

WELL COMPLETION REPORT
BLACKBACK - A3

Esso Australia Ltd.

W1297

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(Page 2 of 88)

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Page 65A)

WELL COMPLETION REPORT

BLACKBACK A-3

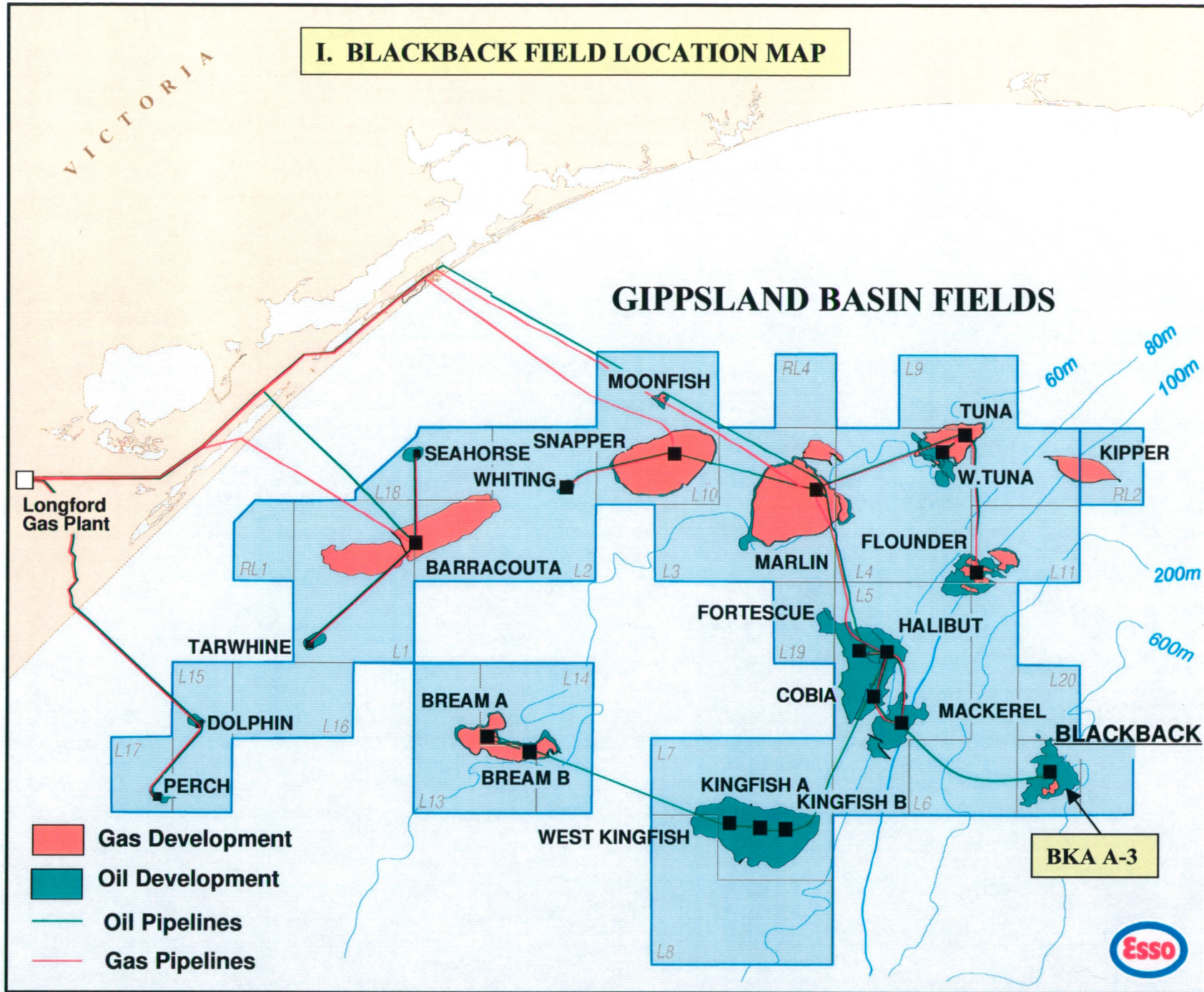
GIPPSLAND BASIN, VICTORIA

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February 2000

CONTENTS

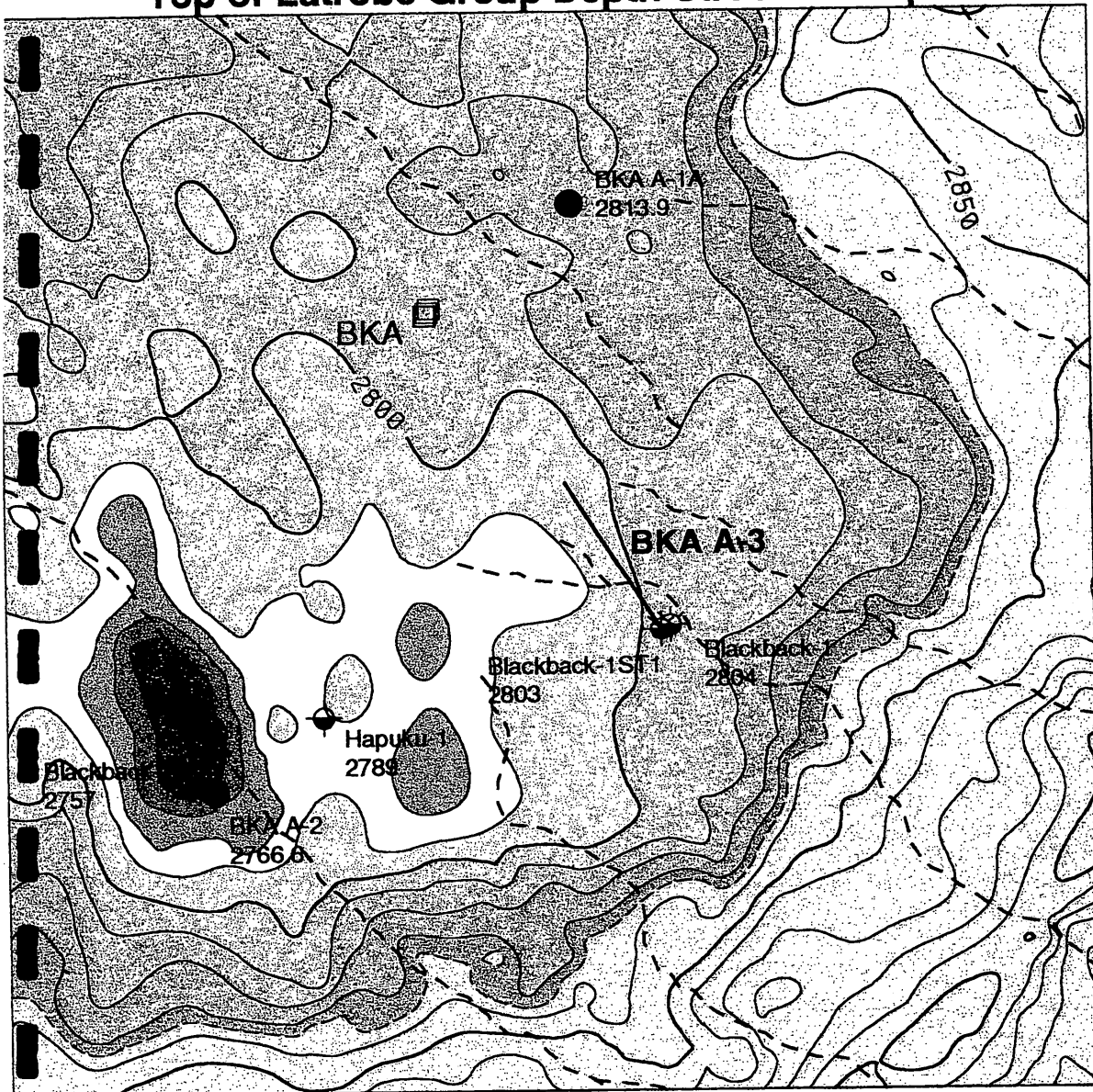
	Page
I. FIELD LOCATION MAP	1
II. WELL DATA RECORD	
Well Location Map	2
Location	3
Elevations & Depths	3
Dates	3
Miscellaneous	3
Well Classification	3
Casing Record	4
Cementing Record	4
Drilling Performance	5
Completion Schematic	6
III. SAMPLES	8
IV. LOGS AND SURVEYS	8
V. FORMATION/RESERVOIR TOPS	9
VI. GEOLOGICAL ANALYSIS	10
Drilling Operations Summary	
Objectives	
Results	
Depth Uncertainty	
Hydrocarbons	
Geophysical Analysis	
VII. APPENDICES	
1. Survey Data & Listing	
1a. Survey Data	
1b. MD-TVD Survey Data Listing	
2. Petrophysics	
2a. Petrophysics Evaluation Summary	
3. Sample Descriptions	
3a. Lithology/Show Descriptions	
4. Logs	
4a. Mud Log	
4b. Well Completion Log	

I. BLACKBACK FIELD LOCATION MAP



II. WELL DATA RECORD
Well Location Map

Top of Latrobe Group Depth Structure Map



----- INTRA-LATROBE FAULT



CONTOUR INTERVAL 10 M

II. WELL DATA RECORD (cont.)

LOCATION*

Field	Blackback	Wellhead Coordinates	
Well Name	Blackback A-3	AMG X	635371.4mE
Conductor Number	N/A	AMG Y	5732898.5mN
State	Victoria	Latitude	38° 32' 30.854"S
Permit/Licence	Vic/L20	Longitude	148° 33' 11.930"E
Geological Basin	Gippsland	Perforations (driller)	Open hole slotted liner
Top of Latrobe	3273mMDRT		
	2823.6mTVDR		
	2797.6mTVDS		
AMG X	635849.1mE		
AMG Y	5732221.2mN		

ELEVATIONS & DEPTHS

Water Depth	395.0m
Top Wellhead to MSL	391.84m
Main Deck Rel to MSL	N/A
RT Relative to MSL	26.0m
Average Well Angle	65°
Total Depth	3913mMDRT
	2843.3mTVDR
	2817.3mTVDS
Plug Back Depth	N/A

DATES

Skid Rig	27/06/1999 (12.25" Hole)
Spudded Well	28/06/1998 (12.25" Hole)
Development Rig Days	52.7
NPT Days	3.4
Rig Released	23/08/1999
LP. Established	20/08/1999

MISCELLANEOUS

Operator	Esso Australia Ltd	Contractor	Sedco Forex
Esso Interest	50%	Rig Name	Sedco 702
Permittee/Licencee	Esso/BHPP	Equipment Type	Semi-submersible
Other Interest	50% BHPP	Completion Type	Horizontal Subsea
Overriding Royalty	N/A	Completion Size	Single 4-1/2"
Drilling AFE No.	L06249907		

WELL CLASSIFICATION

Before Drilling	Subsea Oil Development	After Drilling	Oil well
	*Datum	AGD-66	
	Spheroid	ANS	
	Projection	UTM	

II. WELL DATA RECORD (cont.)

CASING RECORD

Type	Size (inches)	Weight (ppf)	Grade	Thread	Depth (mMDRT)
Conductor	30	457 / 310	X-52	RL-4-H+/RL-4	489.0
Surface	13.375	68	K-55	BTC	1195.81
Intermediate	10.75	55.5	L-80	VAM TOP	3341.08
	9.625	53.5	N-80	LTC	
		47.0	N-80	LTC	
Liner	5.5	17	S13 CR-80	VAM ACE	3907.0

CEMENTING RECORD

String Cemented	Cement Type	Dry Cmt Vol (sx)	Cement Additives	Mix Water (bbls)	Slurry Vol (bbls)	Slurry Density (ppg)	Cement to/from (mMDRT)	Csg Test Pressure (psi)
Conductor	Class G	1069	2% Calcium Chloride	214	225	15.8	489 - 420	--
Surface Casing Lead	Class G	1200	0.45gps Econolite	96	472	12.5	420-948	1200
Surface Casing Tail	Class G	520	Neat	101	107	15.9	948-1195	1200
Intermediate Casing Lead	Class G	360	0.75gps GasCon-469 0.01gps NF-5 0.14gps SCR-100	77	115	13.2	2501	5000
Intermediate Casing Tail	Class G	373	0.4gps Halad-413L 0.03gps GasCon-469 0.01gps NF-5 0.05gps SCR-100	42	76	15.8	3341	
Slotted Liner / Tubing	---	---	---	---	---	---	---	---

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE

Esso Australia Ltd./ Drilling Division - Technical Report BLACKBACK A-3 FINAL WELL REPORT

Facility: Blackback	Rig: Sedco 702	Reservoir: Latrobe
Well: A-3	Location: VIC-L-20	Well Type: Subsea

**DEPTH:	**INCLINATION:	**MUD:
m MD: 3913	Average (deg): 65	Petrofree & Type: Baradrill-N
m TVD: 2843	Maximum (deg): 89.7	Max. wt. (ppg): 11.2
Vert. Section (m): 1467.7		m per day: 96

**TIME ANALYSIS:		
Start Date: 13 Feb 99 @ 19:30	Finish Date: 23 Aug 99 @ 03:00	Total Days: 52.7
Target Days: 34	% Over/Under Target: 55.0% Over	AFE Days: 57.0
NPT Days: 3.4	% of Total: 6.50%	

**COSTS:
AFE No.: L06249907
Revisions: 2

	Material	Equipment	Contracts	Allocations	Contingency	TOTAL
AFE	\$2,350,000	\$3,320,000	\$10,340,000	\$1,890,000	\$0	\$17,900,000
Revised AFE	\$2,780,000	\$3,320,000	\$14,510,000	\$2,690,000	\$0	\$23,300,000
DIMS	\$2,299,316	\$3,145,944	\$13,940,480	\$2,883,244	\$0	\$22,268,984
Projected	\$2,299,316	\$3,145,944	\$13,940,480	\$2,883,244	\$0	\$22,268,984

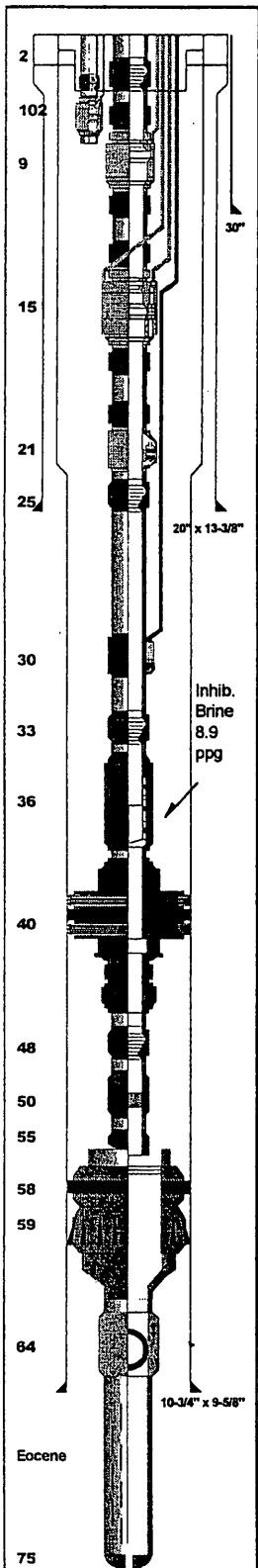
\$ per day: 422561	\$ per day (excl. T&L): 362119	\$ per m: 6375
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**CASING:				
Size / Weight / Grade / Thread	m MDRT	m TVDRT	PIT	
Structural	30"/457&310/X-52/RL4HT&RL4	489	489	N/A
Surface Casing	20"/129.3/X-56/RL4S & 13-3/8"/68/K55/BTC	1195	1195	12.5 ppg, iug
Production Casing	10-3/4"/55.5/L80/VAM TOP & 9-5/8"/53.5&47/LTC	3341	2830	12.0 ppg, iug
Production Liner	5-1/2"/17.0/S13 CR80/VAM ACE	3907	2843	N/A

Casing Comments:
5-1/2" liner is slotted. Top of liner set at 2893m MD (2691m TVD).

**COMPLETION:			
Size: 4-1/2"	Type: Single Oil	Perforation Intervals:	Slotted liner in open hole

Completion Comments:
A 5-1/2" production liner was set from 2893m to 3907m. The bottom 551m (3345m-3896m) was slotted with 2" x 0.025" slots at 333 slots/m sized for sand control. A liner top packer was set above the liner hanger. A completion isolation valve in the blank liner string was closed after running the liner. The valve was opened by pressure cycling after the completion string and tree were run and tested. The subsurface safety valves, control system and pressure/temperature transducers were fully functional.

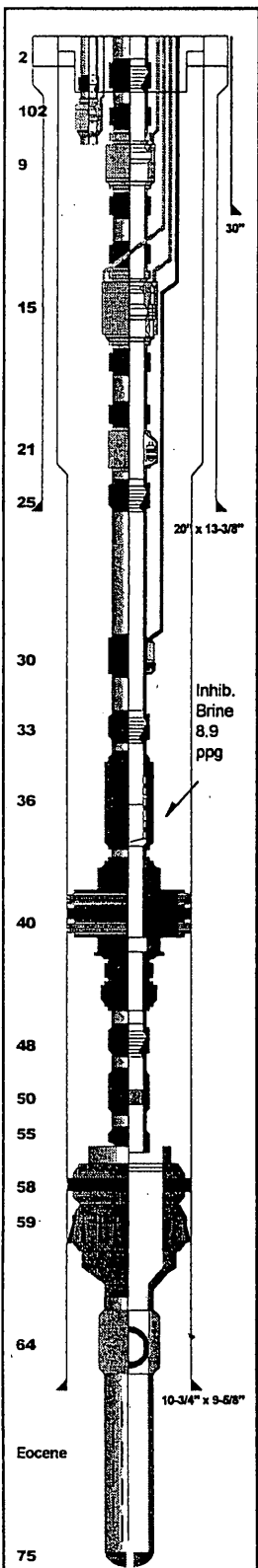


No.	Qty.	Description	OD Max	ID Min	Length (m)	MD (m)	TVD (m)
1	1	RT to top of Tubing Hanger			418.00		
2	1	Tubing Hanger, ABB Vetco Gray, for MS-700 WH, 4.5" x 2.375", 3.813" X Profile	18.560	1.875	0.72	418.00	418
3	1	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	9.38	418.72	
4	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.18	428.10	
5	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.79	429.28	
6	5	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	48.43	431.07	
7	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	479.50	
8	1	Flow Coupling, 4-1/2" Hbtn 811FN38117, Vam Ace BxP, Inc-925	5.250	3.865	1.75	481.30	
9	1	Comm Nipple, 4-1/2" Camco RH-2 Hbtn 3.813 "X" Profile, Vam Ace BxP, Inc-925	6.813	3.813	0.77	483.05	483
10	1	Flow Coupling, 4-1/2" Hbtn 811FN38117, Vam Ace BxP, Inc-925	5.250	3.865	1.75	483.82	
11	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	485.57	
12	53	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	512.83	487.37	
13	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	1000.20	
14	1	Flow Coupling, 4-1/2" Hbtn 811FN38117, Vam Ace BxP, Inc-925	5.250	3.865	1.75	1002.00	
15	1	TRSSV, 4-1/2" Camco TRC-DH-5-F, 3.75" DB profile, Vam Ace BxP, Inc-925	7.437	3.750	3.74	1003.75	1004
16	1	Flow Coupling, 4-1/2" Hbtn 811FN38117, Vam Ace BxP, Inc-925	5.250	3.865	1.75	1007.49	
17	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	1009.24	
18	5	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	48.36	1011.04	
19	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.79	1059.40	
20	1	Flow Coupling, 4-1/2" Hbtn 811FN38117, Vam Ace BxP, Inc-925	5.250	3.865	1.75	1061.19	
21	1	Side Pocket Mandrel, 4-1/2" Camco Type MMRG-4, 1.5" pocket to accept SO2-30R Valve w/ RKP Latch, Inc-925	7.250	3.855	2.92	1062.94	1063
22	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	1065.86	
23	2	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	19.37	1067.66	
24	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	1087.03	
25	1	Landing Nipple, 4-1/2" Hbtn "R", 3.688" bore, Vam Ace, Inc925	4.991	3.688	0.36	1088.83	1089
26	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.78	1089.19	
27	180	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	1740.17	1090.97	
28	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2831.14	
29	1	Coupling, 4-1/2" 12.6 lb/ft Super13Cr-80 VAM ACE	4.961	3.958	0.24	2832.94	
30	1	Solid Gauge Mandrel, 4-1/2" with Perm Quartz Gauge, Schlum. Vam Ace PxP, Alloy 450	6.023	3.958	2.29	2833.18	2664
31	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2835.47	
32	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2837.27	
33	1	Landing Nipple, 4-1/2" Hbtn "R", 3.688" bore, Vam Ace, Inc925	4.991	3.688	0.36	2839.07	2667
34	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.78	2839.43	
35	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2841.21	
36	1	PBR, 5" Seal Bore, 20' stroke, Hbtn 812PBA70503, 4-1/2" VAMACE BxP, Inconel	5.875	3.850	8.09	2843.01	2668
37	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2851.10	
38	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2852.90	
39	1	Ratch Latch Seal Assembly, 4-1/2" Hbtn 812SSR5001, Vam Ace Box, Inc925	5.290	3.938	0.51	2854.70	
40	1	Packer, 9-5/8" Hbtn MHP 212MHP9500-C, 36-59.4lb, Btm Thd 5" Vam Ace box, Inc-925	8.125	3.875	1.98	2855.21	2674
41	1	Millout Extension, 5" Hbtn 812MOE40019, 15# Vam Ace PxP, Inc-925	5.036	4.250	2.35	2857.19	
42	1	Xover, 4-1/2" x 5", Vam Ace x Vam Ace PxP, Inc925	5.593	3.958	0.21	2859.54	
43	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2859.75	
44	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.18	2861.55	
45	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	3.03	2862.73	
46	1	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	9.67	2865.76	
47	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2875.43	
48	1	Landing Nipple, 4-1/2" Hbtn "RN", 3.437" bore, 3.260" NoGo, Vam Ace BxP, Inc925	4.991	3.260	0.41	2877.23	2684
49	1	Xover, 4-1/2" x 4-1/2" VAMACE x NEWVAM, BxP, Hbtn , 9Cr1Mo	4.500	3.958	0.26	2877.64	
50	1	Plug, Mirage Tailpipe, 4-1/2" NEWVAM BxP, Hbtn 21MPA38800, 13Cr	5.880	3.880	1.40	2877.90	
51	1	Xover, 4-1/2" x 4-1/2" NEWVAM x VAM ACE, BxP, Hbtn , 9Cr1Mo	4.500	3.958	0.31	2879.30	
52	1	Pup Joint, 4-1/2" 12.6 lb/ft Super 13Cr-80 V/Ace	4.500	3.958	1.80	2879.61	
53	1	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	9.68	2881.41	
54	1	Tubing, 4-1/2" 12.6 lb/ft Super 13Cr-80 VAM ACE	4.500	3.958	9.63	2891.09	
55	1	Mule Shoe Guide, Self-aligning, Hbtn 812SG48500, 9Cr1Mo	4.800	3.850	0.54	2900.72	
56	1	Bottom of Tubing				2901.26	2695
100	0						
101	1	Pup Joint, 2-3/8" 4.6 lb/ft 13Cr(S)80 VAM ACE PxP	2.697	1.995	2.93		
102	1	TRSSV, 2-3/8" Camco "TRM-4P", 1.875" X profile, 13Cr/410, Vam Ace BxP	3.640	1.875	1.21		
103	1	Pup Joint, 2-3/8" 4.6 lb/ft 13Cr(S)80 VAM ACE BxP	2.697	1.995	3.03		
104	1	Mule Shoe Guide (2-3/8" VAM ACE Modified Coupling with Brass Pin)	3.850	2.992	0.18		

Wellhead Size and Type:
 ABB Vetco Gray MS-700
 10,000 psi Subsea Wellhead System

Wellhead Cap:
 ABB Vetco Gray, TR-16, 5" x 2", LC-7 Mandrel Up

BPV Preparation:
 Halliburton 3.813" X



No.	Description	OD Max	ID Min	Length (m)	MD (m)	TVD (m)
1	RT to Top of Liner Packer Extension			2893.54		
57	Liner Extension, Baker Super 13 Cr	8.308	7.500	7.92	2893.54	2692
58	Liner Packer, Baker Model ZXP 7" 29 lb/ft with HRD Profile Super 13 Cr NEW VAM	8.303	6.185	2.12	2901.46	
59	Liner Hanger, Baker Hydraulic Rotating Flexlock II 7" 29 lb/ft Super 13Cr NEW VAM	8.313	6.188	2.79	2903.58	2697
60	Crossover, 7" 29# NEW VAM Box x 5-1/2" 17# VAM ACE Pin Super 13 Cr	7.690	4.873	0.34	2906.37	
61	Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE (3 jts)	6.051	4.892	36.40	2906.71	
62	Pup Joint - Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE	6.051	4.892	1.89	2943.11	
63	Crossover, 5-1/2" 17# VAM ACE Box x 4-1/2" 12.6# VAM ACE Pin Alloy 450	6.098	3.919	0.51	2945.00	
64	Completion Isolation Valve, Petrolina 7" TB-CIV/RM Assy 380-7031-00-01 Alloy 450 4-1/2" VACE	5.935	3.250	3.87	2945.51	2714
65	Crossover, 4-1/2" 12.6# VAM ACE Box x 5-1/2" 17# VAM ACE Pin Alloy 450	5.531	4.005	0.51	2949.38	
66	Pup Joint - Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE	6.051	4.892	1.87	2949.89	
67	Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE (33 jts)	6.051	4.892	392.89	2951.76	
68	Production Liner (SLOTTED 0.025"), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE (46 jts)	6.051	4.892	551.23	3344.65	2830
69	Pup Joint - Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE	6.051	4.892	1.89	3895.88	2843
70	Coupling, Baker 5-1/2" Super 13 Cr VAM ACE	6.064	4.915	0.41	3897.77	
71	Polished Bore Recepticle, Baker 5-1/2" Super 13 Cr VAM ACE	5.625	3.125	1.62	3898.18	
72	Pup Joint - Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE	6.051	4.892	1.89	3899.80	
73	Pup Joint - Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE	6.051	4.892	1.88	3901.69	
74	Pup Joint - Production Liner (BLANK), 5-1/2" 17 lb/ft Super 13Cr-80 VAM ACE	6.051	4.892	1.88	3903.57	
75	Reamer Shoe, Baker with Insert Float Valve	6.750	4.892	1.55	3905.45	
76	Production Liner Setting Depth			0.00	3907.00	2843
0	1 RT to top of 10-3/4" Casing Hanger			418.48		
2	Casing Hanger, 10-3/4"		9.760	0.34	418.48	418
3	Pup Joint - Production Casing, 10-3/4" 55.5 lb/ft VAM TOP	11.750	9.760	3.00	418.82	
4	Production Casing, 10-3/4" 55.5 lb/ft VAM TOP (55 jts)	11.750	9.760	664.34	421.82	
5	Crossover, 10-3/4" x 9-5/8"	11.750	8.681	9.21	1086.16	1086
6	Production Casing, 9-5/8" 47 lb/ft L-80 LTC (88 jts)	10.625	8.681	1041.15	1095.37	
7	Production Casing, 9-5/8" 53.5 lb/ft L-80 LTC (87 jts)	10.625	8.535	1034.96	2136.52	
8	Pup Joint - Production Casing, 9-5/8" 53.5 lb/ft L-80 LTC	10.625	8.535	3.01	3171.48	
9	Production Casing, 9-5/8" 53.5 lb/ft L-80 LTC (12 jts)	10.625	8.535	142.17	3174.49	
10	Float Collar, 9-5/8" 53.5 lb/ft L-80 LTC	10.625	8.535	0.50	3316.66	
11	Production Casing, 9-5/8" 53.5 lb/ft L-80 LTC (1 jt)	10.625	8.535	11.58	3317.16	
12	Production Casing Float Shoe Joint, 9-5/8" 53.5 lb/ft L-80 LTC	10.625	8.535	12.34	3328.74	
13	Production Casing Setting Depth			0.00	3341.08	2830
14	1 RT to 18-3/4" Wellhead Housing			417.75		

Perforation Details

Name	Eff.	Aband.	Top	Bot.	Interval	TVD	Gun Description	Comment
Eocene	17/08/1999		3344.65	3895.88	551.23		Open hole slotted liner	TVD Rotary Table 2830-43m TVD Subsea 2804-17m

Wellhead Size and Type:
ABB Vetco Gray MS-700
10,000 psi Subsea Wellhead System

Wellhead Cap:
ABB Vetco Gray, TR-16, 5" x 2", LC-7 Mandrel Up

BPV Preparation:
Halliburton 3.813" X

Avg Angle: 65°

Max: 90° @ 3743

Original Completion: /08/1999

Last Workover:

Other: Description
RT to Sea Level
Water Depth
NOTE: Horizontal Well

Depth
26.00
394.00

NOTE: STRUCTURAL AND SURFACE CASING STRINGS DO NOT PRINT OUT

III. SAMPLES

Cuttings

Samples for description only were collected at 30m intervals from the 13-3/8" casing (1195mMDRT) to approximately 150m above the prognosed top Latrobe Group. Three sets of washed and oven dried cuttings were taken at 10m intervals from approximately 150m above to the top Latrobe Group and at 5m intervals from thereon to TD (3913m MRDT). Cuttings descriptions for the interval 2190m to 3913m MDRT are contained in Appendix 3a.

Conventional coring

No conventional cores were cut in Blackback A-3.

Sidewall coring

No sidewall core samples were shot in Blackback A-3.

IV. LOGS AND SURVEYS

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
EMS (Directional)	SDI	489	1173
GYRO	SDI	1173	3311
MWD-GR*	Schlumberger/Anadrill	1211	3355
LWD (RAB/ADN/GR)	Schlumberger/Anadrill	3341**	3913

* GR data only down to 3330m

** Usable data starts below casing shoe

V. FORMATION RESERVOIR TOPS

Formation/ Zone	m TVDSS			m MDRT	m TVT Net Oil Sand	
	Predicted	Actual	Difference	Actual	Predicted	Actual
Sea Floor	402	395	-7	421		
Gippsland Limestone	402	395	-7	421		
Base of High Velocity Channel (BHVC)		2444.2		2505.8		
Top of Lakes Entrance Formation (TOLE)	2549	2552.0	3.0	2667.0		
Mid-Miocene Marker (MMM)		2582.0		2721.2		
Top Oligocene Wedge (TOW)	2772	2776.0	4.0	3174.8		
Top of Latrobe Group (TOL)*	2794	2797.6	3.6	3273.0	20.4	~7+
Top of B150		2812.2		3626.5		
Total Depth (TD)	2815.5	2817.3	1.75	3913.0		
Field Oil-Water Contact (FOWC)	2834	Not reached		Not reached		

* Also Top of (relict) B140 sand.

+ About 7mTVT of the approximately 12mTVT analysed was calculated to be net sand. 7.2mTVT of gross column above this was penetrated, but not analysed (above 9 5/8" casing shoe) and an estimated 16mTVT of gross column was not penetrated in this well. The A-3 well penetrated a gross interval of ~530m of which 320.8m is interpreted to be productive.

VI. GEOLOGICAL ANALYSIS

Drilling Operations Summary

Phase I of the Blackback "new field" development comprises three subsea wellheads spaced 25 metres apart and joined by flexible jumpers in a "daisy chain" arrangement at the end of a 23 kilometre pipeline to host facilities on Mackerel platform.

The Blackback Phase I (BKA) development program commenced at 1930hrs on February 13, 1999, with the arrival of the Sedco 702 semi-submersible drilling rig at the nominated location of the subsea completion and the setting of anchors. Drilling operations commenced at 0000hrs on February 16 with the batch drilling and emplacement of three conductors (A-3, then A-2 and A-1) followed by deployment of the inter-well flexible jumpers and Completion Guide Bases (CGBs).

After running a Temporary Guide Base to the sea floor (395.7mSS) the BKA A-3 well was spudded at 0030hrs on February 17, with a 36" hole drilled to 491m and 30" casing set to 489m, followed by a 17½" hole drilled to 1211m with 13¾" casing set to 1195m.

At 0430hrs on February 21 the rig was temporarily released from BKA A-3 to batch set conductors on A-2 and A-1. The rig returned briefly to A-3 at 1345hrs on February 28 to run the CGB, and was then released to run the CGB on A-2 and proceed to drilling the A-1 and A-2 wells..

On June 27 at 1400hrs the rig was skidded back to the A-3 conductor, drilled out the cement plug at the 13¾" casing shoe, and resumed drilling BKA A-3 in 12¼" hole. Kicking the well off started at 1909m and, with some difficulty, was largely achieved by 2100m. Well angle was gradually built to 62 degrees around 2800m, and then to about 85 degrees at Top of Latrobe, reaching 89.3 degrees at the heel point (3355m). A pump-down gyro survey was conducted prior to running the 10¾"x9½" production casing, which was cemented to 3341mMD (2830mTVDRT).

After changing the mud system from Petrofree to water-based mud, the "horizontal" section was drilled in 8½" hole to a TD of 3913mMD (2843mTVDRT) which was reached at 0100hrs on July29. Following this, 5½" slotted liner was run from 3314m to 2893m and the well was completed with 4½" production tubing. At 1100hrs on August 6 operations on A-3 were temporarily suspended while the rig moved to and completed the A-1A well. The rig returned to A-3 at 1715hrs on August 15 and ran and pressure tested the tree before skidding back to A-1A at 1700hrs on August 18 to run its tree and perforate the well. The rig was skidded back to A-3 at 1200hrs on August 21 to commence demobilization and pull the anchors. Final rig release from A-3 and the BKA project occurred at 0300hrs on August 23, when the rig commenced its tow to Turrum-7.

VI. GEOLOGICAL ANALYSIS (cont'd)

Objectives

In 1989 the Blackback-1/ST1 exploration well/s encountered an approximately 30-metre oil column within poor-to-fair reservoir quality Eocene sands immediately below the Top of Latrobe (TOL) unconformity. A production test (1A) with perforations spanning 17mTVT of the upper two thirds of the oil column produced at 1508 BOPD through a $4\frac{2}{64}$ " choke. Core analysis indicated that, although reservoir porosity ranged up to about 25%, permeability was mostly less than 100md, with a substantial proportion <10md.

Blackback A-3, the final well in the Blackback Phase I development, was designed to produce this column using a nominally 500-metre near-horizontal (89°) well bore to improve deliverability.

The two major risks for this target (pre-drill 'Location C') were structural interpretation (especially elevation) and reservoir quality.

Structural interpretation is critically dependent on the time-to-depth conversion of the seismic data, which is complicated by lateral and vertical distortions in the velocity field of the overlying Gippsland Limestone. Due to the planned high-angle trajectory of the target section, the TOL penetration would be about 700 metres from the nearest well control (Blackback-1ST1); far enough for potentially large vertical depth errors. Also, since A-3 was being drilled without a pilot hole (and, therefore, not being datumed on the FOWC) the pre-drill uncertainty of depth to TOL would be supplemented with the actual depth uncertainty of the survey measurement.

The risk pertaining to reservoir quality arises from the largely poor to mediocre permeability of the Eocene section encountered in Blackback-1/ST1 and the inability to predict how this varies vertically and laterally. While the permeability in these well bores is deemed to be sufficient for a successful horizontal well, there is a risk that it may get significantly worse away from these control points. The only other Eocene penetration in the field, in Blackback-3 (3.7km to the south-west) encountered a uniformly very poor reservoir quality section with core permeabilities mostly less than 2 millidarcies. Variation in the reservoir quality of the Eocene is not distinguishable on seismic or well logs.

To best accommodate these risks a well trajectory aimed towards the mid-point of the 1A production test interval was chosen, being a known point with proven deliverability. The heel point (start of the horizontal section) was situated higher on the interpreted structure, nominally chosen 14m (0.5%) below the "most likely" TOL, but with the provision to raise or lower this closer to the top of the Eocene during drilling – once the actual TOL was known.

An additional, but lesser, concern is the risk of encountering a gas cap. Prior to the Phase I development the Highest Proved Oil for Blackback field was 2805mTVDSS (the top of the Blackback-1ST1 production test 1A interval); this was raised to 2801.8mTVDSS by BKA A-2.

VI. GEOLOGICAL ANALYSIS(cont'd)

Results

Depth Uncertainty

Anadrill's MWD-GR was used in the drilling of the 12¼" hole section to the landing point (3355mMD; 2804.6mTVDSS). The Top of Latrobe (TOL) unconformity was picked on the MWD-GR and cuttings at about 3273mMD (2797.6mTVDSS) which was 3.6 metres deep to prognosis. As programmed, a gyro survey was conducted prior to running casing to attempt to check the validity of the MWD-derived TVD depths. The gyro survey results near the bottom of the hole were five metres TVD deeper than the MWD for the same measured depth. However, the gyro tool used was a "pump-down" prototype, the results from which were deemed somewhat unreliable due to it being run beyond the design limits of the gyrocompass at depth, and also due to some lack of rig motion compensation during shallower readings. Hence, the gyro survey was rejected and the MWD survey was maintained without any adjustment.

The MWD surveying was continued in the 8½" hole (after being tied in to the tail-end of the previous MWD survey) with no other depth verification conducted. No datum was intersected in the well, the intention being to stay as far above the FOWC as possible. Thus, while the TVD depths calculated from MWD surveying are presumed to be reasonably accurate, no quantification of their accuracy was obtained.

Hydrocarbons

Based on a drill cuttings lithology change, increase in mud gas readings (including the onset of C₃₊ components) and a slight increase in the MWD-GR curve, the Top of Latrobe (TOL) in BKA A-3 was picked at 3273mMD (2797.6mTVDSS) - 3.6 metres deep to prognosis.

Resistivity, density and neutron LWD logs were acquired only in the 8½" near-horizontal section from the 9⁵/₈" casing shoe (3341mMD; 2804.3mTVDSS) to TD (3913mMD; 2817.3mTVDSS). As anticipated from the wireline logs through Eocene strata in previous Blackback wells, the complex lithology of the constituent clay-rich, glauconitic sands largely masks the hydrocarbon response. Coupling this with the almost complete lack of fluorescence in drill cuttings, the presence of an oil column is only betrayed by the magnitude and richness of the mud gas readings, and the proximity to the Blackback-1/ST1 wells, where pressures and samples from wireline and production tests were obtained.

VI. GEOLOGICAL ANALYSIS (cont'd)

Using parameters and techniques from the previously drilled Blackback Eocene sections, log analysis (Appendix 2a) was conducted in BKA A-3 from 3360 to 3890mMD after subdividing it into two zones. The upper zone, spanning 3360-3576mMD (2804.8-2810.5mTVDSS) calculated only 38.4 metres of net pay (18% net-to-gross) with a mean total porosity of 19.7% and total water saturation of 62%, whereas the lower zone 3576-3890mMD (2810.5-2816.7mTVDSS) calculated 282.5 metres of net pay (90% net-to-gross) with a mean total porosity of 20.5% and total water saturation of 51%. Averaged across the entire 530 metres analyzed, a total of 320.8 metres of net pay is calculated, yielding a net-to-gross of 61% with a total porosity of 20% and total water saturation of 52%. An average effective porosity of 12% and average effective water saturation of 23% have been derived from these totals, but these are not recommended for use in volumetric estimates.

In both Blackback-1 and Blackback-1ST1 (40 metres apart at TOL) an 11-12m TVD thick interval of apparently poorer net-to-gross, identifiable by slightly higher Gamma Ray response, occurs at the top of the relict section. The contact at the base of this unit is the only correlatable feature within the Eocene section. Although less distinct in BKA A-3 (due to more fluctuation in the gamma ray response) a seemingly equivalent contact has been picked at 3626.5mMD (2812.2mTVDSS). For potential future reservoir management purposes the interval above this contact has been informally labelled B140 and the interval below the B150.

BKA A-3 was completed with 5½" slotted liner extending beyond the 9⁵/₈" casing shoe (3341mMD; 2804.3mTVDSS) to 3907mMD (2817.1mTVDSS). Assuming the TVD depths are reasonably accurate, the A-3 well is accessing the oil column along a 570-metre bore hole situated 16-29 metres above the Blackback-1 OWC.

Production of BKA A-3 commenced on August 20, 1999, achieving production of up to 11Kstbd through a 35% choke within the first few days. Oil production has been constrained by limitations of the gas handling facility, since the co-produced gas has been higher than was anticipated (attributed to a higher than expected GOR rather than a free gas cap).

Up to mid-December cumulative oil production of 797 KSTB was attributed to A-3, with no water-cut evident.

Geophysical Analysis

The depth to TOL in BKA A-3 was relatively close to prognosis (3.6mTVD low). Such a small depth error could have been caused by either a small seismic time pick position change at TOL or by a relatively small velocity change between the seafloor and TOL. No checkshot or sonic log data were acquired in the well and so the construction of a synthetic seismogram to test these hypotheses was not possible. The pre-drill stratigraphic prognosis suggested there would no major lateral stratigraphic changes between Blackback-1/ST1 and BKA A-3 and this has been proved correct.

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APPENDIX 1a

BLACKBACK A-3

Survey Data



Survey

Client: Esso Australia Ltd Field: EAL - BlackBack (68162) Structure: Blackback Sedco 702 A-3 Well: A-3 Borehole: A-3 API #: Date: July 30, 1999 Grid Convergence: -0.96799417* Scale Factor: 0.99982567 Location: S 38 32 30.854, E 148 33 11.918 : N 5732898.500 m, E 635371.100 m Coordinate System: UTM Zone 55 S on Australian Datum 1984	Survey Computation Method: Minimum Curvature DLS Computation Method: Lubinski Vertical Section Azimuth: 144.860° Vertical Section Origin: N 25.100 m, E 16.000 m TVD Reference: Rotary Table 26.0 m above MSL Magnetic Declination: 13.384° Total Field Strength: 60296.647 nT Dip: -69.042° Declination Date: February 25, 1999 Magnetic Declination Model: BGS 1998 North Reference: Grid North Coordinate Reference To: Structure Reference Point
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Station ID	MD (m)	Incl (°)	Azim (°)	TVD (m)	VSec (m)	N/S (m)	E/W (m)	Closure (m)	at Azim (°)	DLS (*30m)	TF (°)
Rotary Table	0.00	0.00	0.00	0.00	0.00	25.10	16.00	0.01	32.52	0.00	0.0MTF
	489.00	0.00	0.00	489.00	0.00	25.10	16.00	0.01	32.52	0.00	78.7MTF
	492.40	0.28	78.69	492.40	0.00	25.11	16.01	0.01	32.53	2.47	84.0MTF
	521.40	0.10	83.97	521.40	0.04	25.12	16.11	0.11	32.66	0.19	98.0MTF
	550.60	0.10	97.99	550.60	0.07	25.12	16.16	0.16	32.75	0.03	110.3MTF
	579.50	0.06	110.32	579.50	0.10	25.11	16.20	0.20	32.82	0.04	141.8MTF
	608.60	0.05	141.84	608.60	0.13	25.10	16.22	0.22	32.87	0.03	170.0MTF
	637.50	0.07	170.01	637.50	0.16	25.07	16.23	0.23	32.92	0.04	155.1MTF
	666.40	0.08	204.93	666.40	0.18	25.04	16.23	0.23	32.94	0.04	107.8MTF
	695.40	0.04	107.62	695.40	0.19	25.02	16.23	0.24	32.97	0.08	161.4MTF
	724.30	0.06	198.55	724.30	0.21	25.01	16.23	0.25	32.99	0.08	-7.7MTF
	750.20	0.14	352.31	750.20	0.19	25.02	16.22	0.24	32.96	0.23	81.4MTF
	782.10	0.18	81.36	782.10	0.18	25.07	16.27	0.27	32.98	0.21	173.2MTF
	811.20	0.09	173.24	811.20	0.22	25.05	16.32	0.32	33.07	0.21	101.5MTF
	840.20	0.09	258.45	840.20	0.23	25.03	16.30	0.31	33.07	0.13	11.0MTF
	869.30	0.21	11.04	869.30	0.18	25.07	16.28	0.29	33.00	0.27	66.5MTF
	898.30	0.18	66.46	898.30	0.16	25.14	16.34	0.34	33.01	0.19	131.1MTF
	927.30	0.18	131.09	927.30	0.21	25.13	16.41	0.41	33.15	0.20	13.2MTF
	956.30	0.07	13.18	956.30	0.24	25.12	16.45	0.45	33.22	0.23	22.0MTF
	985.30	0.10	22.01	985.30	0.22	25.16	16.46	0.47	33.20	0.03	88.8MTF
	1014.30	0.29	88.78	1014.30	0.24	25.19	16.55	0.55	33.31	0.28	120.2MTF
	1043.20	0.22	120.23	1043.20	0.34	25.16	16.67	0.67	33.53	0.16	159.5MTF
	1072.30	0.13	159.52	1072.30	0.42	25.10	16.73	0.73	33.68	0.15	37.5MTF
	1101.30	0.17	37.54	1101.30	0.44	25.10	16.77	0.77	33.74	0.27	66.8MTF
	1130.40	0.31	66.82	1130.40	0.44	25.17	16.86	0.87	33.82	0.19	120.6MTF
	1159.50	0.27	120.57	1159.50	0.52	25.17	17.00	1.00	34.03	0.27	31.1MTF
Tie In Point	1173.00	0.22	31.10	1173.00	0.54	25.17	17.04	1.04	34.09	0.77	-99.7MTF
BHA#1 29th June 1999	1217.08	0.29	260.31	1217.08	0.46	25.22	16.97	0.98	33.93	0.32	-82.7MTF
	1246.26	0.33	277.26	1246.26	0.37	25.22	16.81	0.82	33.69	0.10	-98.1MTF
	1272.89	0.52	261.93	1272.89	0.26	25.22	16.62	0.63	33.39	0.25	-99.4MTF
	1301.77	0.54	260.64	1301.77	0.14	25.18	16.35	0.36	33.01	0.02	102.8MTF
	1330.68	0.35	257.21	1330.67	0.05	25.13	16.13	0.14	32.70	0.20	105.5MTF
	1361.64	0.44	254.51	1361.63	-0.03	25.08	15.93	0.07	32.42	0.09	-75.0MTF
	1391.89	0.48	285.00	1391.88	-0.16	25.08	15.69	0.31	32.03	0.24	103.0MTF
	1420.12	0.38	256.97	1420.11	-0.29	25.09	15.49	0.51	31.68	0.24	-89.8MTF
	1449.86	0.50	270.20	1449.85	-0.40	25.07	15.26	0.74	31.33	0.16	112.1MTF
	1477.63	0.47	247.93	1477.62	-0.50	25.03	15.04	0.97	30.99	0.20	-89.3MTF
	1507.52	0.65	270.66	1507.51	-0.62	24.98	14.75	1.25	30.56	0.28	-83.0MTF
30th June 1999	1536.57	0.53	276.99	1536.56	-0.81	25.00	14.45	1.55	30.03	0.14	106.2MTF
	1566.70	0.70	253.76	1566.69	-0.96	24.97	14.14	1.87	29.52	0.30	-91.7MTF
	1594.69	0.74	268.34	1594.67	-1.12	24.91	13.79	2.21	28.97	0.20	-85.6MTF

	1624.01	0.63	274.36	1623.99	-1.33	24.92	13.44	2.56	28.35	0.13	-82.0MTF
	1652.48	0.63	277.97	1652.46	-1.53	24.96	13.13	2.87	27.76	0.04	-78.0MTF
	1681.26	0.80	281.99	1681.24	-1.79	25.02	12.78	3.22	27.06	0.18	-89.4MTF
	1710.36	1.06	270.56	1710.33	-2.09	25.06	12.31	3.69	26.16	0.33	-69.5MTF
	1740.47	1.15	290.46	1740.44	-2.50	25.17	11.75	4.25	25.02	0.39	-67.5MTF
	1767.89	1.00	292.50	1767.85	-2.93	25.36	11.27	4.74	23.96	0.17	-74.4MTF
	1795.43	1.36	285.65	1795.39	-3.39	25.54	10.73	5.28	22.80	0.42	-73.4MTF
	1823.61	1.49	286.61	1823.56	-3.94	25.73	10.06	5.97	21.35	0.14	-67.2MTF
	1854.27	1.37	292.75	1854.21	-4.56	25.99	9.34	6.72	19.77	0.19	-71.5MTF
1st July 1999	1882.98	1.78	288.50	1882.91	-5.21	26.26	8.60	7.49	18.14	0.45	-78.3MTF
	1913.74	1.78	281.74	1913.65	-5.94	26.51	7.68	8.44	16.16	0.20	-70.8MTF
	1922.22	1.62	289.19	1922.13	-6.14	26.58	7.44	8.69	15.64	0.96	-71.0MTF
BHA #2	1937.69	1.85	288.95	1937.59	-6.52	26.73	7.00	9.15	14.67	0.45	176.9MTF
	1968.70	1.32	183.06	1968.60	-6.64	26.54	6.50	9.60	13.77	2.47	152.4MTF
2nd July 1999	1995.72	4.82	152.43	1995.57	-5.27	25.22	7.01	8.99	15.54	4.16	151.6MTF
	2024.23	6.34	151.65	2023.95	-2.52	22.77	8.32	8.03	20.06	1.60	2.5
	2043.10	6.75	151.80	2042.69	-0.39	20.88	9.33	7.89	24.09	0.65	-21.7
BHA #3 - 3rd July 1999	2055.98	7.09	150.71	2055.48	1.16	19.52	10.08	8.14	27.31	0.85	-17.7
	2073.69	8.30	148.06	2073.03	3.52	17.48	11.29	8.96	32.86	2.14	-42.7
BHA #4 - 4th July 1999	2084.81	8.41	147.37	2084.03	5.13	16.11	12.15	9.77	37.03	0.40	-36.2
	2113.00	10.14	140.47	2111.85	9.67	12.46	14.85	12.69	49.98	2.19	-22.9
	2139.76	12.61	135.76	2138.09	14.90	8.55	18.38	16.72	65.05	2.96	12.7
5th July 1999	2170.42	15.53	138.20	2167.82	22.29	3.10	23.46	23.23	82.48	2.91	1.1
BHA #5 - 6th July 1999	2199.38	16.84	138.29	2195.64	30.30	-2.93	28.83	30.82	95.80	1.36	-4.0
BHA #7 - 7th July 1999	2209.39	17.53	138.13	2205.20	33.24	-5.13	30.80	33.66	99.46	2.07	43.1
	2225.48	17.85	139.10	2220.53	38.10	-8.80	34.03	38.40	104.50	0.81	-3.0
	2257.00	18.39	139.01	2250.48	47.85	-16.20	40.46	48.00	111.83	0.51	-45.7
	2286.10	18.60	138.34	2278.08	57.03	-23.14	46.55	57.10	116.43	0.31	-21.2
	2301.67	18.85	138.04	2292.83	62.00	-26.86	49.89	62.03	118.30	0.52	-15.5
BHA #8 - 8th July 1999	2311.54	19.11	137.82	2302.16	65.18	-29.24	52.04	65.21	119.34	0.82	0.9
9th July 1999	2339.98	22.93	137.97	2328.70	75.31	-36.81	58.87	75.31	122.02	4.03	3.3
	2368.84	26.21	138.40	2354.95	87.22	-45.76	66.87	87.23	124.38	3.41	12.7
10th July 1999	2399.35	28.48	139.47	2382.05	101.16	-56.33	76.07	101.19	126.52	2.28	0.0
	2426.62	30.90	139.48	2405.73	114.61	-66.59	84.85	114.66	128.13	2.66	-0.6
11th July 1999	2456.61	34.55	139.41	2430.96	130.75	-78.91	95.39	130.84	129.60	3.65	10.6
	2485.15	37.37	140.28	2454.06	147.44	-91.72	106.19	147.58	130.82	3.01	17.1
	2516.74	40.36	141.70	2478.65	167.21	-107.12	118.66	167.40	132.07	2.96	16.0
	2543.89	43.70	143.08	2498.82	185.37	-121.52	129.75	185.57	133.13	3.83	28.9
12th July 1999	2572.20	46.79	145.40	2518.75	205.47	-137.84	141.48	205.68	134.25	3.71	7.0
BHA #9- 13th July 1999	2603.51	49.65	145.86	2539.61	228.81	-157.11	154.66	228.97	135.45	2.76	-2.4
	2629.89	52.72	145.70	2556.14	249.36	-174.11	166.22	249.50	136.33	3.49	-2.5
	2659.17	54.58	145.60	2573.50	272.94	-193.57	179.53	273.05	137.16	1.91	-2.0
	2686.64	55.99	145.54	2589.14	295.52	-212.20	192.29	295.62	137.82	1.54	-8.1
14th July 1999	2715.92	57.41	145.30	2605.21	319.99	-232.35	206.18	320.07	138.41	1.47	-5.0
	2745.25	58.79	145.16	2620.71	344.89	-252.80	220.38	344.96	138.92	1.42	-3.4
	2775.36	60.39	145.05	2635.95	370.86	-274.10	235.24	370.92	139.36	1.60	-15.1
	2803.62	61.07	144.84	2649.77	395.51	-294.28	249.40	395.57	139.72	0.75	-9.5
	2832.88	62.18	144.63	2663.68	421.25	-315.30	264.26	421.31	140.03	1.15	-31.6
	2860.12	62.73	144.25	2676.27	445.40	-334.95	278.31	445.46	140.28	0.71	-159.5
15th July 1998	2891.58	62.54	144.17	2690.73	473.34	-357.61	294.65	473.40	140.51	0.19	-1.9
	2918.92	63.92	144.12	2703.05	497.75	-377.39	308.94	497.81	140.70	1.52	-5.6
	2949.26	65.97	143.90	2715.90	525.23	-399.63	325.09	525.29	140.87	2.04	147.3
	2978.89	63.99	145.32	2728.43	552.08	-421.51	340.64	552.14	141.06	2.39	7.2
	3007.50	66.02	145.60	2740.51	578.00	-442.87	355.35	578.06	141.26	2.15	-55.7
16th July 1998	3035.52	66.22	145.28	2751.86	603.62	-463.97	369.88	603.68	141.44	0.38	92.9
	3065.10	66.18	146.20	2763.80	630.68	-486.34	385.12	630.73	141.63	0.85	3.6
	3094.28	67.66	146.30	2775.23	657.52	-508.66	400.03	657.56	141.82	1.52	6.7
	3121.87	69.65	146.55	2785.28	683.21	-530.07	414.24	683.23	141.99	2.18	-1.5
	3151.85	71.81	146.49	2795.17	711.49	-553.67	429.85	711.51	142.18	2.16	23.9
17th July 1998	3179.95	73.50	147.27	2803.55	738.30	-576.14	444.50	738.31	142.35	1.97	-21.9
	3208.75	75.06	146.62	2811.35	766.00	-599.37	459.63	766.01	142.52	1.75	3.3
	3239.34	79.50	146.88	2818.08	795.82	-624.32	475.98	795.82	142.68	4.36	0.9

	3268.93	81.41	146.91	2822.99	824.98	-648.76	491.92	824.98	142.83	1.94	-3.5
	3295.57	82.71	146.83	2826.67	851.35	-670.86	506.34	851.35	142.96	1.47	-1.3
	3327.53	86.62	146.74	2829.64	883.14	-697.48	523.77	883.14	143.10	3.67	0.4
BHA #10-25th July 1999	3366.08	89.66	146.76	2830.89	921.65	-729.69	544.89	921.65	143.25	2.37	-90.0
26th July 1999	3381.33	89.66	146.64	2830.98	936.89	-742.44	553.26	936.89	143.31	0.24	105.3
	3395.78	89.63	146.75	2831.07	951.33	-754.52	561.20	951.34	143.36	0.24	-172.4
	3409.97	89.48	146.73	2831.18	965.51	-766.38	568.98	965.52	143.41	0.32	165.6
	3425.60	89.09	146.83	2831.38	981.13	-779.46	577.54	981.14	143.46	0.77	164.9
	3436.06	88.83	146.90	2831.57	991.58	-788.21	583.26	991.59	143.50	0.77	155.4
	3452.87	88.48	147.06	2831.96	1008.38	-802.30	592.41	1008.39	143.56	0.69	90.0
27th July 1999	3482.91	88.48	147.19	2832.76	1038.38	-827.52	608.71	1038.40	143.66	0.13	-172.7
	3510.70	87.86	147.11	2833.65	1066.14	-850.86	623.78	1066.16	143.75	0.67	143.8
	3539.60	87.45	147.41	2834.83	1094.99	-875.15	639.40	1095.02	143.85	0.53	149.1
	3568.70	87.40	147.44	2836.14	1124.03	-899.64	655.05	1124.07	143.94	0.06	-11.2
	3599.21	88.26	147.27	2837.29	1154.49	-925.32	671.50	1154.54	144.03	0.86	136.5
	3612.82	88.06	147.46	2837.73	1168.08	-936.77	678.83	1168.14	144.07	0.61	135.0
	3627.19	87.97	147.55	2838.23	1182.42	-948.88	686.55	1182.49	144.11	0.27	27.3
28th July 1999	3643.90	88.28	147.71	2838.77	1199.11	-962.99	695.49	1199.18	144.16	0.63	5.7
	3656.96	88.68	147.75	2839.12	1212.15	-974.03	702.46	1212.22	144.20	0.92	39.8
	3686.00	88.74	147.80	2839.77	1241.14	-998.59	717.94	1241.23	144.29	0.08	34.1
	3715.12	89.08	148.03	2840.33	1270.21	-1023.26	733.41	1270.32	144.37	0.42	-1.9
	3743.17	89.69	148.01	2840.63	1298.22	-1047.05	748.26	1298.35	144.45	0.65	129.3
	3771.30	89.51	148.23	2840.82	1326.30	-1070.93	763.12	1326.45	144.53	0.30	160.7
	3800.61	89.31	148.30	2841.13	1355.56	-1095.86	778.53	1355.73	144.61	0.22	-158.2
	3829.67	89.11	148.22	2841.53	1384.57	-1120.57	793.82	1384.76	144.69	0.22	175.9
	3858.86	88.83	148.24	2842.05	1413.70	-1145.39	809.19	1413.92	144.76	0.29	116.6
	3873.51	88.77	148.36	2842.36	1428.32	-1157.85	816.88	1428.56	144.80	0.27	-140.7
29th July 1999	3888.24	88.66	148.27	2842.69	1443.02	-1170.38	824.62	1443.27	144.83	0.29	-81.5
	3893.87	88.69	148.07	2842.82	1448.64	-1175.16	827.59	1448.89	144.85	1.08	0.0
Projection to TD.	3913.00	88.70	148.07	2843.25	1467.73	-1191.39	837.70	1468.01	144.89	0.02	

SCIENTIFIC DRILLING INTERNATIONAL
MELBOURNE, VICKeeper Survey
forESSO AUSTRALIA LTD
MELBOURNE, VIC.

Well Number : Blackback A-3
Site Location : Sedco 702
: Bass Strait
Latitude : -38.542
Survey Date(s) : 18 - 19 JULY 1999
S.D.I. personnel : T.JACKSON / S.GARANTINI
Calculation Method : Minimum Curvature
Survey Depth Zero : RKB
Proposal Direction : 144.86 deg.
Depth Unit : Metres
Grid Correction : +0.97 DEGREES

Comments :

Run Keeper drop gyro inside 5" drill pipe to 3311.0m.
Azimuth data acquired by the gyro is very unreliable due to the tool
being operated outside of its gyrocompass design limits as discussed.
Additional azimuth inaccuracy was caused further up the hole due to rig
movement and the rig compensators inability to stabilise the drill
string sufficiently for accurate gyrocompassing.
Azimuth data is referenced to grid North.
Keeper 024 and memory section 029 used without fault.

Inrun Survey
 ESSO AUSTRALIA LTD

Well number : Blackback A-3

Date : 18 Jul 99

Measured Depth	Vertical Depth	Vert. Section	Incl. Deg	Azimuth Deg	Coordinates		DLS Deg/30m
					N/S	E/W	
1173.0	1173.00	0.54	0.22	31.10	25.17	17.04	0.00
1176.7	1176.70	0.54	0.07	80.23	25.18	17.05	1.48
1205.7	1205.70	0.53	0.24	251.39	25.16	17.01	0.32
1263.6	1263.60	0.26	0.51	300.96	25.25	16.67	0.21
1292.6	1292.60	0.07	0.45	271.95	25.32	16.45	0.26
1321.7	1321.70	-0.07	0.46	273.04	25.33	16.21	0.01
1350.5	1350.50	-0.22	0.48	273.49	25.35	15.98	0.02
1408.1	1408.10	-0.18	0.49	103.17	25.31	15.90	0.50
1437.0	1436.99	-0.21	0.51	300.14	25.34	15.99	1.03
1495.0	1494.99	-0.58	0.58	263.98	25.44	15.47	0.18
1551.0	1551.00	0.07	0.68	262.97	25.27	14.07	0.00
1581.8	1581.79	-1.02	0.67	261.92	25.32	14.54	0.04
1610.7	1610.68	-1.17	0.73	258.69	25.26	14.19	0.07
1639.6	1639.58	-1.38	0.79	275.88	25.25	13.81	0.24
1668.7	1668.68	-1.64	0.89	269.49	25.26	13.39	0.14
1726.9	1726.87	-2.24	1.16	270.92	25.27	12.35	0.14
1756.0	1755.96	-2.64	1.15	285.60	25.35	11.77	0.30
1785.1	1785.06	-3.11	1.27	283.43	25.51	11.18	0.13
1813.9	1813.85	-3.65	1.43	290.59	25.71	10.53	0.24
1842.9	1842.84	-4.28	1.58	291.37	25.98	9.82	0.16
1871.8	1871.73	-4.96	1.72	289.02	26.27	9.04	0.16
1900.6	1900.51	-5.70	1.88	289.49	26.57	8.18	0.17
1929.7	1929.60	-6.51	2.05	288.43	26.89	7.24	0.18
1958.7	1958.58	-7.11	1.08	277.68	27.09	6.48	1.04
1987.6	1987.46	-7.37	3.62	239.52	26.66	5.42	2.96
2016.4	2016.19	-5.95	6.05	133.77	25.15	5.73	8.17
2045.1	2044.71	-2.77	6.92	133.05	22.92	8.09	0.91
2132.0	2130.38	11.39	12.19	134.61	12.90	18.45	1.82
2161.0	2158.55	18.19	15.14	142.45	7.75	22.94	3.60
2190.0	2186.47	26.02	16.33	138.21	1.70	27.97	1.71
2247.9	2241.68	43.34	18.69	139.22	-11.39	39.45	1.23
2276.9	2269.14	52.64	18.89	139.67	-18.49	45.53	0.26
2305.9	2296.54	62.08	19.34	137.96	-25.64	51.78	0.74
2335.1	2323.80	72.45	22.61	137.34	-33.36	58.82	3.37
2363.9	2350.04	84.22	26.03	138.47	-42.16	66.77	3.60
2392.8	2375.70	97.44	28.70	140.22	-52.24	75.41	2.89
2421.7	2400.77	111.77	30.97	140.24	-63.29	84.61	2.36
2450.7	2425.20	127.34	34.21	140.39	-75.31	94.58	3.35
2479.6	2448.66	144.18	37.23	142.28	-88.49	105.11	3.34
2508.7	2471.38	162.35	40.10	144.65	-103.10	115.92	3.33

APPENDIX 1b

BLACKBACK A-3

MD-TVD Survey Data Listing

BLACKBACK A-3 MD-TVD Survey Data Listing

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
0	0.0	0.00	0.00	-26.00	25.10	16.00	5732898.4	635370.9
5	0.00	0.00	5.00	-21.00	25.10	16.00	5732898.4	635370.9
10	0.00	0.00	10.00	-16.00	25.10	16.00	5732898.4	635370.9
15	0.00	0.00	15.00	-11.00	25.10	16.00	5732898.4	635370.9
20	0.00	0.00	20.00	-6.00	25.10	16.00	5732898.4	635370.9
25	0.00	0.00	25.00	-1.00	25.10	16.00	5732898.4	635370.9
30	0.00	0.00	30.00	4.00	25.10	16.00	5732898.4	635370.9
35	0.00	0.00	35.00	9.00	25.10	16.00	5732898.4	635370.9
40	0.00	0.00	40.00	14.00	25.10	16.00	5732898.4	635370.9
45	0.00	0.00	45.00	19.00	25.10	16.00	5732898.4	635370.9
50	0.00	0.00	50.00	24.00	25.10	16.00	5732898.4	635370.9
55	0.00	0.00	55.00	29.00	25.10	16.00	5732898.4	635370.9
60	0.00	0.00	60.00	34.00	25.10	16.00	5732898.4	635370.9
65	0.00	0.00	65.00	39.00	25.10	16.00	5732898.4	635370.9
70	0.00	0.00	70.00	44.00	25.10	16.00	5732898.4	635370.9
75	0.00	0.00	75.00	49.00	25.10	16.00	5732898.4	635370.9
80	0.00	0.00	80.00	54.00	25.10	16.00	5732898.4	635370.9
85	0.00	0.00	85.00	59.00	25.10	16.00	5732898.4	635370.9
90	0.00	0.00	90.00	64.00	25.10	16.00	5732898.4	635370.9
95	0.00	0.00	95.00	69.00	25.10	16.00	5732898.4	635370.9
100	0.00	0.00	100.00	74.00	25.10	16.00	5732898.4	635370.9
105	0.00	0.00	105.00	79.00	25.10	16.00	5732898.4	635370.9
110	0.00	0.00	110.00	84.00	25.10	16.00	5732898.4	635370.9
115	0.00	0.00	115.00	89.00	25.10	16.00	5732898.4	635370.9
120	0.00	0.00	120.00	94.00	25.10	16.00	5732898.4	635370.9
125	0.00	0.00	125.00	99.00	25.10	16.00	5732898.4	635370.9
130	0.00	0.00	130.00	104.00	25.10	16.00	5732898.4	635370.9
135	0.00	0.00	135.00	109.00	25.10	16.00	5732898.4	635370.9
140	0.00	0.00	140.00	114.00	25.10	16.00	5732898.4	635370.9
145	0.00	0.00	145.00	119.00	25.10	16.00	5732898.4	635370.9
150	0.00	0.00	150.00	124.00	25.10	16.00	5732898.4	635370.9
155	0.00	0.00	155.00	129.00	25.10	16.00	5732898.4	635370.9
160	0.00	0.00	160.00	134.00	25.10	16.00	5732898.4	635370.9
165	0.00	0.00	165.00	139.00	25.10	16.00	5732898.4	635370.9
170	0.00	0.00	170.00	144.00	25.10	16.00	5732898.4	635370.9
175	0.00	0.00	175.00	149.00	25.10	16.00	5732898.4	635370.9
180	0.00	0.00	180.00	154.00	25.10	16.00	5732898.4	635370.9
185	0.00	0.00	185.00	159.00	25.10	16.00	5732898.4	635370.9
190	0.00	0.00	190.00	164.00	25.10	16.00	5732898.4	635370.9
195	0.00	0.00	195.00	169.00	25.10	16.00	5732898.4	635370.9
200	0.00	0.00	200.00	174.00	25.10	16.00	5732898.4	635370.9
205	0.00	0.00	205.00	179.00	25.10	16.00	5732898.4	635370.9
210	0.00	0.00	210.00	184.00	25.10	16.00	5732898.4	635370.9
215	0.00	0.00	215.00	189.00	25.10	16.00	5732898.4	635370.9
220	0.00	0.00	220.00	194.00	25.10	16.00	5732898.4	635370.9
225	0.00	0.00	225.00	199.00	25.10	16.00	5732898.4	635370.9
230	0.00	0.00	230.00	204.00	25.10	16.00	5732898.4	635370.9
235	0.00	0.00	235.00	209.00	25.10	16.00	5732898.4	635370.9
240	0.00	0.00	240.00	214.00	25.10	16.00	5732898.4	635370.9
245	0.00	0.00	245.00	219.00	25.10	16.00	5732898.4	635370.9
250	0.00	0.00	250.00	224.00	25.10	16.00	5732898.4	635370.9
255	0.00	0.00	255.00	229.00	25.10	16.00	5732898.4	635370.9
260	0.00	0.00	260.00	234.00	25.10	16.00	5732898.4	635370.9
265	0.00	0.00	265.00	239.00	25.10	16.00	5732898.4	635370.9
270	0.00	0.00	270.00	244.00	25.10	16.00	5732898.4	635370.9
275	0.00	0.00	275.00	249.00	25.10	16.00	5732898.4	635370.9
280	0.00	0.00	280.00	254.00	25.10	16.00	5732898.4	635370.9
285	0.00	0.00	285.00	259.00	25.10	16.00	5732898.4	635370.9
290	0.00	0.00	290.00	264.00	25.10	16.00	5732898.4	635370.9
295	0.00	0.00	295.00	269.00	25.10	16.00	5732898.4	635370.9
300	0.00	0.00	300.00	274.00	25.10	16.00	5732898.4	635370.9
305	0.00	0.00	305.00	279.00	25.10	16.00	5732898.4	635370.9
310	0.00	0.00	310.00	284.00	25.10	16.00	5732898.4	635370.9
315	0.00	0.00	315.00	289.00	25.10	16.00	5732898.4	635370.9
320	0.00	0.00	320.00	294.00	25.10	16.00	5732898.4	635370.9
325	0.00	0.00	325.00	299.00	25.10	16.00	5732898.4	635370.9
330	0.00	0.00	330.00	304.00	25.10	16.00	5732898.4	635370.9
335	0.00	0.00	335.00	309.00	25.10	16.00	5732898.4	635370.9
340	0.00	0.00	340.00	314.00	25.10	16.00	5732898.4	635370.9
345	0.00	0.00	345.00	319.00	25.10	16.00	5732898.4	635370.9
350	0.00	0.00	350.00	324.00	25.10	16.00	5732898.4	635370.9

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
355	0.00	0.00	355.00	329.00	25.10	16.00	5732898.4	635370.9
360	0.00	0.00	360.00	334.00	25.10	16.00	5732898.4	635370.9
365	0.00	0.00	365.00	339.00	25.10	16.00	5732898.4	635370.9
370	0.00	0.00	370.00	344.00	25.10	16.00	5732898.4	635370.9
375	0.00	0.00	375.00	349.00	25.10	16.00	5732898.4	635370.9
380	0.00	0.00	380.00	354.00	25.10	16.00	5732898.4	635370.9
385	0.00	0.00	385.00	359.00	25.10	16.00	5732898.4	635370.9
390	0.00	0.00	390.00	364.00	25.10	16.00	5732898.4	635370.9
395	0.00	0.00	395.00	369.00	25.10	16.00	5732898.4	635370.9
400	0.00	0.00	400.00	374.00	25.10	16.00	5732898.4	635370.9
405	0.00	0.00	405.00	379.00	25.10	16.00	5732898.4	635370.9
410	0.00	0.00	410.00	384.00	25.10	16.00	5732898.4	635370.9
415	0.00	0.00	415.00	389.00	25.10	16.00	5732898.4	635370.9
420	0.00	0.00	420.00	394.00	25.10	16.00	5732898.4	635370.9
425	0.00	0.00	425.00	399.00	25.10	16.00	5732898.4	635370.9
430	0.00	0.00	430.00	404.00	25.10	16.00	5732898.4	635370.9
435	0.00	0.00	435.00	409.00	25.10	16.00	5732898.4	635370.9
440	0.00	0.00	440.00	414.00	25.10	16.00	5732898.4	635370.9
445	0.00	0.00	445.00	419.00	25.10	16.00	5732898.4	635370.9
450	0.00	0.00	450.00	424.00	25.10	16.00	5732898.4	635370.9
455	0.00	0.00	455.00	429.00	25.10	16.00	5732898.4	635370.9
460	0.00	0.00	460.00	434.00	25.10	16.00	5732898.4	635370.9
465	0.00	0.00	465.00	439.00	25.10	16.00	5732898.4	635370.9
470	0.00	0.00	470.00	444.00	25.10	16.00	5732898.4	635370.9
475	0.00	0.00	475.00	449.00	25.10	16.00	5732898.4	635370.9
480	0.00	0.00	480.00	454.00	25.10	16.00	5732898.4	635370.9
485	0.00	0.00	485.00	459.00	25.10	16.00	5732898.4	635370.9
490	0.08	23.15	490.00	464.00	25.10	16.00	5732898.4	635370.9
495	0.26	79.16	495.00	469.00	25.10	16.02	5732898.4	635371.0
500	0.23	80.07	500.00	474.00	25.11	16.04	5732898.4	635371.0
505	0.20	80.98	505.00	479.00	25.11	16.06	5732898.5	635371.0
510	0.17	81.89	510.00	484.00	25.11	16.08	5732898.5	635371.0
515	0.14	82.80	515.00	489.00	25.12	16.09	5732898.5	635371.0
520	0.11	83.72	520.00	494.00	25.12	16.10	5732898.5	635371.0
525	0.10	85.70	525.00	499.00	25.12	16.11	5732898.5	635371.1
530	0.10	88.10	530.00	504.00	25.12	16.12	5732898.5	635371.1
535	0.10	90.50	535.00	509.00	25.12	16.13	5732898.5	635371.1
540	0.10	92.90	540.00	514.00	25.12	16.14	5732898.5	635371.1
545	0.10	95.30	545.00	519.00	25.12	16.14	5732898.5	635371.1
550	0.10	97.70	550.00	524.00	25.12	16.15	5732898.5	635371.1
555	0.09	99.87	555.00	529.00	25.12	16.16	5732898.5	635371.1
560	0.09	102.00	560.00	534.00	25.11	16.17	5732898.5	635371.1
565	0.08	104.13	565.00	539.00	25.11	16.18	5732898.5	635371.1
570	0.07	106.27	570.00	544.00	25.11	16.18	5732898.5	635371.1
575	0.07	108.40	575.00	549.00	25.11	16.19	5732898.5	635371.1
580	0.06	110.86	580.00	554.00	25.11	16.19	5732898.4	635371.1
585	0.06	116.28	585.00	559.00	25.11	16.20	5732898.4	635371.1
590	0.06	121.69	590.00	564.00	25.10	16.20	5732898.4	635371.1
595	0.05	127.11	595.00	569.00	25.10	16.21	5732898.4	635371.2
600	0.05	132.52	600.00	574.00	25.10	16.21	5732898.4	635371.2
605	0.05	137.94	605.00	579.00	25.10	16.21	5732898.4	635371.2
610	0.05	143.20	610.00	584.00	25.09	16.22	5732898.4	635371.2
615	0.05	148.08	615.00	589.00	25.09	16.22	5732898.4	635371.2
620	0.06	152.95	620.00	594.00	25.08	16.22	5732898.4	635371.2
625	0.06	157.83	625.00	599.00	25.08	16.22	5732898.4	635371.2
630	0.06	162.70	630.00	604.00	25.07	16.22	5732898.4	635371.2
635	0.07	167.57	635.00	609.00	25.07	16.23	5732898.4	635371.2
640	0.07	173.03	640.00	614.00	25.06	16.23	5732898.4	635371.2
645	0.07	179.07	645.00	619.00	25.06	16.23	5732898.4	635371.2
650	0.07	185.11	650.00	624.00	25.05	16.23	5732898.4	635371.2
655	0.06	191.16	655.00	629.00	25.05	16.23	5732898.4	635371.2
660	0.06	197.20	660.00	634.00	25.04	16.22	5732898.4	635371.2
665	0.06	203.24	665.00	639.00	25.04	16.22	5732898.4	635371.2
670	0.06	192.85	670.00	644.00	25.03	16.22	5732898.4	635371.2
675	0.05	176.07	675.00	649.00	25.03	16.22	5732898.4	635371.2
680	0.05	159.29	680.00	654.00	25.02	16.22	5732898.4	635371.2
685	0.05	142.52	685.00	659.00	25.02	16.22	5732898.4	635371.2
690	0.04	125.74	690.00	664.00	25.02	16.22	5732898.4	635371.2
695	0.04	108.96	695.00	669.00	25.02	16.23	5732898.4	635371.2
700	0.04	122.09	700.00	674.00	25.02	16.23	5732898.4	635371.2
705	0.05	137.83	705.00	679.00	25.01	16.23	5732898.4	635371.2
710	0.05	153.56	710.00	684.00	25.01	16.23	5732898.4	635371.2
715	0.05	169.29	715.00	689.00	25.01	16.23	5732898.3	635371.2

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
720	0.06	185.02	720.00	694.00	25.00	16.23	5732898.3	635371.2
725	0.06	202.71	725.00	699.00	25.00	16.23	5732898.3	635371.2
730	0.08	232.39	730.00	704.00	25.00	16.23	5732898.3	635371.2
735	0.09	262.07	735.00	709.00	24.99	16.22	5732898.3	635371.2
740	0.11	291.76	740.00	714.00	25.00	16.21	5732898.3	635371.2
745	0.12	321.44	745.00	719.00	25.01	16.21	5732898.3	635371.2
750	0.14	351.12	750.00	724.00	25.02	16.22	5732898.4	635371.2
755	0.15	311.54	755.00	729.00	25.03	16.22	5732898.4	635371.2
760	0.15	269.07	760.00	734.00	25.03	16.21	5732898.4	635371.2
765	0.16	226.60	765.00	739.00	25.02	16.20	5732898.4	635371.2
770	0.16	184.13	770.00	744.00	25.01	16.22	5732898.4	635371.2
775	0.17	141.66	775.00	749.00	25.02	16.24	5732898.4	635371.2
780	0.18	99.20	780.00	754.00	25.05	16.26	5732898.4	635371.2
785	0.17	90.52	785.00	759.00	25.07	16.27	5732898.4	635371.2
790	0.16	106.30	790.00	764.00	25.06	16.29	5732898.4	635371.2
795	0.14	122.09	795.00	769.00	25.06	16.30	5732898.4	635371.2
800	0.12	137.88	800.00	774.00	25.06	16.31	5732898.4	635371.3
805	0.11	153.66	805.00	779.00	25.05	16.31	5732898.4	635371.3
810	0.09	169.45	810.00	784.00	25.05	16.31	5732898.4	635371.3
815	0.09	184.41	815.00	789.00	25.04	16.31	5732898.4	635371.3
820	0.09	199.10	820.00	794.00	25.04	16.31	5732898.4	635371.3
825	0.09	213.79	825.00	799.00	25.03	16.31	5732898.4	635371.3
830	0.09	228.48	830.00	804.00	25.03	16.30	5732898.4	635371.3
835	0.09	243.17	835.00	809.00	25.02	16.30	5732898.4	635371.2
840	0.09	257.86	840.00	814.00	25.02	16.29	5732898.4	635371.2
845	0.11	217.64	845.00	819.00	25.02	16.29	5732898.4	635371.2
850	0.13	175.13	850.00	824.00	25.01	16.29	5732898.4	635371.2
855	0.15	132.62	855.00	829.00	25.01	16.30	5732898.3	635371.2
860	0.17	90.11	860.00	834.00	25.02	16.31	5732898.4	635371.3
865	0.19	47.60	865.00	839.00	25.05	16.31	5732898.4	635371.3
870	0.21	12.38	870.00	844.00	25.07	16.28	5732898.4	635371.2
875	0.20	21.93	875.00	849.00	25.09	16.29	5732898.4	635371.2
880	0.20	31.49	880.00	854.00	25.11	16.30	5732898.4	635371.2
885	0.19	41.04	885.00	859.00	25.12	16.31	5732898.5	635371.3
890	0.19	50.60	890.00	864.00	25.13	16.32	5732898.5	635371.3
895	0.18	60.15	895.00	869.00	25.14	16.33	5732898.5	635371.3
900	0.18	70.25	900.00	874.00	25.14	16.34	5732898.5	635371.3
905	0.18	81.39	905.00	879.00	25.15	16.35	5732898.5	635371.3
910	0.18	92.54	910.00	884.00	25.15	16.37	5732898.5	635371.3
915	0.18	103.68	915.00	889.00	25.14	16.38	5732898.5	635371.3
920	0.18	114.82	920.00	894.00	25.14	16.40	5732898.5	635371.3
925	0.18	125.96	925.00	899.00	25.13	16.41	5732898.5	635371.4
930	0.17	120.11	930.00	904.00	25.12	16.42	5732898.5	635371.4
935	0.15	99.78	935.00	909.00	25.12	16.43	5732898.5	635371.4
940	0.13	79.45	940.00	914.00	25.12	16.44	5732898.5	635371.4
945	0.11	59.12	945.00	919.00	25.12	16.45	5732898.5	635371.4
950	0.09	38.79	950.00	924.00	25.12	16.45	5732898.5	635371.4
955	0.07	18.47	955.00	929.00	25.12	16.45	5732898.5	635371.4
960	0.07	14.31	960.00	934.00	25.12	16.45	5732898.5	635371.4
965	0.08	15.83	965.00	939.00	25.13	16.45	5732898.5	635371.4
970	0.08	17.35	970.00	944.00	25.13	16.45	5732898.5	635371.4
975	0.09	18.87	975.00	949.00	25.14	16.46	5732898.5	635371.4
980	0.09	20.40	980.00	954.00	25.15	16.46	5732898.5	635371.4
985	0.10	21.92	985.00	959.00	25.16	16.46	5732898.5	635371.4
990	0.13	32.83	990.00	964.00	25.16	16.47	5732898.5	635371.4
995	0.16	44.34	995.00	969.00	25.17	16.47	5732898.5	635371.4
1000	0.20	55.86	1000.00	974.00	25.18	16.49	5732898.5	635371.4
1005	0.23	67.37	1005.00	979.00	25.19	16.50	5732898.5	635371.5
1010	0.26	78.88	1010.00	984.00	25.19	16.53	5732898.5	635371.5
1015	0.29	89.54	1015.00	989.00	25.18	16.55	5732898.5	635371.5
1020	0.28	94.98	1020.00	994.00	25.18	16.57	5732898.5	635371.5
1025	0.26	100.42	1025.00	999.00	25.18	16.60	5732898.5	635371.5
1030	0.25	105.87	1030.00	1004.00	25.17	16.62	5732898.5	635371.6
1035	0.24	111.31	1035.00	1009.00	25.17	16.64	5732898.5	635371.6
1040	0.23	116.75	1040.00	1014.00	25.16	16.66	5732898.5	635371.6
1045	0.21	122.66	1045.00	1019.00	25.15	16.67	5732898.5	635371.6
1050	0.20	129.41	1050.00	1024.00	25.14	16.69	5732898.5	635371.6
1055	0.18	136.16	1055.00	1029.00	25.13	16.70	5732898.5	635371.6
1060	0.17	142.91	1060.00	1034.00	25.12	16.71	5732898.5	635371.7
1065	0.15	149.66	1065.00	1039.00	25.11	16.72	5732898.5	635371.7
1070	0.14	156.41	1070.00	1044.00	25.10	16.72	5732898.4	635371.7
1075	0.13	148.16	1075.00	1049.00	25.09	16.73	5732898.4	635371.7
1080	0.14	127.13	1080.00	1054.00	25.08	16.74	5732898.4	635371.7

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
1085	0.15	106.10	1085.00	1059.00	25.08	16.75	5732898.4	635371.7
1090	0.15	85.07	1090.00	1064.00	25.08	16.76	5732898.4	635371.7
1095	0.16	64.04	1095.00	1069.00	25.09	16.76	5732898.4	635371.7
1100	0.17	43.01	1100.00	1074.00	25.10	16.76	5732898.4	635371.7
1105	0.19	41.26	1105.00	1079.00	25.11	16.77	5732898.4	635371.7
1110	0.21	46.29	1110.00	1084.00	25.12	16.78	5732898.5	635371.7
1115	0.24	51.32	1115.00	1089.00	25.13	16.80	5732898.5	635371.7
1120	0.26	56.36	1120.00	1094.00	25.15	16.82	5732898.5	635371.8
1125	0.28	61.39	1125.00	1099.00	25.16	16.84	5732898.5	635371.8
1130	0.31	66.42	1130.00	1104.00	25.16	16.86	5732898.5	635371.8
1135	0.30	75.32	1135.00	1109.00	25.17	16.89	5732898.5	635371.8
1140	0.30	84.55	1140.00	1114.00	25.18	16.91	5732898.5	635371.9
1145	0.29	93.79	1145.00	1119.00	25.18	16.94	5732898.5	635371.9
1150	0.28	103.02	1150.00	1124.00	25.17	16.96	5732898.5	635371.9
1155	0.28	112.26	1155.00	1129.00	25.17	16.98	5732898.5	635371.9
1160	0.27	117.26	1160.00	1134.00	25.16	17.00	5732898.5	635371.9
1165	0.25	84.12	1165.00	1139.00	25.16	17.02	5732898.5	635372.0
1170	0.23	50.98	1170.00	1144.00	25.16	17.03	5732898.5	635372.0
1175	0.22	41.50	1175.00	1149.00	25.17	17.04	5732898.5	635372.0
1180	0.23	67.50	1180.00	1154.00	25.18	17.05	5732898.5	635372.0
1185	0.24	93.50	1185.00	1159.00	25.19	17.07	5732898.5	635372.0
1190	0.25	119.50	1190.00	1164.00	25.18	17.08	5732898.5	635372.0
1195	0.25	145.50	1195.00	1169.00	25.16	17.08	5732898.5	635372.0
1200	0.26	171.50	1200.00	1174.00	25.15	17.07	5732898.5	635372.0
1205	0.27	197.50	1205.00	1179.00	25.15	17.04	5732898.5	635372.0
1210	0.28	223.50	1210.00	1184.00	25.16	17.01	5732898.5	635372.0
1215	0.29	249.49	1215.00	1189.00	25.20	16.98	5732898.5	635371.9
1220	0.29	262.01	1220.00	1194.00	25.22	16.95	5732898.6	635371.9
1225	0.30	264.91	1225.00	1199.00	25.22	16.93	5732898.6	635371.9
1230	0.31	267.81	1230.00	1204.00	25.21	16.90	5732898.6	635371.8
1235	0.31	270.72	1235.00	1209.00	25.21	16.87	5732898.6	635371.8
1240	0.32	273.62	1240.00	1214.00	25.21	16.85	5732898.6	635371.8
1245	0.33	276.53	1245.00	1219.00	25.22	16.82	5732898.6	635371.8
1250	0.36	275.11	1250.00	1224.00	25.22	16.79	5732898.6	635371.7
1255	0.39	272.23	1255.00	1229.00	25.22	16.76	5732898.6	635371.7
1260	0.43	269.35	1260.00	1234.00	25.22	16.72	5732898.6	635371.7
1265	0.46	266.47	1265.00	1239.00	25.22	16.68	5732898.6	635371.6
1270	0.50	263.59	1270.00	1244.00	25.22	16.64	5732898.6	635371.6
1275	0.52	261.84	1275.00	1249.00	25.21	16.60	5732898.5	635371.5
1280	0.52	261.61	1280.00	1254.00	25.20	16.55	5732898.5	635371.5
1285	0.53	261.39	1285.00	1259.00	25.20	16.51	5732898.5	635371.5
1290	0.53	261.17	1290.00	1264.00	25.19	16.46	5732898.5	635371.4
1295	0.54	260.94	1295.00	1269.00	25.18	16.41	5732898.5	635371.4
1300	0.54	260.72	1300.00	1274.00	25.17	16.37	5732898.5	635371.3
1305	0.52	260.26	1305.00	1279.00	25.17	16.32	5732898.5	635371.3
1310	0.49	259.66	1309.99	1283.99	25.16	16.28	5732898.5	635371.2
1315	0.45	259.07	1314.99	1288.99	25.15	16.24	5732898.5	635371.2
1320	0.42	258.48	1319.99	1293.99	25.14	16.20	5732898.5	635371.1
1325	0.39	257.88	1324.99	1298.99	25.14	16.17	5732898.5	635371.1
1330	0.35	257.29	1329.99	1303.99	25.13	16.14	5732898.5	635371.1
1335	0.36	256.83	1334.99	1308.99	25.12	16.11	5732898.5	635371.1
1340	0.38	256.40	1339.99	1313.99	25.12	16.07	5732898.5	635371.0
1345	0.39	255.96	1344.99	1318.99	25.11	16.04	5732898.4	635371.0
1350	0.41	255.53	1349.99	1323.99	25.10	16.01	5732898.4	635371.0
1355	0.42	255.09	1354.99	1328.99	25.09	15.97	5732898.4	635370.9
1360	0.44	254.65	1359.99	1333.99	25.08	15.94	5732898.4	635370.9
1365	0.44	257.90	1364.99	1338.99	25.07	15.90	5732898.4	635370.8
1370	0.45	262.94	1369.99	1343.99	25.06	15.86	5732898.4	635370.8
1375	0.46	267.98	1374.99	1348.99	25.06	15.82	5732898.4	635370.8
1380	0.46	273.02	1379.99	1353.99	25.06	15.78	5732898.4	635370.7
1385	0.47	278.06	1384.99	1358.99	25.07	15.74	5732898.4	635370.7
1390	0.48	283.10	1389.99	1363.99	25.07	15.70	5732898.4	635370.7
1395	0.47	281.91	1394.99	1368.99	25.08	15.67	5732898.4	635370.6
1400	0.45	276.95	1399.99	1373.99	25.09	15.63	5732898.4	635370.6
1405	0.43	271.98	1404.99	1378.99	25.09	15.59	5732898.4	635370.5
1410	0.42	267.02	1409.99	1383.99	25.09	15.55	5732898.4	635370.5
1415	0.40	262.05	1414.99	1388.99	25.09	15.52	5732898.4	635370.5
1420	0.38	257.09	1419.99	1393.99	25.09	15.49	5732898.4	635370.4
1425	0.40	259.14	1424.99	1398.99	25.08	15.45	5732898.4	635370.4
1430	0.42	261.37	1429.99	1403.99	25.08	15.42	5732898.4	635370.4
1435	0.44	263.59	1434.99	1408.99	25.07	15.38	5732898.4	635370.3
1440	0.46	265.81	1439.99	1413.99	25.07	15.34	5732898.4	635370.3
1445	0.48	268.04	1444.99	1418.99	25.07	15.30	5732898.4	635370.2

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
1450	0.50	270.09	1449.99	1423.99	25.07	15.26	5732898.4	635370.2
1455	0.49	266.08	1454.99	1428.99	25.06	15.21	5732898.4	635370.2
1460	0.49	262.07	1459.99	1433.99	25.06	15.17	5732898.4	635370.1
1465	0.48	258.06	1464.99	1438.99	25.05	15.13	5732898.4	635370.1
1470	0.48	254.05	1469.99	1443.99	25.04	15.09	5732898.4	635370.0
1475	0.47	250.04	1474.99	1448.99	25.03	15.05	5732898.4	635370.0
1480	0.48	249.73	1479.99	1453.99	25.02	15.01	5732898.4	635370.0
1485	0.51	253.53	1484.99	1458.99	25.00	14.97	5732898.3	635369.9
1490	0.54	257.34	1489.99	1463.99	24.99	14.93	5732898.3	635369.9
1495	0.57	261.14	1494.99	1468.99	24.98	14.88	5732898.3	635369.8
1500	0.60	264.94	1499.99	1473.99	24.98	14.83	5732898.3	635369.8
1505	0.63	268.74	1504.99	1478.99	24.98	14.78	5732898.3	635369.7
1510	0.64	271.20	1509.99	1483.99	24.98	14.72	5732898.3	635369.7
1515	0.62	272.29	1514.99	1488.99	24.98	14.67	5732898.3	635369.6
1520	0.60	273.38	1519.99	1493.99	24.98	14.61	5732898.3	635369.6
1525	0.58	274.47	1524.99	1498.99	24.99	14.56	5732898.3	635369.5
1530	0.56	275.56	1529.99	1503.99	24.99	14.51	5732898.3	635369.5
1535	0.54	276.65	1534.99	1508.99	25.00	14.47	5732898.3	635369.4
1540	0.55	274.35	1539.99	1513.99	25.00	14.42	5732898.3	635369.4
1545	0.58	270.49	1544.99	1518.99	25.00	14.37	5732898.3	635369.3
1550	0.61	266.64	1549.99	1523.99	25.00	14.32	5732898.3	635369.3
1555	0.63	262.78	1554.99	1528.99	25.00	14.27	5732898.3	635369.2
1560	0.66	258.93	1559.99	1533.99	24.99	14.21	5732898.3	635369.2
1565	0.69	255.07	1564.99	1538.99	24.97	14.16	5732898.3	635369.1
1570	0.70	255.48	1569.99	1543.99	24.95	14.10	5732898.3	635369.0
1575	0.71	258.08	1574.98	1548.98	24.94	14.04	5732898.3	635369.0
1580	0.72	260.69	1579.98	1553.98	24.93	13.98	5732898.3	635368.9
1585	0.73	263.29	1584.98	1558.98	24.92	13.91	5732898.3	635368.9
1590	0.73	265.90	1589.98	1563.98	24.91	13.85	5732898.3	635368.8
1595	0.74	268.40	1594.98	1568.98	24.91	13.79	5732898.3	635368.7
1600	0.72	269.43	1599.98	1573.98	24.91	13.72	5732898.2	635368.7
1605	0.70	270.46	1604.98	1578.98	24.91	13.66	5732898.2	635368.6
1610	0.68	271.48	1609.98	1583.98	24.91	13.60	5732898.3	635368.5
1615	0.66	272.51	1614.98	1588.98	24.91	13.54	5732898.3	635368.5
1620	0.65	273.54	1619.98	1593.98	24.91	13.49	5732898.3	635368.4
1625	0.63	274.49	1624.98	1598.98	24.92	13.43	5732898.3	635368.4
1630	0.63	275.12	1629.98	1603.98	24.92	13.38	5732898.3	635368.3
1635	0.63	275.75	1634.98	1608.98	24.93	13.32	5732898.3	635368.3
1640	0.63	276.39	1639.98	1613.98	24.93	13.27	5732898.3	635368.2
1645	0.63	277.02	1644.98	1618.98	24.94	13.21	5732898.3	635368.2
1650	0.63	277.66	1649.98	1623.98	24.95	13.16	5732898.3	635368.1
1655	0.64	278.32	1654.98	1628.98	24.95	13.10	5732898.3	635368.0
1660	0.67	279.02	1659.98	1633.98	24.96	13.05	5732898.3	635368.0
1665	0.70	279.72	1664.98	1638.98	24.97	12.99	5732898.3	635367.9
1670	0.73	280.42	1669.98	1643.98	24.98	12.92	5732898.3	635367.9
1675	0.76	281.12	1674.98	1648.98	25.00	12.86	5732898.3	635367.8
1680	0.79	281.81	1679.98	1653.98	25.01	12.79	5732898.4	635367.7
1685	0.83	280.52	1684.98	1658.98	25.02	12.72	5732898.4	635367.7
1690	0.88	278.56	1689.98	1663.98	25.04	12.65	5732898.4	635367.6
1695	0.92	276.59	1694.98	1668.98	25.05	12.57	5732898.4	635367.5
1700	0.97	274.63	1699.98	1673.98	25.05	12.49	5732898.4	635367.4
1705	1.01	272.67	1704.97	1678.97	25.06	12.41	5732898.4	635367.4
1710	1.06	270.70	1709.97	1683.97	25.06	12.32	5732898.4	635367.3
1715	1.07	273.63	1714.97	1688.97	25.06	12.22	5732898.4	635367.2
1720	1.09	276.93	1719.97	1693.97	25.07	12.13	5732898.4	635367.1
1725	1.10	280.24	1724.97	1698.97	25.09	12.04	5732898.4	635367.0
1730	1.12	283.54	1729.97	1703.97	25.11	11.94	5732898.4	635366.9
1735	1.13	286.84	1734.97	1708.97	25.13	11.85	5732898.5	635366.8
1740	1.15	290.15	1739.97	1713.97	25.16	11.76	5732898.5	635366.7
1745	1.13	290.80	1744.97	1718.97	25.20	11.66	5732898.5	635366.6
1750	1.10	291.17	1749.97	1723.97	25.23	11.57	5732898.6	635366.5
1755	1.07	291.54	1754.97	1728.97	25.27	11.48	5732898.6	635366.4
1760	1.04	291.91	1759.96	1733.96	25.30	11.40	5732898.6	635366.3
1765	1.02	292.28	1764.96	1738.96	25.34	11.32	5732898.7	635366.3
1770	1.03	291.98	1769.96	1743.96	25.37	11.23	5732898.7	635366.2
1775	1.09	290.73	1774.96	1748.96	25.40	11.15	5732898.7	635366.1
1780	1.16	289.49	1779.96	1753.96	25.44	11.06	5732898.8	635366.0
1785	1.22	288.24	1784.96	1758.96	25.47	10.96	5732898.8	635365.9
1790	1.29	287.00	1789.96	1763.96	25.50	10.85	5732898.8	635365.8
1795	1.35	285.76	1794.96	1768.96	25.53	10.74	5732898.9	635365.7
1800	1.38	285.81	1799.96	1773.96	25.57	10.63	5732898.9	635365.6
1805	1.40	285.98	1804.95	1778.95	25.60	10.51	5732898.9	635365.5
1810	1.43	286.15	1809.95	1783.95	25.63	10.39	5732899.0	635365.3

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
1815	1.45	286.32	1814.95	1788.95	25.67	10.27	5732899.0	635365.2
1820	1.47	286.49	1819.95	1793.95	25.70	10.15	5732899.0	635365.1
1825	1.48	286.89	1824.95	1798.95	25.74	10.02	5732899.1	635365.0
1830	1.46	287.89	1829.95	1803.95	25.78	9.90	5732899.1	635364.8
1835	1.45	288.89	1834.94	1808.94	25.82	9.78	5732899.2	635364.7
1840	1.43	289.89	1839.94	1813.94	25.86	9.66	5732899.2	635364.6
1845	1.41	290.89	1844.94	1818.94	25.90	9.55	5732899.2	635364.5
1850	1.39	291.89	1849.94	1823.94	25.95	9.43	5732899.3	635364.4
1855	1.38	292.64	1854.94	1828.94	25.99	9.32	5732899.3	635364.3
1860	1.45	291.90	1859.94	1833.94	26.04	9.21	5732899.4	635364.2
1865	1.52	291.16	1864.94	1838.94	26.09	9.09	5732899.4	635364.0
1870	1.59	290.42	1869.93	1843.93	26.14	8.96	5732899.5	635363.9
1875	1.67	289.68	1874.93	1848.93	26.18	8.83	5732899.5	635363.8
1880	1.74	288.94	1879.93	1853.93	26.23	8.69	5732899.6	635363.6
1885	1.78	288.06	1884.93	1858.93	26.28	8.54	5732899.6	635363.5
1890	1.78	286.96	1889.92	1863.92	26.33	8.39	5732899.7	635363.3
1895	1.78	285.86	1894.92	1868.92	26.37	8.24	5732899.7	635363.2
1900	1.78	284.76	1899.92	1873.92	26.41	8.09	5732899.8	635363.0
1905	1.78	283.66	1904.92	1878.92	26.45	7.94	5732899.8	635362.9
1910	1.78	282.56	1909.92	1883.92	26.48	7.79	5732899.8	635362.7
1915	1.76	282.85	1914.91	1888.91	26.52	7.64	5732899.9	635362.6
1920	1.66	287.24	1919.91	1893.91	26.56	7.50	5732899.9	635362.4
1925	1.66	289.15	1924.91	1898.91	26.60	7.36	5732899.9	635362.3
1930	1.74	289.07	1929.91	1903.91	26.65	7.22	5732900.0	635362.2
1935	1.81	288.99	1934.90	1908.90	26.70	7.08	5732900.0	635362.0
1940	1.81	281.06	1939.90	1913.90	26.75	6.92	5732900.1	635361.9
1945	1.73	263.99	1944.90	1918.90	26.75	6.77	5732900.1	635361.7
1950	1.64	246.91	1949.90	1923.90	26.72	6.64	5732900.1	635361.6
1955	1.55	229.84	1954.90	1928.90	26.67	6.55	5732900.0	635361.5
1960	1.47	212.77	1959.90	1933.90	26.60	6.50	5732899.9	635361.4
1965	1.38	195.69	1964.90	1938.90	26.55	6.49	5732899.9	635361.4
1970	1.49	181.59	1969.89	1943.89	26.50	6.50	5732899.8	635361.4
1975	2.14	175.92	1974.89	1948.89	26.34	6.51	5732899.7	635361.5
1980	2.78	170.25	1979.89	1953.89	26.13	6.54	5732899.5	635361.5
1985	3.43	164.58	1984.88	1958.88	25.88	6.62	5732899.2	635361.6
1990	4.08	158.91	1989.87	1963.87	25.58	6.76	5732898.9	635361.7
1995	4.73	153.25	1994.86	1968.86	25.26	6.97	5732898.6	635361.9
2000	5.05	152.31	1999.84	1973.84	24.89	7.18	5732898.2	635362.1
2005	5.31	152.18	2004.82	1978.82	24.49	7.39	5732897.8	635362.3
2010	5.58	152.04	2009.79	1983.79	24.07	7.61	5732897.4	635362.6
2015	5.85	151.90	2014.77	1988.77	23.63	7.85	5732897.0	635362.8
2020	6.11	151.77	2019.74	1993.74	23.17	8.09	5732896.5	635363.0
2025	6.36	151.66	2024.71	1998.71	22.69	8.35	5732896.0	635363.3
2030	6.47	151.70	2029.68	2003.68	22.20	8.62	5732895.5	635363.6
2035	6.57	151.74	2034.65	2008.65	21.70	8.89	5732895.0	635363.8
2040	6.68	151.78	2039.62	2013.62	21.19	9.16	5732894.5	635364.1
2045	6.80	151.64	2044.58	2018.58	20.68	9.44	5732894.0	635364.4
2050	6.93	151.22	2049.55	2023.55	20.15	9.72	5732893.5	635364.7
2055	7.06	150.79	2054.51	2028.51	19.62	10.02	5732893.0	635365.0
2060	7.36	150.11	2059.47	2033.47	19.07	10.33	5732892.4	635365.3
2065	7.71	149.36	2064.43	2038.43	18.51	10.66	5732891.8	635365.6
2070	8.05	148.61	2069.38	2043.38	17.92	11.01	5732891.3	635366.0
2075	8.31	147.98	2074.33	2048.33	17.32	11.39	5732890.7	635366.3
2080	8.36	147.67	2079.27	2053.27	16.70	11.78	5732890.0	635366.7
2085	8.42	147.32	2084.22	2058.22	16.09	12.17	5732889.4	635367.1
2090	8.73	146.10	2089.17	2063.17	15.46	12.58	5732888.8	635367.5
2095	9.04	144.88	2094.11	2068.11	14.83	13.01	5732888.2	635368.0
2100	9.34	143.65	2099.04	2073.04	14.18	13.48	5732887.5	635368.4
2105	9.65	142.43	2103.97	2077.97	13.53	13.98	5732886.9	635368.9
2110	9.96	141.20	2108.90	2082.90	12.86	14.51	5732886.2	635369.5
2115	10.32	140.12	2113.82	2087.82	12.19	15.07	5732885.5	635370.0
2120	10.79	139.24	2118.74	2092.74	11.49	15.66	5732884.8	635370.6
2125	11.25	138.36	2123.65	2097.65	10.77	16.29	5732884.1	635371.2
2130	11.71	137.48	2128.55	2102.55	10.03	16.96	5732883.4	635371.9
2135	12.17	136.60	2133.44	2107.44	9.28	17.67	5732882.6	635372.6
2140	12.63	135.78	2138.32	2112.32	8.51	18.42	5732881.9	635373.4
2145	13.11	136.18	2143.20	2117.20	7.71	19.19	5732881.1	635374.1
2150	13.59	136.57	2148.06	2122.06	6.88	19.99	5732880.2	635374.9
2155	14.06	136.97	2152.92	2126.92	6.00	20.80	5732879.3	635375.8
2160	14.54	137.37	2157.76	2131.76	5.10	21.64	5732878.4	635376.6
2165	15.01	137.77	2162.60	2136.60	4.15	22.50	5732877.5	635377.4
2170	15.49	138.17	2167.42	2141.42	3.18	23.38	5732876.5	635378.3
2175	15.74	138.21	2172.23	2146.23	2.17	24.28	5732875.5	635379.2

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
2180	15.96	138.23	2177.04	2151.04	1.15	25.19	5732874.5	635380.1
2185	16.19	138.25	2181.85	2155.85	0.12	26.11	5732873.5	635381.1
2190	16.42	138.26	2186.65	2160.65	-0.93	27.04	5732872.4	635382.0
2195	16.64	138.28	2191.44	2165.44	-1.99	27.99	5732871.4	635382.9
2200	16.88	138.28	2196.23	2170.23	-3.07	28.95	5732870.3	635383.9
2205	17.23	138.20	2201.01	2175.01	-4.16	29.92	5732869.2	635384.9
2210	17.54	138.17	2205.78	2179.78	-5.27	30.92	5732868.1	635385.9
2215	17.64	138.47	2210.55	2184.55	-6.40	31.93	5732866.9	635386.9
2220	17.74	138.77	2215.31	2189.31	-7.54	32.93	5732865.8	635387.9
2225	17.84	139.07	2220.07	2194.07	-8.69	33.93	5732864.6	635388.9
2230	17.93	139.09	2224.83	2198.83	-9.85	34.94	5732863.5	635389.9
2235	18.01	139.07	2229.59	2203.59	-11.02	35.95	5732862.3	635390.9
2240	18.10	139.06	2234.34	2208.34	-12.19	36.97	5732861.2	635391.9
2245	18.18	139.04	2239.09	2213.09	-13.37	37.99	5732860.0	635392.9
2250	18.27	139.03	2243.84	2217.84	-14.55	39.01	5732858.8	635394.0
2255	18.36	139.02	2248.59	2222.59	-15.73	40.04	5732857.6	635395.0
2260	18.41	138.94	2253.33	2227.33	-16.92	41.08	5732856.4	635396.0
2265	18.45	138.83	2258.08	2232.08	-18.11	42.12	5732855.2	635397.1
2270	18.48	138.71	2262.82	2236.82	-19.31	43.16	5732854.0	635398.1
2275	18.52	138.60	2267.56	2241.56	-20.50	44.21	5732852.8	635399.2
2280	18.56	138.48	2272.30	2246.30	-21.69	45.26	5732851.7	635400.2
2285	18.59	138.37	2277.04	2251.04	-22.88	46.32	5732850.5	635401.3
2290	18.66	138.26	2281.78	2255.78	-24.07	47.38	5732849.3	635402.3
2295	18.74	138.17	2286.51	2260.51	-25.27	48.45	5732848.1	635403.4
2300	18.82	138.07	2291.25	2265.25	-26.47	49.52	5732846.9	635404.5
2305	18.94	137.97	2295.98	2269.98	-27.67	50.60	5732845.7	635405.6
2310	19.07	137.85	2300.71	2274.71	-28.88	51.70	5732844.5	635406.6
2315	19.57	137.84	2305.43	2279.43	-30.10	52.80	5732843.2	635407.8
2320	20.25	137.86	2310.13	2284.13	-31.36	53.95	5732842.0	635408.9
2325	20.92	137.89	2314.81	2288.81	-32.66	55.13	5732840.7	635410.1
2330	21.59	137.92	2319.47	2293.47	-34.01	56.34	5732839.3	635411.3
2335	22.26	137.94	2324.11	2298.11	-35.40	57.59	5732837.9	635412.5
2340	22.93	137.97	2328.72	2302.72	-36.82	58.88	5732836.5	635413.8
2345	23.50	138.04	2333.32	2307.32	-38.29	60.20	5732835.1	635415.1
2350	24.07	138.12	2337.89	2311.89	-39.79	61.54	5732833.6	635416.5
2355	24.64	138.19	2342.45	2316.45	-41.32	62.92	5732832.0	635417.9
2360	25.21	138.27	2346.98	2320.98	-42.90	64.32	5732830.4	635419.3
2365	25.77	138.34	2351.50	2325.50	-44.50	65.75	5732828.8	635420.7
2370	26.30	138.44	2355.99	2329.99	-46.15	67.21	5732827.2	635422.2
2375	26.67	138.62	2360.46	2334.46	-47.82	68.69	5732825.5	635423.6
2380	27.04	138.79	2364.92	2338.92	-49.51	70.18	5732823.8	635425.1
2385	27.41	138.97	2369.37	2343.37	-51.24	71.68	5732822.1	635426.6
2390	27.78	139.14	2373.80	2347.80	-52.99	73.20	5732820.4	635428.1
2395	28.16	139.32	2378.22	2352.22	-54.76	74.73	5732818.6	635429.7
2400	28.54	139.47	2382.62	2356.62	-56.57	76.27	5732816.8	635431.2
2405	28.98	139.47	2387.00	2361.00	-58.39	77.84	5732814.9	635432.8
2410	29.43	139.47	2391.37	2365.37	-60.25	79.42	5732813.1	635434.4
2415	29.87	139.48	2395.71	2369.71	-62.13	81.03	5732811.2	635436.0
2420	30.31	139.48	2400.04	2374.04	-64.03	82.66	5732809.3	635437.6
2425	30.76	139.48	2404.34	2378.34	-65.97	84.31	5732807.4	635439.3
2430	31.31	139.47	2408.63	2382.63	-67.92	85.98	5732805.4	635440.9
2435	31.92	139.46	2412.89	2386.89	-69.92	87.69	5732803.4	635442.6
2440	32.53	139.45	2417.12	2391.12	-71.94	89.42	5732801.4	635444.4
2445	33.14	139.44	2421.32	2395.32	-74.00	91.18	5732799.3	635446.1
2450	33.75	139.43	2425.49	2399.49	-76.09	92.97	5732797.2	635447.9
2455	34.35	139.41	2429.63	2403.63	-78.22	94.79	5732795.1	635449.7
2460	34.88	139.51	2433.75	2407.75	-80.38	96.64	5732793.0	635451.6
2465	35.38	139.67	2437.84	2411.84	-82.57	98.51	5732790.8	635453.5
2470	35.87	139.82	2441.90	2415.90	-84.79	100.39	5732788.5	635455.3
2475	36.37	139.97	2445.94	2419.94	-87.05	102.29	5732786.3	635457.2
2480	36.86	140.12	2449.95	2423.95	-89.33	104.20	5732784.0	635459.1
2485	37.36	140.28	2453.94	2427.94	-91.65	106.13	5732781.7	635461.1
2490	37.83	140.50	2457.90	2431.90	-94.00	108.08	5732779.3	635463.0
2495	38.30	140.72	2461.84	2435.84	-96.38	110.03	5732777.0	635465.0
2500	38.78	140.95	2465.75	2439.75	-98.80	112.00	5732774.5	635466.9
2505	39.25	141.17	2469.63	2443.63	-101.25	113.98	5732772.1	635468.9
2510	39.72	141.40	2473.49	2447.49	-103.73	115.96	5732769.6	635470.9
2515	40.20	141.62	2477.33	2451.33	-106.24	117.96	5732767.1	635472.9
2520	40.76	141.87	2481.13	2455.13	-108.79	119.97	5732764.5	635474.9
2525	41.38	142.12	2484.90	2458.90	-111.38	121.99	5732762.0	635476.9
2530	41.99	142.37	2488.63	2462.63	-114.01	124.03	5732759.3	635479.0
2535	42.61	142.63	2492.33	2466.33	-116.68	126.08	5732756.7	635481.0
2540	43.22	142.88	2495.99	2469.99	-119.39	128.13	5732753.9	635483.1

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
2545	43.82	143.17	2499.62	2473.62	-122.14	130.21	5732751.2	635485.2
2550	44.37	143.58	2503.21	2477.21	-124.94	132.28	5732748.4	635487.2
2555	44.91	143.99	2506.77	2480.77	-127.77	134.36	5732745.6	635489.3
2560	45.46	144.40	2510.29	2484.29	-130.65	136.43	5732742.7	635491.4
2565	46.00	144.81	2513.78	2487.78	-133.57	138.50	5732739.8	635493.4
2570	46.55	145.22	2517.24	2491.24	-136.53	140.57	5732736.8	635495.5
2575	47.05	145.44	2520.66	2494.66	-139.53	142.64	5732733.8	635497.6
2580	47.50	145.51	2524.05	2498.05	-142.55	144.72	5732730.8	635499.7
2585	47.96	145.59	2527.42	2501.42	-145.61	146.82	5732727.7	635501.8
2590	48.42	145.66	2530.75	2504.75	-148.68	148.92	5732724.7	635503.9
2595	48.87	145.73	2534.05	2508.05	-151.78	151.03	5732721.6	635506.0
2600	49.33	145.81	2537.33	2511.33	-154.91	153.16	5732718.4	635508.1
2605	49.82	145.85	2540.57	2514.57	-158.06	155.30	5732715.3	635510.2
2610	50.41	145.82	2543.78	2517.78	-161.23	157.45	5732712.1	635512.4
2615	50.99	145.79	2546.94	2520.94	-164.43	159.63	5732708.9	635514.6
2620	51.57	145.76	2550.07	2524.07	-167.66	161.82	5732705.7	635516.8
2625	52.15	145.73	2553.16	2527.16	-170.91	164.03	5732702.4	635519.0
2630	52.73	145.70	2556.21	2530.21	-174.18	166.27	5732699.2	635521.2
2635	53.04	145.68	2559.22	2533.22	-177.48	168.51	5732695.9	635523.5
2640	53.36	145.67	2562.22	2536.22	-180.78	170.77	5732692.6	635525.7
2645	53.68	145.65	2565.19	2539.19	-184.10	173.04	5732689.2	635528.0
2650	54.00	145.63	2568.14	2542.14	-187.43	175.32	5732685.9	635530.3
2655	54.32	145.61	2571.07	2545.07	-190.78	177.61	5732682.6	635532.6
2660	54.62	145.60	2573.98	2547.98	-194.14	179.91	5732679.2	635534.9
2665	54.88	145.59	2576.86	2550.86	-197.51	182.21	5732675.8	635537.2
2670	55.14	145.58	2579.73	2553.73	-200.88	184.53	5732672.5	635539.5
2675	55.39	145.57	2582.58	2556.58	-204.27	186.85	5732669.1	635541.8
2680	55.65	145.55	2585.41	2559.41	-207.67	189.18	5732665.7	635544.1
2685	55.91	145.54	2588.22	2562.22	-211.08	191.52	5732662.3	635546.5
2690	56.15	145.51	2591.01	2565.01	-214.50	193.87	5732658.8	635548.8
2695	56.40	145.47	2593.79	2567.79	-217.93	196.22	5732655.4	635551.2
2700	56.64	145.43	2596.55	2570.55	-221.36	198.59	5732652.0	635553.5
2705	56.88	145.39	2599.29	2573.29	-224.80	200.96	5732648.5	635555.9
2710	57.12	145.35	2602.01	2576.01	-228.26	203.35	5732645.1	635558.3
2715	57.37	145.31	2604.72	2578.72	-231.71	205.74	5732641.6	635560.7
2720	57.60	145.28	2607.41	2581.41	-235.18	208.14	5732638.2	635563.1
2725	57.84	145.26	2610.08	2584.08	-238.65	210.55	5732634.7	635565.5
2730	58.07	145.23	2612.73	2586.73	-242.14	212.96	5732631.2	635567.9
2735	58.31	145.21	2615.36	2589.36	-245.63	215.39	5732627.7	635570.3
2740	58.54	145.19	2617.98	2591.98	-249.12	217.82	5732624.2	635572.8
2745	58.78	145.16	2620.58	2594.58	-252.63	220.26	5732620.7	635575.2
2750	59.04	145.14	2623.16	2597.16	-256.14	222.70	5732617.2	635577.7
2755	59.31	145.12	2625.73	2599.73	-259.67	225.16	5732613.7	635580.1
2760	59.57	145.11	2628.27	2602.27	-263.20	227.62	5732610.1	635582.6
2765	59.84	145.09	2630.79	2604.79	-266.74	230.09	5732606.6	635585.0
2770	60.11	145.07	2633.29	2607.29	-270.29	232.57	5732603.1	635587.5
2775	60.37	145.05	2635.78	2609.78	-273.85	235.05	5732599.5	635590.0
2780	60.50	145.02	2638.24	2612.24	-277.41	237.55	5732595.9	635592.5
2785	60.62	144.98	2640.70	2614.70	-280.98	240.05	5732592.4	635595.0
2790	60.74	144.94	2643.15	2617.15	-284.55	242.55	5732588.8	635597.5
2795	60.86	144.90	2645.59	2619.59	-288.12	245.06	5732585.2	635600.0
2800	60.98	144.87	2648.02	2622.02	-291.69	247.57	5732581.6	635602.5
2805	61.12	144.83	2650.44	2624.44	-295.27	250.09	5732578.1	635605.0
2810	61.31	144.79	2652.84	2626.84	-298.85	252.61	5732574.5	635607.6
2815	61.50	144.76	2655.24	2629.24	-302.44	255.15	5732570.9	635610.1
2820	61.69	144.72	2657.62	2631.62	-306.03	257.69	5732567.3	635612.6
2825	61.88	144.69	2659.98	2633.98	-309.62	260.23	5732563.7	635615.2
2830	62.07	144.65	2662.33	2636.33	-313.23	262.78	5732560.1	635617.7
2835	62.22	144.60	2664.66	2638.66	-316.83	265.34	5732556.5	635620.3
2840	62.32	144.53	2666.99	2640.99	-320.44	267.91	5732552.9	635622.9
2845	62.42	144.46	2669.31	2643.31	-324.04	270.48	5732549.3	635625.4
2850	62.53	144.39	2671.62	2645.62	-327.65	273.06	5732545.7	635628.0
2855	62.63	144.32	2673.92	2647.92	-331.26	275.65	5732542.1	635630.6
2860	62.73	144.25	2676.22	2650.22	-334.86	278.24	5732538.5	635633.2
2865	62.70	144.24	2678.51	2652.51	-338.47	280.84	5732534.9	635635.8
2870	62.67	144.22	2680.80	2654.80	-342.07	283.43	5732531.3	635638.4
2875	62.64	144.21	2683.10	2657.10	-345.68	286.03	5732527.7	635641.0
2880	62.61	144.20	2685.40	2659.40	-349.28	288.63	5732524.1	635643.6
2885	62.58	144.19	2687.70	2661.70	-352.88	291.22	5732520.5	635646.2
2890	62.55	144.17	2690.00	2664.00	-356.48	293.82	5732516.9	635648.8
2895	62.71	144.16	2692.31	2666.31	-360.08	296.42	5732513.3	635651.4
2900	62.97	144.15	2694.59	2668.59	-363.68	299.03	5732509.7	635654.0
2905	63.22	144.15	2696.85	2670.85	-367.30	301.64	5732506.0	635656.6

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
2910	63.47	144.14	2699.09	2673.09	-370.92	304.25	5732502.4	635659.2
2915	63.72	144.13	2701.32	2675.32	-374.55	306.88	5732498.8	635661.8
2920	63.99	144.11	2703.52	2677.52	-378.18	309.51	5732495.2	635664.5
2925	64.33	144.08	2705.70	2679.70	-381.83	312.15	5732491.5	635667.1
2930	64.67	144.04	2707.85	2681.85	-385.48	314.80	5732487.9	635669.7
2935	65.01	144.00	2709.98	2683.98	-389.14	317.46	5732484.2	635672.4
2940	65.34	143.97	2712.08	2686.08	-392.81	320.12	5732480.5	635675.1
2945	65.68	143.93	2714.15	2688.15	-396.49	322.80	5732476.8	635677.7
2950	65.92	143.94	2716.20	2690.20	-400.18	325.49	5732473.2	635680.4
2955	65.59	144.18	2718.25	2692.25	-403.87	328.17	5732469.5	635683.1
2960	65.25	144.41	2720.33	2694.33	-407.56	330.82	5732465.8	635685.8
2965	64.92	144.65	2722.44	2696.44	-411.26	333.45	5732462.1	635688.4
2970	64.58	144.89	2724.57	2698.57	-414.95	336.06	5732458.4	635691.0
2975	64.25	145.13	2726.73	2700.73	-418.64	338.64	5732454.7	635693.6
2980	64.07	145.33	2728.91	2702.91	-422.34	341.21	5732451.0	635696.2
2985	64.42	145.38	2731.09	2705.09	-426.04	343.77	5732447.3	635698.7
2990	64.78	145.43	2733.23	2707.23	-429.76	346.33	5732443.6	635701.3
2995	65.13	145.48	2735.35	2709.35	-433.49	348.90	5732439.8	635703.8
3000	65.49	145.53	2737.44	2711.44	-437.24	351.48	5732436.1	635706.4
3005	65.84	145.58	2739.50	2713.50	-440.99	354.05	5732432.3	635709.0
3010	66.04	145.57	2741.53	2715.53	-444.76	356.63	5732428.6	635711.6
3015	66.07	145.51	2743.56	2717.56	-448.53	359.22	5732424.8	635714.2
3020	66.11	145.46	2745.59	2719.59	-452.30	361.81	5732421.0	635716.8
3025	66.14	145.40	2747.61	2721.61	-456.06	364.40	5732417.3	635719.4
3030	66.18	145.34	2749.63	2723.63	-459.83	367.00	5732413.5	635721.9
3035	66.22	145.29	2751.65	2725.65	-463.59	369.61	5732409.8	635724.6
3040	66.21	145.42	2753.66	2727.66	-467.35	372.21	5732406.0	635727.2
3045	66.21	145.57	2755.68	2729.68	-471.12	374.80	5732402.2	635729.7
3050	66.20	145.73	2757.70	2731.70	-474.90	377.38	5732398.4	635732.3
3055	66.19	145.89	2759.72	2733.72	-478.68	379.95	5732394.7	635734.9
3060	66.19	146.04	2761.74	2735.74	-482.47	382.51	5732390.9	635737.5
3065	66.18	146.20	2763.75	2737.75	-486.27	385.06	5732387.1	635740.0
3070	66.43	146.22	2765.76	2739.76	-490.08	387.61	5732383.3	635742.6
3075	66.68	146.23	2767.75	2741.75	-493.89	390.16	5732379.5	635745.1
3080	66.94	146.25	2769.72	2743.72	-497.71	392.71	5732375.6	635747.7
3085	67.19	146.27	2771.67	2745.67	-501.54	395.27	5732371.8	635750.2
3090	67.44	146.29	2773.60	2747.60	-505.38	397.83	5732368.0	635752.8
3095	67.71	146.31	2775.51	2749.51	-509.22	400.40	5732364.1	635755.3
3100	68.07	146.35	2777.39	2751.39	-513.08	402.96	5732360.3	635757.9
3105	68.43	146.40	2779.24	2753.24	-516.94	405.54	5732356.4	635760.5
3110	68.79	146.44	2781.06	2755.06	-520.82	408.11	5732352.5	635763.1
3115	69.15	146.49	2782.86	2756.86	-524.71	410.69	5732348.6	635765.6
3120	69.52	146.53	2784.62	2758.62	-528.61	413.27	5732344.7	635768.2
3125	69.88	146.54	2786.36	2760.36	-532.53	415.86	5732340.8	635770.8
3130	70.24	146.53	2788.06	2762.06	-536.45	418.45	5732336.9	635773.4
3135	70.60	146.52	2789.74	2763.74	-540.38	421.04	5732333.0	635776.0
3140	70.96	146.51	2791.39	2765.39	-544.31	423.65	5732329.0	635778.6
3145	71.32	146.50	2793.00	2767.00	-548.26	426.26	5732325.1	635781.2
3150	71.68	146.49	2794.59	2768.59	-552.21	428.88	5732321.1	635783.8
3155	72.00	146.58	2796.15	2770.15	-556.18	431.50	5732317.2	635786.4
3160	72.30	146.72	2797.68	2771.68	-560.15	434.11	5732313.2	635789.1
3165	72.60	146.86	2799.19	2773.19	-564.14	436.73	5732309.2	635791.7
3170	72.90	146.99	2800.67	2774.67	-568.14	439.33	5732305.2	635794.3
3175	73.20	147.13	2802.13	2776.13	-572.16	441.93	5732301.2	635796.9
3180	73.50	147.27	2803.56	2777.56	-576.18	444.53	5732297.2	635799.5
3185	73.77	147.16	2804.97	2778.97	-580.22	447.13	5732293.1	635802.1
3190	74.04	147.04	2806.35	2780.35	-584.25	449.73	5732289.1	635804.7
3195	74.32	146.93	2807.72	2781.72	-588.28	452.36	5732285.1	635807.3
3200	74.59	146.82	2809.06	2783.06	-592.32	454.99	5732281.0	635809.9
3205	74.86	146.70	2810.38	2784.38	-596.35	457.63	5732277.0	635812.6
3210	75.24	146.63	2811.67	2785.67	-600.39	460.29	5732273.0	635815.2
3215	75.97	146.67	2812.91	2786.91	-604.43	462.95	5732268.9	635817.9
3220	76.69	146.72	2814.09	2788.09	-608.49	465.62	5732264.8	635820.6
3225	77.42	146.76	2815.21	2789.21	-612.57	468.29	5732260.8	635823.2
3230	78.14	146.80	2816.27	2790.27	-616.65	470.97	5732256.7	635825.9
3235	78.87	146.84	2817.27	2791.27	-620.76	473.65	5732252.6	635828.6
3240	79.54	146.88	2818.20	2792.20	-624.87	476.33	5732248.5	635831.3
3245	79.87	146.89	2819.10	2793.10	-628.99	479.02	5732244.4	635834.0
3250	80.19	146.89	2819.96	2793.96	-633.11	481.71	5732240.2	635836.7
3255	80.51	146.90	2820.80	2794.80	-637.24	484.40	5732236.1	635839.4
3260	80.83	146.90	2821.61	2795.61	-641.38	487.10	5732232.0	635842.0
3265	81.16	146.91	2822.39	2796.39	-645.51	489.79	5732227.8	635844.7
3270	81.46	146.91	2823.15	2797.15	-649.65	492.49	5732223.7	635847.4

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3273	81.61	146.90	2823.59	2797.59	-652.14	494.11	5732221.2	635849.1
3274	81.66	146.89	2823.74	2797.74	-652.97	494.65	5732220.4	635849.6
3275	81.71	146.89	2823.88	2797.88	-653.80	495.19	5732219.5	635850.1
3276	81.76	146.89	2824.02	2798.02	-654.63	495.73	5732218.7	635850.7
3277	81.80	146.89	2824.17	2798.17	-655.46	496.28	5732217.9	635851.2
3278	81.85	146.88	2824.31	2798.31	-656.28	496.82	5732217.1	635851.8
3279	81.90	146.88	2824.45	2798.45	-657.11	497.36	5732216.2	635852.3
3280	81.95	146.88	2824.59	2798.59	-657.94	497.90	5732215.4	635852.8
3281	82.00	146.87	2824.73	2798.73	-658.77	498.44	5732214.6	635853.4
3282	82.05	146.87	2824.87	2798.87	-659.60	498.98	5732213.7	635853.9
3283	82.10	146.87	2825.01	2799.01	-660.43	499.52	5732212.9	635854.5
3284	82.15	146.86	2825.14	2799.14	-661.26	500.06	5732212.1	635855.0
3285	82.19	146.86	2825.28	2799.28	-662.09	500.60	5732211.3	635855.6
3286	82.24	146.86	2825.42	2799.42	-662.92	501.15	5732210.4	635856.1
3287	82.29	146.86	2825.55	2799.55	-663.75	501.69	5732209.6	635856.6
3288	82.34	146.85	2825.68	2799.68	-664.58	502.23	5732208.8	635857.2
3289	82.39	146.85	2825.82	2799.82	-665.41	502.77	5732207.9	635857.7
3290	82.44	146.85	2825.95	2799.95	-666.24	503.31	5732207.1	635858.3
3291	82.49	146.84	2826.08	2800.08	-667.07	503.86	5732206.3	635858.8
3292	82.54	146.84	2826.21	2800.21	-667.90	504.40	5732205.4	635859.3
3293	82.58	146.84	2826.34	2800.34	-668.73	504.94	5732204.6	635859.9
3294	82.63	146.83	2826.47	2800.47	-669.56	505.48	5732203.8	635860.4
3295	82.68	146.83	2826.60	2800.60	-670.39	506.03	5732203.0	635861.0
3296	82.76	146.83	2826.72	2800.72	-671.22	506.57	5732202.1	635861.5
3297	82.88	146.83	2826.85	2800.85	-672.05	507.11	5732201.3	635862.1
3298	83.01	146.82	2826.97	2800.97	-672.88	507.65	5732200.5	635862.6
3299	83.13	146.82	2827.09	2801.09	-673.71	508.20	5732199.6	635863.1
3300	83.25	146.82	2827.21	2801.21	-674.54	508.74	5732198.8	635863.7
3301	83.37	146.81	2827.33	2801.33	-675.37	509.28	5732198.0	635864.2
3302	83.50	146.81	2827.44	2801.44	-676.20	509.83	5732197.1	635864.8
3303	83.62	146.81	2827.55	2801.55	-677.04	510.37	5732196.3	635865.3
3304	83.74	146.81	2827.66	2801.66	-677.87	510.92	5732195.5	635865.9
3305	83.86	146.80	2827.77	2801.77	-678.70	511.46	5732194.6	635866.4
3306	83.99	146.80	2827.88	2801.88	-679.53	512.01	5732193.8	635867.0
3307	84.11	146.80	2827.98	2801.98	-680.36	512.55	5732193.0	635867.5
3308	84.23	146.79	2828.08	2802.08	-681.20	513.09	5732192.1	635868.0
3309	84.35	146.79	2828.18	2802.18	-682.03	513.64	5732191.3	635868.6
3310	84.48	146.79	2828.28	2802.28	-682.86	514.18	5732190.5	635869.1
3311	84.60	146.79	2828.37	2802.37	-683.70	514.73	5732189.6	635869.7
3312	84.72	146.78	2828.47	2802.47	-684.53	515.28	5732188.8	635870.2
3313	84.84	146.78	2828.56	2802.56	-685.36	515.82	5732188.0	635870.8
3314	84.96	146.78	2828.65	2802.65	-686.19	516.37	5732187.1	635871.3
3315	85.09	146.78	2828.73	2802.73	-687.03	516.91	5732186.3	635871.9
3316	85.21	146.77	2828.82	2802.82	-687.86	517.46	5732185.5	635872.4
3317	85.33	146.77	2828.90	2802.90	-688.70	518.00	5732184.6	635873.0
3318	85.45	146.77	2828.98	2802.98	-689.53	518.55	5732183.8	635873.5
3319	85.58	146.76	2829.06	2803.06	-690.36	519.10	5732183.0	635874.0
3320	85.70	146.76	2829.14	2803.14	-691.20	519.64	5732182.1	635874.6
3321	85.82	146.76	2829.21	2803.21	-692.03	520.19	5732181.3	635875.1
3322	85.94	146.76	2829.28	2803.28	-692.86	520.74	5732180.5	635875.7
3323	86.07	146.75	2829.35	2803.35	-693.70	521.28	5732179.6	635876.2
3324	86.19	146.75	2829.42	2803.42	-694.53	521.83	5732178.8	635876.8
3325	86.31	146.75	2829.48	2803.48	-695.37	522.38	5732178.0	635877.3
3326	86.43	146.74	2829.55	2803.55	-696.20	522.93	5732177.1	635877.9
3327	86.56	146.74	2829.61	2803.61	-697.04	523.47	5732176.3	635878.4
3328	86.66	146.74	2829.67	2803.67	-697.87	524.02	5732175.5	635879.0
3329	86.74	146.74	2829.73	2803.73	-698.71	524.57	5732174.6	635879.5
3330	86.81	146.74	2829.78	2803.78	-699.54	525.12	5732173.8	635880.1
3331	86.89	146.74	2829.84	2803.84	-700.38	525.66	5732173.0	635880.6
3332	86.97	146.74	2829.89	2803.89	-701.21	526.21	5732172.1	635881.2
3333	87.05	146.74	2829.94	2803.94	-702.05	526.76	5732171.3	635881.7
3334	87.13	146.74	2829.99	2803.99	-702.88	527.31	5732170.5	635882.3
3335	87.21	146.74	2830.04	2804.04	-703.72	527.85	5732169.6	635882.8
3336	87.29	146.74	2830.09	2804.09	-704.55	528.40	5732168.8	635883.3
3337	87.37	146.74	2830.14	2804.14	-705.39	528.95	5732168.0	635883.9
3338	87.45	146.75	2830.18	2804.18	-706.22	529.50	5732167.1	635884.4
3339	87.52	146.75	2830.23	2804.23	-707.06	530.04	5732166.3	635885.0
3340	87.60	146.75	2830.27	2804.27	-707.89	530.59	5732165.4	635885.5
3341	87.68	146.75	2830.31	2804.31	-708.73	531.14	5732164.6	635886.1
3342	87.76	146.75	2830.35	2804.35	-709.57	531.69	5732163.8	635886.6
3343	87.84	146.75	2830.39	2804.39	-710.40	532.24	5732162.9	635887.2
3344	87.92	146.75	2830.42	2804.42	-711.24	532.78	5732162.1	635887.7

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3345	88.00	146.75	2830.46	2804.46	-712.07	533.33	5732161.3	635888.3
3346	88.08	146.75	2830.49	2804.49	-712.91	533.88	5732160.4	635888.8
3347	88.16	146.75	2830.53	2804.53	-713.74	534.43	5732159.6	635889.4
3348	88.23	146.75	2830.56	2804.56	-714.58	534.98	5732158.8	635889.9
3349	88.31	146.75	2830.59	2804.59	-715.42	535.52	5732157.9	635890.5
3350	88.39	146.75	2830.62	2804.62	-716.25	536.07	5732157.1	635891.0
3351	88.47	146.75	2830.65	2804.65	-717.09	536.62	5732156.3	635891.6
3352	88.55	146.75	2830.67	2804.67	-717.92	537.17	5732155.4	635892.1
3353	88.63	146.75	2830.70	2804.70	-718.76	537.72	5732154.6	635892.7
3354	88.71	146.75	2830.72	2804.72	-719.60	538.26	5732153.7	635893.2
3355	88.79	146.75	2830.74	2804.74	-720.43	538.81	5732152.9	635893.8
3356	88.87	146.75	2830.76	2804.76	-721.27	539.36	5732152.1	635894.3
3357	88.94	146.76	2830.78	2804.78	-722.10	539.91	5732151.2	635894.9
3358	89.02	146.76	2830.80	2804.80	-722.94	540.46	5732150.4	635895.4
3359	89.10	146.76	2830.81	2804.81	-723.78	541.01	5732149.6	635896.0
3360	89.18	146.76	2830.83	2804.83	-724.61	541.55	5732148.7	635896.5
3361	89.26	146.76	2830.84	2804.84	-725.45	542.10	5732147.9	635897.0
3362	89.34	146.76	2830.86	2804.86	-726.29	542.65	5732147.1	635897.6
3363	89.42	146.76	2830.87	2804.87	-727.12	543.20	5732146.2	635898.1
3364	89.50	146.76	2830.88	2804.88	-727.96	543.75	5732145.4	635898.7
3365	89.57	146.76	2830.88	2804.88	-728.79	544.29	5732144.5	635899.2
3366	89.65	146.76	2830.89	2804.89	-729.63	544.84	5732143.7	635899.8
3367	89.66	146.75	2830.90	2804.90	-730.47	545.39	5732142.9	635900.3
3368	89.66	146.74	2830.90	2804.90	-731.30	545.94	5732142.0	635900.9
3369	89.66	146.74	2830.91	2804.91	-732.14	546.49	5732141.2	635901.4
3370	89.66	146.73	2830.91	2804.91	-732.98	547.04	5732140.4	635902.0
3371	89.66	146.72	2830.92	2804.92	-733.81	547.58	5732139.5	635902.5
3372	89.66	146.71	2830.93	2804.93	-734.65	548.13	5732138.7	635903.1
3373	89.66	146.71	2830.93	2804.93	-735.48	548.68	5732137.9	635903.6
3374	89.66	146.70	2830.94	2804.94	-736.32	549.23	5732137.0	635904.2
3375	89.66	146.69	2830.94	2804.94	-737.16	549.78	5732136.2	635904.7
3376	89.66	146.68	2830.95	2804.95	-737.99	550.33	5732135.4	635905.3
3377	89.66	146.67	2830.96	2804.96	-738.83	550.88	5732134.5	635905.8
3378	89.66	146.67	2830.96	2804.96	-739.66	551.43	5732133.7	635906.4
3379	89.66	146.66	2830.97	2804.97	-740.50	551.98	5732132.8	635906.9
3380	89.66	146.65	2830.97	2804.97	-741.33	552.53	5732132.0	635907.5
3381	89.66	146.64	2830.98	2804.98	-742.17	553.08	5732131.2	635908.0
3382	89.66	146.65	2830.99	2804.99	-743.00	553.63	5732130.3	635908.6
3383	89.66	146.65	2830.99	2804.99	-743.84	554.18	5732129.5	635909.1
3384	89.65	146.66	2831.00	2805.00	-744.67	554.73	5732128.7	635909.7
3385	89.65	146.67	2831.00	2805.00	-745.51	555.28	5732127.8	635910.2
3386	89.65	146.68	2831.01	2805.01	-746.34	555.83	5732127.0	635910.8
3387	89.65	146.68	2831.02	2805.02	-747.18	556.37	5732126.2	635911.3
3388	89.65	146.69	2831.02	2805.02	-748.02	556.92	5732125.3	635911.9
3389	89.64	146.70	2831.03	2805.03	-748.85	557.47	5732124.5	635912.4
3390	89.64	146.71	2831.03	2805.03	-749.69	558.02	5732123.7	635913.0
3391	89.64	146.71	2831.04	2805.04	-750.52	558.57	5732122.8	635913.5
3392	89.64	146.72	2831.05	2805.05	-751.36	559.12	5732122.0	635914.1
3393	89.64	146.73	2831.05	2805.05	-752.20	559.67	5732121.1	635914.6
3394	89.63	146.74	2831.06	2805.06	-753.03	560.22	5732120.3	635915.2
3395	89.63	146.74	2831.07	2805.07	-753.87	560.77	5732119.5	635915.7
3396	89.63	146.75	2831.07	2805.07	-754.70	561.31	5732118.6	635916.3
3397	89.62	146.75	2831.08	2805.08	-755.54	561.86	5732117.8	635916.8
3398	89.61	146.75	2831.09	2805.09	-756.38	562.41	5732117.0	635917.4
3399	89.60	146.75	2831.09	2805.09	-757.21	562.96	5732116.1	635917.9
3400	89.59	146.74	2831.10	2805.10	-758.05	563.51	5732115.3	635918.5
3401	89.57	146.74	2831.11	2805.11	-758.89	564.06	5732114.5	635919.0
3402	89.56	146.74	2831.12	2805.12	-759.72	564.60	5732113.6	635919.6
3403	89.55	146.74	2831.12	2805.12	-760.56	565.15	5732112.8	635920.1
3404	89.54	146.74	2831.13	2805.13	-761.39	565.70	5732111.9	635920.6
3405	89.53	146.74	2831.14	2805.14	-762.23	566.25	5732111.1	635921.2
3406	89.52	146.74	2831.15	2805.15	-763.07	566.80	5732110.3	635921.7
3407	89.51	146.73	2831.16	2805.16	-763.90	567.35	5732109.4	635922.3
3408	89.50	146.73	2831.16	2805.16	-764.74	567.89	5732108.6	635922.8
3409	89.49	146.73	2831.17	2805.17	-765.57	568.44	5732107.8	635923.4
3410	89.48	146.73	2831.18	2805.18	-766.41	568.99	5732106.9	635923.9
3411	89.45	146.74	2831.19	2805.19	-767.25	569.54	5732106.1	635924.5
3412	89.43	146.74	2831.20	2805.20	-768.08	570.09	5732105.3	635925.0
3413	89.40	146.75	2831.21	2805.21	-768.92	570.64	5732104.4	635925.6
3414	89.38	146.76	2831.22	2805.22	-769.76	571.18	5732103.6	635926.1
3415	89.35	146.76	2831.23	2805.23	-770.59	571.73	5732102.7	635926.7
3416	89.33	146.77	2831.24	2805.24	-771.43	572.28	5732101.9	635927.2
3417	89.30	146.77	2831.26	2805.26	-772.26	572.83	5732101.1	635927.8

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3418	89.28	146.78	2831.27	2805.27	-773.10	573.38	5732100.2	635928.3
3419	89.25	146.79	2831.28	2805.28	-773.94	573.92	5732099.4	635928.9
3420	89.23	146.79	2831.29	2805.29	-774.77	574.47	5732098.6	635929.4
3421	89.20	146.80	2831.31	2805.31	-775.61	575.02	5732097.7	635930.0
3422	89.18	146.81	2831.32	2805.32	-776.45	575.57	5732096.9	635930.5
3423	89.15	146.81	2831.34	2805.34	-777.28	576.11	5732096.1	635931.1
3424	89.13	146.82	2831.35	2805.35	-778.12	576.66	5732095.2	635931.6
3425	89.10	146.83	2831.37	2805.37	-778.96	577.21	5732094.4	635932.2
3426	89.08	146.83	2831.38	2805.38	-779.79	577.76	5732093.5	635932.7
3427	89.06	146.84	2831.40	2805.40	-780.63	578.30	5732092.7	635933.3
3428	89.03	146.85	2831.42	2805.42	-781.47	578.85	5732091.9	635933.8
3429	89.01	146.85	2831.43	2805.43	-782.31	579.40	5732091.0	635934.3
3430	88.98	146.86	2831.45	2805.45	-783.14	579.94	5732090.2	635934.9
3431	88.96	146.87	2831.47	2805.47	-783.98	580.49	5732089.4	635935.4
3432	88.93	146.87	2831.49	2805.49	-784.82	581.04	5732088.5	635936.0
3433	88.91	146.88	2831.51	2805.51	-785.65	581.58	5732087.7	635936.5
3434	88.88	146.89	2831.53	2805.53	-786.49	582.13	5732086.8	635937.1
3435	88.86	146.89	2831.54	2805.54	-787.33	582.68	5732086.0	635937.6
3436	88.83	146.90	2831.57	2805.57	-788.17	583.22	5732085.2	635938.2
3437	88.81	146.91	2831.59	2805.59	-789.00	583.77	5732084.3	635938.7
3438	88.79	146.92	2831.61	2805.61	-789.84	584.31	5732083.5	635939.3
3439	88.77	146.93	2831.63	2805.63	-790.68	584.86	5732082.7	635939.8
3440	88.75	146.94	2831.65	2805.65	-791.52	585.40	5732081.8	635940.4
3441	88.73	146.95	2831.67	2805.67	-792.36	585.95	5732081.0	635940.9
3442	88.71	146.96	2831.69	2805.69	-793.19	586.49	5732080.1	635941.4
3443	88.69	146.97	2831.72	2805.72	-794.03	587.04	5732079.3	635942.0
3444	88.66	146.98	2831.74	2805.74	-794.87	587.58	5732078.5	635942.5
3445	88.64	146.99	2831.76	2805.76	-795.71	588.13	5732077.6	635943.1
3446	88.62	146.99	2831.79	2805.79	-796.55	588.67	5732076.8	635943.6
3447	88.60	147.00	2831.81	2805.81	-797.39	589.22	5732076.0	635944.2
3448	88.58	147.01	2831.84	2805.84	-798.22	589.76	5732075.1	635944.7
3449	88.56	147.02	2831.86	2805.86	-799.06	590.31	5732074.3	635945.3
3450	88.54	147.03	2831.89	2805.89	-799.90	590.85	5732073.4	635945.8
3451	88.52	147.04	2831.91	2805.91	-800.74	591.39	5732072.6	635946.3
3452	88.50	147.05	2831.94	2805.94	-801.58	591.94	5732071.8	635946.9
3453	88.48	147.06	2831.96	2805.96	-802.42	592.48	5732070.9	635947.4
3454	88.48	147.06	2831.99	2805.99	-803.26	593.03	5732070.1	635948.0
3455	88.48	147.07	2832.02	2806.02	-804.10	593.57	5732069.2	635948.5
3456	88.48	147.07	2832.04	2806.04	-804.93	594.11	5732068.4	635949.1
3457	88.48	147.08	2832.07	2806.07	-805.77	594.66	5732067.6	635949.6
3458	88.48	147.08	2832.10	2806.10	-806.61	595.20	5732066.7	635950.1
3459	88.48	147.09	2832.12	2806.12	-807.45	595.74	5732065.9	635950.7
3460	88.48	147.09	2832.15	2806.15	-808.29	596.29	5732065.0	635951.2
3461	88.48	147.10	2832.18	2806.18	-809.13	596.83	5732064.2	635951.8
3462	88.48	147.10	2832.20	2806.20	-809.97	597.37	5732063.4	635952.3
3463	88.48	147.10	2832.23	2806.23	-810.81	597.91	5732062.5	635952.9
3464	88.48	147.11	2832.26	2806.26	-811.65	598.46	5732061.7	635953.4
3465	88.48	147.11	2832.28	2806.28	-812.49	599.00	5732060.9	635953.9
3466	88.48	147.12	2832.31	2806.31	-813.33	599.54	5732060.0	635954.5
3467	88.48	147.12	2832.34	2806.34	-814.17	600.09	5732059.2	635955.0
3468	88.48	147.13	2832.36	2806.36	-815.01	600.63	5732058.3	635955.6
3469	88.48	147.13	2832.39	2806.39	-815.85	601.17	5732057.5	635956.1
3470	88.48	147.13	2832.42	2806.42	-816.69	601.71	5732056.7	635956.7
3471	88.48	147.14	2832.44	2806.44	-817.53	602.26	5732055.8	635957.2
3472	88.48	147.14	2832.47	2806.47	-818.36	602.80	5732055.0	635957.7
3473	88.48	147.15	2832.49	2806.49	-819.20	603.34	5732054.1	635958.3
3474	88.48	147.15	2832.52	2806.52	-820.04	603.88	5732053.3	635958.8
3475	88.48	147.16	2832.55	2806.55	-820.88	604.43	5732052.5	635959.4
3476	88.48	147.16	2832.57	2806.57	-821.72	604.97	5732051.6	635959.9
3477	88.48	147.16	2832.60	2806.60	-822.56	605.51	5732050.8	635960.5
3478	88.48	147.17	2832.63	2806.63	-823.40	606.05	5732049.9	635961.0
3479	88.48	147.17	2832.65	2806.65	-824.24	606.59	5732049.1	635961.5
3480	88.48	147.18	2832.68	2806.68	-825.08	607.14	5732048.3	635962.1
3481	88.48	147.18	2832.71	2806.71	-825.92	607.68	5732047.4	635962.6
3482	88.48	147.19	2832.73	2806.73	-826.76	608.22	5732046.6	635963.2
3483	88.48	147.19	2832.76	2806.76	-827.60	608.76	5732045.7	635963.7
3484	88.46	147.19	2832.79	2806.79	-828.44	609.30	5732044.9	635964.2
3485	88.43	147.18	2832.81	2806.81	-829.28	609.84	5732044.1	635964.8
3486	88.41	147.18	2832.84	2806.84	-830.12	610.39	5732043.2	635965.3
3487	88.39	147.18	2832.87	2806.87	-830.96	610.93	5732042.4	635965.9
3488	88.37	147.18	2832.90	2806.90	-831.80	611.47	5732041.5	635966.4
3489	88.34	147.17	2832.93	2806.93	-832.64	612.01	5732040.7	635967.0
3490	88.32	147.17	2832.96	2806.96	-833.48	612.55	5732039.9	635967.5

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northng	Easting
3491	88.30	147.17	2832.99	2806.99	-834.32	613.10	5732039.0	635968.0
3492	88.28	147.16	2833.01	2807.01	-835.16	613.64	5732038.2	635968.6
3493	88.25	147.16	2833.05	2807.05	-836.00	614.18	5732037.3	635969.1
3494	88.23	147.16	2833.08	2807.08	-836.84	614.72	5732036.5	635969.7
3495	88.21	147.16	2833.11	2807.11	-837.68	615.26	5732035.7	635970.2
3496	88.19	147.15	2833.14	2807.14	-838.52	615.81	5732034.8	635970.8
3497	88.17	147.15	2833.17	2807.17	-839.36	616.35	5732034.0	635971.3
3498	88.14	147.15	2833.20	2807.20	-840.20	616.89	5732033.1	635971.8
3499	88.12	147.14	2833.23	2807.23	-841.04	617.43	5732032.3	635972.4
3500	88.10	147.14	2833.27	2807.27	-841.88	617.97	5732031.5	635972.9
3501	88.08	147.14	2833.30	2807.30	-842.72	618.52	5732030.6	635973.5
3502	88.05	147.14	2833.34	2807.34	-843.56	619.06	5732029.8	635974.0
3503	88.03	147.13	2833.37	2807.37	-844.40	619.60	5732028.9	635974.5
3504	88.01	147.13	2833.40	2807.40	-845.24	620.14	5732028.1	635975.1
3505	87.99	147.13	2833.44	2807.44	-846.08	620.69	5732027.3	635975.6
3506	87.96	147.12	2833.47	2807.47	-846.92	621.23	5732026.4	635976.2
3507	87.94	147.12	2833.51	2807.51	-847.76	621.77	5732025.6	635976.7
3508	87.92	147.12	2833.55	2807.55	-848.60	622.31	5732024.7	635977.3
3509	87.90	147.11	2833.58	2807.58	-849.44	622.86	5732023.9	635977.8
3510	87.88	147.11	2833.62	2807.62	-850.28	623.40	5732023.1	635978.3
3511	87.86	147.11	2833.66	2807.66	-851.11	623.94	5732022.2	635978.9
3512	87.84	147.12	2833.69	2807.69	-851.95	624.48	5732021.4	635979.4
3513	87.83	147.13	2833.73	2807.73	-852.79	625.03	5732020.5	635980.0
3514	87.81	147.14	2833.77	2807.77	-853.63	625.57	5732019.7	635980.5
3515	87.80	147.15	2833.81	2807.81	-854.47	626.11	5732018.9	635981.1
3516	87.78	147.17	2833.85	2807.85	-855.31	626.65	5732018.0	635981.6
3517	87.77	147.18	2833.89	2807.89	-856.15	627.19	5732017.2	635982.1
3518	87.76	147.19	2833.92	2807.92	-856.99	627.74	5732016.3	635982.7
3519	87.74	147.20	2833.96	2807.96	-857.83	628.28	5732015.5	635983.2
3520	87.73	147.21	2834.00	2808.00	-858.67	628.82	5732014.7	635983.8
3521	87.71	147.22	2834.04	2808.04	-859.51	629.36	5732013.8	635984.3
3522	87.70	147.23	2834.08	2808.08	-860.35	629.90	5732013.0	635984.8
3523	87.69	147.24	2834.12	2808.12	-861.19	630.44	5732012.1	635985.4
3524	87.67	147.25	2834.16	2808.16	-862.03	630.98	5732011.3	635985.9
3525	87.66	147.26	2834.20	2808.20	-862.87	631.52	5732010.5	635986.5
3526	87.64	147.27	2834.25	2808.25	-863.71	632.06	5732009.6	635987.0
3527	87.63	147.28	2834.29	2808.29	-864.55	632.60	5732008.8	635987.6
3528	87.61	147.29	2834.33	2808.33	-865.39	633.14	5732007.9	635988.1
3529	87.60	147.30	2834.37	2808.37	-866.23	633.68	5732007.1	635988.6
3530	87.59	147.31	2834.41	2808.41	-867.07	634.22	5732006.3	635989.2
3531	87.57	147.32	2834.45	2808.45	-867.92	634.76	5732005.4	635989.7
3532	87.56	147.33	2834.50	2808.50	-868.76	635.30	5732004.6	635990.2
3533	87.54	147.34	2834.54	2808.54	-869.60	635.84	5732003.7	635990.8
3534	87.53	147.35	2834.58	2808.58	-870.44	636.38	5732002.9	635991.3
3535	87.52	147.36	2834.63	2808.63	-871.28	636.92	5732002.1	635991.9
3536	87.50	147.37	2834.67	2808.67	-872.12	637.46	5732001.2	635992.4
3537	87.49	147.38	2834.71	2808.71	-872.96	638.00	5732000.4	635992.9
3538	87.47	147.39	2834.76	2808.76	-873.80	638.53	5731999.5	635993.5
3539	87.46	147.40	2834.80	2808.80	-874.65	639.07	5731998.7	635994.0
3540	87.45	147.41	2834.85	2808.85	-875.49	639.61	5731997.9	635994.6
3541	87.45	147.41	2834.89	2808.89	-876.33	640.15	5731997.0	635995.1
3542	87.45	147.41	2834.93	2808.93	-877.17	640.69	5731996.2	635995.6
3543	87.44	147.41	2834.98	2808.98	-878.01	641.22	5731995.3	635996.2
3544	87.44	147.41	2835.02	2809.02	-878.85	641.76	5731994.5	635996.7
3545	87.44	147.42	2835.07	2809.07	-879.70	642.30	5731993.6	635997.2
3546	87.44	147.42	2835.11	2809.11	-880.54	642.84	5731992.8	635997.8
3547	87.44	147.42	2835.16	2809.16	-881.38	643.38	5731992.0	635998.3
3548	87.44	147.42	2835.20	2809.20	-882.22	643.91	5731991.1	635998.9
3549	87.43	147.42	2835.25	2809.25	-883.06	644.45	5731990.3	635999.4
3550	87.43	147.42	2835.29	2809.29	-883.91	644.99	5731989.4	635999.9
3551	87.43	147.42	2835.34	2809.34	-884.75	645.53	5731988.6	636000.5
3552	87.43	147.42	2835.38	2809.38	-885.59	646.07	5731987.8	636001.0
3553	87.43	147.42	2835.43	2809.43	-886.43	646.60	5731986.9	636001.6
3554	87.43	147.42	2835.47	2809.47	-887.27	647.14	5731986.1	636002.1
3555	87.42	147.43	2835.52	2809.52	-888.11	647.68	5731985.2	636002.6
3556	87.42	147.43	2835.56	2809.56	-888.96	648.22	5731984.4	636003.2
3557	87.42	147.43	2835.61	2809.61	-889.80	648.76	5731983.5	636003.7
3558	87.42	147.43	2835.65	2809.65	-890.64	649.29	5731982.7	636004.2
3559	87.42	147.43	2835.70	2809.70	-891.48	649.83	5731981.9	636004.8
3560	87.41	147.43	2835.74	2809.74	-892.32	650.37	5731981.0	636005.3
3561	87.41	147.43	2835.79	2809.79	-893.17	650.91	5731980.2	636005.9
3562	87.41	147.43	2835.83	2809.83	-894.01	651.44	5731979.3	636006.4
3563	87.41	147.43	2835.88	2809.88	-894.85	651.98	5731978.5	636006.9

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3564	87.41	147.44	2835.92	2809.92	-895.69	652.52	5731977.6	636007.5
3565	87.41	147.44	2835.97	2809.97	-896.53	653.06	5731976.8	636008.0
3566	87.40	147.44	2836.01	2810.01	-897.38	653.60	5731976.0	636008.5
3567	87.40	147.44	2836.06	2810.06	-898.22	654.13	5731975.1	636009.1
3568	87.40	147.44	2836.10	2810.10	-899.06	654.67	5731974.3	636009.6
3569	87.41	147.44	2836.15	2810.15	-899.90	655.21	5731973.4	636010.2
3570	87.44	147.43	2836.19	2810.19	-900.74	655.75	5731972.6	636010.7
3571	87.46	147.43	2836.24	2810.24	-901.59	656.28	5731971.8	636011.2
3572	87.49	147.42	2836.28	2810.28	-902.43	656.82	5731970.9	636011.8
3573	87.52	147.42	2836.33	2810.33	-903.27	657.36	5731970.1	636012.3
3574	87.55	147.41	2836.37	2810.37	-904.11	657.90	5731969.2	636012.8
3575	87.58	147.40	2836.41	2810.41	-904.95	658.44	5731968.4	636013.4
3576	87.61	147.40	2836.45	2810.45	-905.79	658.97	5731967.5	636013.9
3577	87.63	147.39	2836.49	2810.49	-906.64	659.51	5731966.7	636014.5
3578	87.66	147.39	2836.54	2810.54	-907.48	660.05	5731965.9	636015.0
3579	87.69	147.38	2836.58	2810.58	-908.32	660.59	5731965.0	636015.5
3580	87.72	147.38	2836.62	2810.62	-909.16	661.13	5731964.2	636016.1
3581	87.75	147.37	2836.66	2810.66	-910.00	661.67	5731963.3	636016.6
3582	87.77	147.37	2836.69	2810.69	-910.84	662.21	5731962.5	636017.2
3583	87.80	147.36	2836.73	2810.73	-911.69	662.74	5731961.7	636017.7
3584	87.83	147.35	2836.77	2810.77	-912.53	663.28	5731960.8	636018.2
3585	87.86	147.35	2836.81	2810.81	-913.37	663.82	5731960.0	636018.8
3586	87.89	147.34	2836.85	2810.85	-914.21	664.36	5731959.1	636019.3
3587	87.92	147.34	2836.88	2810.88	-915.05	664.90	5731958.3	636019.8
3588	87.94	147.33	2836.92	2810.92	-915.89	665.44	5731957.4	636020.4
3589	87.97	147.33	2836.95	2810.95	-916.73	665.98	5731956.6	636020.9
3590	88.00	147.32	2836.99	2810.99	-917.57	666.52	5731955.8	636021.5
3591	88.03	147.32	2837.02	2811.02	-918.42	667.06	5731954.9	636022.0
3592	88.06	147.31	2837.06	2811.06	-919.26	667.60	5731954.1	636022.5
3593	88.08	147.30	2837.09	2811.09	-920.10	668.14	5731953.2	636023.1
3594	88.11	147.30	2837.13	2811.13	-920.94	668.68	5731952.4	636023.6
3595	88.14	147.29	2837.16	2811.16	-921.78	669.22	5731951.6	636024.2
3596	88.17	147.29	2837.19	2811.19	-922.62	669.76	5731950.7	636024.7
3597	88.20	147.28	2837.22	2811.22	-923.46	670.30	5731949.9	636025.2
3598	88.23	147.28	2837.25	2811.25	-924.30	670.84	5731949.0	636025.8
3599	88.25	147.27	2837.28	2811.28	-925.14	671.38	5731948.2	636026.3
3600	88.25	147.28	2837.31	2811.31	-925.98	671.92	5731947.4	636026.9
3601	88.23	147.29	2837.35	2811.35	-926.83	672.46	5731946.5	636027.4
3602	88.22	147.31	2837.38	2811.38	-927.67	673.00	5731945.7	636027.9
3603	88.20	147.32	2837.41	2811.41	-928.51	673.54	5731944.8	636028.5
3604	88.19	147.34	2837.44	2811.44	-929.35	674.08	5731944.0	636029.0
3605	88.17	147.35	2837.47	2811.47	-930.19	674.62	5731943.1	636029.6
3606	88.16	147.36	2837.50	2811.50	-931.03	675.16	5731942.3	636030.1
3607	88.15	147.38	2837.53	2811.53	-931.87	675.70	5731941.5	636030.6
3608	88.13	147.39	2837.57	2811.57	-932.72	676.24	5731940.6	636031.2
3609	88.12	147.41	2837.60	2811.60	-933.56	676.77	5731939.8	636031.7
3610	88.10	147.42	2837.63	2811.63	-934.40	677.31	5731938.9	636032.3
3611	88.09	147.43	2837.67	2811.67	-935.24	677.85	5731938.1	636032.8
3612	88.07	147.45	2837.70	2811.70	-936.08	678.39	5731937.3	636033.3
3613	88.06	147.46	2837.73	2811.73	-936.93	678.93	5731936.4	636033.9
3614	88.05	147.47	2837.77	2811.77	-937.77	679.46	5731935.6	636034.4
3615	88.05	147.47	2837.80	2811.80	-938.61	680.00	5731934.7	636034.9
3616	88.04	147.48	2837.84	2811.84	-939.46	680.54	5731933.9	636035.5
3617	88.03	147.49	2837.87	2811.87	-940.30	681.08	5731933.0	636036.0
3618	88.03	147.49	2837.90	2811.90	-941.14	681.61	5731932.2	636036.6
3619	88.02	147.50	2837.94	2811.94	-941.98	682.15	5731931.4	636037.1
3620	88.02	147.50	2837.97	2811.97	-942.83	682.69	5731930.5	636037.6
3621	88.01	147.51	2838.01	2812.01	-943.67	683.22	5731929.7	636038.2
3622	88.00	147.52	2838.04	2812.04	-944.51	683.76	5731928.8	636038.7
3623	88.00	147.52	2838.08	2812.08	-945.36	684.30	5731928.0	636039.2
3624	87.99	147.53	2838.11	2812.11	-946.20	684.83	5731927.1	636039.8
3625	87.98	147.54	2838.15	2812.15	-947.04	685.37	5731926.3	636040.3
3626	87.98	147.54	2838.18	2812.18	-947.89	685.91	5731925.5	636040.9
3627	87.97	147.55	2838.22	2812.22	-948.73	686.44	5731924.6	636041.4
3628	87.99	147.56	2838.25	2812.25	-949.57	686.98	5731923.8	636041.9
3629	88.00	147.57	2838.29	2812.29	-950.42	687.51	5731922.9	636042.5
3630	88.02	147.58	2838.32	2812.32	-951.26	688.05	5731922.1	636043.0
3631	88.04	147.59	2838.36	2812.36	-952.10	688.59	5731921.2	636043.5
3632	88.06	147.60	2838.39	2812.39	-952.95	689.12	5731920.4	636044.1
3633	88.08	147.61	2838.43	2812.43	-953.79	689.66	5731919.6	636044.6
3634	88.10	147.62	2838.46	2812.46	-954.63	690.19	5731918.7	636045.1
3635	88.11	147.62	2838.49	2812.49	-955.48	690.73	5731917.9	636045.7
3636	88.13	147.63	2838.52	2812.52	-956.32	691.26	5731917.0	636046.2

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3637	88.15	147.64	2838.56	2812.56	-957.17	691.80	5731916.2	636046.7
3638	88.17	147.65	2838.59	2812.59	-958.01	692.33	5731915.3	636047.3
3639	88.19	147.66	2838.62	2812.62	-958.86	692.87	5731914.5	636047.8
3640	88.21	147.67	2838.65	2812.65	-959.70	693.40	5731913.6	636048.3
3641	88.23	147.68	2838.68	2812.68	-960.54	693.94	5731912.8	636048.9
3642	88.24	147.69	2838.71	2812.71	-961.39	694.47	5731912.0	636049.4
3643	88.26	147.70	2838.74	2812.74	-962.23	695.01	5731911.1	636050.0
3644	88.28	147.71	2838.77	2812.77	-963.08	695.54	5731910.3	636050.5
3645	88.32	147.71	2838.80	2812.80	-963.92	696.07	5731909.4	636051.0
3646	88.36	147.72	2838.83	2812.83	-964.77	696.61	5731908.6	636051.6
3647	88.39	147.72	2838.86	2812.86	-965.61	697.14	5731907.7	636052.1
3648	88.43	147.72	2838.89	2812.89	-966.46	697.67	5731906.9	636052.6
3649	88.46	147.73	2838.92	2812.92	-967.30	698.21	5731906.0	636053.2
3650	88.50	147.73	2838.94	2812.94	-968.15	698.74	5731905.2	636053.7
3651	88.54	147.74	2838.97	2812.97	-969.00	699.28	5731904.3	636054.2
3652	88.57	147.74	2838.99	2812.99	-969.84	699.81	5731903.5	636054.8
3653	88.61	147.74	2839.02	2813.02	-970.69	700.34	5731902.7	636055.3
3654	88.65	147.75	2839.04	2813.04	-971.53	700.88	5731901.8	636055.8
3655	88.68	147.75	2839.07	2813.07	-972.38	701.41	5731901.0	636056.4
3656	88.68	147.75	2839.09	2813.09	-973.22	701.94	5731900.1	636056.9
3657	88.68	147.75	2839.11	2813.11	-974.07	702.48	5731899.3	636057.4
3658	88.69	147.75	2839.14	2813.14	-974.91	703.01	5731898.4	636058.0
3659	88.69	147.76	2839.16	2813.16	-975.76	703.54	5731897.6	636058.5
3660	88.69	147.76	2839.18	2813.18	-976.60	704.08	5731896.7	636059.0
3661	88.69	147.76	2839.20	2813.20	-977.45	704.61	5731895.9	636059.6
3662	88.69	147.76	2839.23	2813.23	-978.30	705.14	5731895.0	636060.1
3663	88.70	147.76	2839.25	2813.25	-979.14	705.68	5731894.2	636060.6
3664	88.70	147.76	2839.27	2813.27	-979.99	706.21	5731893.4	636061.2
3665	88.70	147.77	2839.29	2813.29	-980.83	706.74	5731892.5	636061.7
3666	88.70	147.77	2839.32	2813.32	-981.68	707.28	5731891.7	636062.2
3667	88.70	147.77	2839.34	2813.34	-982.52	707.81	5731890.8	636062.8
3668	88.71	147.77	2839.36	2813.36	-983.37	708.34	5731890.0	636063.3
3669	88.71	147.77	2839.39	2813.39	-984.22	708.88	5731889.1	636063.8
3670	88.71	147.77	2839.41	2813.41	-985.06	709.41	5731888.3	636064.4
3671	88.71	147.78	2839.43	2813.43	-985.91	709.94	5731887.4	636064.9
3672	88.71	147.78	2839.45	2813.45	-986.75	710.48	5731886.6	636065.4
3673	88.71	147.78	2839.48	2813.48	-987.60	711.01	5731885.7	636066.0
3674	88.72	147.78	2839.50	2813.50	-988.44	711.54	5731884.9	636066.5
3675	88.72	147.78	2839.52	2813.52	-989.29	712.07	5731884.1	636067.0
3676	88.72	147.78	2839.54	2813.54	-990.14	712.61	5731883.2	636067.6
3677	88.72	147.79	2839.56	2813.56	-990.98	713.14	5731882.4	636068.1
3678	88.72	147.79	2839.59	2813.59	-991.83	713.67	5731881.5	636068.6
3679	88.73	147.79	2839.61	2813.61	-992.67	714.21	5731880.7	636069.2
3680	88.73	147.79	2839.63	2813.63	-993.52	714.74	5731879.8	636069.7
3681	88.73	147.79	2839.65	2813.65	-994.37	715.27	5731879.0	636070.2
3682	88.73	147.79	2839.68	2813.68	-995.21	715.81	5731878.1	636070.8
3683	88.73	147.80	2839.70	2813.70	-996.06	716.34	5731877.3	636071.3
3684	88.74	147.80	2839.72	2813.72	-996.90	716.87	5731876.4	636071.8
3685	88.74	147.80	2839.74	2813.74	-997.75	717.40	5731875.6	636072.4
3686	88.74	147.80	2839.76	2813.76	-998.59	717.94	5731874.7	636072.9
3687	88.75	147.81	2839.79	2813.79	-999.44	718.47	5731873.9	636073.4
3688	88.76	147.82	2839.81	2813.81	-1000.29	719.00	5731873.1	636073.9
3689	88.78	147.82	2839.83	2813.83	-1001.13	719.53	5731872.2	636074.5
3690	88.79	147.83	2839.85	2813.85	-1001.98	720.07	5731871.4	636075.0
3691	88.80	147.84	2839.87	2813.87	-1002.83	720.60	5731870.5	636075.5
3692	88.81	147.85	2839.89	2813.89	-1003.67	721.13	5731869.7	636076.1
3693	88.82	147.86	2839.91	2813.91	-1004.52	721.66	5731868.8	636076.6
3694	88.83	147.86	2839.93	2813.93	-1005.37	722.19	5731868.0	636077.1
3695	88.85	147.87	2839.95	2813.95	-1006.21	722.73	5731867.1	636077.7
3696	88.86	147.88	2839.97	2813.97	-1007.06	723.26	5731866.3	636078.2
3697	88.87	147.89	2839.99	2813.99	-1007.91	723.79	5731865.4	636078.7
3698	88.88	147.89	2840.01	2814.01	-1008.75	724.32	5731864.6	636079.3
3699	88.89	147.90	2840.03	2814.03	-1009.60	724.85	5731863.7	636079.8
3700	88.90	147.91	2840.05	2814.05	-1010.45	725.38	5731862.9	636080.3
3701	88.92	147.92	2840.07	2814.07	-1011.29	725.91	5731862.0	636080.9
3702	88.93	147.93	2840.09	2814.09	-1012.14	726.45	5731861.2	636081.4
3703	88.94	147.93	2840.11	2814.11	-1012.99	726.98	5731860.4	636081.9
3704	88.95	147.94	2840.13	2814.13	-1013.84	727.51	5731859.5	636082.5
3705	88.96	147.95	2840.15	2814.15	-1014.68	728.04	5731858.7	636083.0
3706	88.97	147.96	2840.16	2814.16	-1015.53	728.57	5731857.8	636083.5
3707	88.99	147.97	2840.18	2814.18	-1016.38	729.10	5731857.0	636084.0
3708	89.00	147.97	2840.20	2814.20	-1017.23	729.63	5731856.1	636084.6
3709	89.01	147.98	2840.22	2814.22	-1018.07	730.16	5731855.3	636085.1

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3710	89.02	147.99	2840.23	2814.23	-1018.92	730.69	5731854.4	636085.6
3711	89.03	148.00	2840.25	2814.25	-1019.77	731.22	5731853.6	636086.2
3712	89.04	148.01	2840.27	2814.27	-1020.62	731.75	5731852.7	636086.7
3713	89.06	148.01	2840.28	2814.28	-1021.46	732.28	5731851.9	636087.2
3714	89.07	148.02	2840.30	2814.30	-1022.31	732.81	5731851.0	636087.8
3715	89.08	148.03	2840.32	2814.32	-1023.16	733.34	5731850.2	636088.3
3716	89.10	148.03	2840.33	2814.33	-1024.01	733.87	5731849.3	636088.8
3717	89.12	148.03	2840.35	2814.35	-1024.86	734.40	5731848.5	636089.3
3718	89.14	148.03	2840.36	2814.36	-1025.71	734.93	5731847.6	636089.9
3719	89.16	148.03	2840.38	2814.38	-1026.55	735.46	5731846.8	636090.4
3720	89.19	148.03	2840.39	2814.39	-1027.40	735.99	5731845.9	636090.9
3721	89.21	148.03	2840.41	2814.41	-1028.25	736.51	5731845.1	636091.5
3722	89.23	148.03	2840.42	2814.42	-1029.10	737.04	5731844.2	636092.0
3723	89.25	148.02	2840.43	2814.43	-1029.95	737.57	5731843.4	636092.5
3724	89.27	148.02	2840.45	2814.45	-1030.79	738.10	5731842.5	636093.1
3725	89.29	148.02	2840.46	2814.46	-1031.64	738.63	5731841.7	636093.6
3726	89.32	148.02	2840.47	2814.47	-1032.49	739.16	5731840.8	636094.1
3727	89.34	148.02	2840.48	2814.48	-1033.34	739.69	5731840.0	636094.6
3728	89.36	148.02	2840.49	2814.49	-1034.19	740.22	5731839.2	636095.2
3729	89.38	148.02	2840.50	2814.50	-1035.04	740.75	5731838.3	636095.7
3730	89.40	148.02	2840.51	2814.51	-1035.88	741.28	5731837.5	636096.2
3731	89.43	148.02	2840.53	2814.53	-1036.73	741.81	5731836.6	636096.8
3732	89.45	148.02	2840.53	2814.53	-1037.58	742.34	5731835.8	636097.3
3733	89.47	148.02	2840.54	2814.54	-1038.43	742.87	5731834.9	636097.8
3734	89.49	148.02	2840.55	2814.55	-1039.28	743.40	5731834.1	636098.3
3735	89.51	148.02	2840.56	2814.56	-1040.12	743.93	5731833.2	636098.9
3736	89.53	148.02	2840.57	2814.57	-1040.97	744.46	5731832.4	636099.4
3737	89.56	148.01	2840.58	2814.58	-1041.82	744.99	5731831.5	636099.9
3738	89.58	148.01	2840.59	2814.59	-1042.67	745.52	5731830.7	636100.5
3739	89.60	148.01	2840.59	2814.59	-1043.52	746.05	5731829.8	636101.0
3740	89.62	148.01	2840.60	2814.60	-1044.37	746.58	5731829.0	636101.5
3741	89.64	148.01	2840.61	2814.61	-1045.21	747.11	5731828.1	636102.1
3742	89.66	148.01	2840.61	2814.61	-1046.06	747.64	5731827.3	636102.6
3743	89.69	148.01	2840.62	2814.62	-1046.91	748.17	5731826.4	636103.1
3744	89.68	148.02	2840.62	2814.62	-1047.76	748.70	5731825.6	636103.6
3745	89.68	148.02	2840.63	2814.63	-1048.61	749.23	5731824.7	636104.2
3746	89.67	148.03	2840.63	2814.63	-1049.45	749.76	5731823.9	636104.7
3747	89.67	148.04	2840.64	2814.64	-1050.30	750.28	5731823.0	636105.2
3748	89.66	148.05	2840.65	2814.65	-1051.15	750.81	5731822.2	636105.8
3749	89.65	148.06	2840.65	2814.65	-1052.00	751.34	5731821.3	636106.3
3750	89.65	148.06	2840.66	2814.66	-1052.85	751.87	5731820.5	636106.8
3751	89.64	148.07	2840.66	2814.66	-1053.70	752.40	5731819.6	636107.3
3752	89.63	148.08	2840.67	2814.67	-1054.55	752.93	5731818.8	636107.9
3753	89.63	148.09	2840.68	2814.68	-1055.39	753.46	5731817.9	636108.4
3754	89.62	148.09	2840.68	2814.68	-1056.24	753.99	5731817.1	636108.9
3755	89.61	148.10	2840.69	2814.69	-1057.09	754.52	5731816.2	636109.5
3756	89.61	148.11	2840.70	2814.70	-1057.94	755.04	5731815.4	636110.0
3757	89.60	148.12	2840.70	2814.70	-1058.79	755.57	5731814.6	636110.5
3758	89.60	148.13	2840.71	2814.71	-1059.64	756.10	5731813.7	636111.0
3759	89.59	148.13	2840.72	2814.72	-1060.49	756.63	5731812.9	636111.6
3760	89.58	148.14	2840.73	2814.73	-1061.34	757.16	5731812.0	636112.1
3761	89.58	148.15	2840.73	2814.73	-1062.19	757.68	5731811.2	636112.6
3762	89.57	148.16	2840.74	2814.74	-1063.04	758.21	5731810.3	636113.2
3763	89.56	148.17	2840.75	2814.75	-1063.89	758.74	5731809.5	636113.7
3764	89.56	148.17	2840.76	2814.76	-1064.74	759.27	5731808.6	636114.2
3765	89.55	148.18	2840.76	2814.76	-1065.59	759.79	5731807.8	636114.7
3766	89.54	148.19	2840.77	2814.77	-1066.44	760.32	5731806.9	636115.3
3767	89.54	148.20	2840.78	2814.78	-1067.29	760.85	5731806.1	636115.8
3768	89.53	148.20	2840.79	2814.79	-1068.14	761.37	5731805.2	636116.3
3769	89.52	148.21	2840.80	2814.80	-1068.99	761.90	5731804.4	636116.8
3770	89.52	148.22	2840.80	2814.80	-1069.84	762.43	5731803.5	636117.4
3771	89.51	148.23	2840.81	2814.81	-1070.69	762.95	5731802.7	636117.9
3772	89.51	148.23	2840.82	2814.82	-1071.54	763.48	5731801.8	636118.4
3773	89.50	148.23	2840.83	2814.83	-1072.39	764.01	5731801.0	636119.0
3774	89.49	148.24	2840.84	2814.84	-1073.24	764.53	5731800.1	636119.5
3775	89.48	148.24	2840.85	2814.85	-1074.09	765.06	5731799.3	636120.0
3776	89.48	148.24	2840.86	2814.86	-1074.94	765.59	5731798.4	636120.5
3777	89.47	148.24	2840.87	2814.87	-1075.79	766.11	5731797.6	636121.1
3778	89.46	148.25	2840.88	2814.88	-1076.64	766.64	5731796.7	636121.6
3779	89.46	148.25	2840.88	2814.88	-1077.49	767.17	5731795.9	636122.1
3780	89.45	148.25	2840.89	2814.89	-1078.34	767.69	5731795.0	636122.6
3781	89.44	148.25	2840.90	2814.90	-1079.19	768.22	5731794.2	636123.2
3782	89.44	148.26	2840.91	2814.91	-1080.04	768.74	5731793.3	636123.7

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3783	89.43	148.26	2840.92	2814.92	-1080.89	769.27	5731792.5	636124.2
3784	89.42	148.26	2840.93	2814.93	-1081.74	769.80	5731791.6	636124.7
3785	89.42	148.26	2840.94	2814.94	-1082.59	770.32	5731790.8	636125.3
3786	89.41	148.27	2840.95	2814.95	-1083.44	770.85	5731789.9	636125.8
3787	89.40	148.27	2840.96	2814.96	-1084.29	771.37	5731789.1	636126.3
3788	89.40	148.27	2840.97	2814.97	-1085.14	771.90	5731788.2	636126.8
3789	89.39	148.27	2840.99	2814.99	-1085.99	772.43	5731787.3	636127.4
3790	89.38	148.27	2841.00	2815.00	-1086.84	772.95	5731786.5	636127.9
3791	89.38	148.28	2841.01	2815.01	-1087.69	773.48	5731785.6	636128.4
3792	89.37	148.28	2841.02	2815.02	-1088.54	774.00	5731784.8	636129.0
3793	89.36	148.28	2841.03	2815.03	-1089.39	774.53	5731783.9	636129.5
3794	89.36	148.28	2841.04	2815.04	-1090.24	775.05	5731783.1	636130.0
3795	89.35	148.29	2841.05	2815.05	-1091.09	775.58	5731782.2	636130.5
3796	89.34	148.29	2841.06	2815.06	-1091.94	776.11	5731781.4	636131.1
3797	89.33	148.29	2841.07	2815.07	-1092.80	776.63	5731780.5	636131.6
3798	89.33	148.29	2841.09	2815.09	-1093.65	777.16	5731779.7	636132.1
3799	89.32	148.30	2841.10	2815.10	-1094.50	777.68	5731778.8	636132.6
3800	89.31	148.30	2841.11	2815.11	-1095.35	778.21	5731778.0	636133.2
3801	89.31	148.30	2841.12	2815.12	-1096.20	778.73	5731777.1	636133.7
3802	89.30	148.30	2841.13	2815.13	-1097.05	779.26	5731776.3	636134.2
3803	89.29	148.29	2841.15	2815.15	-1097.90	779.78	5731775.4	636134.7
3804	89.29	148.29	2841.16	2815.16	-1098.75	780.31	5731774.6	636135.3
3805	89.28	148.29	2841.17	2815.17	-1099.60	780.84	5731773.7	636135.8
3806	89.27	148.29	2841.18	2815.18	-1100.45	781.36	5731772.9	636136.3
3807	89.27	148.28	2841.20	2815.20	-1101.30	781.89	5731772.0	636136.8
3808	89.26	148.28	2841.21	2815.21	-1102.15	782.41	5731771.2	636137.4
3809	89.25	148.28	2841.22	2815.22	-1103.00	782.94	5731770.3	636137.9
3810	89.25	148.27	2841.24	2815.24	-1103.85	783.46	5731769.5	636138.4
3811	89.24	148.27	2841.25	2815.25	-1104.70	783.99	5731768.6	636138.9
3812	89.23	148.27	2841.26	2815.26	-1105.55	784.52	5731767.8	636139.5
3813	89.22	148.27	2841.28	2815.28	-1106.41	785.04	5731766.9	636140.0
3814	89.22	148.26	2841.29	2815.29	-1107.26	785.57	5731766.1	636140.5
3815	89.21	148.26	2841.30	2815.30	-1108.11	786.09	5731765.2	636141.0
3816	89.20	148.26	2841.32	2815.32	-1108.96	786.62	5731764.4	636141.6
3817	89.20	148.25	2841.33	2815.33	-1109.81	787.15	5731763.5	636142.1
3818	89.19	148.25	2841.34	2815.34	-1110.66	787.67	5731762.7	636142.6
3819	89.18	148.25	2841.36	2815.36	-1111.51	788.20	5731761.8	636143.1
3820	89.18	148.25	2841.37	2815.37	-1112.36	788.72	5731761.0	636143.7
3821	89.17	148.24	2841.39	2815.39	-1113.21	789.25	5731760.1	636144.2
3822	89.16	148.24	2841.40	2815.40	-1114.06	789.78	5731759.3	636144.7
3823	89.16	148.24	2841.42	2815.42	-1114.91	790.30	5731758.4	636145.3
3824	89.15	148.24	2841.43	2815.43	-1115.76	790.83	5731757.6	636145.8
3825	89.14	148.23	2841.45	2815.45	-1116.61	791.36	5731756.7	636146.3
3826	89.14	148.23	2841.46	2815.46	-1117.46	791.88	5731755.9	636146.8
3827	89.13	148.23	2841.48	2815.48	-1118.31	792.41	5731755.0	636147.4
3828	89.12	148.22	2841.49	2815.49	-1119.16	792.94	5731754.2	636147.9
3829	89.11	148.22	2841.51	2815.51	-1120.01	793.46	5731753.3	636148.4
3830	89.11	148.22	2841.52	2815.52	-1120.86	793.99	5731752.5	636148.9
3831	89.10	148.22	2841.54	2815.54	-1121.71	794.52	5731751.6	636149.5
3832	89.09	148.22	2841.55	2815.55	-1122.56	795.04	5731750.8	636150.0
3833	89.08	148.22	2841.57	2815.57	-1123.41	795.57	5731749.9	636150.5
3834	89.07	148.22	2841.59	2815.59	-1124.26	796.09	5731749.1	636151.0
3835	89.06	148.22	2841.60	2815.60	-1125.11	796.62	5731748.2	636151.6
3836	89.05	148.22	2841.62	2815.62	-1125.96	797.15	5731747.4	636152.1
3837	89.04	148.23	2841.64	2815.64	-1126.81	797.67	5731746.5	636152.6
3838	89.03	148.23	2841.65	2815.65	-1127.66	798.20	5731745.7	636153.1
3839	89.02	148.23	2841.67	2815.67	-1128.51	798.73	5731744.8	636153.7
3840	89.01	148.23	2841.69	2815.69	-1129.36	799.25	5731744.0	636154.2
3841	89.00	148.23	2841.70	2815.70	-1130.21	799.78	5731743.1	636154.7
3842	88.99	148.23	2841.72	2815.72	-1131.06	800.31	5731742.3	636155.3
3843	88.98	148.23	2841.74	2815.74	-1131.91	800.83	5731741.4	636155.8
3844	88.97	148.23	2841.76	2815.76	-1132.76	801.36	5731740.6	636156.3
3845	88.96	148.23	2841.78	2815.78	-1133.61	801.89	5731739.7	636156.8
3846	88.95	148.23	2841.79	2815.79	-1134.46	802.41	5731738.9	636157.4
3847	88.94	148.23	2841.81	2815.81	-1135.31	802.94	5731738.0	636157.9
3848	88.93	148.23	2841.83	2815.83	-1136.16	803.47	5731737.2	636158.4
3849	88.92	148.23	2841.85	2815.85	-1137.01	803.99	5731736.3	636158.9
3850	88.91	148.23	2841.87	2815.87	-1137.86	804.52	5731735.5	636159.5
3851	88.91	148.23	2841.89	2815.89	-1138.71	805.04	5731734.6	636160.0
3852	88.90	148.24	2841.91	2815.91	-1139.56	805.57	5731733.8	636160.5
3853	88.89	148.24	2841.93	2815.93	-1140.41	806.10	5731732.9	636161.0
3854	88.88	148.24	2841.95	2815.95	-1141.26	806.62	5731732.1	636161.6
3855	88.87	148.24	2841.97	2815.97	-1142.11	807.15	5731731.2	636162.1

MD	Angl	irectio	VDR	TVDSS	DNorth	DEast	Northing	Easting
3856	88.86	148.24	2841.98	2815.98	-1142.96	807.68	5731730.4	636162.6
3857	88.85	148.24	2842.00	2816.00	-1143.81	808.20	5731729.5	636163.1
3858	88.84	148.24	2842.03	2816.03	-1144.66	808.73	5731728.7	636163.7
3859	88.83	148.24	2842.05	2816.05	-1145.51	809.25	5731727.8	636164.2
3860	88.82	148.24	2842.07	2816.07	-1146.36	809.78	5731727.0	636164.7
3861	88.82	148.24	2842.09	2816.09	-1147.21	810.31	5731726.1	636165.3
3862	88.81	148.24	2842.11	2816.11	-1148.06	810.83	5731725.3	636165.8
3863	88.81	148.24	2842.13	2816.13	-1148.91	811.36	5731724.4	636166.3
3864	88.80	148.25	2842.15	2816.15	-1149.76	811.89	5731723.6	636166.8
3865	88.79	148.25	2842.17	2816.17	-1150.61	812.41	5731722.7	636167.4
3866	88.79	148.25	2842.19	2816.19	-1151.46	812.94	5731721.9	636167.9
3867	88.78	148.25	2842.21	2816.21	-1152.31	813.46	5731721.0	636168.4
3868	88.78	148.25	2842.23	2816.23	-1153.16	813.99	5731720.2	636168.9
3869	88.77	148.25	2842.25	2816.25	-1154.01	814.52	5731719.3	636169.5
3870	88.77	148.25	2842.28	2816.28	-1154.86	815.04	5731718.5	636170.0
3871	88.76	148.25	2842.30	2816.30	-1155.71	815.57	5731717.6	636170.5
3872	88.75	148.25	2842.32	2816.32	-1156.56	816.09	5731716.8	636171.0
3873	88.75	148.25	2842.34	2816.34	-1157.41	816.62	5731715.9	636171.6
3874	88.74	148.26	2842.36	2816.36	-1158.26	817.15	5731715.1	636172.1
3875	88.74	148.26	2842.39	2816.39	-1159.11	817.67	5731714.2	636172.6
3876	88.73	148.26	2842.41	2816.41	-1159.96	818.20	5731713.4	636173.1
3877	88.73	148.26	2842.43	2816.43	-1160.81	818.72	5731712.5	636173.7
3878	88.72	148.26	2842.45	2816.45	-1161.66	819.25	5731711.7	636174.2
3879	88.71	148.26	2842.47	2816.47	-1162.51	819.78	5731710.8	636174.7
3880	88.71	148.26	2842.50	2816.50	-1163.36	820.30	5731710.0	636175.2
3881	88.70	148.26	2842.52	2816.52	-1164.21	820.83	5731709.1	636175.8
3882	88.70	148.26	2842.54	2816.54	-1165.06	821.35	5731708.3	636176.3
3883	88.69	148.26	2842.56	2816.56	-1165.91	821.88	5731707.4	636176.8
3884	88.68	148.27	2842.59	2816.59	-1166.76	822.41	5731706.6	636177.4
3885	88.68	148.27	2842.61	2816.61	-1167.61	822.93	5731705.7	636177.9
3886	88.67	148.27	2842.63	2816.63	-1168.46	823.46	5731704.9	636178.4
3887	88.67	148.27	2842.66	2816.66	-1169.31	823.98	5731704.0	636178.9
3888	88.66	148.27	2842.68	2816.68	-1170.17	824.51	5731703.2	636179.5
3889	88.66	148.24	2842.70	2816.70	-1171.02	825.04	5731702.3	636180.0
3890	88.67	148.21	2842.73	2816.73	-1171.87	825.56	5731701.5	636180.5
3891	88.67	148.17	2842.75	2816.75	-1172.71	826.09	5731700.6	636181.0
3892	88.68	148.14	2842.77	2816.77	-1173.56	826.62	5731699.8	636181.6
3893	88.69	148.10	2842.80	2816.80	-1174.41	827.14	5731698.9	636182.1
3894	88.69	148.07	2842.82	2816.82	-1175.26	827.67	5731698.1	636182.6
3895	88.69	148.07	2842.84	2816.84	-1176.11	828.20	5731697.2	636183.1
3896	88.69	148.07	2842.86	2816.86	-1176.96	828.73	5731696.4	636183.7
3897	88.69	148.07	2842.89	2816.89	-1177.81	829.26	5731695.5	636184.2
3898	88.69	148.07	2842.91	2816.91	-1178.66	829.79	5731694.7	636184.7
3899	88.69	148.07	2842.93	2816.93	-1179.50	830.32	5731693.8	636185.3
3900	88.69	148.07	2842.96	2816.96	-1180.35	830.85	5731693.0	636185.8
3901	88.69	148.07	2842.98	2816.98	-1181.20	831.37	5731692.1	636186.3
3902	88.69	148.07	2843.00	2817.00	-1182.05	831.90	5731691.3	636186.8
3903	88.69	148.07	2843.02	2817.02	-1182.90	832.43	5731690.4	636187.4
3904	88.70	148.07	2843.05	2817.05	-1183.75	832.96	5731689.6	636187.9
3905	88.70	148.07	2843.07	2817.07	-1184.59	833.49	5731688.7	636188.4
3906	88.70	148.07	2843.09	2817.09	-1185.44	834.02	5731687.9	636189.0
3907	88.70	148.07	2843.12	2817.12	-1186.29	834.55	5731687.0	636189.5
3908	88.70	148.07	2843.14	2817.14	-1187.14	835.08	5731686.2	636190.0
3909	88.70	148.07	2843.16	2817.16	-1187.99	835.60	5731685.4	636190.6
3910	88.70	148.07	2843.18	2817.18	-1188.84	836.13	5731684.5	636191.1
3911	88.70	148.07	2843.21	2817.21	-1189.69	836.66	5731683.7	636191.6
3912	88.70	148.07	2843.23	2817.23	-1190.53	837.19	5731682.8	636192.1
3913	88.70	148.07	2843.25	2817.25	-1191.38	837.72	5731682.0	636192.7

0

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APPENDIX 2a

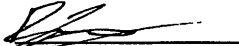
BLACKBACK A-3

Petrophysics Evaluation Summary

Esso Australia Ltd
Exploration Department

Blackback A-3
Formation Evaluation
Log Analysis Report

R. J. Lyons
October 1999

Endorsed by: 
FE Team Leader

Date: 29/10/99

Blackback A-3 LOG ANALYSIS

Blackback A-3 was the third well of the Blackback Phase 1 development project. The well was designed as a near-horizontal well targeting Eocene reservoir with a heel location approximately 1 kilometre south-east of the subsea template. The well was spudded on February 17, 1999 by the semi-submersible Sedco 702. After setting 20" casing at 1195m the rig was temporarily released to batch drill A-2. The rig returned to location on June 27 and drilled the 12 1/4" intermediate section to a depth of 3355m, setting 9 5/8" casing at 3341m MD. The horizontal 8 1/2" hole section was then drilled to a total depth of 3913m MD on July 29th and completed with a 5 1/2" slotted liner.

The LWD, RAB-ADN4-GR data have analysed for effective porosity and water saturation from 3360 to 3890m. The 1994 Blackback Field Study "Eocene" Laser model was used to derive effective porosity from gamma ray, density and neutron log responses. Water saturations were derived using the Waxman Smits model as in the 94 Field Study. Note that all depths quoted below are logged MDKB unless specified otherwise. The result of the analyses is included as Attachment 1.

DATA

Open Hole Logs Acquired

- | | |
|---|--------------|
| 1. RAB / ADN4 / GR (8 1/2" Production hole) | 3355 - 3913m |
| 2. MWD-GR (12 1/4" landing section) | 1211 - 3355m |

Mud Data (8 1/2" Production Hole)

Mud Type: Baradril-N (water based)
 Mud Weight: 9.8 LB/G
 BHT: 74 °C

Log Quality

LWD log quality is very good through out the interval; minimal editing and depth alignment was necessary. Neutron - Density data agree well with the Blackback-1 and ST1 wells (Figure 1). The slightly lower resistivities observed on the Blackback-1 and ST1 wireline logs relative to the A-3 LWD data (Figure 2) are attributed to fluid invasion. High irreducible water saturations (poor reservoir quality) are responsible for the low resistivities observed in Blackback-3 relative to the other wells.

INTERPRETATION**Logs Used**

GR, RING, ROBB, TNPH

Analysis Parameters

The Eocene porosity model (Blackback-1 ST1) developed for the 1994 Field Study was used to derive total and effective porosity. The LASER parameters are provided in Attachment 1.

Water saturations were calculated using the Waxman Smits model (SOLAR, Standard Calculations Tool) using the following inputs:

a	1	
m	2	
n	2	
BQv	2.5	<i>From 94 Field Study</i>
Rw	0.095	

Free Formation Water Resistivity

The free formation water resistivity of 0.095 ohmm (30,000 ppm NaCl @ 80C) used in this analysis is consistent with the salinity used in the 1994 Blackback Field Study. Note, the temperature used in this calculation is from the Blackback-1 ST1 production Test, the maximum BHT (74C) measured from the LWD logs is slightly lower.

Effective Porosity and Water Saturations

Effective porosity was calculated using the final values of total porosity and clay volume from LASER (assuming a clay porosity of .3). Effective water saturation was calculated from the total water saturation using the following equations:

$$\text{PHIE} = (\text{PHIT} - (\text{Vclay} * \text{PHIclay}))$$

$$\text{SWE} = (1 - ((\text{PHIT}/\text{PHIE}) * (1 - \text{SWT})))$$

Estimation of Permeability

Permeability was estimated from the LASER effective porosity curve using the regression developed in the 1994 Blackback Field Study for Blackback-1 where:

$$\text{Perm.est} = 10^{**} (-0.205773 + (12.864383 * \text{phie}))$$

DISCUSSION

1. LWD data clearly indicates the best reservoir quality is in the lowermost 314m of the well (Figure 3).
2. Blackback A-3 penetrated 320.8 m MD, of oil pay with a mean *total porosity* of 20 p.u., and a mean *total water saturation* of 52 s.u. (Table 1). (where net pay = estimated permeability \geq 10md).
3. The log-derived *total water saturations* are consistent with capillary pressure data @ 171 kpa (approximate Height above FWL for Horizontal section, Attachment 3) from the Blackback-1 and ST1 wells (Figures 4 and 5).
4. *Total porosity* and *total water saturations* are strongly recommended for OOIP calculations (as per EPR Formation Evaluation Guidelines for Shaly Sands). Effective water saturations in particular should be used with caution in this complex lithology.
5. Initial oil production was approximately 10,000 stb/d (60% choke) (Figure 6) .

Attached are the following presentations of results:

- Table 1 - Blackback A-3, Petrophysics Analysis Summary.
- Figure 1 - Neutron – Density Crossplot, Blackback-1, ST1, and A-3.
- Figure 2 - Resistivity vs. Porosity Crossplot, Blackback-1, ST1, 3, and A-3.
- Figure 3 - Blackback A-3, Log Analysis Results.
- Figure 4 - Blackback Eocene Capillary Pressure vs. Saturations.
- Figure 5 - Blackback Eocene, Swpc vs. Permeability.
- Figure 6 - Blackback A-3, Oil Production and Gas Rate.
- Attachment 1 - LASER analysis parameters and Depth Plot.
- Attachment 2 - Analysis Depth Plot Blackback A-3
- Attachment 3 - Estimated Capillary Pressure, Blackback A-3.

Reference:

Dodge, W.S., "Blackback/Terakihi Formation Evaluation Field Study", Esso Australia Ltd., Exploration Dep. Report, December 1994.

BLACKBACK A3

PETROPHYSICS ANALYSIS SUMMARY

Depth reference: MDKB

Net Porous Interval based on Porosity cut-off only.
Both Porosity and Sw cut-offs invoked when generating Hydrocarbon-Metres.

GROSS INTERVAL (metres) (top)	Gross Metres	NET INTERVAL			Mean Vwclay	(Std.) (Dev.)	Mean Phit	(Std.) (Dev.)	Mean Phie	(Std.) (Dev.)	Waxman Smits		Mean Est. Perm (md)	Cutoff
		Net Metres	Net to Gross(%)	Mean Gross(%)							Mean Sw	Mean Swe		
3360	216	38.4	18	0.425	0.0178	0.197	0.006	0.104	0.0079	0.0079	0.62	0.28	14.1	10 md est perm
3576	314	282.5	90	0.372	0.032	0.205	0.014	0.123	0.0168	0.0168	0.51	0.18	27.1	10 md est perm
3360	530	320.8	61	0.38	0.0351	0.200	0.012	0.120	0.0171	0.0171	0.52	0.23	25.5	10 md est perm

- Notes:
1. Permeability estimated using regression from Blackback 1ST (94 Field Study) where $perm.est = 10^{**}(-0.205773 + (12.864384 * phie))$
 2. Water saturations from Waxman Smits for comparison with 94 Field Study results.
 3. Total porosity and Total water saturations should be used for OOIP estimates.
 4. Swe from $(1 - ((Phit/Phie) * (1 - Swt)))$, is not recommended for volumetrics.

Statistics using water saturations from Dual Water method, and a cutoff of phie > .12 for comparison purposes.

GROSS INTERVAL (metres) (top)	Gross Metres	NET INTERVAL			Mean Vwclay	(Std.) (Dev.)	Mean Phit	(Std.) (Dev.)	Mean Phie	(Std.) (Dev.)	Dual Water		Mean Cutoff
		Net Metres	Net to Gross(%)	Mean Gross(%)							Mean Sw	Mean Swe	
3360	530	155.7	29	0.35	0.024	0.21	0.024	0.14	0.01	0.01	0.47	0.21	phie > .12

Neutron - Density Crossplot, Blackback 1, ST1 and A-3

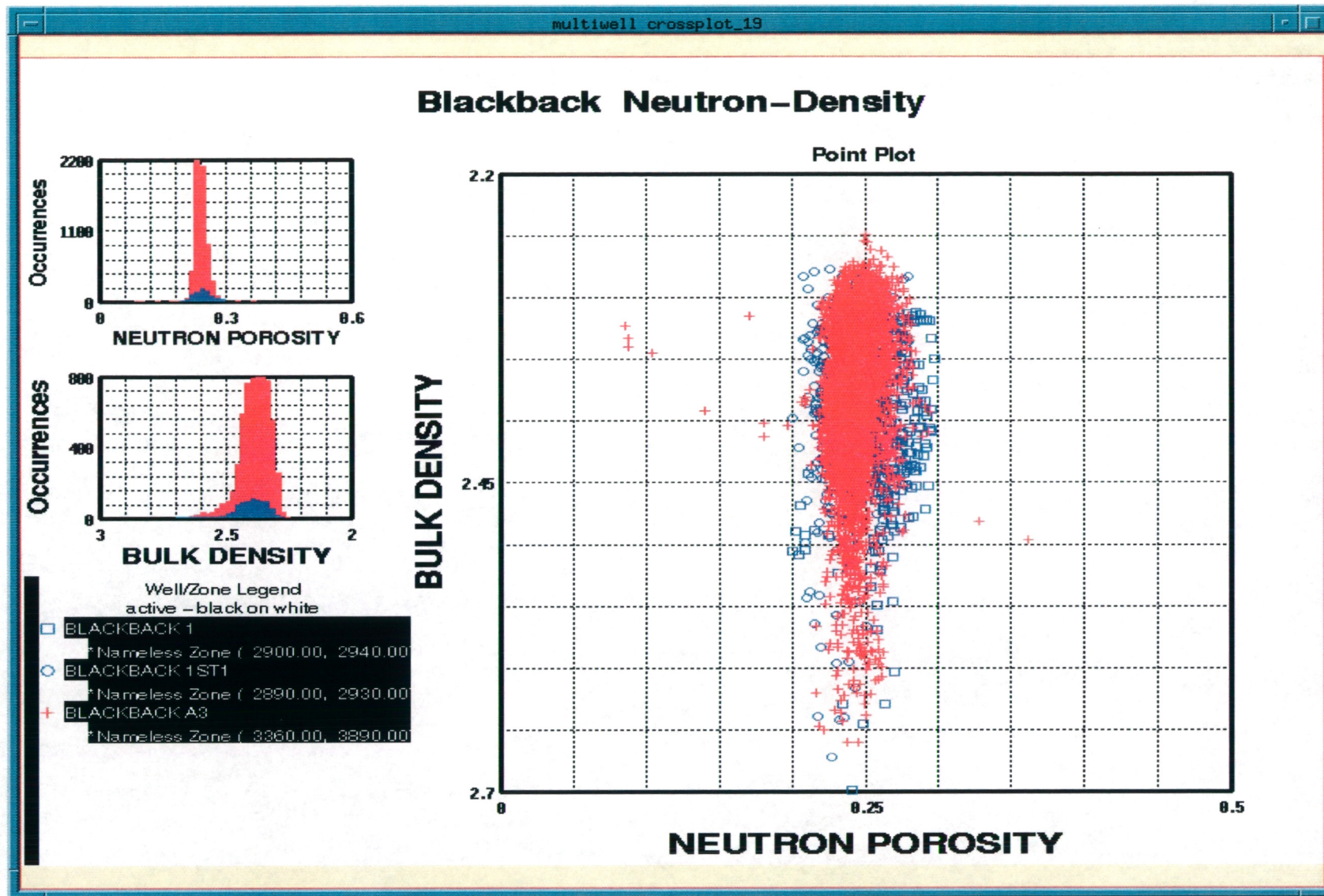


Figure 1.

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Resistivity vs. Porosity Crossplot, Blackback 1, ST1, 3 and A-3

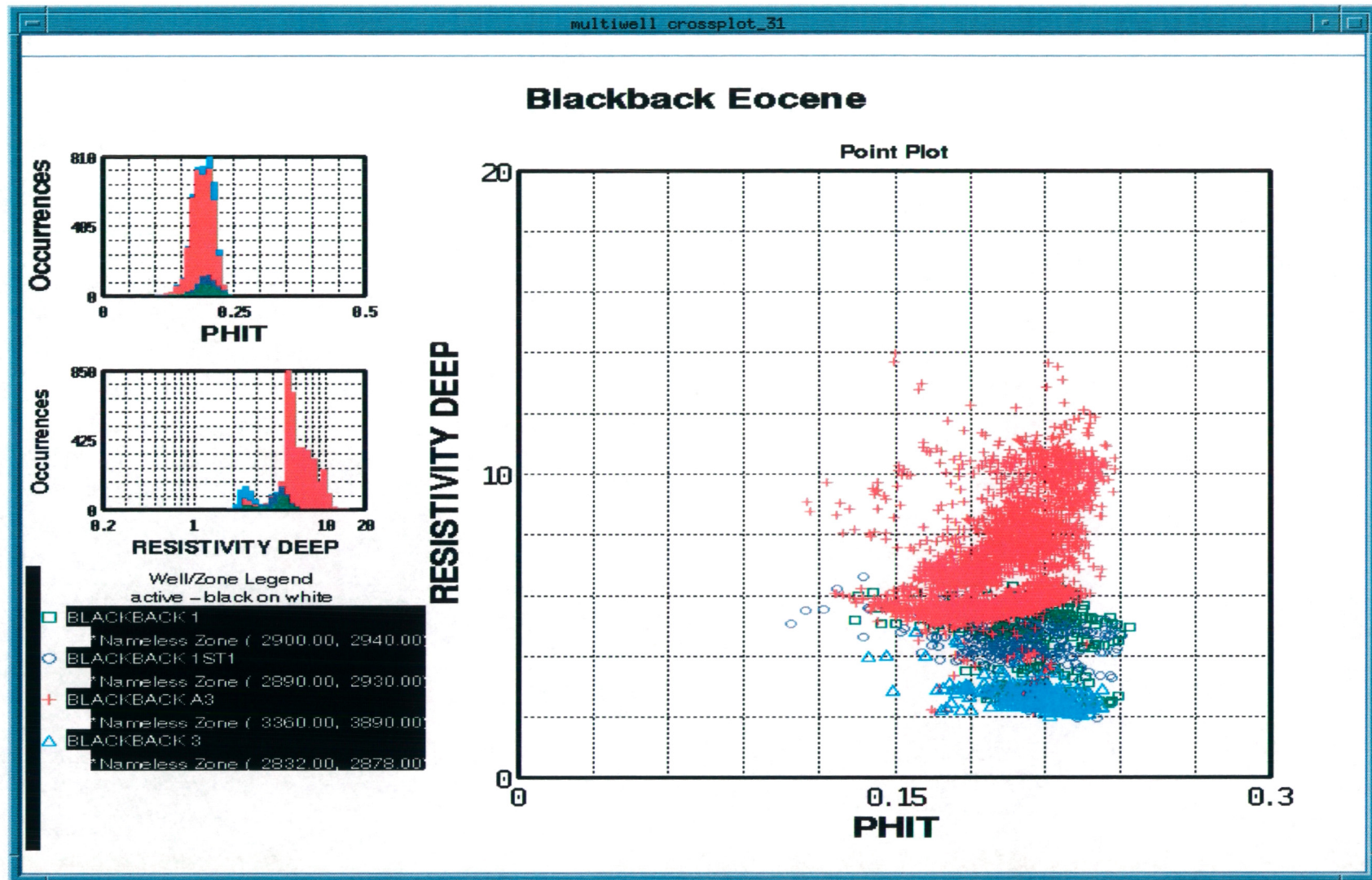


Figure 2.

Blackback A-3, Log Analysis Results

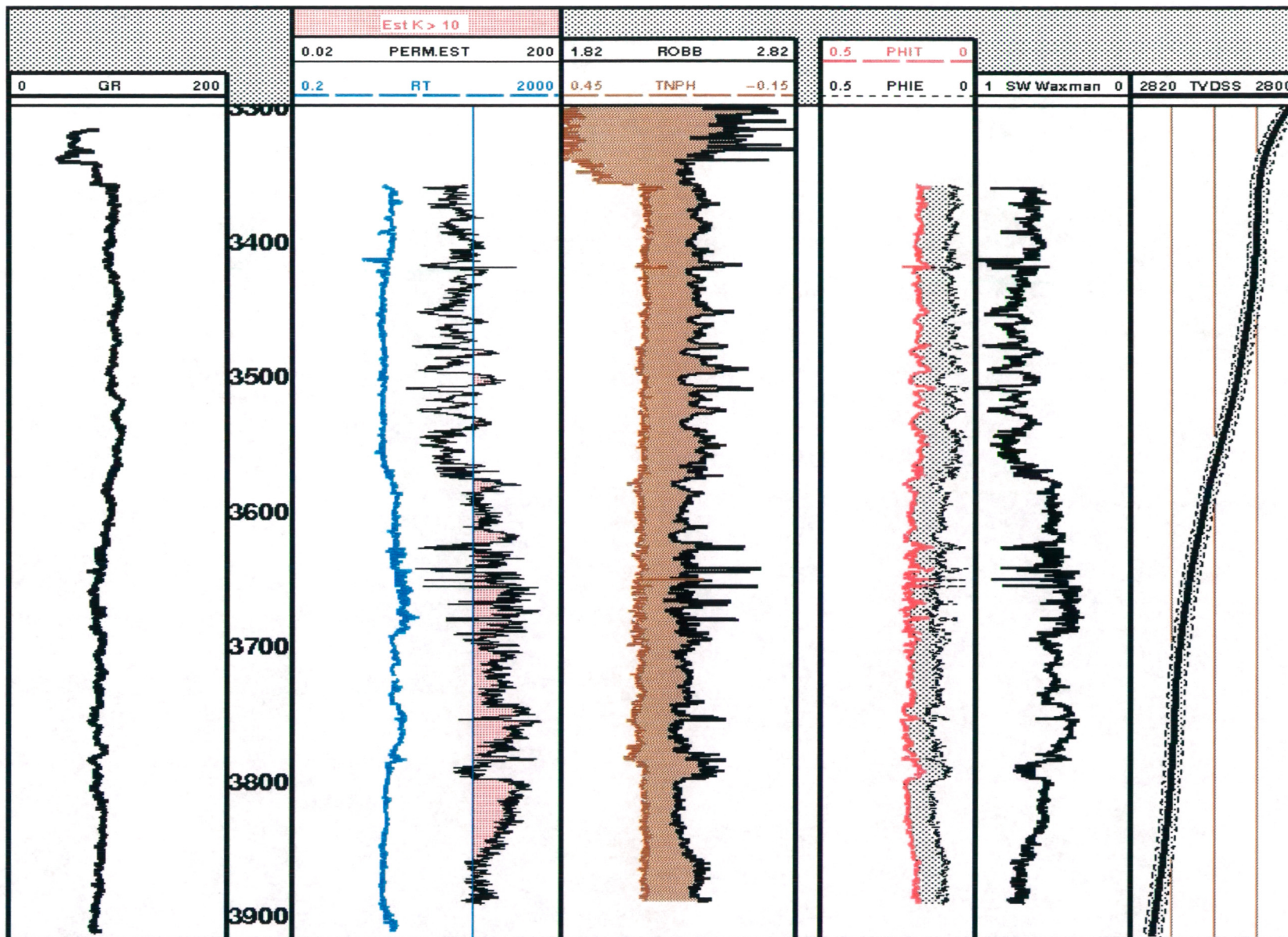
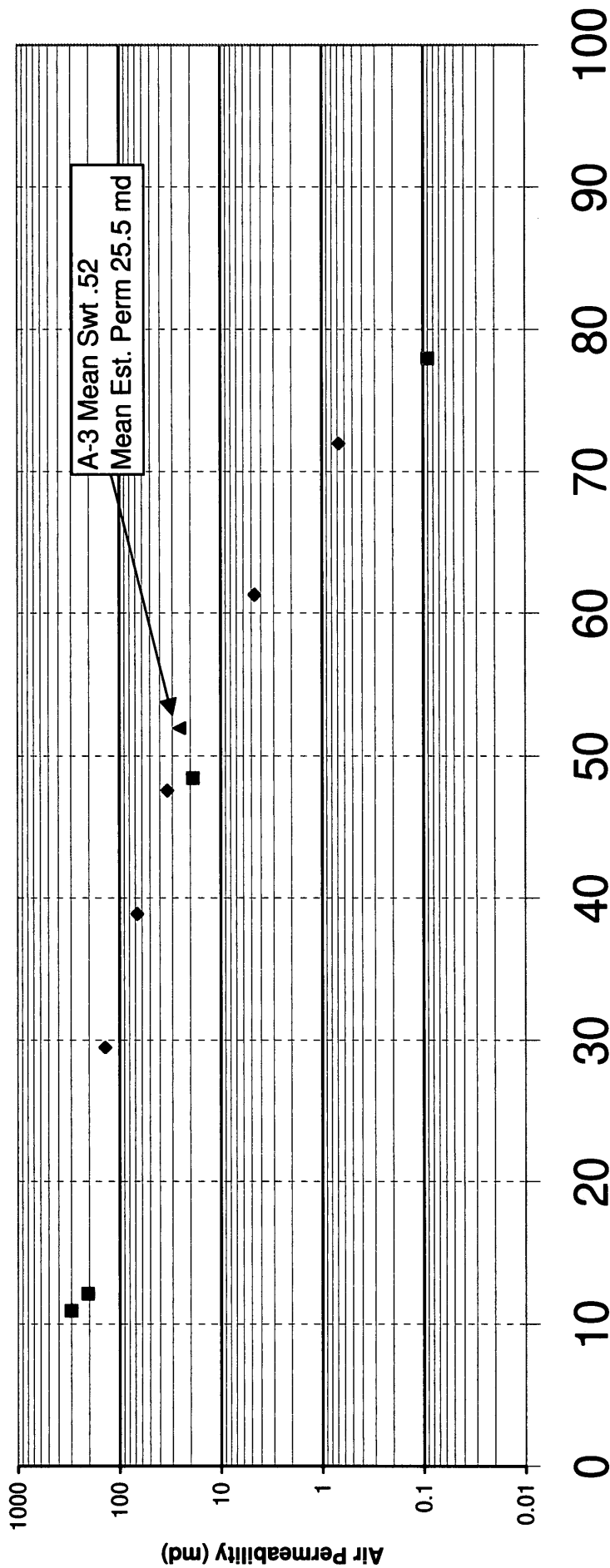


Figure 3.

Blackback Eocene Swpc vs. Permeability



◆ Blackback 1 ■ Blackback 1 ST1 ▲ A-3 Analysis

Figure 5.

BLACKBACK A-3: EOCENE HORIZONTAL WELL



Figure 6.

Blackback A-3 Eocene LASER MODEL

MODEL: BLACKBACK3 EOCENE MODEL

PROBLEM FILE: BLACKBACK A-3

CONSTRAINT TABLE

sum=1	.005	1	
BULK DENSITY	Density Linear	.06	2
VOL.PHOTO XSECTION	Photoelectric Linear	1	3
NEUTRON POROSITY	CNL Piecewise-Linear	.03	4
GAMMA RAY	GR weight fraction	10	12
0.	Clay Bound Water	.01	23

VARIABLE TABLE

VWXO	1	0	0.2000	0.	1.
VCLBW	2	0	0.2000	0.	1.
QRTZ	7	3	0.2000	0.	1.
SIDERITE	14	3	0.2000	0.	1.
CLAY_2	16	3	0.2000	0.	1.

CONSTRAINT PARAMETER EXCEPTION TABLE

Density Linear	rho VWXO	1.02
Density Linear	rho VCLBW	1.02
Density Linear	rho KFELDS	2.54
Density Linear	rho SIDERITE	3.91
Density Linear	rho CLAY_2	2.79
Density Linear	rho KAOL	2.62
Photoelectric Linear	U VWXO	.542
Photoelectric Linear	U VCLBW	.542
Photoelectric Linear	U KFELDS	7.26
Photoelectric Linear	U SIDERITE	57.4
Photoelectric Linear	U CLAY_2	14.2
Photoelectric Linear	U KAOL	4.45
GR weight fraction	GR VWXO	30.
GR weight fraction	GR VCLBW	30.
GR weight fraction	GR QRTZ	30.
GR weight fraction	GR KFELDS	235
GR weight fraction	GR SIDERITE	30.
GR weight fraction	GR CLAY_2	170
GR weight fraction	GR KAOL	80.
GR weight fraction	mode mat3fm0	3
GR weight fraction	rho VWXO	1.02
GR weight fraction	rho VCLBW	1.02
GR weight fraction	rho KFELDS	2.54
GR weight fraction	rho SIDERITE	3.91
GR weight fraction	rho CLAY_2	2.79
GR weight fraction	rho KAOL	2.62
Clay Bound Water	coeff VWXO	0.

Clay Bound Water	coeff VCLBW	-1.
Clay Bound Water	coeff CLAY_2	0.28
Clay Bound Water	coeff KAOL	0.37
CNL Piecewise-Linear	CNL 0 QRTZ	-.0207
CNL Piecewise-Linear	CNL 0 KFELDS	-.0004
CNL Piecewise-Linear	CNL 0 SIDERITE	.1558
CNL Piecewise-Linear	CNL 0 CLAY_2	.1452
CNL Piecewise-Linear	CNL 0 KAOL	.3275
CNL Piecewise-Linear	CNL 5 VWXO	.003236
CNL Piecewise-Linear	CNL 5 VCLBW	.003236
CNL Piecewise-Linear	CNL 5 QRTZ	.0175
CNL Piecewise-Linear	CNL 5 KFELDS	.0618
CNL Piecewise-Linear	CNL 5 SIDERITE	.3412
CNL Piecewise-Linear	CNL 5 CLAY_2	.2088
CNL Piecewise-Linear	CNL 5 KAOL	.3849
CNL Piecewise-Linear	CNL 10 VWXO	.00794
CNL Piecewise-Linear	CNL 10 VCLBW	.00794
CNL Piecewise-Linear	CNL 10 QRTZ	.0593
CNL Piecewise-Linear	CNL 10 KFELDS	.1126
CNL Piecewise-Linear	CNL 10 SIDERITE	.4551
CNL Piecewise-Linear	CNL 10 CLAY_2	.2652
CNL Piecewise-Linear	CNL 10 KAOL	.4388
CNL Piecewise-Linear	CNL 20 VWXO	.0162
CNL Piecewise-Linear	CNL 20 VCLBW	.0162
CNL Piecewise-Linear	CNL 20 QRTZ	.1532
CNL Piecewise-Linear	CNL 20 KFELDS	.2039
CNL Piecewise-Linear	CNL 20 SIDERITE	.5910
CNL Piecewise-Linear	CNL 20 CLAY_2	.3599
CNL Piecewise-Linear	CNL 20 KAOL	.5289
CNL Piecewise-Linear	CNL 40 VWXO	.0216
CNL Piecewise-Linear	CNL 40 VCLBW	.0216
CNL Piecewise-Linear	CNL 40 QRTZ	.3539
CNL Piecewise-Linear	CNL 40 KFELDS	.3762
CNL Piecewise-Linear	CNL 40 SIDERITE	.7205
CNL Piecewise-Linear	CNL 40 CLAY_2	.5142
CNL Piecewise-Linear	CNL 40 KAOL	.6607

0 INITIALIZER PARAMETER EXCEPTION TABLE

24 AUXILIARY VARIABLE TABLE

PHIT	VWXO	1.0000	0.0000
PHIT	VCLBW	1.0000	0.0000
PHIT	QRTZ	0.0000	0.0000
PHIT	SIDERITE	0.0000	0.0000
PHIT	CLAY_2	0.0000	0.0000
PHIT	1.0	0.0000	1.0000
PHIE	VWXO	1.0000	0.0000
PHIE	VCLBW	0.0000	0.0000
PHIE	QRTZ	0.0000	0.0000
PHIE	SIDERITE	0.0000	0.0000
PHIE	CLAY_2	0.0000	0.0000
PHIE	1.0	0.0000	1.0000

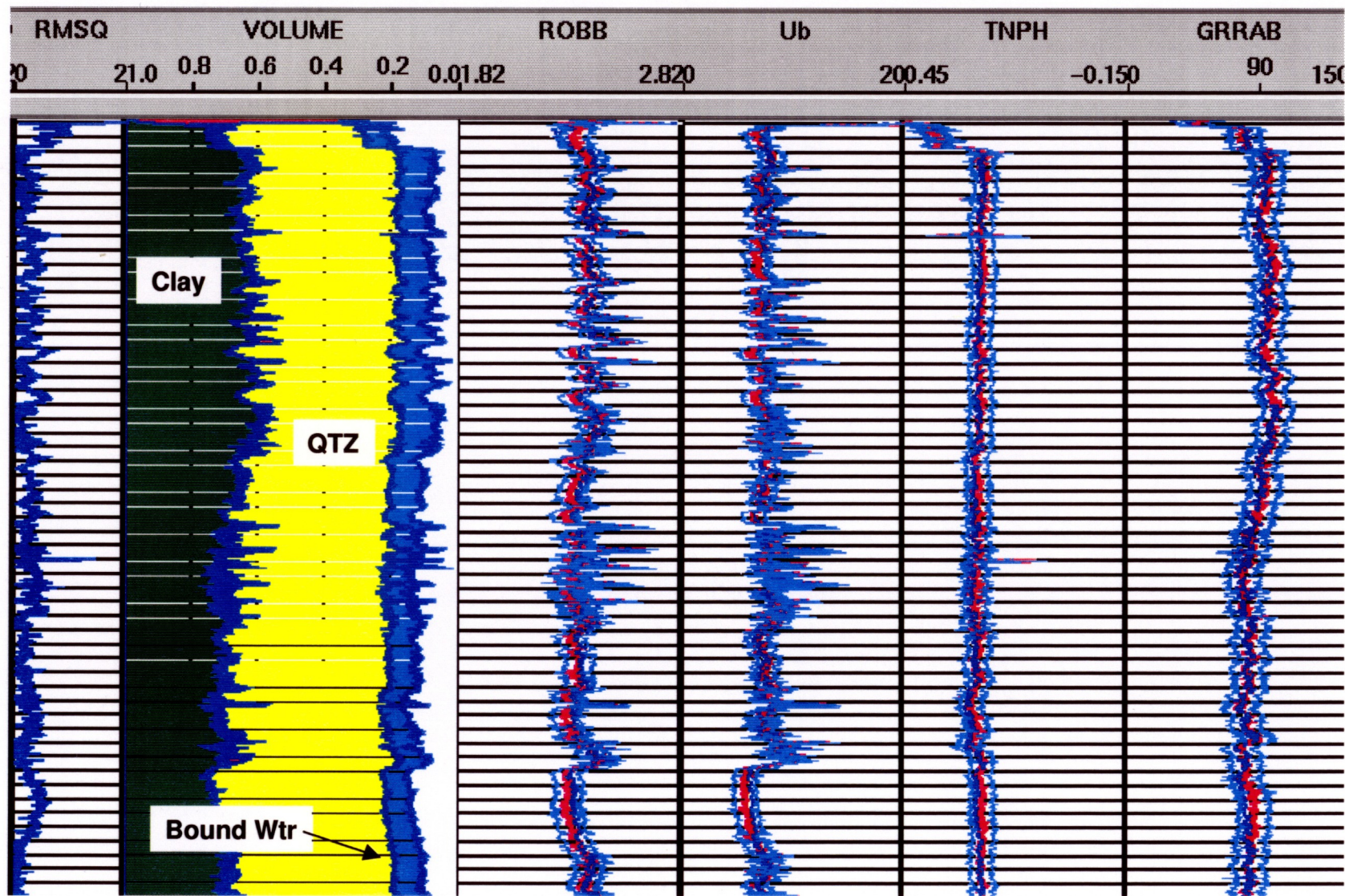
Attachment 1: LASER ANALYSIS PARAMETERS

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VWCLAY	VWXO	0.0000	0.0000
VWCLAY	VCLBW	1.0000	0.0000
VWCLAY	QRTZ	0.0000	0.0000
VWCLAY	SIDERITE	0.0000	0.0000
VWCLAY	CLAY_2	1.0000	0.0000
VWCLAY	1.0	0.0000	1.0000
VDCLAY	VWXO	0.0000	0.0000
VDCLAY	VCLBW	0.0000	0.0000
VDCLAY	QRTZ	0.0000	0.0000
VDCLAY	SIDERITE	0.0000	0.0000
VDCLAY	CLAY_2	1.0000	0.0000
VDCLAY	1.0	0.0000	1.0000

0 BAD-DATA LOGIC TABLE

Blackback A-3 LASER RESULTS



907523 060

PE602995

This is an enclosure indicator page.
The enclosure PE602995 is enclosed within the
container PE907523 at this location in this
document.

The enclosure PE602995 has the following characteristics:

ITEM_BARCODE = PE602995
CONTAINER_BARCODE = PE907523
NAME = Blackback-A3 Log Analysis Depth Plot
BASIN = GIPPSLAND
ONSHORE? = N
DATA_TYPE = WELL
DATA_SUB_TYPE = WELL_LOG
DESCRIPTION = Blackback-A3 Log Analysis Depth Plot
Scale 1:500 Attachment 2
REMARKS =
DATE_WRITTEN = 09-NOV-1999
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Esso Australia Ltd
WELL_NAME = Blackback-A3
CONTRACTOR =
AUTHOR =
ORIGINATOR = Esso Australia Ltd
TOP_DEPTH = 3300
BOTTOM_DEPTH = 3917
ROW_CREATED_BY = DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

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PE602995

BLACKBACK A3

Attachment 2

Log Analysis Depth Plot
3300 - 3917 MD

Attachment 3: Estimated Capillary Pressure, Blackback A-3

Field OWC		2834
Horizontal Section		2812
column height		22

Density	water	1.02
Density	hc	0.523

Pc res 15.6 psi
 107.2 kpa

where $Pc_{res} = 1.4223 * (Rho_{wtr} - Rho_{hc}) * Height$

lab	contact angle	0
	IFT	48

res	contact angle	0
	IFT	30

Pc lab 24.9 psi
 171.5 kpa

where $Pc_{lab} = pc_{res} * ((\sigma \cos \theta_{lab} / \sigma \cos \theta_{res})$

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APPENDIX 3a

BLACKBACK A-3

Lithology/Show Descriptions

Geologist: Greg Clota

Blackback A-3 Lithology / Show Descriptions

Interval (m) From To	%	Lithology / Show Description
		Geologist onboard from 2190mMD
2190-2220	100	LIMESTONE: Dark grey to brown grey, olive grey, calcilutite, silty in part, trace forams, rare carbonaceous specks, trace light grey very fine calcarenite inclusions, rare calcite spar, firm to moderately hard, massive to blocky.
2220-2250	100	LIMESTONE: Medium dark to dark grey, brown grey, calcisiltite, micritic, trace carbonaceous specks, common very fine calcareous sand, slightly dolomitic in part, firm to predominantly moderately hard, massive to blocky.
2250-2280	100	LIMESTONE: Predominantly as above, locally trace light brown cryptocrystalline dolomitic inclusions.
2280-2310	100	LIMESTONE: Medium dark grey to brown grey, calcilutite, slightly silty, micritic, trace carbonaceous specks, locally common fine calcareous sand, trace light grey cryptocrystalline calcareous inclusions, moderately hard, blocky.
2310-2340	100	LIMESTONE: As above.
2340-2370	100	LIMESTONE: Medium grey to brown grey, calcilutite, slightly silty, micritic, trace disseminated pyrite, trace fine calcareous sand, rare carbonaceous specks, locally tight grey very fine calcarenite inclusions, moderately hard, massive to blocky.
2370-2400	100	LIMESTONE: Brown grey, brown black, calcilutite, silty in part, micritic, trace carbonaceous specks, rare disseminated pyrite, occasionally very fine calcareous sand, firm to moderately hard, massive to blocky.
2400-2430	100	LIMESTONE: Brown grey to medium dark grey, calcilutite, slightly silty in part, micritic, trace carbonaceous specks, occasionally light grey very fine to fine calcarenite inclusions/laminae, firm, massive to blocky.
2430-2460	100	LIMESTONE: Brown grey to olive grey, calcilutite, slightly silty, micritic, rare disseminated pyrite, trace carbonaceous specks, locally common light brown to light grey very fine to fine calcarenite inclusions, firm, massive.
2460-2490	100	LIMESTONE: Brown black to dark grey, calcilutite, slightly silty, trace carbonaceous specks, trace very fine calcareous sand, firm, massive to blocky.
2490-2520	100	LIMESTONE: Medium dark grey, brown grey, calcilutite, slightly silty in part, micritic, trace disseminated pyrite, occasionally white calcite infill (birdseye), trace carbonaceous specks, locally fine sparry calcarenite inclusions, firm, massive.
2520-2550	100	LIMESTONE: Medium dark to dark grey, olive grey in part, calcilutite, micritic, trace disseminated pyrite, trace white calcite infill (Birdseye), occasionally carbonaceous specks, rare fine calcareous sand, firm, massive to blocky with interlaminated light grey slightly silty calcilutite, soft, massive to amorphous.

2550-2580	100	LIMESTONE: Dark grey to grey black, calcilutite becoming argillaceous grades to calcareous claystone, trace disseminated pyrite, trace carbonaceous specks, trace white calcite infill (birdseye), homogeneous, firm, massive to blocky.
2580-2610	100	LIMESTONE: Medium grey to brown grey, calcilutite, locally very argillaceous grades to calcareous claystone, slightly silty in part, micritic, trace disseminated pyrite, trace carbonaceous specks and laminae, firm, massive with interlaminated very light grey calcilutite, slightly silty, common fine rounded calcareous sand, rare microglauconite, soft to plastic, massive to amorphous.
2610-2640	70	LIMESTONE: Brown grey to olive black, calcilutite, slightly silty, micritic, trace carbonaceous specks, trace disseminated pyrite, firm to locally moderately hard, massive to blocky. Interlaminae of light grey calcilutite, slightly silty, occasionally fine rounded calcareous sand, soft to plastic, massive to amorphous.
	30	CLAYSTONE: Medium to medium dark grey, moderately calcareous to locally very calcareous grades to calcilutite in part, occasionally carbonaceous specks, homogeneous, waxy texture, firm, massive to blocky.
2640-2670	60	LIMESTONE: As above.
	40	CLAYSTONE: As above.
2670-2700	70	CLAYSTONE: Medium to medium dark grey, brown grey, slightly calcareous, slightly silty, trace carbonaceous specks, rare disseminated pyrite, firm to moderately hard in part, massive to blocky.
	30	LIMESTONE: Light grey to light brown grey, calcilutite locally becomes very argillaceous grades to calcareous claystone, slightly silty, trace fine calcareous sand, soft to plastic, firm in part, massive to locally amorphous.
2700-2730	80	CLAYSTONE: As above.
	20	LIMESTONE: As above.
2730-2760	80	CLAYSTONE: Light to medium grey, brown grey, moderately calcareous, slightly silty in part, trace carbonaceous specks, rare forams, trace white calcite infill, soft to firm, massive to blocky.
	20	LIMESTONE: As above.
2760-2790	100	CLAYSTONE: Medium grey, brown grey, moderately calcareous, slightly silty in part, rare forams, trace white calcite infill, trace disseminated pyrite in part, soft to firm, massive to blocky with interbedded/laminated light grey calcilutite very argillaceous grades to calcareous claystone, silty, trace carbonaceous flecks, occasionally disseminated pyrite, hygroturgid, soft to plastic, massive to amorphous.
2790-2820	100	CLAYSTONE: As above.
2820-2850	100	CLAYSTONE: Medium to medium dark grey, brown grey, slightly to locally moderately calcareous, trace disseminated pyrite, rare nodular pyrite, trace carbonaceous specks, rare forams, firm, massive to blocky with minor interlaminated light grey calcilutite, silty, trace carbonaceous specks, trace fine calcareous sand, soft to plastic, massive to amorphous.

- 2850-2880 100 **CLAYSTONE:** Medium to dark grey, brown grey, slightly silty, slightly calcareous, trace nodular pyrite, rare carbonaceous specks, firm, massive to blocky with interlaminated light grey calcilutite, silty, trace carbonaceous specks, hygroturgid, soft to plastic, massive to amorphous.
- 2880-2910 100 **CLAYSTONE:** Dark grey, brown black, slightly calcareous, slightly silty in part, trace nodular pyrite, occasionally carbonaceous specks, occasionally light grey calcilutite inclusions, firm to moderately hard, massive to blocky.
- 2910-2940 100 **CLAYSTONE:** Medium dark to dark grey, brown black, slightly calcareous, trace carbonaceous specks, trace disseminated pyrite, homogeneous, firm to moderately hard, massive to blocky.
- 2940-2970 100 **CLAYSTONE:** Dark grey to brown grey, slightly calcareous, slightly silty in part, trace carbonaceous specks, rare disseminated pyrite, locally light brown very fine to fine sparry calcarenite inclusions, firm to moderately hard, massive to blocky.
- 2970-3000 100 **CLAYSTONE:** Predominantly as above, locally light grey soft to plastic calcilutite inclusions.
- 3000-3030 100 **CLAYSTONE:** Medium grey to dark grey, slightly calcareous, trace disseminated pyrite, trace carbonaceous specks, locally light grey soft to plastic calcilutite laminae, firm to moderately hard in part, massive to blocky.
- 3030-3060 100 **CLAYSTONE:** Dark grey to brown black, slightly calcareous, trace carbonaceous specks, trace disseminated pyrite, occasionally white calcite infill, firm, massive to blocky.
- 3060-3090 100 **CLAYSTONE:** As above.
- 3090-3110 100 **CLAYSTONE:** Brown grey, medium dark grey, slightly calcareous, trace carbonaceous specks, trace nodular & disseminated pyrite, common light grey soft to plastic calcilutite inclusions/laminae, trace fine rounded calcite sand, firm, massive to blocky.
- 3110-3120 100 **CLAYSTONE:** Brown grey to olive black, slightly to locally moderately calcareous, slightly silty, trace carbonaceous specks, trace light brown cryptocrystalline dolomitic inclusions, firm to moderately hard, massive to blocky.
- 3120-3130 100 **CLAYSTONE:** Predominantly as above, trace disseminated pyrite.
- 3130-3140 100 **CLAYSTONE:** Medium grey to brown grey, occasionally light grey, slightly to locally moderately calcareous, trace carbonaceous specks, trace disseminated pyrite, locally common light grey soft to plastic calcilutite inclusions/laminae, trace rounded fine calcareous sand, firm to moderately hard, massive to blocky.
- 3140-3150 100 **CLAYSTONE:** Medium to dark grey, olive black in part, slightly to moderately calcareous, trace disseminated pyrite, locally common light grey soft to plastic calcilutite, firm to occasionally moderately hard, massive.
- 3150-3160 100 **CLAYSTONE:** Light grey to brown grey, slightly to locally very calcareous grades to calcilutite, slightly silty, rare fine calcareous sand, marly texture, soft to firm, plastic in part, massive to blocky, amorphous in part.

3160-3170	100	CLAYSTONE: Brown grey to light grey, moderately calcareous, locally very calcareous grades to calcilutite in part, slightly silty, trace disseminated pyrite, rare microglauconite, trace carbonaceous specks, soft to firm, plastic in part, massive to amorphous in part.
3170-3180	100	CLAYSTONE: Brown grey to brown black, slightly to locally very calcareous grades to calcilutite in part, slightly silty, trace disseminated pyrite, rare microglauconite, marly texture in part, soft to firm, locally plastic, massive to blocky, amorphous in part.
3180-3190	100	CLAYSTONE: As above.
3190-3200	100	CLAYSTONE: Medium dark grey to grey black, slightly to locally moderately silty grades to silty claystone, trace glauconite, soft to firm, massive to blocky in part.
3200-3210	100	CLAYSTONE: Predominantly as above, trace light grey soft to plastic silty calcilutite, trace glauconite, trace very fine quartz sand.
3210-3220	100	CLAYSTONE: Medium to medium dark grey, brown black in part, slightly calcareous, slightly silty, trace microglauconite, trace disseminated pyrite, firm to moderately hard, massive to blocky with interlaminated light grey calcisiltite, very argillaceous, common very fine quartz sand, rare glauconite pellets, soft, massive.
3220-3225	100	CLAYSTONE: Predominantly as above, common interlaminated light grey calcisiltite, very argillaceous, common very fine quartz sand, trace microglauconite, rare pelletal glauconite, soft, massive.
3225-3230	100	CLAYSTONE: Brown grey to olive grey, slightly calcareous, slightly silty, trace very fine calcareous sand, trace pelletal glauconite, trace carbonaceous specks, firm, massive to blocky.
3230-3235	100	CLAYSTONE: As above.
3235-3240	100	CLAYSTONE: Dark grey, brown black, becomes very silty grades to silty claystone, trace carbonaceous specks, rare pelletal glauconite, trace very fine quartz sand, firm to moderately hard, massive.
3240-3245	100	CLAYSTONE: As above.
3245-3250	100	CLAYSTONE: Medium to dark grey, brown grey, slightly calcareous, locally very silty, trace glauconite, rare carbonaceous specks, trace light grey calcisiltite inclusions, rare medium quartz float, firm, massive.
3250-3255	100	CLAYSTONE: As above.
3255-3260	100	CLAYSTONE: Medium grey, olive grey, brown grey, slightly calcareous, silty in part, trace glauconite, locally common light grey calcisiltite laminae with rare medium quartz float, firm to moderately hard, massive to blocky.
3260-3265	90	CLAYSTONE: As above.
	10	SILTSTONE: Brown grey to olive black, very argillaceous, abundant very fine to fine arenaceous inclusions, trace pelletal glauconite, micromicaceous, soft, massive.
3265-3270	90	CLAYSTONE: As above.
	10	SILTSTONE: As above.

3270-3275	10	SANDSTONE: Clear to translucent, light grey, fine to medium, angular to subangular, moderately sorted, trace kaolinitic matrix, common pelletal and microglauconite, trace nodular pyrite, friable to predominantly disaggregated, fair porosity, no fluorescence.
	10	SILTSTONE: As above.
	80	CLAYSTONE: As above.
3275-3280	10	SANDSTONE: Predominantly as above, becomes fine, friable, poor porosity, no fluorescence.
	40	SILTSTONE: Dark grey to olive black, very argillaceous, common pelletal glauconite, trace disseminated/nodular pyrite, micromicaceous, trace lithics, slightly arenaceous, firm, massive.
	50	CLAYSTONE: As above.
3280-3285	20	SANDSTONE: Clear to translucent, light grey, medium, occasionally coarse, angular to subangular, moderate sorting, common dolo/calcareous cement, common pelletal glauconite, rare nodular pyrite, friable to disaggregated, poor porosity, no fluorescence.
	80	SILTSTONE: Brown black to olive black, very argillaceous, very arenaceous, common pelletal/microglauconite, trace lithics, micromicaceous, trace nodular pyrite, soft to firm, massive.
3285-3290	10	SANDSTONE: Clear to translucent, light grey, fine to medium, subangular to subrounded, moderate sorting, trace dolo/calcareous cement, occasionally coarse quartz float, trace nodular pyrite, trace pelletal glauconite, disaggregated, fair porosity, no fluorescence.
	90	SILTSTONE: Dark brown to brown black, very argillaceous, very arenaceous, common pelletal/microglauconite, micromicaceous, trace lithics, soft, massive.
3290-3295	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
3295-3300	30	SANDSTONE: Clear to translucent, light grey, fine to medium, subangular to subrounded, moderate sorting, common brown dolo/calcareous cement, common pelletal glauconite, trace nodular pyrite, friable to disaggregated, occasionally hard aggregates, fair to nil porosity, no fluorescence.
	70	SILTSTONE: As above.
3300-3305	30	SANDSTONE: Clear to translucent, frosted, fine to medium, occasionally coarse, subangular to subrounded, argillaceous/silty matrix in part, trace dolo/calcareous cement, common pelletal glauconite, rare very coarse milky quartz float, poor to fair porosity, no fluorescence.
	70	SILTSTONE: As above.
3305-3310	40	SANDSTONE: As above.
	60	SILTSTONE: Medium dark brown, olive black in part, very argillaceous, arenaceous in part, trace glauconite, micromicaceous, trace lithics, soft to firm, massive.

- 3310-3315 30 **SANDSTONE:** Clear to translucent, light grey, fine to coarse, predominantly as above, subangular to subrounded, poor sorting, trace pelletal glauconite, trace nodular pyrite, poor to fair porosity, no fluorescence.
- 70 **SILTSTONE:** As above.
- 3315-3320 30 **SANDSTONE:** Predominantly as above, trace dolo/calcareous cement in part, trace very coarse quartz float, fair to good porosity.
- 70 **SILTSTONE:** As above.
- 3320-3325 40 **SANDSTONE:** Clear to translucent, frosted, light grey, fine to predominantly medium, subangular to subrounded, moderate sorting, clean, common pelletal glauconite, rare nodular pyrite, trace coarse Fe stained quartz, disaggregated, good porosity, no fluorescence.
- 60 **SILTSTONE:** Dark brown, olive black, very argillaceous, arenaceous, micromicaceous, common pelletal/microglauconite, trace lithics, soft, massive.
- 3325-3330 30 **SANDSTONE:** Predominantly as above, trace coarse quartz float, trace dolo/calcareous cement, fair to good porosity, no fluorescence.
- 70 **SILTSTONE:** As above.
- 3330-3335 50 **SANDSTONE:** Clear to translucent, frosted, fine to predominantly medium, angular to subangular, poor to moderate sorting, locally dolo/calcareous matrix, argillaceous/silty matrix in part, trace pelletal glauconite, occasional pyrite nodules, disaggregated, fair to good porosity, no fluorescence.
- 50 **SILTSTONE:** Dark brown, medium to dark grey in part, very argillaceous, arenaceous in part, trace pelletal glauconite, micromicaceous, trace lithic fragments, firm, massive.
- 3335-3340 40 **SANDSTONE:** Predominantly as above, becomes medium to coarse.
- 60 **SILTSTONE:** As above.
- 3340-3345 40 **SANDSTONE:** Clear to translucent, frosted, fine to predominantly medium to coarse, poor sorting, locally dolo/calcareous cement, slightly argillaceous matrix, common pelletal glauconite, friable to disaggregated, good porosity, no fluorescence.
- 60 **SILTSTONE:** As above.
- 3345-3350 30 **SANDSTONE:** As above.
- 70 **SILTSTONE:** As above.
- 3350-3355 40 **SANDSTONE:** Clear to translucent, light grey, medium to coarse, angular to subangular, poor sorting, slightly argillaceous/silty matrix, occasionally coarse to very coarse milky quartz float, disaggregated, good porosity, no fluorescence.
- 60 **SILTSTONE:** Dark brown to olive black, very argillaceous, arenaceous, common pelletal/microglauconite, trace disseminated & nodular pyrite, occasionally lithic fragments, soft to firm, massive to amorphous. Drill 8½" hole section from 3355m with Baradril-N mud. Abundant Barcarb contamination in the sample returns.

- 3355-3360 30 **SANDSTONE:** Clear to translucent, light brown, fine to medium, angular to subrounded, moderate sorting, clean, trace nodular pyrite, common pelletal glauconite, trace coarse milky quartz float, disaggregated, good porosity, no fluorescence.
- 70 **SILTSTONE:** Moderate brown, grey brown, dark brown in part, very argillaceous, arenaceous in part, slightly siliceous in part, common micro/pelletal glauconite, micromicaceous, trace lithic fragments, soft to firm, occasionally hard, massive to amorphous.
- 3360-3365 40 **SANDSTONE:** Predominantly as above, locally dolosiliceous cement, hard aggregates, tight in part, no fluorescence.
- 60 **SILTSTONE:** As above.
- 3365-3370 70 **SANDSTONE:** Clear to translucent, light brown, fine to predominantly medium, subangular to subrounded, moderate sorting, clean, common pelletal glauconite, common coarse quartz float, trace nodular pyrite, disaggregated, good porosity, no fluorescence.
- 30 **SILTSTONE:** As above.
- 3370-3375 40 **SANDSTONE:** Predominantly as above, locally dark brown dolosiliceous cement, hard aggregates, tight in part, no fluorescence.
- 60 **SILTSTONE:** As above.
- 3375-3380 30 **SANDSTONE:** Predominantly as above, trace pyritic cement in part, no fluorescence.
- 70 **SILTSTONE:** As above.
- 3380-3385 40 **SANDSTONE:** Clear to translucent, frosted, medium to coarse, subangular to subrounded, moderately sorted, clean, trace nodular pyrite, trace to common pelletal glauconite, disaggregated, good porosity, no fluorescence.
- 60 **SILTSTONE:** Light to medium grey, brown grey, very argillaceous, common micro/pelletal glauconite, trace lithic fragments, soft to firm, massive to amorphous in part.
- 3385-3390 40 **SANDSTONE:** As above.
- 60 **SILTSTONE:** As above.
- 3390-3395 60 **SANDSTONE:** As above.
- 40 **SILTSTONE:** As above.
- 3395-3400 70 **SANDSTONE:** Clear to translucent, frosted, fine to predominantly medium to coarse, subangular to subrounded, poor to moderate sorting, locally strong dolosiliceous cement, trace nodular pyrite, common pelletal glauconite, trace very coarse milky quartz float, disaggregated, occasionally hard cemented aggregates, generally good porosity, no fluorescence.
- 30 **SILTSTONE:** As above.
- 3400-3405 70 **SANDSTONE:** As above.
- 30 **SILTSTONE:** As above.
- 3405-3410 60 **SANDSTONE:** Predominantly as above, becomes medium, good porosity, no fluorescence.
- 40 **SILTSTONE:** Light to medium grey, green grey in part, very argillaceous, abundant micro/pelletal glauconite, micromicaceous, trace lithic fragments, soft to plastic, massive to amorphous.

3410-3415	70	SANDSTONE: Clear to translucent, frosted, medium to coarse, angular to subangular, poorly sorted, clean, common pelletal glauconite, trace nodular pyrite, disaggregated, good porosity, no fluorescence.
	30	SILTSTONE: As above.
3415-3420	60	SANDSTONE: Predominantly as above, locally dark brown dolosiliceous cement, hard aggregates in part, good to nil porosity, no fluorescence.
	40	SILTSTONE: As above.
3420-3425	60	SANDSTONE: Clear to translucent, frosted, light brown, fine to predominantly medium, subangular to subrounded, moderate sorting, clean, common pelletal glauconite, trace nodular pyrite, trace coarse quartz float, disaggregated, good porosity, no fluorescence.
	40	SILTSTONE: Brown grey, dusky brown, occasional light grey, locally very argillaceous grades to claystone in part, common micro/pelletal glauconite, micromicaceous, arenaceous in part, trace lithic fragments, soft, plastic, locally firm, massive to amorphous.
3425-3430	80	SANDSTONE: Predominantly as above, locally dark brown dolomitic cemented aggregates, tight, no fluorescence.
	20	SILTSTONE: As above.
3430-3435	70	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium to coarse, subangular to subrounded, moderate sorting, clean, common nodular pyrite, common pelletal glauconite, trace Fe stained quartz, disaggregated, good porosity, no fluorescence.
	30	SILTSTONE: Light to medium grey, brown grey, very argillaceous grades to claystone in part, occasionally arenaceous, trace carbonaceous fragments, micromicaceous, soft to plastic, slightly dispersive in part, massive to amorphous.
3435-3440	80	SANDSTONE: As above.
	20	SILTSTONE: As above.
3440-3445	90	SANDSTONE: As above.
	10	SILTSTONE: As above.
3445-3450	100	SANDSTONE: Clear to translucent, frosted, medium brown, medium to coarse, angular to subangular, moderate sorting, predominantly clean, locally pyritic cement, common pelletal glauconite, Fe stained quartz, disaggregated, good porosity, no fluorescence.
	Trace	SILTSTONE: As above.
3450-3455	100	SANDSTONE: Clear to translucent, medium brown, fine to medium, angular to subangular, moderate sorting, common nodular pyrite, common pelletal glauconite, Fe stained quartz, disaggregated, good porosity, no fluorescence.
	Trace	SILTSTONE: As above.
3455-3460	80	SANDSTONE: Clear to translucent, fine to predominantly medium to coarse, sub-angular to angular, moderate sorting, common nodular pyrite, common pelletal glauconite, locally dark brown dolosiliceous cement, Fe stained quartz, occasional hard tight aggregates, predominantly disaggregated, good porosity, no fluorescence.

- 20 **SILTSTONE:** Medium grey, locally very argillaceous, grades to claystone in part, trace micromica, common micro glauconite, soft, massive to amorphous.
- 3460-3465 90 **SANDSTONE:** Clear to translucent, fine to predominantly medium, moderate sorting, angular to sub-angular, common to abundant dark brown dolosiliceous cement, common pyrite nodules, common pelitic glauconite, trace Fe stained quartz, common to abundant hard tight aggregates, predominantly disaggregated, good porosity, no fluorescence.
- 10 **SILTSTONE:** As above.
- 3465-3470 80 **SANDSTONE:** As above.
- 20 **SILTSTONE:** Medium to light grey, pale brown, locally argillaceous, trace carbonaceous specks, trace micromica, trace micro glauconite, soft, massive to amorphous.
- 3470-3475 90 **SANDSTONE:** Clear to translucent, fine to medium, moderate sorting, angular to sub-angular, common dark brown dolomite cement aggregates, common pelitic glauconite, trace pyrite cement and nodules, disaggregated, good porosity, no fluorescence.
- 10 **SILTSTONE:** Medium to light grey, pale brown, locally argillaceous, common pelitic and micro glauconite, trace carbonaceous specks, trace micromica, soft, massive to amorphous.
- 3475-3480 90 **SANDSTONE:** Clear to translucent, medium grained, moderate sorting, angular to sub-angular, common to abundant dark brown dolosiliceous cement, common pelitic glauconite, common nodular pyrite, Fe stained quartz, common to abundant hard tight aggregates, predominantly disaggregated, good porosity, no fluorescence.
- 10 **SILTSTONE:** As above.
- 3480-3485 90 **SANDSTONE:** Clear to translucent, fine to predominantly medium, moderate sorting, angular to sub angular, abundant dark brown dolosiliceous cement, common pelitic glauconite, trace nodular pyrite, largely disaggregated, abundant hard, tight aggregates, good porosity, no fluorescence.
- 10 **SILTSTONE:** Pale brown, medium light grey, locally argillaceous grading to claystone in part, trace micromica, trace micro glauconite, soft, massive to amorphous.
- 3485-3490 90 **SANDSTONE:** As above.
- 10 **SILTSTONE:** As above.
- 3490-3495 90 **SANDSTONE:** Clear to translucent, fine to predominantly medium, moderate sorting, angular to sub-angular, abundant dark brown dolosiliceous cement, common pyrite nodules, common pelitic glauconite, abundant hard tight aggregates, largely disaggregated, good porosity, no fluorescence.
- 10 **SILTSTONE:** Pale brown, medium light grey, locally argillaceous grading to claystone in part, trace micromica, trace micro glauconite, soft, massive to amorphous.

3495-3500	100	SANDSTONE: Clear to translucent, medium, moderate sorting, angular to sub-angular, common pellicular glauconite, trace dolosiliceous cement, occasional hard tight aggregates, trace Fe stained quartz, disaggregated, good porosity, no fluorescence.
3500-3505	100	SANDSTONE: Predominantly as above, common to abundant pellicular glauconite.
3505-3510	100	SANDSTONE: As above.
3510-3515	90	SANDSTONE: Clear to translucent, frosted, medium to predominantly coarse, angular to subangular, moderate sorting, predominantly clean, trace pyrite cement, common pelletal glauconite, occasionally nodular pyrite, trace very coarse milky quartz float, disaggregated, good porosity, no fluorescence.
	10	SILTSTONE: Medium brown, grey brown, locally very argillaceous, arenaceous in part, locally slightly dolomitic, common micro/pelletal glauconite, micromicaceous, trace disseminated pyrite, soft, massive to amorphous.
3515-3520	80	SANDSTONE: As above.
	20	SILTSTONE: As above.
3520-3525	100	SANDSTONE: Clear to translucent, frosted, medium to coarse, subangular-subrounded, moderate sorting, clean, common pelletal glauconite, occasionally Fe stained quartz float, disaggregated, good porosity, no fluorescence.
3525-3530	90	SANDSTONE: Predominantly as above, becomes medium.
	10	SILTSTONE: Moderate brown, dark brown, dusky brown, locally very argillaceous, arenaceous in part, common micro/pelletal glauconite, trace fine nodular pyrite, locally slightly dolomitic, mottled texture in part, soft to plastic, occasionally moderately hard, massive to amorphous.
3530-3535	100	SANDSTONE: As above, medium grained.
3535-3540	90	SANDSTONE: Clear to translucent, frosted, occasionally light brown, medium to coarse, subangular to subrounded, moderate sorting, predominantly clean, locally dark brown dolomitic cement, common pelletal glauconite, trace nodular pyrite, disaggregated, good porosity, no fluorescence.
	10	SILTSTONE: Moderate brown, dark brown, dusky brown, locally very argillaceous, arenaceous in part, common micro/pelletal glauconite, trace fine nodular pyrite, locally slightly dolomitic, mottled texture in part, soft to plastic, occasionally moderately hard, massive to amorphous.
3540-3545	100	SANDSTONE: Predominantly as above, becomes medium grained.
3545-3550	100	SANDSTONE: As above.
3550-3555	90	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium, subangular to subrounded, moderate to good sorting, clean, common pelletal glauconite, trace Fe stained quartz, disaggregated, good porosity, no fluorescence.

	10	SILTSTONE: Moderate brown, brown grey, very argillaceous, arenaceous in part, common micro/pelletal glauconite, micromicaceous, trace lithic fragments, soft, slightly dispersive, massive to amorphous.
3555-3560	90	SANDSTONE: Predominantly as above, trace coarse quartz float.
	10	SILTSTONE: As above.
3560-3565	90	SANDSTONE: Clear to translucent, frosted, medium, subangular to subrounded, good sorting, clean, common pelletal glauconite, trace nodular pyrite, common coarse quartz float, disaggregated, good porosity, no fluorescence.
	10	SILTSTONE: As above.
3565-3570	80	SANDSTONE: Predominantly as above, becomes medium.
	20	SILTSTONE: As above.
3570-3575	80	SANDSTONE: Clear to translucent, frosted, fine to medium, subangular to subrounded, moderate sorting, clean, common pelletal glauconite, trace nodular pyrite, disaggregated, good porosity, no fluorescence.
	20	SILTSTONE: As above.
3575-3580	90	SANDSTONE: As above.
	10	SILTSTONE: As above.
3580-3585	80	SANDSTONE: Predominantly as above, becomes medium.
	20	SILTSTONE: As above.
3585-3590	100	SANDSTONE: Clear to translucent, frosted, medium, subangular to subrounded, clean, common pelletal glauconite, common coarse milky quartz float, disaggregated, good porosity, no fluorescence.
3590-3595	90	SANDSTONE: As above.
	10	SILTSTONE: Brown grey, dusky brown, very argillaceous, common pelletal/microglauconite, trace fine disseminated pyrite, micromicaceous, soft to dispersive, massive to amorphous.
3595-3600	90	SANDSTONE: Clear to translucent, frosted, fine to coarse, subangular to subrounded, poor sorting, predominantly clean, locally dark brown dolomitic cement, abundant pelletal glauconite, common coarse-very coarse milky quartz float, trace Fe stained quartz, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
	10	SILTSTONE: As above.
3600-3605	100	SANDSTONE: Clear to translucent, fine to predominantly medium, moderate sorting, subangular to subrounded, common dark brown dolomitic cement, abundant pelletal glauconite, common nodular pyrite, trace Fe stained quartz, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
	Trace	SILTSTONE: As above
3605-3610	100	SANDSTONE: Predominantly as above, fine to predominantly medium to coarse, poor sorting, trace pyrite cement.
	Trace	SILTSTONE: As above

3610-3615	100	SANDSTONE: Clear to translucent, medium to coarse, moderate sorting, subangular to angular, trace nodular pyrite, trace dolomitic cement, abundant pelitic glauconite, trace Fe stained quartz, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
3615-3620	100	SANDSTONE: Clear to translucent, coarse to predominantly medium, subrounded to angular, moderate sorting, trace nodular pyrite, local dolomite cement, common coarse-very coarse quartz float, trace Fe stained quartz, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
3620-3625	100	SANDSTONE: As above.
3625-3630	100	SANDSTONE: Clear to translucent, coarse to predominantly medium, subrounded to angular, moderate sorting, occasional nodular pyrite, local dolomite cement, common coarse-very coarse quartz float, trace Fe stained quartz, disaggregated, predominantly good porosity, locally tight (when cemented). Fluorescence: trace dull pale yellow/green pinpoint, slow diffuse cut, thin ring residue.
3630-3635	100	SANDSTONE: Clear to translucent, coarse to predominantly medium, moderate sorting, subrounded to angular, local dolomite cement, abundant pelitic glauconite, trace nodular pyrite, trace Fe stained quartz, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
3635-3640	100	SANDSTONE: Clear to translucent, medium to coarse, moderate sorting, subrounded to angular, local dark brown dolomite cement, abundant micro/pelletal glauconite, occasional coarse-very coarse quartz float, occasional nodular pyrite, trace biotite, trace Fe stained quartz, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
	Trace	SILTSTONE: Pale brown to light grey, very argillaceous, common pelletal/micro glauconite, trace fine disseminated pyrite, micromicaceous, soft to dispersive, massive to amorphous.
3640-3645	100	SANDSTONE: As above.
3645-3655	100	SANDSTONE: Clear to translucent, coarse to predominantly medium, moderate sorting, subrounded to subangular, local dark brown dolomite cement, common micro/pelletic glauconite, occasional very coarse quartz float, common nodular pyrite, disaggregated, predominantly good porosity, locally tight (when cemented), Fluorescence: trace dull yellow/green pinpoint associated with aggregates, slow diffuse cut, thin light brown ring residue.
3655-3660	100	SANDSTONE: Clear to translucent, frosted, fine to coarse, poor sorting, subrounded to subangular, local dolomite cement, common nodular pyrite, common micro/pelletic glauconite, occasional very coarse quartz float, trace biotite, disaggregated, predominantly good porosity, no fluorescence.
3660-3665	100	SANDSTONE: As above.

3665-3670	100	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium, moderate sorting, subrounded to subangular, local dolomite cement, common micro/pellitic glauconite, trace nodular pyrite, occasional coarse to very coarse quartz float, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
3670-3675	100	SANDSTONE: Predominantly as above, fine to predominantly medium.
3675-3680	100	SANDSTONE: Clear to translucent, frosted, coarse to predominantly medium, poor sorting, subangular to subrounded, local dolomite cement, common micro/pellitic glauconite, common nodular pyrite, occasional very coarse quartz float, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
3680-3685	100	SANDSTONE: As above.
	Trace	SILTSTONE: Pale brown to medium light grey, very argillaceous, trace micromica, locally common microglauconite, soft to dispersive, amorphous.
3685-3690	100	SANDSTONE: Clear to translucent, frosted, coarse to predominantly medium, moderate sorting, subangular to subrounded, local dolomite cement, common micro/pellitic glauconite, occasional nodular pyrite, occasional very coarse quartz float, disaggregated, predominantly good porosity, locally tight, (when cemented), no fluorescence.
3690-3695	100	SANDSTONE: Predominantly as above, medium to coarse, poor sorting.
3695-3700	100	SANDSTONE: Clear to translucent, frosted, medium to coarse, moderately sorted, subangular to subrounded, local dolomite cement, common nodular pyrite, abundant pellitic/micro glauconite, occasional very coarse quartz float, disaggregated, predominantly good porosity, locally tight (when cemented), no fluorescence.
	Trace	SILTSTONE: As above.
3700-3705	100	SANDSTONE: Clear to translucent, frosted, medium to coarse, subangular to subrounded, moderate sorting, trace dark brown dolomitic cement, trace pyrite cement, common pelletal glauconite, trace nodular pyrite, disaggregated, occasionally hard aggregates (when cemented), nil to predominantly good porosity, no fluorescence.
3705-3710	90	SANDSTONE: Predominantly as above, trace very coarse fractured quartz float.
	10	SILTSTONE: Green grey to medium grey, very argillaceous, common micro/pelletal glauconite, slightly arenaceous, micromicaceous, soft to dispersive, massive to amorphous.
3710-3715	100	SANDSTONE: Predominantly as above, becomes medium.
3715-3720	90	SANDSTONE: Predominantly as above, medium to coarse, trace very coarse fractured quartz float.
	10	SILTSTONE: Green grey to medium grey, very argillaceous, common micro/pelletal glauconite, slightly arenaceous, micromicaceous, soft to dispersive, massive to amorphous.

3720-3725	80	SANDSTONE: Clear to translucent, frosted, medium to predominantly coarse, angular to subrounded, poor sorting, trace dark brown dolomitic cement, predominantly clean, common very coarse fractured milky quartz, common pelletal glauconite, trace nodular pyrite, disaggregated, good porosity, tight (when cemented), no fluorescence.
	20	SILTSTONE: Green grey to medium grey, very argillaceous grades to silty claystone, common micro/pelletal glauconite, slightly arenaceous, micromicaceous, soft to dispersive, massive to amorphous.
3725-3730	100	SANDSTONE: As above.
3730-3735	100	SANDSTONE: Clear to translucent, frosted, medium to predominantly coarse to very coarse, angular to subrounded, poor sorting, clean, trace biotite, common pelletal glauconite, trace nodular pyrite, disaggregated, good porosity, no fluorescence.
3735-3740	100	SANDSTONE: Predominantly as above, becomes medium to coarse.
3740-3745	100	SANDSTONE: Clear to translucent, frosted, medium, subangular-subrounded, good sorting, predominantly clean, locally trace dark brown dolomitic cement, minor pyritic cement, common pelletal glauconite, trace coarse float, trace Fe stained quartz, disaggregated, good porosity, no fluorescence.
3745-3750	90	SANDSTONE: Predominantly as above, becomes medium to coarse, abundant pelletal glauconite.
	10	SILTSTONE: Green grey, brown grey in part, very argillaceous grades to claystone, common micro/pelletal glauconite, trace biotite, micromicaceous, dispersive, massive to amorphous.
3750-3755	100	SANDSTONE: Clear to translucent, frosted, medium to coarse, angular to subrounded, moderate sorting, trace dark brown dolomitic cement, common pelletal glauconite, trace nodular pyrite, occasionally very coarse milky quartz float, disaggregated, hard aggregates (when cemented), predominantly good porosity, no fluorescence.
3755-3760	100	SANDSTONE: Predominantly as above, trace Fe stained quartz.
3760-3765	90	SANDSTONE: Clear to translucent, frosted, medium to coarse, angular to subrounded, moderate sorting, locally common dolomitic cement, trace nodular pyrite, trace pelletal glauconite, common very coarse smoky quartz, disaggregated, hard aggregates (when cemented), good porosity, no fluorescence.
	10	SILTSTONE: Green grey, brown grey in part, very argillaceous, common micro/pelletal glauconite, micromicaceous, trace biotite, soft to dispersive, massive to amorphous.
3765-3770	90	SANDSTONE: Predominantly as above, locally common very coarse smoky/milky quartz float.
	10	SILTSTONE: As above.
3770-3775	100	SANDSTONE: As above.
3775-3780	90	SANDSTONE: As above.
	10	SILTSTONE: As above.

3780-3785	100	SANDSTONE: Predominantly as above, becomes medium to coarse, trace dolomitic cement, abundant glauconite.
3785-3790	90	SANDSTONE: Clear to translucent, frosted, medium to occasionally coarse, subangular to subrounded, moderate sorting, trace dolomitic cement, trace pyritic cement, common pelletal glauconite, common very coarse milky quartz, disaggregated, good porosity, no fluorescence.
	10	SILTSTONE: Green grey, medium grey, very argillaceous grades to claystone, common micro/pelletal glauconite, micromicaceous, trace biotite, trace lithic fragments, soft to dispersive, massive to amorphous.
3790-3795	90	SANDSTONE: Predominantly as above, becomes medium grained.
	10	SILTSTONE: As above.
3795-3800	80	SANDSTONE: Predominantly as above, common very coarse fractured milky quartz float.
	20	SILTSTONE: As above.
3800-3805	70	SANDSTONE: As above.
	30	SILTSTONE: Predominantly as above, becoming moderate brown, mottled texture in part.
3805-3810	80	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium to coarse, angular to subrounded, poor sorting, trace dolomitic cement, common pelletal glauconite, common very coarse milky quartz, trace Fe stained quartz, disaggregated, good porosity, no fluorescence.
	20	SILTSTONE: Light brown grey, green grey, grey brown, very argillaceous, abundant micro/pelletal glauconite, micromicaceous, slightly arenaceous in part, soft to dispersive, massive to amorphous.
3810-3815	90	SANDSTONE: Clear to translucent, frosted, light brown, fine-coarse, angular to subrounded, poorly sorted, locally common dolomitic cement, common pelletal glauconite, trace nodular pyrite, trace Fe stained quartz, disaggregated, occasional hard aggregates, poor to good porosity, no fluorescence.
	10	SILTSTONE: As above.
3815-3820	100	SANDSTONE: Predominantly as above, occasionally very coarse quartz float.
3820-3825	90	SANDSTONE: Predominantly as above, becoming medium to coarse, locally trace dolomitic cement.
	10	SILTSTONE: Light brown, green grey to light grey, very argillaceous grades to claystone, arenaceous inclusions in part, micromicaceous, trace biotite, locally kaolinitic inclusions, soft to dispersive, massive to amorphous.
3825-3830	80	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium to coarse, subangular to subrounded, poorly sorted, locally common dolomitic cement, common pellitic glauconite, trace nodular pyrite, trace Fe stained quartz, disaggregated, occasional hard aggregates, poor to good porosity, no fluorescence.
	20	SILTSTONE: As above.
3830-3835	100	SANDSTONE: As above.

	Trace	SILTSTONE: As above.
3835-3840	100	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium to coarse, angular to subrounded, poorly sorted, locally common dolomitic cement, common pelitic glauconite, trace nodular pyrite, trace Fe stained quartz, disaggregated, occasional hard aggregates, poor to good porosity, no fluorescence.
	Trace	SILTSTONE: Green grey to light grey, pale brown, very argillaceous, grades to claystone, common micro glauconite, micromicaceous, locally common kaolinite inclusions, soft to dispersive, massive to amorphous.
3840-3845	100	SANDSTONE: As above.
	Trace	SILTSTONE: As above
3845-3850	90	SANDSTONE: Clear to translucent, frosted, fine to very coarse, poorly sorted, angular to subrounded, locally common dolomitic cement, common pelitic glauconite, trace nodular pyrite, trace Fe stained quartz, disaggregated, common hard aggregates, poor to good porosity, no fluorescence.
	10	SILTSTONE: Pale brown, grey green, very argillaceous, occasional arenaceous inclusions, common micro glauconite, micromicaceous, common kaolinite inclusions, soft to dispersive, massive to amorphous.
3850-3855	90	SANDSTONE: Clear to translucent, frosted, fine to medium, moderately sorted, angular to subrounded, trace dolomitic cement, common pelitic glauconite, trace nodular pyrite, trace Fe stained quartz, trace hard aggregates, occasional coarse quartz float, good porosity, no fluorescence.
	10	SILTSTONE: As above.
3855-3860	90	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium to coarse, poorly sorted, angular to subrounded, locally common dolomitic cement, common pelitic glauconite, trace nodular pyrite, common hard aggregates, occasional very coarse quartz float, poor to good porosity, no fluorescence.
	10	SILTSTONE: Pale brown to light medium grey, green grey, very argillaceous, occasional arenaceous inclusions, common kaolinite inclusions, common micro glauconite, micromicaceous, soft to dispersive, massive to amorphous.
3860-3865	100	SANDSTONE: Clear to translucent, frosted, fine to medium, moderately sorted, angular to subrounded, trace dolomitic cement, common pelitic glauconite, trace nodular pyrite, trace Fe stained quartz, trace hard aggregates, occasional coarse to very coarse quartz float, good porosity, disaggregated, no fluorescence.
	Trace	SILTSTONE: As above.
3865-3870	90	SANDSTONE: As above
	10	SILTSTONE: As above.
3870-3875	100	SANDSTONE: Clear to translucent, frosted, fine to medium, moderately sorted, angular to subrounded, trace dolomitic cement, common pelitic glauconite, trace Fe stained quartz, trace biotite, occasional coarse quartz float, disaggregated, good porosity, no fluorescence.

	Trace	SILTSTONE: As above.
3875-3880	90	SANDSTONE: Predominantly as above, fine to predominantly medium, trace hard aggregates.
	10	SILTSTONE: Pale brown to light medium grey, green grey, very argillaceous, occasional arenaceous inclusions, common kaolinite inclusions, common micro glauconite, micromicaceous, soft to dispersive, massive to amorphous.
3880-3885	90	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium to coarse, poorly sorted, trace dolomitic cement, common pellitic glauconite, trace hard aggregates, trace Fe stained quartz, occasional very coarse quartz float, disaggregated, good porosity. Fluorescence: trace dim, pale yellow/green, pinpoint, slow diffuse cut, thin ring residue.
	10	SILTSTONE: Light brown to medium light grey, green grey, very argillaceous, grades to claystone in places, locally arenaceous, common glauconite, micromicaceous, trace biotite, trace disseminated pyrite, local kaolinite inclusions, soft to dispersive, massive to amorphous.
3885-3890	100	SANDSTONE: Clear to translucent, frosted, fine to coarse, poorly sorted, angular to subrounded, trace dolomitic cement, common pellitic glauconite, trace nodular pyrite, trace biotite, trace Fe stained quartz, common very coarse quartz float, common hard aggregates, poor to good porosity, no fluorescence.
	Trace	SILTSTONE: As above.
3890-3895	90	SANDSTONE: As above.
	10	SILTSTONE: Medium brown to medium light grey, green grey, very argillaceous, locally slightly arenaceous, local kaolinite inclusions, common micro glauconite, trace disseminated pyrite, trace biotite, soft to dispersive, massive to amorphous.
3895-3900	90	SANDSTONE: As above.
	10	SILTSTONE: Medium brown to medium light grey, green grey, very argillaceous, locally slightly arenaceous, common kaolinite inclusions, common micro glauconite, micromicaceous, soft to dispersive, massive to amorphous.
3900-3905	90	SANDSTONE: Clear to translucent, frosted, fine to very coarse, predominantly medium, poorly sorted, angular to subrounded, locally common dolomitic cement, common pellitic glauconite, trace nodular pyrite, common hard aggregates, trace Fe stained quartz, disaggregated, poor to good porosity. Fluorescence: trace dim, pale yellow/green pinpoint, slow diffuse cut, thin ring residue.
	10	SILTSTONE: As above.
3905-3910	90	SANDSTONE: Clear to translucent, frosted, fine to coarse, predominantly medium, poorly sorted, angular to subrounded, locally common dolomitic cement, common pellitic glauconite, trace nodular pyrite, common hard aggregates, trace Fe stained quartz, disaggregated, poor to good porosity, no fluorescence.

- 10 **SILTSTONE:** Medium light grey to medium brown, green grey, very argillaceous, locally slightly arenaceous, common kaolinite inclusions, common micro glauconite, trace biotite, micromicaceous, trace disseminated pyrite, soft to dispersive, massive to amorphous.
- 3910-3913 100 **SANDSTONE:** Clear to translucent, frosted, fine to medium, moderately sorted, angular to subrounded, trace dolomitic cement, common pelitic glauconite, trace nodular pyrite, trace hard aggregates, trace biotite, trace Fe stained quartz, occasional coarse quartz float, disaggregated, good porosity, no fluorescence.
- Trace **SILTSTONE:** Pale brown to medium grey, green grey, very argillaceous, locally grades to claystone, common microglauconite, trace biotite, local arenaceous inclusions, soft to dispersive, massive to amorphous.
- Reached Total Depth of 3913mMDRT/2843mTVDRT at 0055 hours 29/07/1999.**

907523 083

907523 084

APPENDIX 4a

BLACKBACK A-3

Mud Log

PE602996

This is an enclosure indicator page.
The enclosure PE602996 is enclosed within the
container PE907523 at this location in this
document.

The enclosure PE602996 has the following characteristics:

ITEM_BARCODE = PE602996
CONTAINER_BARCODE = PE907523
NAME = Blackback-A3 Mud Log
BASIN = GIPPSLAND
ONSHORE? = N
DATA_TYPE = WELL
DATA_SUB_TYPE = MUD_LOG
DESCRIPTION = Blackback-A3 Masterlog Mud Log Scale
1:500 Appendix 4a
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Esso Australia Ltd
WELL_NAME = Blackback-A3
CONTRACTOR = Geoservices
AUTHOR =
ORIGINATOR = Esso Australia Ltd
TOP_DEPTH = 1180
BOTTOM_DEPTH = 3930
ROW_CREATED_BY = DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

907523 086

APPENDIX 4b

BLACKBACK A-3

Well Completion Log

907523 087

PE602997

This is an enclosure indicator page.
The enclosure PE602997 is enclosed within the
container PE907523 at this location in this
document.

The enclosure PE602997 has the following characteristics:

ITEM_BARCODE = PE602997
CONTAINER_BARCODE = PE907523
NAME = Blackback-A3 Well Completion Log
BASIN = GIPPSLAND
ONSHORE? = N
DATA_TYPE = WELL
DATA_SUB_TYPE = MONTAGE_LOG
DESCRIPTION = Blackback-A3 Well Completion Log Scale
1:200 Appendix 4b
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Esso Australia Ltd
WELL_NAME = Blackback-A3
CONTRACTOR =
AUTHOR =
ORIGINATOR = Esso Australia Ltd
TOP_DEPTH =
BOTTOM_DEPTH =
ROW_CREATED_BY = DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)