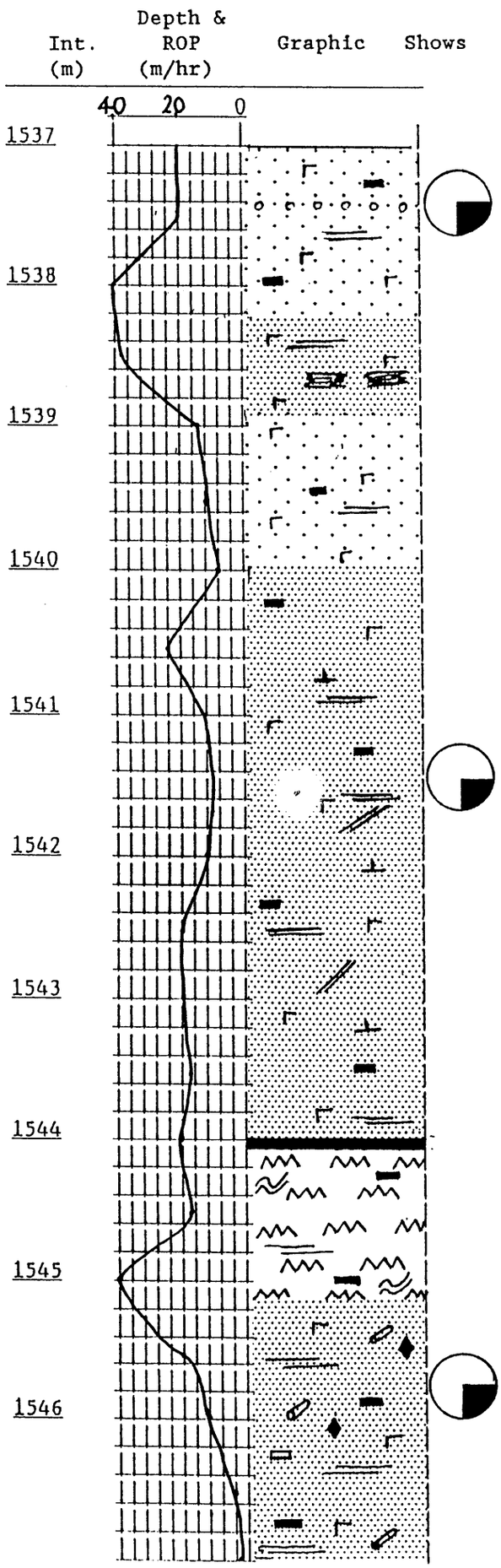
Core No. 3

Interval Cored : 1537-1554m
Cut : 17m
Bit Type : Chris. RC476
Described by : G Smith
A Clare

Well : Sweetlips-1

Recovered : 13.77m (81%)
Bit Size : 12 1/4"
Date : 06/08/89

Fibreglass Sleeved Core



Descriptive Lithology

1537.0-1538.26 SANDSTONE: Very light grey, clear to translucent and occasionally milky white grains, grading fine to very coarse, predominantly medium, moderately sorted, subangular to subrounded, weak calcite cement, very weak silica cement associated with quartz overgrowths, minor white argillaceous matrix, trace carbonaceous detritus, common muscovite flecks, firm, friable to slightly brittle, very good visual porosity, FLUORESCENCE: no direct fluorescence, very weak slow pluming cut, fast milky yellow crush cut, thin ring residue.

1538.26-1538.93 SANDSTONE: White, clear to translucent, fine to medium, predominantly medium, moderately well sorted, subangular to subrounded, weak silica cement, minor white argillaceous matrix, common muscovite flecks, trace carbonaceous flecks, trace of rip up clasts and dine inter-laminae firm to moderately soft, friable, good visual porosity, FLUORESCENCE: A/A, thin ring residue.

1538.93-1539.95 SANDSTONE: White, clear to translucent, fine to very coarse, predominantly coarse, generally A/A, common white to light grey argillaceous matrix, abundant muscovite flecks, very good visual porosity, FLUORESCENCE: A/A.

1539.95-1543.96 SANDSTONE: Off white to light grey, translucent to clear, occasionally milky white and smokey grey grains, medium grained grading to both fine and coarse in part, moderately well sorted, subrounded to subangular, weak calcite cement, trace silica cement,common off white argillaceous matrix, common muscovite, minor coal fragments, soft, friable, very good to excellent visual porosity, FLUORESCENCE: No direct fluorescence, no cut, very weak pale yellow crush cut, very thin pale ring residue.

1543.96-1544.06 COAL: Black, dull, uneven to subconchoidal, common silty laminae, minor pyrite (disseminated and nodular), hard, brittle, slightly woody texture, interlaminated with a

CORE DESCRIPTION

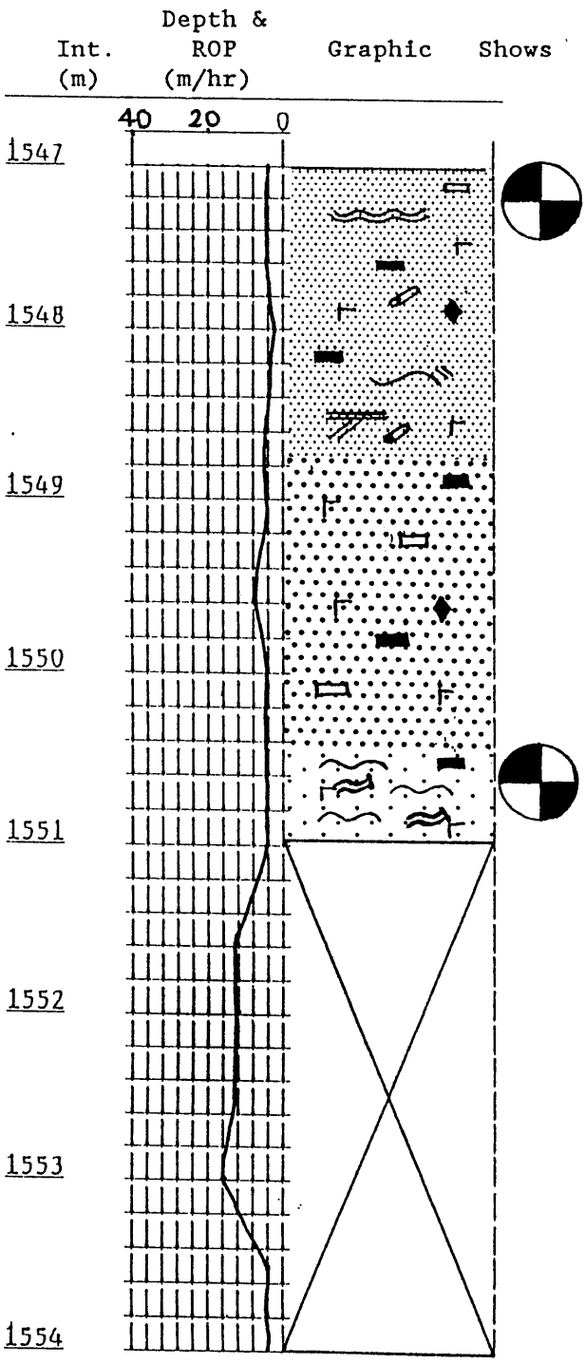
Core No. 3

Interval Cored : 1537-1554m
Cut : 17m
Bit Type : Chris. RC476
Described by : G Smith
A Clare

Well : Sweetlips-1

Recovered : 13.77m (81%)
Bit Size : 12 1/4"
Date : 06/08/89

Fibreglass Sleeved Core



Descriptive Lithology

(1543.96-1544.06 cont'd)
light mottled grey medium to coarse grained sandstone (poorly sorted, angular to subrounded, moderate calcite cement, common light grey and brown argillaceous matrix, abundant muscovite flecks, good visual porosity, FLUORESCENCE: No direct fluorescence, very slow yellow streaming cut, moderately slow yellow crush cut, thin ring residue).
1544.06-1545.12 SILTSTONE: Light grey/ brown, argillaceous, arenaceous in part, grading to very fine sandstone, common carbonaceous laminae, and convoluted beds, dewatering structures.
1545.12-1548.74 SANDSTONE: Light grey, clear to buff, predominantly fine to occasionally medium grained, angular to subangular, moderately sorted, trace silica cement, rare dolomitic cement, common white to buff argillaceous matrix, trace to common fine carbonaceous flecks, common large plant fragments (up to 4cm across), common muscovite, interlaminae of siltstone and very fine sandstone, trace of weathered feldspar, trace of pyrite, moderately hard, slightly friable, fair to good visual porosity, FLUORESCENCE: 50% very dull yellow/ green fluorescence, very weak to dull yellow/green slow diffuse cut, dull yellow/green crush cut, thin dull yellow/green ring residue.
1548.74-1550.43 SANDSTONE: Light grey, clear to light buff, very coarse to medium, predominantly coarse, poorly sorted, subangular to subrounded, occasionally angular, no cement, trace of buff argillaceous matrix, trace carbonaceous fragments, very minor fine grained aggregates, trace of weathered feldspar, rare pyrite, trace muscovite, soft, very friable, excellent visual porosity, FLUORESCENCE: no direct fluorescence, weak yellow/green slow diffuse cut, dull to moderately bright yellow/green crush cut, moderately bright yellow/ green ring residue.
1550.43-1550.93 SANDSTONE: Light grey, clear to off white, fine to very coarse, predominantly medium, poorly sorted, subangular to subrounded,

CORE DESCRIPTION

Core No. 3

Well : Sweetlips-1

Interval Cored : 1537-1554m
Cut : 17m
Bit Type : Chris. RC476
Described by : G Smith
A Clare

Recovered : 13.77m (81%)
Bit Size : $12\frac{1}{4}$"
Date : 06/08/89

Fibreglass Sleeved Core

Int. (m)	Depth & ROP (m/hr)	Graphic	Shows	Descriptive Lithology
				(1550.43-1550.93 cont'd) trace silica cement, rare dolomite cement, common white argillaceous matrix, trace carbonaceous flecks, trace muscovite, very rare pyrite, firm, moderately friable, good to very good visual porosity, FLUORESCENCE: pervasive very dull yellow/green fluorescence, very fast weak yellow/green pluming cut, dull to moderately bright yellow/green crush cut, thin moderately bright yellow/green ring residue.

APPENDIX 3

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
1	1849.0	35	SILTSTONE: Dark grey/brown, very argillaceous, minor very fine sand grains, trace carbonaceous flakes, rare micromicaceous flakes, very slightly calcareous, firm, blocky. GAS: 4625/732/199.8/42/23.6
2	1840.0	35	SILTSTONE: Dark grey/brown, generally as above, very dispersive and swelling, soft to firm, blocky/crumbly. GAS: 2405/732/199.8/42.4/Tr
3	1834.0	37	SANDSTONE: Off white to light grey, very fine to medium grained, predominantly fine, moderately sorted, subangular to subrounded, very calcareous cement, trace silica cement, moderately light grey argillaceous matrix, abundant weathered feldspars (orthoclase), minor dark grey/black lithic fragments, rare dark green mineral fragments, trace mica, firm, friable, poor visual porosity, no fluorescence. GAS: 37/Tr/Tr/Tr/Tr
4	1831.0	44	SILTSTONE: Dark grey, slight argillaceous, minor very fine sand grains, trace carbonaceous specks, firm to moderately hard, slightly swelling, subfissile. GAS: 2035/610/144.3/42.4/Tr
5	1825.0	40	SILTSTONE: Light to medium grey, very argillaceous, minor very fine grained sand, common microcarbonaceous fragments, micromicaceous flakes, common lithic fragments, slightly swelling, firm, blocky. GAS: 3885/976/177.6/38/Tr
6	1820.0	51	SANDSTONE: White to light grey, very fine to fine, rare medium grained, predominantly fine, subrounded, weak silica cement, abundant light grey to off white argillaceous matrix, trace carbonaceous fragments, minor green and red lithic/mineral fragments, soft to firm, friable, poor visual porosity, no fluorescence. GAS: Tr/Tr/Tr/Tr/Tr
7	1817.0	42	SILTSTONE: Dark grey, moderate to very argillaceous, very slightly arenaceous, trace carbonaceous specks, trace micromica, firm to soft, subfissile. GAS: 3792.5/1403/333/98.1/Tr
8	1815.0	54	CLAYSTONE: Dark grey, smooth homogeneous texture, very slightly silty in parts, trace micromica, firm, blocky. GAS: 925/366/133.2/37.2/Tr
9	1809.5	39	SANDSTONE: Mottled light grey to off white, fine to coarse, predominantly medium grained, very poorly sorted, subangular to subrounded, weak silica cement, light grey to white argillaceous matrix, minor nodular pyrite, minor black to dark grey and green lithic fragments, firm to moderately hard, friable, very poor to poor visual porosity, no fluorescence. GAS: Tr/Tr/Tr/Tr/Tr

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
10	1797.5	32	SANDSTONE: Light grey, mottled, fine to pebbly grained (quartz fragments 9mm), very poorly sorted, subangular to angular, occasionally subrounded, minor weak silica cement, common white argillaceous matrix, minor clasts of pale green weathered lithic fragments, common muscovite mica fragments, minor carbonaceous fragments, soft, friable, fair to good visual porosity, no fluorescence. GAS:Tr/Tr/Tr/Tr/Tr
11	1787.0	30	SANDSTONE: Light grey, very fine to fine grained, moderately well sorted, subrounded, very weak silica cement, minor white argillaceous matrix, common lithic and carbonaceous micro fragments, trace cream to pale pink weathered feldspars, trace micromica, soft, friable, poor to tight visual porosity, no fluorescence. GAS: 259/158.6/55.5/13.5/Tr
12	1778.0	31	SANDSTONE: Mottled light grey/dark grey, very fine to fine grained, well sorted, subangular to subrounded, very weak silica cement, abundant light grey to white argillaceous matrix, common carbonaceous flakes, minor micromica flakes, firm to soft, friable, very poor visual porosity, no fluorescence. GAS: 259/244/122/38/Tr
13	1770.0	26	SILTSTONE: Very dark grey, moderately argillaceous, common very fine sand grains, common muscovite and micromica flakes, common carbonaceous flakes and clasts, rare lithic fragments, firm to soft, subfissile to blocky. GAS: 407/317.2/111/38.8/Tr
14	1762.0	32	SILTSTONE: Medium grey/brown, abundant very fine sand grains, grading in parts to very fine sandstone, moderately argillaceous, common muscovite mica flakes and carbonaceous fragments, minor carbonaceous microlaminae, trace lithic fragments, firm, blocky. GAS: 333/366/155/33.8/Tr
15	1749.0	31	SANDSTONE: Light grey, very fine to fine, predominantly fine grained, very well sorted, subrounded, none to very weak silica cement, moderately white argillaceous matrix, trace carbonaceous specks, soft, very friable, poor visual porosity, no fluorescence. GAS: 37/12.2/Tr/Tr/Tr
16	1744.0	48	CLAYSTONE: Medium grey, very slightly silty, very uniform and homogeneous texture, slightly swelling and dispersive, slightly sticky, soft, crumbly to subfissile. GAS: 407/97.6/44/Tr/Tr
17	1739.0	32	CLAYSTONE: Generally as above with minor coal clasts and thin discontinuous laminae, soft, subfissile. GAS: 185/109/91/Tr/Tr

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
18	1735.0	34	SANDSTONE: Mottled light to medium grey/brown, fine grading to coarse grained, predominantly medium, moderately sorted, subangular, moderately strong siliceous cement, minor light brown/grey argillaceous matrix, common carbonaceous fragments, trace muscovite mica flakes, soft to firm, friable, poor to fair visual porosity, no fluorescence. GAS: 64/24/22/Tr/Tr
19	1723.0	36	COAL: Grading to carbonaceous siltstone, black, dull, very silty/argillaceous, uneven to subfissile, firm to moderately hard, occasionally blocky. GAS: 4995/2074/777/648.2/98.4
20	1720.0	32	SILTSTONE: Light grey to off white, moderately argillaceous, abundant very fine loose sand grains, grading to very fine sandstone, common thin discontinuous coal and carbonaceous laminae, common muscovite mica flakes, firm to soft, blocky. GAS: 277.5/292.8/144/110/36
21	1716.2	54	CLAYSTONE: Very dark grey, slightly silty and arenaceous with very fine grained sandstone, minor carbonaceous flakes, slightly swelling, firm, crumbly. GAS: 925/1049/422/449/123
22	1713.9	37	SILTSTONE: Very dark grey, moderate to very argillaceous, trace very fine sand grains, slightly carbonaceous with minor carbonaceous flakes and laminae, very slightly calcareous, soft to firm, slightly swelling, blocky. GAS: 546/732/199/178/49
23	1703.0	50	CLAYSTONE: Very light grey, very slightly silty, smooth homogeneous texture, minor carbonaceous fragments (1-2mm), slightly micromicaceous, trace micromicaceous flakes, very dispersive, soft, crumbly. GAS: 473/244/83/71/31
24	1690.0	45	CLAYSTONE: Generally as above with abundant coaly and carbonaceous fragments, coal fragments (= 20mm) black, very dark grey, very silty in part, dull to subvitreous lustre, uneven brk, brittle, moderately hard. GAS: 1665/1037/244/201/43
25	1680.0	39	SANDSTONE: Mottled light grey/brown, very fine to fine grained, moderately well sorted, subangular to subrounded, weak siliceous cement, abundant light grey/brown silty to argillaceous matrix, abundant carbonaceous fragments and carbonaceous rootlets, common muscovite flakes, trace weathered feldspars, moderately hard to firm, brittle, tight visual porosity, no fluorescence. GAS: 92/240/16/36/12

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
26	1673.0	27	SANDSTONE: Off white to light grey, well sorted, subrounded, very weak siliceous and calcite cement, abundant white to light grey argillaceous matrix, minor carbonaceous fragments, abundant micromicaceous flakes, common lithic fragments, very thin discontinuous siltstone laminae, firm, friable, tight to very poor visual porosity, no fluorescence. GAS: 83/170/66/49/34
27	1668.0	37	Interlaminated very fine grained sandstone and siltstone SANDSTONE: Light grey, very fine to fine, well sorted, subrounded to subangular, very weak siliceous cement, trace calcite cement, abundant light grey argillaceous/silty matrix, abundant micromicaceous flakes, trace carbonaceous and lithic fragments, soft to firm, friable, tight to very poor visual porosity, no fluorescence. SILTSTONE: Medium grey/brown, very argillaceous, minor very fine sand grains, micromica, slightly swelling, trace carbonaceous specks, soft, subfissile. GAS:370/561/216/138/54
28	1655.3	28	CLAYSTONE: Light grey, common very fine grained sand and siltstone, smooth texture, soft, dispersive and soluble, crumbly. GAS: Tr/Tr
29	1643.2	50	CLAYSTONE: Medium brown, very smooth homogeneous texture, trace carbonaceous fragments, moderately swelling and dispersive, soft, subfissile. GAS: Tr/Tr/-/-/-
30	1631.5	38	CLAYSTONE: Generally as above, common microcarbonaceous fragments, smooth, homogeneous texture, trace micromicaceous flakes, soft, blocky to crumbly. GAS: 46/109/89/27.6/Tr
31	1623.9	50	COAL: Black to very dark brown, dull to occasionally subvitreous, predominantly dull, very silty and grading to carbonaceous siltstone, common to abundant plant debris and carbonaceous fossil fragments, trace very fine disseminated quartz grains, trace very fine disseminated pyrite, trace to common very fine discontinuous laminae, hard, brittle to uneven, blocky to slightly friable. GAS: 91/549/977/290/61
32	1614.5	50	CLAYSTONE: Light to medium grey, predominantly medium grey, trace to common very fine discontinuous laminae, trace very fine carbonaceous laminae and carbonaceous flakes, firm to moderately hard, blocky, no fluorescence. GAS: 28/159/244/38/82/49

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
33	1603.2	25	SANDSTONE: Medium grey/brown, very fine to fine, predominantly very fine grained, well sorted, subrounded, no observable cement, moderately strong swelling clays in a predominantly silty matrix, grading in part to medium brown siltstone, firm to moderately hard, trace fine muscovite mica, trace carbonaceous flakes, trace very fine light grey discontinuous sandstone laminae, moderate to poor visual porosity, no fluorescence. GAS: 37/98/133/68/24
34	1600.5	25	SANDSTONE: Medium grey, clear to translucent grains, very fine grained, well sorted, subrounded, occasionally subangular, no observable cement, trace to common grey argillaceous matrix, grading in part to siltstone, moderately hard, trace micromica, very rare specks of carbonaceous debris, blocky, poor visual porosity, no fluorescence. GAS 64/25/38/25/10
35	1581.5	50	SANDSTONE: Off white to light grey, occasionally very fine light brown laminae, very fine to fine, predominantly fine grained, well sorted, subrounded, occasionally rounded, common light grey to occasionally light brown silty matrix, firm to moderately hard, trace micromica, very rare pyrite, good to very good visual porosity, no fluorescence. GAS: 5/12/14/Tr/-
36	1575.9	40	CLAYSTONE: Light grey/buff, grading in part to siltstone, very weak discontinuous laminae associated with carbonaceous debris, common carbonaceous flakes, common micromica, firm to moderately hard, blocky, no fluorescence. GAS: Tr/-/-/-/-
37	1570.2	50	CLAYSTONE: Light grey, occasionally light grey/buff, trace very fine laminae, trace micromica, trace carbonaceous flakes, trace very fine disseminated sandstone grains, firm to moderately hard, blocky, no fluorescence. GAS: 22/24/33/Tr/-
38	1567.5	46	SILTSTONE: Light grey to light grey/buff, grading in parts to siltstone, arenaceous to argillaceous, predominantly argillaceous matrix, common very fine disseminated sandstone grains, moderately hard, blocky, trace very fine discontinuous black to brown laminae (coaly fragments), hard, no fluorescence. GAS: 64/43/61/56/37
39	1567.0	50	CLAYSTONE: Light grey, grading in part to siltstone, trace very fine disseminated sandstone grains, trace micromica, trace carbonaceous flakes, trace very fine discontinuous carbonaceous laminae, moderately hard, blocky, no fluorescence. GAS: 20/18/39/25/12

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
40	1563.0	40	SANDSTONE: Light grey, clear to translucent grains, coarse to occasionally very coarse, moderately sorted, subangular to subrounded, occasionally rounded, no observable cement, trace argillaceous matrix, trace dark brown oil staining (very patchy), trace disseminated pyrite, trace carbonaceous flakes, moderately hard, friable, excellent visual porosity, 60% solid moderately bright yellow/green fluorescence, no cut, very weak dull yellow/green crush cut, very thin yellow/green dull to moderately bright ring residue (moderate to strong hydrocarbon odour) GAS: 182/256/2442/848/430
41	1562.0	40	SANDSTONE: Off white to light grey, clear to translucent, fine to very coarse, predominantly medium grained, poorly sorted, subrounded to subangular, occasionally rounded, trace white to grey argillaceous matrix, firm to moderately hard, friable, trace patchy oil staining (brown), strong hydrocarbon odour, trace muscovite mica, trace carbonaceous flakes, trace to rare disseminated pyrite, very good to excellent visual porosity, 70% moderately bright yellow/green solid fluorescence, very weak yellow/green slow diffuse cut, dull to moderately bright yellow/green crush cut, thin dull yellow/green ring residue. GAS: 36/305/2997/3240/2091
42	1561.5	40	SANDSTONE: Medium to light grey, clear to off white, fine to very coarse, predominantly fine grained, poor to moderately sorted, subangular to subrounded, occasionally rounded, common medium grey/brown to occasionally light buff argillaceous matrix, firm, trace to common micromica, trace carbonaceous flakes, trace very fine silty laminae, moderate to good visual porosity, 40% moderately bright to dull yellow/green patchy fluorescence, very slow streaming dull yellow/green cut, moderately bright yellow/green crush cut, thick dull yellow/green ring residue. GAS: 91/122/3108/534/369
43	1561.0	35	SANDSTONE: Medium to light grey, occasionally off white, clear to off white, very fine to coarse, predominantly fine grained, moderately sorted, subangular to subrounded, predominantly subrounded, common white to medium grey argillaceous matrix, firm to moderately hard, trace disseminated (semi-nodular) pyrite, trace to common muscovite, trace carbonaceous flakes and laminae, moderate to poor visual porosity, 20% dull patchy yellow/green fluorescence, very dull very slow yellow/green diffuse cut, dull yellow/green crush cut, very thin dull yellow/green film residue. GAS: Tr/Tr/-/-/-
44	1559.0	50	CLAYSTONE: Medium grey/brown, grading in parts to siltstone, trace to common micromica, trace very fine discontinuous laminae, moderately hard to hard, blocky, no fluorescence. GAS: 10/183/299/211/86

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
45	1555	30	SANDSTONE: Medium grey to brown, clear to off white, fine to very fined grained, moderately well sorted, subrounded to rounded, occasionally subangular, no observable cement, very strong swelling clay matrix, moderately hard, trace patchy pyrite, trace muscovite mica, trace very fine silty laminae, very poor visual porosity, trace very dull green patchy fluorescence, no cut, no crush cut, trace very dull green very thin ring residue. GAS: 18/49/150/157/89
46	1550.8	-	- GAS: -
47	1547.0	15	SANDSTONE: White to off white, clear to white, medium to very coarse, predominantly coarse, moderately sorted, subrounded to rounded, trace buff argillaceous matrix, firm and friable, trace muscovite mica, excellent visual porosity, no fluorescence. GAS: Tr/-/-/-/-
48	1537.2	-	- GAS: -
49	1523.2	-	- GAS: -
50	1520.0	35	SANDSTONE: Medium to light grey/buff, clear to off white, very fine to occasionally fine, moderate to well sorted, subangular to subrounded, strong calcareous cement, strong swelling clay matrix, moderately hard, trace pyrite, very poor visual porosity, no fluorescence. GAS: 136/98/899/729/664
51	1512.0	40	SANDSTONE: Off white to light grey, clear to white, very fine to coarse, predominantly medium grained, moderately sorted, subangular to subrounded, trace grey argillaceous matrix, firm and friable, trace muscovite mica, trace pyrite and muscovite, very good visual porosity, no fluorescence. GAS: 48/55/122/303/270
52	1507.0	-	- GAS: -
53	1504.0	35	CLAYSTONE: Medium grey, strong calcareous content (calcareous claystone), trace to very rare forams, moderately hard, blocky. GAS: 18/24/20/15/20
54	1500.0	35	CLAYSTONE: As above, trace forams and calcareous shell fragments, moderately hard, blocky. GAS: 28/24/22/15/Tr
55	1497.0	40	CLAYSTONE: As above, very calcareous, trace micromica, trace fossil fragments, moderately blocky. GAS: 23/12/22/7/Tr

SWEETLIPS-1

SIDEWALL CORE DESCRIPTIONS

NO.	Depth (m)	Rec. (mm)	Description
56	1490.0	50	CLAYSTONE: Medium to grey, calcareous claystone, calcilutite (mudstone), trace fossil fragments, trace very faint continuous laminae, very rare pyrite, moderately hard, blocky. GAS: 46/20/33/4/Tr
57	1482.0	55	CLAYSTONE: As above, very limey, trace fossil fragments, very rare forams, moderately hard, blocky. GAS: 148/49/56/22/Tr
58	1468.0	55	CLAYSTONE: As above, common fossil fragments, common forams, moderately hard, blocky. GAS: 925/73/55/12/Tr
59	1453.0	50	CLAYSTONE: As above, trace sponge spicules, common forams, moderately hard, blocky. GAS: 45/29/28/23/Tr
60	1433.0	35	CLAYSTONE: Medium to occasionally buff/grey (patchy), common forams, trace pyrite, trace glauconite, moderately hard, blocky. GAS: 222/24/12/Tr/Tr

APPENDIX 4

TABLE 1

SWEETLIPS-1 RFT INTERPRETATION SUMMARY

UNIT	DEPTH INTERVAL (m MDKB)	DEPTH INTERVAL (m TVDSS)	FLUID TYPE	RFT CONTACT (m TVDSS)	SAMPLE	GAS (cu.ft)	OIL (litres)	WATER (litres)	GOR (SCF/STB)	GLR (STB/kSCF)
Top Latrobe	1511.0-1561.0	1490.0-1540.0	Gas	-1540.0		Yes				
	1561.0-1564.5	1540.0-1543.5	Oil	-1544.0		Yes				
Sample 1	1561.0	1540.0	Gas			100.8	0.001	0.6 *		0.00006
Sample 2	1563.0	1542.0	Oil			39.1	16.75	2.5 *	371	
Sample 3	1580.5	1559.5	Water			0.9	0.0	21.25		

SWEETLIPS-1 ST1 RFT INTERPRETATION SUMMARY

UNIT	DEPTH INTERVAL (m MDKB)	DEPTH INTERVAL (m TVDSS)	FLUID TYPE	RFT CONTACT (m TVDSS)	SAMPLE	GAS (cu.ft)	OIL (litres)	WATER (litres)	GOR (SCF/STB)	GLR (STB/kSCF)
Top Latrobe	1649.0-1668.5	1520.0-1539.5	Gas	-1539.5	No					
	1668.5-1672.5	1539.5-1543.0	Oil	-1543.0		No				
Sample 1	1676.0	1545.7	Water			0.02	0.0	22.2		

NOTES:

1. RFT recoveries shown are all from the 6 gallon chamber.

2. Samples marked with star (*) had 1 gallon chamber preserved for PVT analysis.

TABLE 2
SWEETLIPS-1 OPEN-HOLE RFT PRESSURE DATA
AUGUST 9TH 1989

ZONE OR SAND=ZONE1

RUN \SEAT	DEPTH MEASURED (M MDRT)	ZONE OR SAND	ASSUMED FORMATION FLUID	DEPTH TVD (M SS)	FORMATION PRESSURE (PSIA)	SEAT VALIDITY	CALC. PT. TO PT. GRADIENT	LEAST SQRS FIT GRAD. FOR ZONE	ASSUMED HYDRAULIC GRADIENT
1/1	1512.5	ZONE1	GAS	1491.5	2177.8	GOOD	.	0.162	0.162
1/2	1517.0	ZONE1	GAS	1496.0	2178.6	GOOD	0.171	0.162	0.162
1/3	1526.5	ZONE1	GAS	1505.5	2179.8	GOOD	0.126	0.162	0.162
1/4	1545.5	ZONE1	GAS	1524.5	2182.9	GOOD	0.164	0.162	0.162
1/5	1552.0	ZONE1	GAS	1531.0	2184.2	GOOD	0.195	0.162	0.162
1/6	1559.0	ZONE1	GAS	1538.0	2185.5	GOOD	0.181	0.162	0.162
1/7	1562.5	ZONE1	OIL	1541.5	2187.0	GOOD	0.426	1.053	1.053
1/8	1564.0	ZONE1	OIL	1543.0	2188.5	GOOD	1.053	1.053	1.053
1/9	1580.5	ZONE1	WATER	1559.5	2211.6	GOOD	1.395	1.288	1.420
1/10	1583.0	ZONE1	WATER	1562.0	2214.8	GOOD	1.288	1.288	1.420

ZONE OR SAND=ZONE2

RUN \SEAT	DEPTH MEASURED (M MDRT)	ZONE OR SAND	ASSUMED FORMATION FLUID	DEPTH TVD (M SS)	FORMATION PRESSURE (PSIA)	SEAT VALIDITY	CALC. PT. TO PT. GRADIENT	LEAST SQRS FIT GRAD. FOR ZONE	ASSUMED HYDRAULIC GRADIENT
1/11	1597.5	ZONE2	WATER	1576.5	2243.0	GOOD	1.944	1.409	1.420
1/14	1604.0	ZONE2	WATER	1583.0	2251.9	GOOD	1.377	1.409	1.420
1/17	1607.0	ZONE2	WATER	1586.0	2256.4	GOOD	1.497	1.409	1.420

ZONE OR SAND=ZONE3

RUN \SEAT	DEPTH MEASURED (M MDRT)	ZONE OR SAND	ASSUMED FORMATION FLUID	DEPTH TVD (M SS)	FORMATION PRESSURE (PSIA)	SEAT VALIDITY	CALC. PT. TO PT. GRADIENT	LEAST SQRS FIT GRAD. FOR ZONE	ASSUMED HYDRAULIC GRADIENT
1/18	1620.5	ZONE3	WATER	1599.5	2281.9	SUPERCHARGED	1.887	.	1.420
1/19	1627.0	ZONE3	WATER	1606.0	2288.7	GOOD	1.051	.	1.420

TABLE 3
SWEETLIPS-1 STI OPEN-HOLE RFT PRESSURE DATA
AUGUST 18TH 1989

ZONE OR SAND=ZONE1

RUN \SEAT	DEPTH MEASURED (M MDRT)	ZONE OR SAND	ASSUMED FORMATION FLUID	DEPTH TVD (M SS)	FORMATION PRESSURE (PSIA)	SEAT VALIDITY	CALC. PT. TO PT. GRADIENT	LEAST SQRS FIT GRAD. FOR ZONE	ASSUMED HYDRAULIC GRADIENT
1/1	1649.0	ZONE1	GAS	1522.0	2182.6	GOOD	.	0.181	0.170
1/2	1659.5	ZONE1	GAS	1531.4	2184.0	GOOD	0.149	0.181	0.170
1/3	1664.0	ZONE1	GAS	1535.3	2184.9	GOOD	0.231	0.181	0.170
1/4	1667.5	ZONE1	GAS	1538.4	2185.6	GOOD	0.226	0.181	0.170
1/5	1669.0	ZONE1	OIL	1539.7	2186.0	GOOD	0.308	1.115	1.050
1/6	1672.0	ZONE1	OIL	1542.3	2188.9	GOOD	1.115	1.115	1.050
1/7	1674.0	ZONE1	WATER	1544.0	2191.1	GOOD	1.294	1.389	1.420
1/8	1676.0	ZONE1	WATER	1545.7	2194.0	GOOD	1.706	1.389	1.420
1/9	1680.0	ZONE1	WATER	1549.2	2198.9	GOOD	1.400	1.389	1.420
1/10	1683.5	ZONE1	WATER	1552.2	2203.1	GOOD	1.400	1.389	1.420
1/11	1686.0	ZONE1	WATER	1554.4	2206.4	GOOD	1.500	1.389	1.420
1/12	1689.0	ZONE1	WATER	1557.0	2209.5	GOOD	1.192	1.389	1.420
1/13	1691.0	ZONE1	WATER	1559.2	2212.6	GOOD	1.409	1.389	1.420
1/14	1702.0	ZONE1	WATER	1568.3	2225.2	GOOD	1.385	1.389	1.420
1/15	1705.0	ZONE1	WATER	1570.8	2228.7	GOOD	1.400	1.389	1.420