

W1019

WCR VOL 1

SNOOK-1 (W1019)

WELL COMPLETION REPORT  
SNOOK-1  
VOLUME 1  
BASIC DATA 24 MAY 1990

PETROLEUM DIVISION

GIPPSLAND BASIN  
VICTORIA

ESSO AUSTRALIA LIMITED

COMPILED BY: A.P. CLARE:

APRIL 1990

04890121

SNOOK-1

WELL COMPLETION REPORT

VOLUME 1: BASIC DATA

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1. WELL DATA RECORD

SNOOK-1

LOCATION : Latitude : 38<sup>0</sup> 19' 41.46" South  
Longitude : 147<sup>0</sup> 24' 17.87" East  
X = 535396 mE  
Y = 5757679 mN  
Map Projection: UTM Zone 55  
Geographical Location: Bass Strait,  
Victoria  
Field: SNOOK

PERMIT : Vic/P27

ELEVATION : 21m

WATER DEPTH : 28m

TOTAL DEPTH : 1550m

PLUG BACK TYPE : Cement Plug

REASONS FOR  
PLUGGING BACK : Plugged and abandoned

MOVE IN : 17/01/90 1230 hours

SPUDDED : 18/01/90 0400 hours

REACHED T.D. : 25/01/90 1130 hours

RIG RELEASED : 29/01/90 1030 hours

OPERATOR : Esso Australia Resources Limited

PERMITTEE OR LICENCEE : Esso/BHP Petroleum (Victoria) Pty. Ltd.

ESSO INTEREST : 50%

OTHER INTEREST : 50%

CONTRACTOR : South Seas Drilling Company

RIG NAME : Southern Cross

EQUIPMENT TYPE : Semi-submersible

TOTAL RIG DAYS : 12.03

DRILLING AFE NO. : 230001 (Segment 34)

TYPE COMPLETION : Plugged and abandoned

WELL CLASSIFICATION : Before Drilling: Wildcat  
After Drilling: Plugged and abandoned

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

SNOOK-1

<u>INTERVAL (m)</u>	<u>TYPE</u>
780 - 1550	Cutting samples - 3 sets of washed and oven dried and 1 set of bagged air dried cuttings.  Samples from 780 - 1030 at 30m intervals. Samples from 1030 - 1550 and 5m intervals.
800 - 1550	Unwashed composite tinned samples for geochemistry collected at 30m/15m intervals.
1528.5 - 1120	Sidewall Cores, Shot 30. Rec: 26, Bought: 26.

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8. TEMPERATURE RECORD - SNOOK-1

LOGGING RUN	THERMOMETER DEPTH (m)	MAX. RECORDED TEMPERATURE (C°)	CIRCULATION TIME (t <sub>k</sub> ) (hours)	TIME AFTER CIRCULATION STOPPED (t)	HORNER TEMPERATURE (C°)	GEOHERMAL GRADIENT (C°/km)
<u>Suite 1</u>						
BHC-CAL-GR	769.0	43.0	2 hrs 18 mins	3H 29M(3.48)		
<u>Suite 2</u>						
DLL-MSFL-LDL-CNL-BHC-GR-SP	1549.0	48.6	7 hrs 30 mins	6H 55M(6.92)	NO TEMPERATURE CALCULABLE	25.35 (BASED UPON COMBO TEMP)
WSS	1552.0	48.6*		11H 25M(11.42)		
CST's	No Thermometers Run					

\* The WSS temperature is questionable and would appear to have been copied from the combo string temperature.

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6. WIRELINE LOGS AND SURVEYS  
SNOOK-1

<u>TYPE AND SCALE</u>		<u>FROM</u>	<u>TO</u>
<u>SWEETLIPS-1</u>			
	<u>SUITE 1</u>		
BHC-CAL-GR	1:200	769.0	49.0
	1:500		
	<u>SUITE 2</u>		
DLL-MSFL-GR-SP-AMS	1:200	1549.0	755.0
	1:500		
BHC-GR-CAL	1:200	1526.0	755.0
	1:500		
LDL-CNL-GR	1:200	1543.5	1050.0
	1:500		
WST (CHECKSHOT)		1552.0	755.0
GST-GR (SIDEWALL CORES)	(30 SHOT, 26 RECOVERED)	1528.5	1120.0

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SNOOK-1 FINAL WELL REPORT  
Operations Summary

1. MOVING/MOORING

After bolstering the No. 8 anchor at the Tarwhine-1 Subsea Completion location, the Southern Cross was towed by the MV Torungen Supplier to the Snook-1 location. Anchor No 8. was dropped at Snook-1 at 1230 hours January 17, 1990, completing the 8nm tow in 2.75 hours at an average speed of 2.9 kts.

The MV's Canning Tide and Torungen Supplier then ran and set the eight anchors in 5.75 hours and the rig was moved towards the called location. The anchors were load tested to 250 kips and were then slacked off to an operating pretension of 125 kips. After ballasting down, the TGB was run and landed at a seafloor depth of 49m RKB. The rig position was determined to be 5m on a bearing of 330° from the called location.

2. DRILLING OPERATIONS

a) 26" Hole/20" Casing

After setting the TGB, the 26" bit/26" hole opener BHA was made up, stabbed into the TGB and Snook-1 was spudded at 0400 hours January 18, 1990. The 26" hole was drilled from 49m to 173m, at an average ROP of 13.8 mph, using seawater and high viscosity gel slugs to clean the hole. After pumping a high viscosity sweep, 250 bbls of high viscosity mud was spotted, a Totco was dropped and the bit was pulled to the seafloor. The Totco was recovered (1/4°) and the bit was RIH. No drag or fill was encountered, 200 bbls of high viscosity mud was spotted in the hole at TD and the drillstring was POOH to 109m, where an additional 100bbls of high viscosity mud was spotted. The drillstring was then POOH to run casing.

Eight joints of 20", 94ppf, X-56, RL-4S casing, plus a crossover joint (129 ppf, RL-4S x ALT-2) and the 24" pile joint/18-3/4" Vetco SG-5 wellhead assembly were run with the 20" shoe at 164m. The casing was cemented to the seafloor, using a drillpipe stinger, with a lead slurry of 750sx of Class "G" cement plus 2.2% prehydrated gel and a tail slurry of 600sx of Class "G" cement plus 1.5% CaCl<sub>2</sub>.

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

b) 17-1/2" Hole/13-3/8" Casing

A 17-1/2" bit and pendulum BHA were picked up and RIH to the TOC at 157m. The cement and 20" casing shoe were drilled and the 17-1/2" hole was drilled from 173m to 771m at an average ROP of 21.0 mph. Seawater and high viscosity pills were used initially for drilling out of the casing. The system was then closed and a seawater/gel/native solids mud was allowed to develop over the section. After reaching TD, a Totco was dropped and a wiper trip was made to the 20" casing shoe. Maximum drag of 80 kips was recorded on the first three stands pulled. The Totco was recovered (1/2°) and the bit was RIH. The hole was then circulated clean, the drillstring was POOH and the BHC/GR/CAL log was run.



The wearbushing was pulled and 61 joints of 13-3/8", 54.5ppf, K-55, BTC casing, plus the casing hanger pup joint (68 ppf, N-80) were run and landed with the shoe at 756m. The casing was then cemented in place with 1000sx of Class "G" neat cement. The estimated TOC was calculated to be at 256m based on an 18" average hole diameter as per the caliper log. The plug was bumped and the pressure was increased to 1500 psi to test the casing. After closing the annular and flushing the wellhead sealing area with 10bbbls of high viscosity mud, the packoff was successfully energized, using a cementing kelly, and tested to 200/2000 psi along with the BOP stack. A Phase I PIT was run against the shear rams to 1500 psi and the choke manifold was tested to 200/5000 psi.

c) 12-1/4" Hole

An S11J bit and pendulum BHA, with a 12-3/16" stabilizer, were RIH to the TOC at 731m. The cement plugs and float collar/float shoe were drilled out and 3m of new hole was drilled to 774m, where a Phase II PIT was conducted to leakoff at 920 psi (16.2 ppg EMW).

The 12-1/4" hole was then drilled from 774m to 1407m, at an average ROP of 17.3 mph, where the bit was pulled due to a decrease in ROP. While drilling this section at about 1050m, the mud in the hole was displaced with a 9.5 ppg, seawater/polymer/prehydrated gel mud system. This mud was then used to drill through the claystone/siltstone formations of the Lakes Entrance and on to the Top of Latrobe Gurnard Formation (picked as prognosed at ± 1128m) and Coarse Clastics. Torque remained steady in this section until some coal beds were encountered below 1200m. Coal sloughings/cavings then appeared to jam the bit and stabilizer, causing increased torque and intermittent rotary stalling. While drilling this section, samples were circulated up for geologic analysis at 1159m and 1366m; however, no shows were encountered and gas was minimal (max peak at 1334-1340m = 5.5u). While attempting to POOH from 1407m, the drillstring became stuck with the bit at 1317m and the stabilizer at 1295m. Since the interval contained several thick coal seams, it was surmised that the bit/stabilizer was obstructed by coal cavings. The drillstring was eventually freed in the downward direction and recovered through the interval via backreaming with the rotary and drillpipe slips. The bit was POOH and graded T8 B8 1/4".

An HP51A bit was then RIH and, after spending 4.50 hours reaming tight hole from 1164m to 1407m, the bit was used to drill to the programmed TD of the well (1550m) at an average ROP of 18.5 mph. After reaching TD, a large amount of coal cuttings were circulated out and a wiper trip was made to the 13-3/8" casing shoe. Normal drag was encountered while POOH. The bit was then RIH and the hole was circulated clean. The drillstring was then POOH without incident.

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

Run No. 1 = DLL/MSFL/LDL/CNL/SP/GR/CAL/AMS  
Run No. 2 = WST  
Run No. 3 = CST/GR (30 Core Shots, 26 Recovered).

Due to a malfunction of the Schlumberger unit's power generator, it was necessary to hook up rig power to the unit. While RIH for log No. 1, the power dropped below the level required and the depth indicator and computer went down. Therefore, it was necessary to POOH to re-establish depth control. The power problem was determined to be system overload caused by the additional use of the blue line printer. The printer was turned off and the logging program was completed without incident. Because of the absence of shows, the SHDT and RFT were not run.

3. PLUG AND ABANDONMENT

After completing final logs, open-ended drillpipe was RIH to 1178m and a 100m balanced cement plug (P & A Plug No. 1) was set across the Top of Latrobe using 260sx of Class "G" neat cement mixed in seawater. After tagging the plug at 1081m, the pipe was pulled up to 806m and a 100m balanced cement plug (P & A Plug No. 2) was set across the 13-3/8" casing shoe using 300sx of Class "G" neat cement mixed in seawater. The plug was later pressure tested to 1500 psi and tagged at 706m with 15 kips.

Schlumberger was rigged up and the 13-3/8" casing was cut at 134m using a Pengo explosive cutter. The wearbushing was pulled, a spear was run and seven joints of casing plus a stub were pulled and laid down.

Open-ended drillpipe was RIH and a 80m balanced cement plug (P & A Plug No. 3) was set across the 13-3/8" casing stub, from 164m to 84m, using 375sx of Class "G" neat cement mixed in seawater. While laying down drillpipe, Plug No. 3 was pressure tested to 500 psi.

The inner barrel of the slip joint was then pinned closed and the BOP stack and riser were pulled. A mechanical cutter was RIH and the 20" casing was cut at 59m ( $\pm$  1m below the pile joint assembly ALT-2 connector). An 18-3/4" wellhead running tool and bumper sub were then run and the wellhead and PGB were retrieved and laid down. Due to the failure of 3 of the 4 TGB mousetrap slings, the TGB was left on the seabed. After making a run with a chain grapple to level to TGB, the TGB retrieving tool was run and the TGB was successfully recovered.

4. RELEASE RIG

After retrieving the TGB and backloading Esso equipment, the Southern Cross was released at 1030 hours January 29, 1990 for a farm-out to the Nerdlihc Company. After the anchors were recovered and the rig departed the location, a seabed survey was conducted over the well location using the RCV 225 vehicle mounted on the MV Flinders Tide.

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SNOOK-1 FINAL WELL REPORT  
CASING DATA

OD (In.)	WEIGHT (LB/FT)	GRADE	CONNECTION	LENGTH (m)	SHOE DEPTH (mRKB)	CENTRALIZER POSITION	REMARKS
20	94	X-56	RL-4S	12.46	164	NONE	FLOAT SHOE JOINT
20	94	X-56	RL-4S	82.81		NONE	7 INTERMEDIATE JOINTS
20	129	X-56	RL-4S x ALT-2	11.95		NONE	CROSSOVER JOINT
24	670	---	ALT-2	10.92 =====		NONE	WELLHEAD: VETCO SG-5 S/N 394360-3
				118.14			
13-3/8	54.5	K-55	BTC	11.06	756	NONE	FLOAT SHOE JOINT
	54.5	K-55	BTC	11.98		1 ACROSS COLLAR	FLOAT JOINT
	54.5	K-55	BTC	11.64		NONE	FLOAT COLLAR JOINT
	54.5	K-55	BTC	670.97		1 ACROSS FIRST NINE COLLARS	58 INTERMEDIATE JOINTS
	68	N-80	BTC	3.21 =====		NONE	CASING HANGER PUP JOINT -CSG HANGER: SG-5, TYPE T, S/N 325420-1 S8722 (LOCK RING REMOVED) -PACKOFF ASSY: SG-5, S/N 334028-3
				708.86			

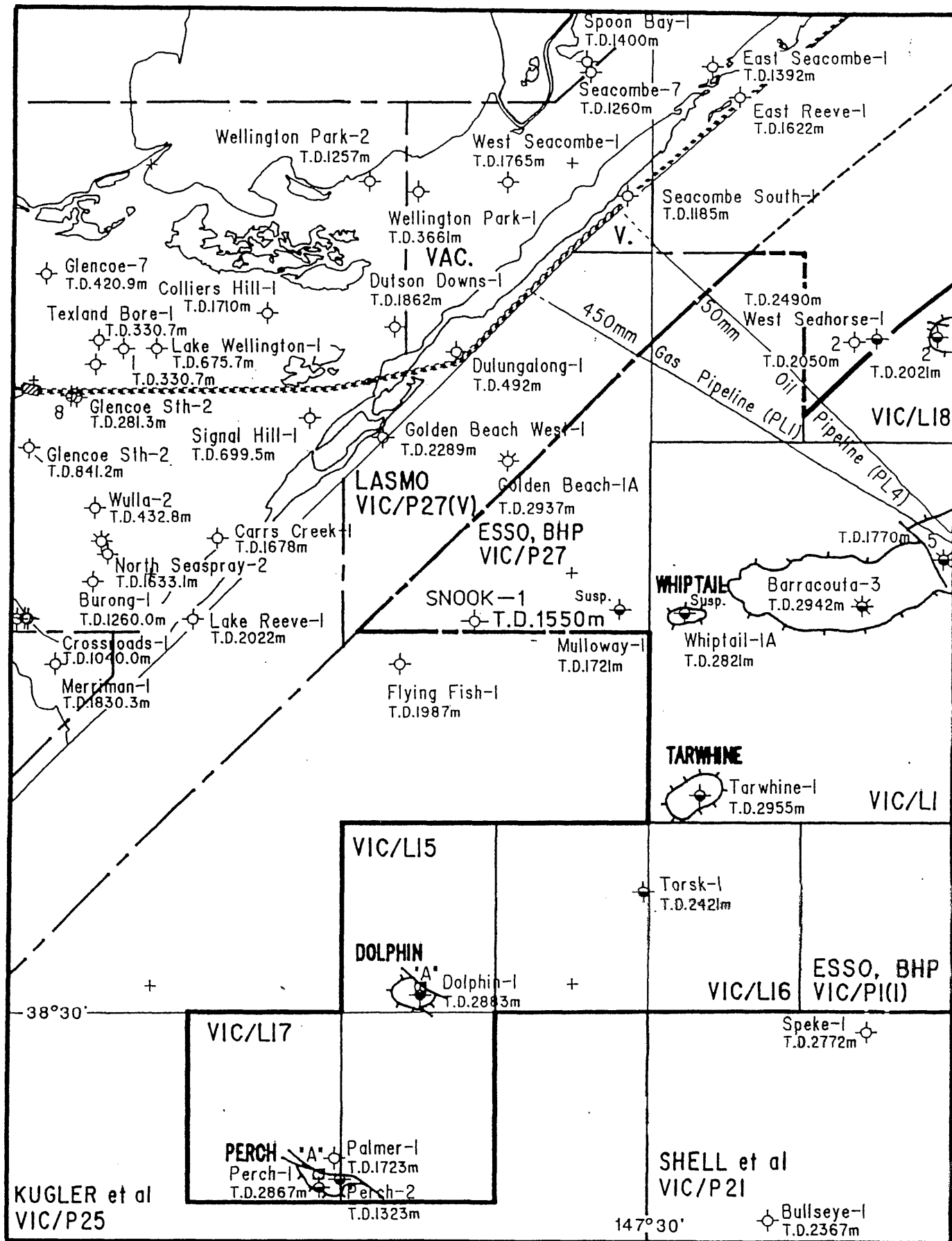
ESSO AUSTRALIA LTD.  
SNOOK-1 FINAL WELL REPORT  
CEMENT DATA

DATE (1990)	TYPE JOB	INTERVAL (M-RKB)	TYPE CEMENT	VOLUME (SX)	SLURRY WEIGHT (PPG)	ADDITIVES	MIX WATER	REMARKS
19-Jan	20" PRIMARY LEAD	164-49	CLASS "G"	750	13.2	2.2% PHG	FW	CEMENT THROUGH DP STINGER. CMT VOLUME AS PER PROGRAM TO PROVIDE 200% EXCESS ABOVE GAUGE HOLE VOLUME W/ TOC @ SEAFLOOR.
19-Jan	20" PRIMARY TAIL		CLASS "G"	600	15.8	1.5% CaCl <sub>2</sub>	SW	
22-Jan	13-3/8" PRIMARY	756-256	CLASS "G"	1000	15.8	---	SW	CMT VOLUME BASED ON 18" AVG. HOLE DIAMETER PER THE CALIPER LOG. BUMPED PLUG W/ 1500 PSI.
26-Jan	P & A PLUG No.1	1178-1081	CLASS "G"	260	15.8	---	FW	SET TO COVER THE TOP OF LATROBE PICKED @ 1128m. TAGGED WITH 15 KIPS.
26-Jan	P & A PLUG No.2	806-706	CLASS "G"	300	15.8	---	SW	SET ACROSS 13-3/8" CASING SHOE @ 756m. TESTED TO 1500 PSI, TAGGED WITH 15 KIPS.
27-Jan	P & A PLUG No.3	164-84	CLASS "G"	375	15.8	---	SW	SET ACROSS 13-3/8" CASING STUB @ 134m. TESTED TO 500 PSI.

FIGURES

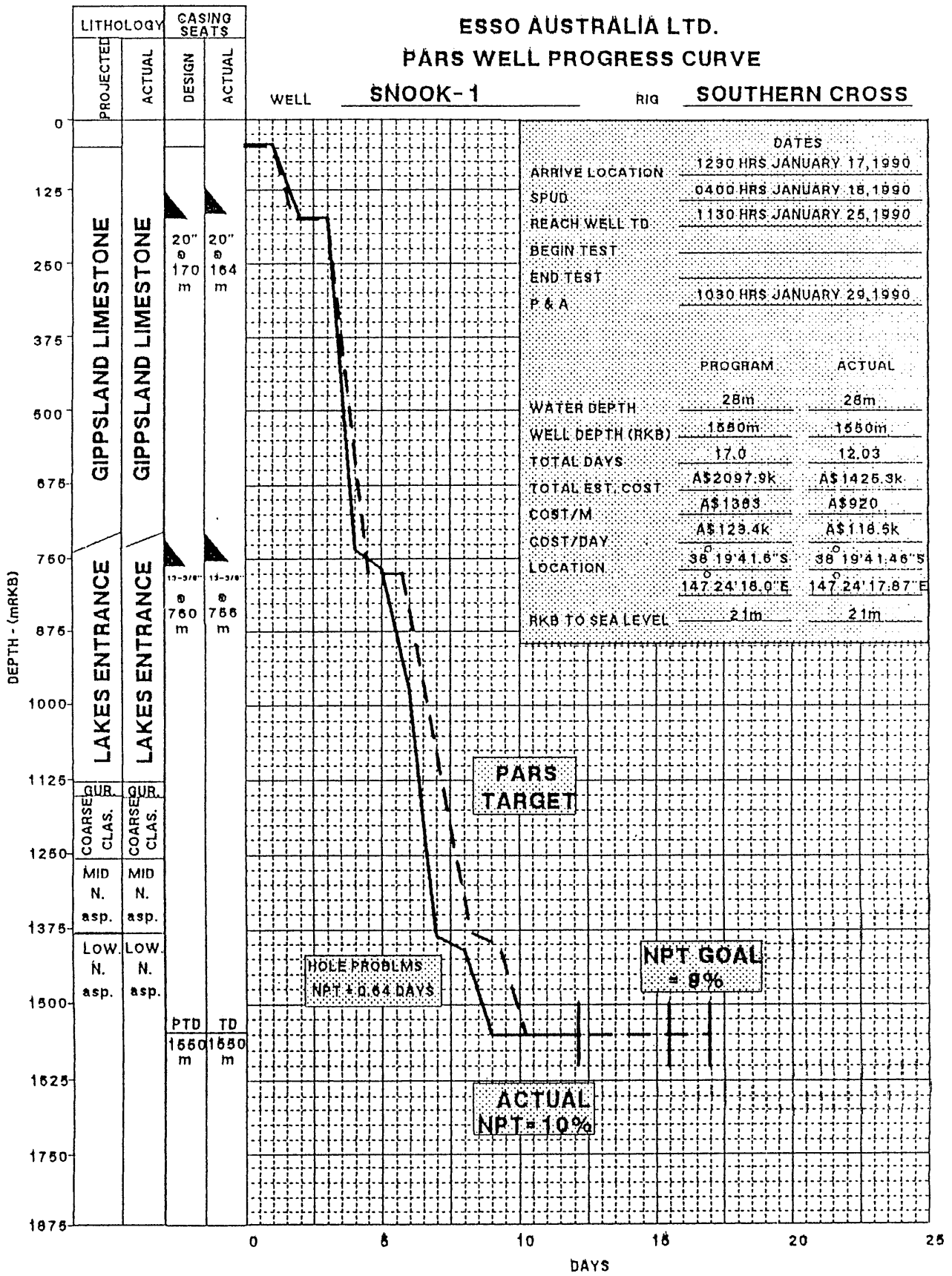
# SNOOK-1 Locality Map

Scale 1:250 000



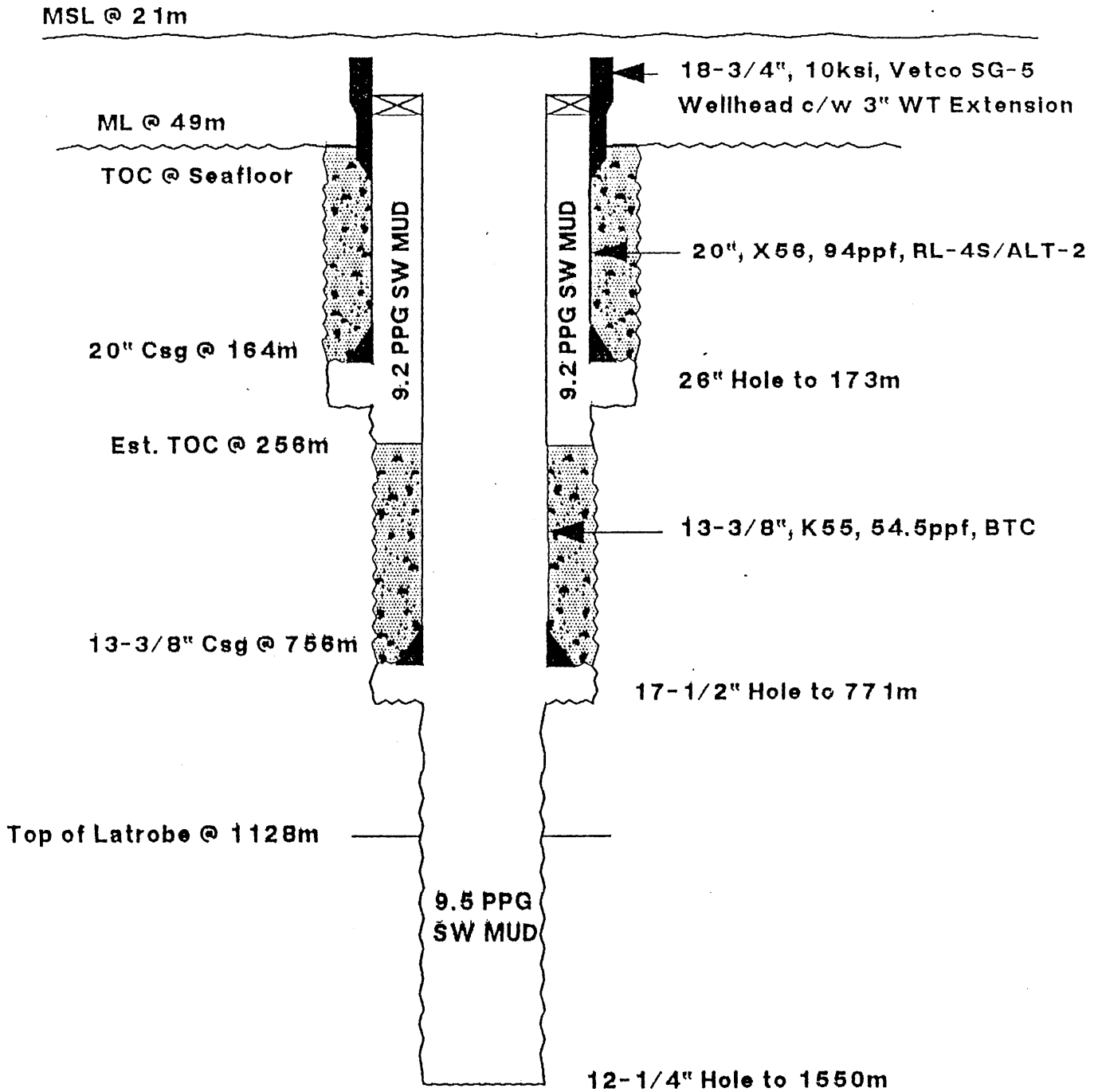
**ESSO AUSTRALIA LTD.**  
**PARS WELL PROGRESS CURVE**

WELL SNOOK-1 RIG SOUTHERN CROSS



# ESSO AUSTRALIA LTD. SNOOK-1 FINAL WELL REPORT WELLBORE SCHEMATIC

RKB



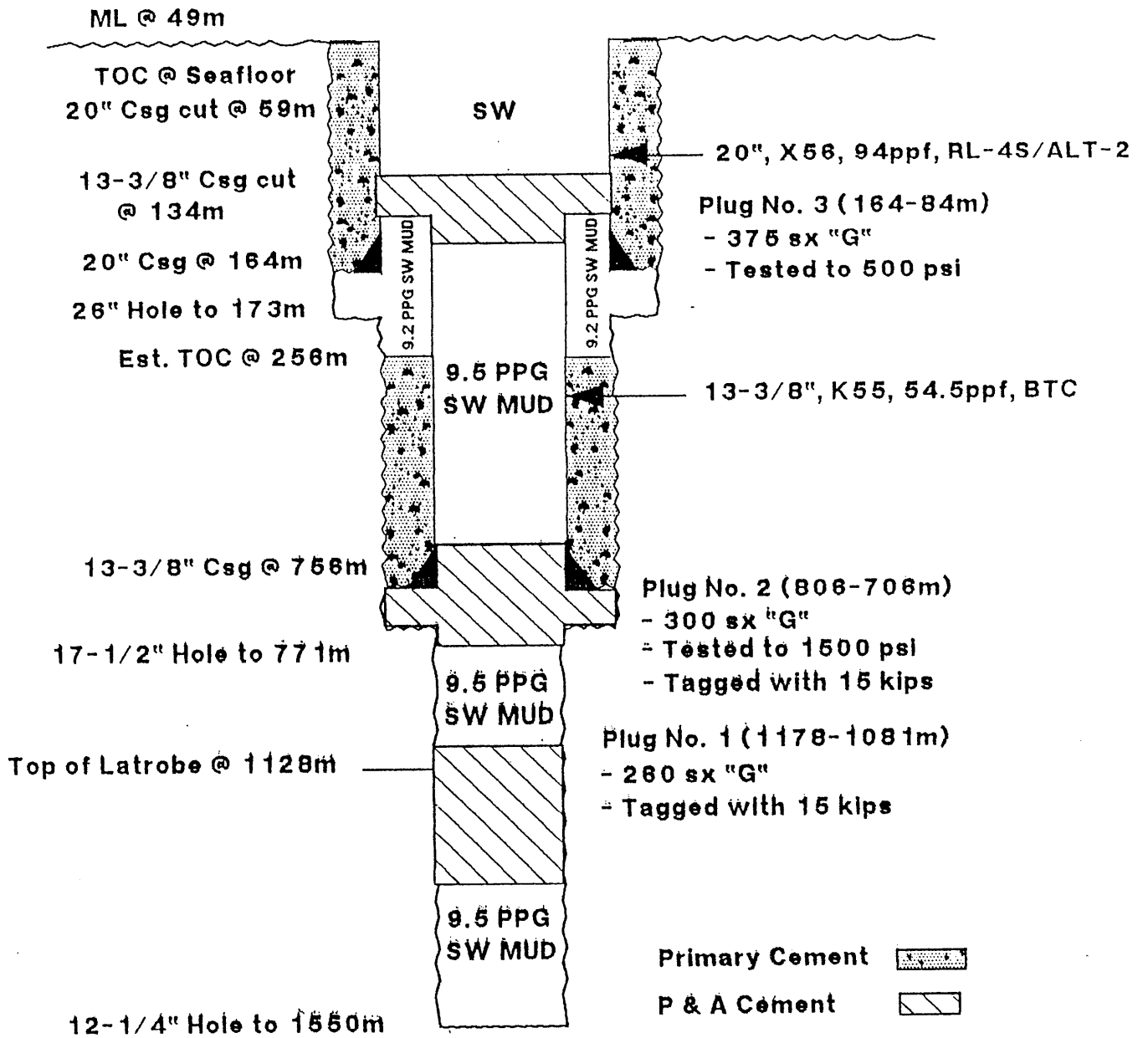
All depths are meters RKB



**ESSO AUSTRALIA LTD.**  
**SNOOK-1 FINAL WELL REPORT**  
**WELLBORE ABANDONMENT SCHEMATIC**

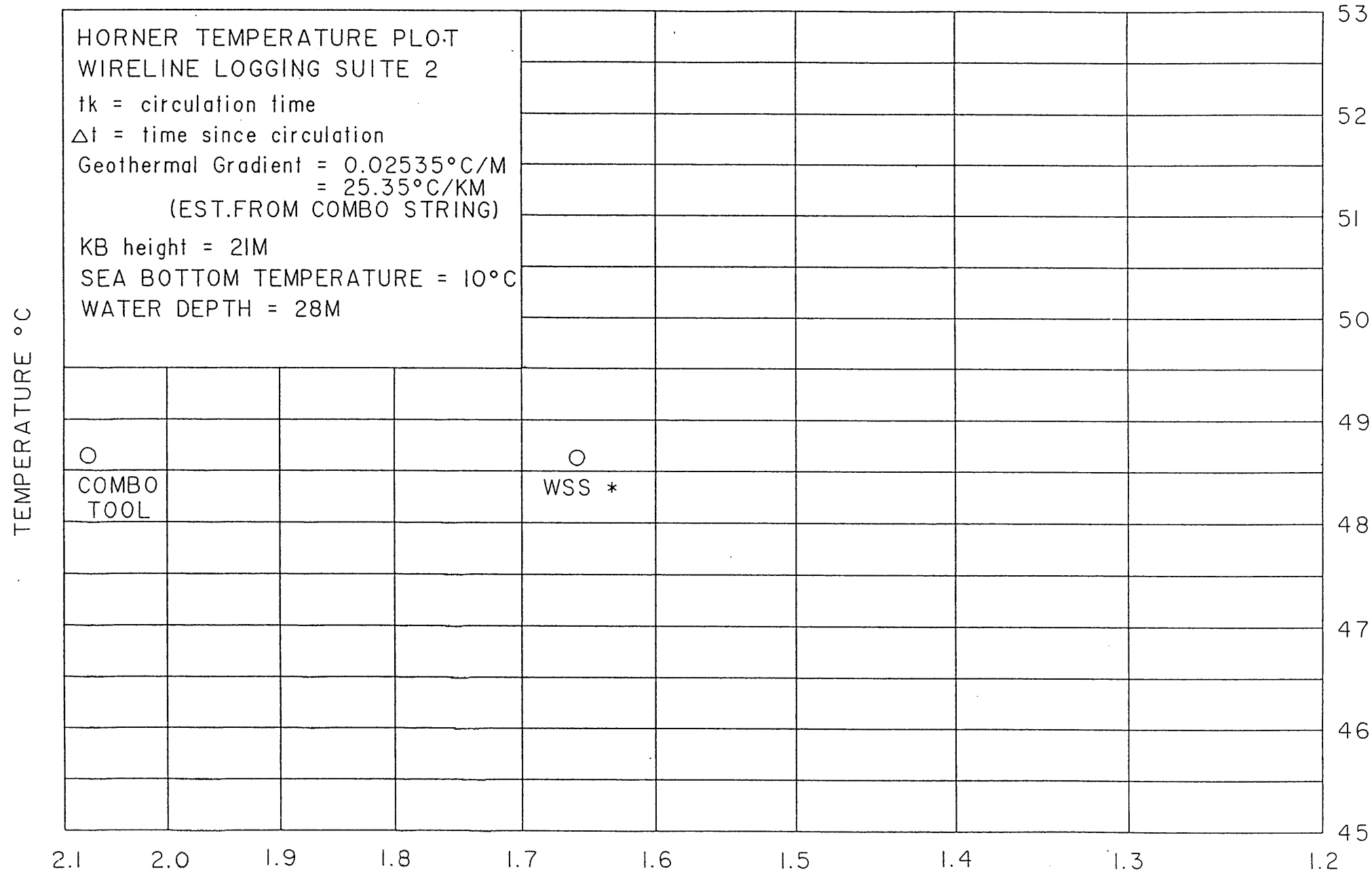
RKB

MSL @ 21m



All depths are meters RKB

# SNOOK-1



$$\frac{tk + \Delta t}{\Delta t}$$

\* WSS APPEARS TO HAVE HAD ITS TEMPERATURE COPIED FROM COMBO TOOL

APPENDIX 1

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
770-780	100	<u>LIMESTONE</u> : Calcarenite to calcilutite, light to medium grey, abundant sticky argillaceous matrix, abundant fossil fragments (shell fragments, Bryozoa), common foraminifera, firm-soft.
780-790	100	<u>LIMESTONE</u> : Very light to medium grey, calcarenite to calcilutite, abundant fossil fragments (Bryozoans, echinoid spines, shell fragments), common foraminifera, blocky, firm to soft, abundant sticky argillaceous matrix, trace glauconite.
790-800	100	<u>LIMESTONE</u> : Very light to medium grey, calcarenite to calcilutite, abundant fossil fragments (Bryozoans, shell fragments), common foraminifera (disc shaped), abundant sticky argillaceous matrix, firm to soft, blocky.
800-810	100	<u>LIMESTONE</u> : Very light to medium grey, calcarenite to calcilutite, abundant fossil fragments (Bryozoans, shell fragments), common foraminifera, abundant sticky argillaceous matrix, firm to soft, blocky, trace glauconite.
810-820	100	<u>LIMESTONE</u> : Light to medium grey, calcilutite, abundant fossil fragments (shell debris), abundant sticky argillaceous matrix, firm to hard, blocky, trace foraminifera, common glauconite (pellets).
820-830	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, common fossil fragments (Bryozoans, shell fragments, foraminifera), moderately hard to soft, moderately sorted, abundant argillaceous matrix, trace glauconite.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
830-840	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, common fossil fragments (Bryozoans, shell fragments, foraminiferas), moderately hard to soft, moderately sorted, abundant argillaceous matrix, trace glauconite.
840-850	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, common fossil fragments (shell fragments, Bryozoans), abundant foraminiferas (commonly pyritized), moderately hard-firm, moderate sorting, trace glauconite, silty matrix.
850-860	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, common fossil fragments (Bryozoans, shell fragments), common foraminifera, firm, moderate sorting, trace glauconite, trace pyrite, silty matrix.
860-870	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, silty matrix, abundant fossil fragments (Bryozoa), firm to soft, abundant foraminifera, trace glauconite.
870-880	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, silty matrix, abundant fossil fragments (Bryozoa), firm to soft, common foraminifera, trace glauconite, calcilutite.
880-890	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, abundant fossil fragments (Bryozoa), abundant foraminifera, trace pyrite, trace glauconite.
890-900	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, as above.
900-910	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
910-920	100	<u>CALCAREOUS CLAYSTONE</u> : As above, common Bryozoan fragments.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
920-930	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
930-940	100	<u>CALCAREOUS CLAYSTONE</u> : Light medium grey, green grey, slightly silty, micromicaceous, abundant bryozoan fragments, abundant foraminifera, blocky, firm to soft.
940-950	100	<u>CALCAREOUS CLAYSTONE</u> : As above, very rare fine angular quartz grains.
950-960	100	<u>CALCAREOUS CLAYSTONE</u> : As above, rare nodular glauconite.
960-970	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
970-980	100	<u>CALCAREOUS CLAYSTONE</u> : As above, becoming more green grey.
980-990	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium green grey, disseminated calcarenite (very fine) grains, trace fossil fragments, common foraminifera, blocky, slightly dispersive, soft to firm.
990-1000	100	<u>CALCAREOUS CLAYSTONE</u> : As above, trace nodular glauconite.
1000-1010	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1010-1020	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1020-1030	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1030-1035	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1035-1040	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1040-1045	100	<u>CALCAREOUS CLAYSTONE</u> : As above, predominantly light to medium grey.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
1045-1050	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1050-1055	100	<u>CALCAREOUS CLAYSTONE</u> : Light to medium grey, minor green grey, abundant disseminated calcarenite grains, slightly dispersive, slightly sticky, rare fossil fragments, trace foraminifera, rare very fine nodular glauconite, blocky to amorphous, soft to firm.
1055-1060	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1060-1065	100	<u>CALCAREOUS CLAYSTONE</u> : As above, trace loose dark green nodular glauconite.
1065-1070	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1070-1075	100	<u>CALCAREOUS CLAYSTONE</u> : As above, common glauconite nodules.
1075-1080	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1080-1085	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1090-1095	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
1095-1100	100	<u>CALCAREOUS CLAYSTONE</u> : As above, rare brown carbonaceous siltstone ?lithics.
1100-1105	100	<u>CALCAREOUS CLAYSTONE</u> : As above, trace dark green glauconite nodules.
1105-1110	100	<u>CALCAREOUS CLAYSTONE</u> : As above, becoming more light brown, rare brown carbonaceous siltstone clasts, trace glauconite.
1110-1115	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
	TR	<u>SILTSTONE</u> : Medium to dark brown, argillaceous carbonaceous, blocky to amorphous, soft.
1115-1120	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
	TR	<u>SILTSTONE</u> : As above.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
1120-1125	100	<u>CALCAREOUS CLAYSTONE</u> : As above.
	TR	<u>SILTSTONE</u> : As above with abundant medium green nodular to micaceous glauconite.
1125-1130	80	<u>CALCAREOUS CLAYSTONE</u> : As above.
	20	<u>SANDSTONE</u> : Light grey, clear to translucent, green stained in parts, very fine, moderately sorted, angular, rarely well rounded, loose, abundant inferred argillaceous matrix (washing out at shakers) poor inferred porosity, no fluorescence.
1130-1135	60	<u>CALCAREOUS CLAYSTONE</u> : As above.
	40	<u>SANDSTONE</u> : As above, trace disseminated coarse quartz grains, very poor inferred porosity, no fluorescence.
	TR	<u>SILTSTONE</u> : Brown, argillaceous as above.
1135-1140	70	<u>SANDSTONE</u> : Light grey, clear to translucent, very fine to coarse, predominately fine, poorly sorted, angular to subrounded, loose, inferred argillaceous matrix, abundant glauconite nodules, trace pyrite, trace mica, very poor inferred porosity, no fluorescence.
	30	<u>CALCAREOUS CLAYSTONE</u> : As above (cavings).
	TR	<u>SILTSTONE</u> : As above.
1140-1145	90	<u>SANDSTONE</u> : Light grey, clear to translucent, medium to coarse, poorly to moderately sorted, angular to rounded, predominantly subrounded, loose and clean, trace pyrite (adhering to grains) trace micromica, rare glauconite nodules, very good inferred porosity, no fluorescence.
	10	<u>CALCAREOUS CLAYSTONE</u> : (Cavings).
1145-1150	85	<u>SANDSTONE</u> : Light grey, clear to translucent, coarse to very coarse, moderately sorted, angular to rounded, predominantly rounded, loose to clean, rare glauconite nodules, very good inferred porosity, no fluorescence.



LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
	15	<u>CALCAREOUS CLAYSTONE</u> : (Cavings).
1150-1155	85	<u>SANDSTONE</u> : As above, predominantly very coarse, excellent inferred porosity, no fluorescence.
	15	<u>CALCAREOUS CLAYSTONE</u> : As above (cavings).
1155-1160	85	<u>SANDSTONE</u> : As above, predominantly very coarse, excellent inferred porosity, no fluorescence.
	15	<u>CALCAREOUS CLAYSTONE</u> : As above (cavings).
1160-1165	85	<u>SANDSTONE</u> : As above, predominantly medium grained, rare orange stained coarse grains, no fluorescence.
	15	<u>CALCAREOUS CLAYSTONE</u> : As above (cavings).
1165-1170	85	<u>SANDSTONE</u> : As above, medium to coarse, trace bit fractured coarse grains, moderately sorted, excellent visual porosity, no fluorescence.
	15	<u>CALCAREOUS CLAYSTONE</u> : Cavings as above.
1170-1175	90	<u>SANDSTONE</u> : As above, common oxide staining, rare coarse grey chert grains, trace thin mica/coal laminae, excellent visual porosity, no fluorescence.
	10	<u>CALCAREOUS CLAYSTONE</u> : As above, cavings.
1175-1180	90	<u>SANDSTONE</u> : As above, abundant oxide staining, no fluorescence.
	10	<u>CALCAREOUS CLAYSTONE</u> : As above, cavings.
1180-1185	90	<u>SANDSTONE</u> : As above, abundant oxide staining, no fluorescence.
	10	<u>CALCAREOUS CLAYSTONE</u> : As above, cavings.
1185-1190	95	<u>SANDSTONE</u> : As above, trace oxide staining, no fluorescence.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
	5	<u>SILTSTONE</u> : Medium to dark brown, argillaceous, carbonaceous to very carbonaceous, grades to lignitic brown coal in part, blocky, firm to soft.
	TR	<u>CALCAREOUS CLAYSTONE</u> : As above, cavings.
1190-1195	85	<u>SANDSTONE</u> : Medium to coarse as above, trace oxide staining, excellent visual porosity, no fluorescence.
	10	<u>SILTSTONE</u> : Medium to dark brown, as above, common coal fragments.
	5	<u>CALCAREOUS CLAYSTONE</u> : As above, cavings.
1195-1200	70	<u>SANDSTONE</u> : As above, rare oxide staining very good inferred porosity, no fluorescence.
	30	<u>SILTSTONE</u> : As above, predominantly medium brown, with thin coal laminae, and abundant lignitic coal fragments.
1200-1205	100	<u>SANDSTONE</u> : Light grey, clear to translucent, medium to coarse, predominantly medium, well sorted, rounded, clean and loose, trace oxide staining, excellent inferred porosity, no fluorescence.
	TR	<u>SILTSTONE</u> : As above.
1205-1210	90	<u>SANDSTONE</u> : As above, common oxide staining common mica, excellent inferred porosity, no fluorescence.
	10	<u>SILTSTONE</u> : As above.
1210-1215	95	<u>SANDSTONE</u> : As above, predominantly coarse bit fractured grains, excellent inferred porosity, no fluorescence.
	5	<u>SILTSTONE</u> : As above, grades to lignitic coal.
1215-1220	50	<u>SANDSTONE</u> : As above, very coarse to conglomeratic, abundant bit fractured grains, excellent inferred porosity, no fluorescence.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
	50	<u>SILTSTONE</u> : As above, grades to subbituminous coal, waxy texture, hackly-subconchoidal, hard, malleable.
1220-1225	50	<u>SANDSTONE</u> : Conglomeratic, as above, no fluorescence.
	50	<u>COAL</u> : Black to dark brown, grades to carbonaceous siltstone as above, subvitreous-earthy, hackly to subconchoidal, silty laminae, plant fragments, malleable, hard.
1225-1230	95	<u>SANDSTONE</u> : As above, coarse to conglomeratic, common oxide stained grains, excellent inferred porosity, no fluorescence.
	5	<u>COAL</u> : As above.
1230-1235	95	<u>SANDSTONE</u> : As above, medium to very coarse, common oxide staining, excellent inferred porosity, no fluorescence.
	5	<u>COAL</u> : As above, trace amber.
1235-1240	100	<u>SANDSTONE</u> : As above, trace oxide staining, no fluorescence.
	TR	<u>COAL</u> : As above.
1240-1245	100	<u>SANDSTONE</u> : As above, excellent inferred porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
1245-1250	100	<u>SANDSTONE</u> : As above, excellent inferred porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
	TR	<u>CALCAREOUS CLAYSTONE</u> : Cavings.
1250-1255	100	<u>SANDSTONE</u> : As above, no fluorescence.
	TR	<u>COAL</u> : As above.
	TR	<u>CALCAREOUS CLAYSTONE</u> : Cavings.
1255-1260	50	<u>SANDSTONE</u> : As above, common bit fractured grains, no fluorescence.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
	50	<u>COAL</u> : As above, grades to waxy carbonaceous siltstone, malleable, hard.
	TR	<u>CALCAREOUS CLAYSTONE</u> : Cavings.
1260-1265	40	<u>SANDSTONE</u> : As above, excellent inferred porosity, no fluorescence.
	60	<u>SILTSTONE</u> : Medium to dark brown-black, very carbonaceous, grades to coal as above.
1265-1270	10	<u>CALCAREOUS CLAYSTONE</u> : Cavings.
	80	<u>SANDSTONE</u> : As above, no fluorescence.
	10	<u>SILTSTONE</u> : As above.
1270-1275	60	<u>CALCAREOUS CLAYSTONE</u> : Cavings
	30	<u>SANDSTONE</u> : As above, no fluorescence.
	10	<u>SILTSTONE</u> : As above.
1275-1280	60	<u>SANDSTONE</u> : As above, medium to very coarse, common bit fractured grains, loose and clean, trace oxide staining, very good inferred porosity, no fluorescence.
	40	<u>SILTSTONE</u> : Tan to dark brown, carbonaceous, grading to coal as above.
1280-1285	60	<u>SILTSTONE</u> : As above.
	40	<u>SANDSTONE</u> : As above, predominately bit fractured grains, no fluorescence.
1285-1290	40	<u>SILTSTONE</u> : As above, grading to coal.
	30	<u>COAL</u> : Dark brown to black, silty, grading to carbonaceous siltstone as above, subvitreous, malleable, hard.
	30	<u>SANDSTONE</u> : As above, no fluorescence.
1295-1300	60	<u>SANDSTONE</u> : As above, trace medium grains, excellent inferred porosity, no fluorescence.
	20	<u>SILTSTONE</u> : As above.
	20	<u>COAL</u> : As above.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
1300-1305	90	<u>SANDSTONE</u> : As above, predominantly coarse bit fractured well rounded grains, loose and clean, excellent inferred porosity, no fluorescence.
	10	<u>COAL</u> : As above.
	TR	<u>SILTSTONE</u> : As above.
1305-1310	85	<u>SANDSTONE</u> : As above, trace muscovite mica, no fluorescence.
	15	<u>COAL</u> : As above.
	TR	<u>SILTSTONE</u> : As above.
1310-1315	90	<u>SANDSTONE</u> : As above, very coarse to conglomeratic, bit fractured grains, excellent inferred porosity, no fluorescence.
	10	<u>COAL</u> : Grading to carbonaceous siltstone, as above.
1315-1320	95	<u>SANDSTONE</u> : As above, coarse to very coarse, well rounded, clean and loose, excellent inferred porosity, no fluorescence.
	5	<u>COAL</u> : As above.
1320-1325	95	<u>SANDSTONE</u> : As above, predominantly very coarse, excellent inferred porosity, no fluorescence.
	5	<u>COAL</u> : As above.
1325-1330	80	<u>SANDSTONE</u> : As above, excellent inferred porosity, no fluorescence.
	20	<u>COAL</u> : As above.
1330-1335	45	<u>SANDSTONE</u> : As above, no fluorescence.
	45	<u>SILTSTONE</u> : Tan to dark brown, carbonaceous, argillaceous, micromicaceous, waxy texture, grades to coal as above, blocky, firm.
	10	<u>COAL</u> : As above.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
1335-1340	90	<u>SANDSTONE</u> : As above, predominantly very coarse bit fractured grains, excellent inferred porosity, no fluorescence.
	10	<u>SILTSTONE</u> : Grading to coal as above.
1340-1345	60	<u>SANDSTONE</u> : As above, no fluorescence.
	40	<u>SILTSTONE</u> : As above, fissile in parts.
1345-1350	90	<u>SANDSTONE</u> : Light grey, clear to milky, coarse to very coarse, abundant bit fractured grains, moderately sorted, subangular to rounded, loose and clean, excellent inferred porosity, no fluorescence.
	10	<u>COAL</u> : Black as above, fissile.
1350-1355	50	<u>SANDSTONE</u> : As above, rarely medium grained, excellent inferred porosity, no fluorescence.
	30	<u>SILTSTONE</u> : Tan to dark brown, waxy, carbonaceous as above.
	20	<u>COAL</u> : Black, subvitreous to vitreous, grades to carbonaceous siltstone in part, blocky, firm to hard.
1355-1360	10	<u>SANDSTONE</u> : As above, no fluorescence.
	90	<u>COAL</u> : As above, platy in parts.
1360-1365	50	<u>SANDSTONE</u> : As above, medium to very coarse, predominantly coarse, common bit fractured grains, loose and clean, excellent inferred porosity, no fluorescence.
	50	<u>COAL</u> : As above.
1365-1370	80	<u>SANDSTONE</u> : As above, predominantly very coarse bit fractured rounded grains, loose and clean, trace muscovite mica, excellent inferred porosity, no fluorescence.
	20	<u>COAL</u> : As above, large (4 to 8cm) blocks gathered at shakers show common platy cleavage planes perpendicular to bedding, common silty laminae (0.5 to 3mm) common amber, plant (leaf) impressions, common pressure relief cracks.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
1370-1375	90	<u>SANDSTONE</u> : As above, very coarse, excellent inferred porosity, no fluorescence.
	10	<u>COAL</u> : As above.
1375-1380	80	<u>SANDSTONE</u> : As above, no fluorescence.
	20	<u>COAL</u> : As above.
1380-1385	10	<u>SANDSTONE</u> : As above, no fluorescence.
	90	<u>COAL</u> : As above, common amber.
1385-1390	60	<u>SANDSTONE</u> : As above, no fluorescence.
	40	<u>COAL</u> : As above.
1390-1395	60	<u>SANDSTONE</u> : As above, very coarse, excellent inferred porosity, no fluorescence.
	40	<u>COAL</u> : As above.
1395-1400	50	<u>SANDSTONE</u> : As above, no fluorescence.
	50	<u>COAL</u> : As above, very silty in part.
	TR	<u>SILTSTONE</u> : Dark brown, carbonaceous, waxy texture, grades to coal as above.
1400-1405	10	<u>SANDSTONE</u> : As above, no fluorescence.
	90	<u>COAL</u> : As above.
1405-1410	10	<u>SANDSTONE</u> : As above, no fluorescence.
	90	<u>COAL</u> : As above.
1410-1415	40	<u>SANDSTONE</u> : As above, minor medium grained, excellent inferred porosity, no fluorescence.
	60	<u>COAL</u> : As above.
	TR	<u>SILTSTONE</u> : As above, slightly arenaceous in part.
1415-1420	60	<u>SANDSTONE</u> : As above, predominantly very coarse, no fluorescence.
	30	<u>COAL</u> : As above.
	TR	<u>SILTSTONE</u> : As above.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
1420-1425	70	<u>SANDSTONE</u> : Light grey, medium to very coarse, predominantly coarse, moderately sorted, subangular to rounded, loose and clean, excellent inferred porosity, no fluorescence.
	30	<u>COAL</u> : As above.
1425-1430	60	<u>SANDSTONE</u> : As above, coarse to very coarse, trace mica, excellent inferred porosity, no fluorescence.
	40	<u>COAL</u> : As above.
1430-1435	70	<u>SANDSTONE</u> : As above, predominantly very coarse to conglomeratic bit fractured grains, well rounded, slight trace calcite/dolomite cement, slight trace mineral fluorescence, no cut, no residue.
	30	<u>COAL</u> : As above.
1435-1440	85	<u>SANDSTONE</u> : As above, excellent inferred porosity, trace mineral fluorescence, as above.
	15	<u>COAL</u> : As above.
1440-1445	90	<u>SANDSTONE</u> : As above, trace mineral fluorescence, no cut.
	10	<u>COAL</u> : As above.
	TR	<u>SILTSTONE</u> : Brown, argillaceous matrix, carbonaceous, blocky to sucrosic, soft to firm.
1445-1450	100	<u>SANDSTONE</u> : As above, trace dolomite cement fine to medium grain aggregates, trace mica, excellent inferred porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
1450-1455	90	<u>SANDSTONE</u> : As above, excellent visual porosity, no fluorescence.
	10	<u>COAL</u> : As above.
	TR	<u>SILTSTONE</u> : Medium brown, argillaceous to arenaceous, carbonaceous laminae, blocky, firm.



LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
1455-1460	90	<u>SANDSTONE</u> : As above, very coarse, loose and clean, excellent inferred porosity, slight trace mineral fluorescence, no cut.
	10	<u>COAL</u> : As above.
1460-1465	100	<u>SANDSTONE</u> : As above, excellent porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
1465-1470	100	<u>SANDSTONE</u> : As above, trace mica, no fluorescence.
	TR	<u>COAL</u> : As above.
1470-1475	100	<u>SANDSTONE</u> : As above, excellent inferred porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
1475-1480	95	<u>SANDSTONE</u> : As above, trace mica, excellent porosity, no fluorescence.
	5	<u>COAL</u> : As above, trace amber.
1480-1485	95	<u>SANDSTONE</u> : As above, no fluorescence.
	5	<u>COAL</u> : As above.
1485-1490	95	<u>SANDSTONE</u> : As above, no fluorescence.
	5	<u>COAL</u> : As above.
1490-1495	100	<u>SANDSTONE</u> : As above, trace medium grains, loose and clean, excellent inferred porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
1495-1500	100	<u>SANDSTONE</u> : As above, medium to coarse, loose and clean, excellent inferred porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
1500-1505	100	<u>SANDSTONE</u> : As above, medium to very coarse, excellent inferred porosity, no fluorescence.

LITHOLOGY DESCRIPTIONS

SNOOK-1

<u>Depth</u>	<u>%</u>	<u>Description</u>
	TR	<u>COAL</u> : As above.
1505-1510	100	<u>SANDSTONE</u> : As above, predominantly coarse, loose and clean, excellent inferred porosity, no fluorescence.
	TR	<u>COAL</u> : As above.
1510-1515	100	<u>SANDSTONE</u> : As above, no fluorescence.
	TR	<u>COAL</u> : As above.
1515-1520	100	<u>SANDSTONE</u> : As above, very coarse, predominantly bit fractured grains, loose and clean, excellent visual porosity, no fluorescence.
1520-1525	100	<u>SANDSTONE</u> : As above, rare 2 mica, rare grey chert, no fluorescence.
1525-1530	100	<u>SANDSTONE</u> : As above, no fluorescence.
1530-1535	100	<u>SANDSTONE</u> : As above, no fluorescence.
1535-1540	100	<u>SANDSTONE</u> : As above, very coarse-conglomeratic, excellent inferred porosity, no fluorescence.
1540-1545	100	<u>SANDSTONE</u> : As above, no fluorescence.

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APPENDIX 2

SNOOK-1

SIDEWALL CORE DESCRIPTIONS

<u>NO.</u>	<u>Depth</u> (m)	<u>Rec.</u> (mm)	<u>Description</u>
1	1528.5	40	<u>SANDSTONE</u> : Light grey, very fine to coarse, poorly sorted, subangular to subrounded, weak silica cement, minor silty/argillaceous matrix, trace grey chert grains, thin discontinuous carbonaceous laminae, friable, fair to good visual porosity, no fluorescence. GAS: None detected.
2	1527	40	<u>SANDSTONE</u> : Light brown, very fine to predominantly fine, moderately sorted, subangular to subrounded, weak silica cement, common light brown argillaceous matrix, trace mica, trace chert, minor carbonaceous fragments, friable, poor visual porosity, no fluorescence. GAS: None detected.
3	1491.5	-	Lost bullet.
4	1470.5	20	<u>SANDSTONE</u> : Light brown, clear to translucent, very fine, grades to arenaceous siltstone, well sorted, subangular to subrounded, weak silica cement, abundant light brown argillaceous matrix, micromicaceous, trace carbonaceous fragments, soft, very poor to no visual porosity, no fluorescence. GAS: 10/24.2/14.4/TR*
5	1453	40	<u>CLAYSTONE</u> : Light grey, homogeneous, non swelling, sticky, micromicaceous, blocky to amorphous, soft. GAS: None detected.
6	1444.5	20	<u>CLAYSTONE</u> : Medium brown, homogeneous, carbonaceous, micromicaceous, non swelling, blocky to subfissile, firm to soft. GAS: 190/3.6/TR
7	1427	40	<u>CLAYSTONE</u> : Medium brown, as above with discontinuous arenaceous siltstone lenses/laminae parallel to core axis, slightly sticky, soft to firm. GAS: 270/12.1/4.8/TR

COMMENTS

Shot 30, Recovered 26, 4 lost bullets

\* GAS: ppm C1/C2/C3/C4/etc respectively

SNOOK-1

SIDEWALL CORE DESCRIPTIONS

<u>NO.</u>	<u>Depth</u> (m)	<u>Rec.</u> (mm)	<u>Description</u>
8	1420	40	<u>SILTSTONE</u> : Light grey, argillaceous, grades to claystone, micromicaceous, homogeneous, non-swelling, blocky, firm. GAS: 30/30.3/14.4/TR
9	1406.5	35	<u>SANDSTONE</u> : Light grey, clear to translucent, very fine, grades to arenaceous siltstone, well sorted, subangular to subrounded, weak silica cement, trace argillaceous matrix, micromicaceous, common carbonaceous flecks and laminae, blocky to sucrosic, firm to friable, poor visual porosity, no fluorescence. GAS: None detected.
10	1397	25	<u>SANDSTONE</u> : Light brown (mud infiltrated) clear to translucent, medium to very coarse, moderately sorted, subangular to rounded, very weak silica cement, trace argillaceous matrix, trace mica, friable, very good to excellent visual porosity, no fluorescence. GAS: 10/6/2/-
11	1389	40	<u>SANDSTONE</u> : Light brown, clear to translucent, very fine, grades to arenaceous siltstone, well sorted, subangular to subrounded, weak silica cement, minor argillaceous matrix, micromicaceous, friable to firm, poor visual porosity, no fluorescence. GAS: None detected.
12	1382	50	<u>SANDSTONE</u> : Light grey to light brown, clear to translucent, medium to very coarse, poorly to moderately sorted, subangular to rounded, loose, trace argillaceous matrix, excellent visual porosity, no fluorescence. GAS: None detected.
13	1377.5	50	<u>SANDSTONE</u> : Light to medium brown, (oil stained), clear to translucent, fine to medium with common disseminated coarse grains, poorly sorted, subangular to well rounded, very weak silica cement, trace brown oil stained argillaceous matrix, friable to loose, very good visual porosity, no fluorescence, no cut. GAS: None detected.

SNOOK-1

SIDEWALL CORE DESCRIPTIONS

<u>NO.</u>	<u>Depth</u> (m)	<u>Rec.</u> (mm)	<u>Description</u>
14	1367	45	<u>SANDSTONE</u> : Light grey, clear to translucent, medium to very coarse, poorly sorted, subangular to rounded, trace weak silica cement, minor white argillaceous matrix, friable to loose, excellent visual porosity, no fluorescence. GAS: 50/66.5/29/6.7/TR
15	1358.5	50	<u>SANDSTONE</u> : Light grey, clear to translucent, very fine, grades to arenaceous siltstone, well sorted, subangular to subrounded, weak silica cement, trace white argillaceous matrix, waxy carbonaceous laminae (0.1-0.3mm) trace micromica, friable to firm, fair visual porosity, no fluorescence. GAS: None detected.
16	1353	35	<u>SANDSTONE</u> : Light grey, as above, thin carbonaceous laminae as above, poor to fair visual porosity, no fluorescence. GAS: None detected.
17	1326.5	35	<u>SANDSTONE</u> : Light to medium grey, pale brown stained in part (?mud), clear to translucent, coarse to conglomeratic grains in a fine to medium grained matrix, very poorly sorted, subangular to well rounded, weak silica cement, trace argillaceous/silty matrix, friable to firm, poor to fair visual porosity, no fluorescence. GAS: 0/18.2/9.6/-
18	1306	-	Lost bullet.
19	1283	15	<u>SANDSTONE</u> : Light to medium grey, clear to milky, medium to coarse, moderately sorted, subangular to subrounded, moderate calcareous cement, common white to grey argillaceous matrix, commonly carbonaceous, firm to hard, poor visual porosity, dull yellow/orange mineral (calcite), fluorescence, no cut, no residue. GAS: TR/TR/TR

SNOOK-1

SIDEWALL CORE DESCRIPTIONS

<u>NO.</u>	<u>Depth</u> (m)	<u>Rec.</u> (mm)	<u>Description</u>
20	1263.5	35	<u>SANDSTONE</u> : Interlaminated white to medium brown, very fine, grading to arenaceous siltstone, well sorted, subangular to subrounded, weak silica cement, trace to common argillaceous matrix, carbonaceous laminae, trace micromica, brown ?oil staining in part, firm to friable, fair to poor visual porosity, no fluorescence. GAS: None detected.
21	1237	30	<u>SILTSTONE</u> : Medium brown, arenaceous with argillaceous matrix, carbonaceous, micromicaceous, homogeneous, blocky to sucrosic, firm. GAS: TR/TR/TR/-
22	1206.5	40	<u>SILTSTONE</u> : As above, large coaly fragments/laminae, firm. GAS: 10/-
23	1201	55	<u>SILTSTONE</u> : As above, micromicaceous, firm. GAS: None detected.
24	1177	50	<u>SANDSTONE</u> : Medium grey, clear to translucent, fine, well sorted, subangular to subrounded, trace silica cement, trace grey argillaceous matrix, trace micromica, rare carbonaceous fragments, friable to loose, very good visual porosity, no fluorescence. GAS: TR/TR/-
25	1164.5	55	<u>SANDSTONE</u> : As above, very good visual porosity, no fluorescence. GAS: TR/TR
26	1155.5	40	<u>SANDSTONE</u> : As above, very good visual porosity, no fluorescence. GAS: None detected.
27	1150	-	Lost bullet.
28	1146	-	Lost bullet.

SNOOK-1

SIDEWALL CORE DESCRIPTIONS

<u>NO.</u>	<u>Depth</u> (m)	<u>Rec.</u> (mm)	<u>Description</u>
29	1137	50	<u>CLAYSTONE</u> : Medium brown, homogeneous, abundant medium green glauconite pellets, micromicaceous, trace disseminated micropyrite, rare very fine quartz grains, blocky, firm to moderately hard. GAS: 60/-
30	1120	55	<u>CLAYSTONE</u> : Medium to dark brown, homogeneous, disseminated micropyrite, pyrite nodules and pyritised fossil fragments, plastic, slightly sticky, firm. GAS: 490/-

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