

APPENDIX 1

- A - Summary of Drilling Activities
- B - Time Summary

APPENDIX 1ASUMMARY OF DRILLING ACTIVITIESSHEA 1**DATE AND
TIME**

11/07/91

1200 Drill 0 to 8.5m.
 1300 Run 1 x joint 7" x 28lb/ft casing.
 1330 Mix and displace 1 bbl cement at 15.6 ppg.

Continue to rig up camp.

12/07/91

1200 Wait on oxy 1 to cut casing and fabricate t-piece.
 1230 Fabricate and fit t-piece and flow line to 7" casing.
 1500 Mast down, repair light units.
 1600 Drill 8.5-27.17m.
 1730 Repairs for mud pump lube line.
 1830 Drill 27.15-72.0m.
 2230 Condition and circulate - wiper trip.
 2245 P.O.O.H.
 2330 Remove flow line and t-piece, cut 7" casing.

13/07/90

2400 Seven lengths run in. All joints baker locked. Guide at bottom of first length. Float at 1st connection. Set at 69.5m total. Mix cement, pump down and displace.
 0600 Wait on cement and spool wireline on drum, fit HYD lines on to wireline, swing sheaves and lube rig.

NOTE: 3 hrs only chargeable on casing/cementing run due to initial setting up problems - code 1.

1200 Wait on cement.
 1430 Nipple up - B.O.P.
 1900 R.I.H., 101 barrel and rods.
 1945 Break down, replace pump hose.
 2030 Trip - high mud pressure, no circulation and bit blocked.
 2130 Rectify fault with HYD line to B.O.P.
 2200 Pressure test B.O.P.
 2230 Drill out cement, retube 4 hr.
 2330 Water swivel leaking, tighten and grease.

14/09/90

2400 Core out cement 47.2-53.2m.
 0100 Trip out blocked bit.
 0200 Core out cement and float at 59.2m.
 0330 Retube.
 0400 Core out cement at 65.1m.
 0500 Retube.

0530 Core out cement and guide at 71.1m.
 0700 Retube.
 0730 Formation integrity test.
 0800 Core 71.1-77.1m (+ ¼ hr retube).
 1030 Core 77.1-80.0m.
 1130 Service rig.
 1200 Retube.
 1215 Core 80.0-81.1m, no water pressure.
 1230 Attempt to pull tube, tube stuck, dry release won't work.
 Attempt to hold wireline spool down but unsuccessful, cut
 wireline.
 1400 Rod trip - cut wireline at each stand remove 1 x 6m split drill
 pipe from string.
 1600 Core 80.1-84.0m, retube ¼ hr.
 1830 Core 84.0-89.9m, retube ¼ hr.
 2100 Core 89.9-95.8m, retube ¼ hr.
 2300 Core 95.8-99.6m.

15/07/91

2400 Core 99.6-101.7m.
 0100 Remove split sub from string and head, make up and fit new sub
 retube (¼ hr).
 0230 Core 101.7-107.7m, retube ¼ hr.
 0445 Core 107.7-113.6m, retube ¼ hr.
 0645 Lube rig, check all rig oil and grease, lube and check oil mud
 pump.
 0700 Core 113.6-119.6m, retube ¼ hr.
 0900 Core 119.6-125.5m, retube ¼ hr.
 1100 Circulate and mix up high visc. mud.
 1115 Core 125.5-127.5m.
 1200 Core 127.5-131.4m, retube ¼ hr.
 1315 Core 131.4-137.4m, retube ¼ hr.
 1515 Core 137.4-143.3m, retube ¼ hr.
 1715 Repair core tube; back end
 1730 Core 143.3-149.2m, retube ¼ hr.
 1930 Core 149.2-153.9m, retube ¼ hr.
 2100 Core 153.9-160.1m, retube ¼ hr.
 2245 Core 160.1-166.2m, retube ¼ hr.

16/07/91

2400 Pull out of hole, change to standard reamer R.I.H. remove split
 rod reamer shell S/n 11602.
 0230 Core 166.2-172.3m, retube ¼ hr.
 0400 Core 172.3-178.3m, retube ¼ hr.
 0530 Core 178.3-184.4m, retube ¼ hr.
 0700 Core 184.4-190.4m, retube ¼ hr.
 0830 Core 190.4-196.3m, retube ¼ hr.
 1000 Core 196.3-202.2m, retube ¼ hr.
 1130 Lube rig.
 1200 Core 202.2-208.2m, retube ¼ hr.
 1345 Core 208.2-214.1m, retube ¼ hr.
 1515 Core 214.1-220.0m, retube ¼ hr.
 1645 Core 220.0-226.0m, retube ¼ hr.
 Rod rattle in hole, slow revs down while viscing up drill mud.
 1915 Core 226.0-231.8m, retube ¼ hr.
 2045 Core 231.8-237.7m, retube ¼ hr.
 2200 Core 237.7-243.6m, retube ¼ hr.
 2345 Core 243.6-244.6m, retube ¼ hr.

17/07/91

2400 Core 244.6-249.0m, retube $\frac{1}{2}$ hr.
 0115 Core 249.0-255.0m, retube $\frac{1}{2}$ hr.
 0315 Core 255.0-258.6m.
 0430 P.O.O.H, bit change, R.I.H.
 0800 Core 258.6-261.3m, retube $\frac{1}{2}$ hr.
 0900 Mix up high visc. mud and circulate.
 0930 Core 261.3-267.2m.
 1030 Lubricate rig.
 1100 Core to 267.2m, retube $\frac{1}{2}$ hr.
 1200 Repair 101 spear sub.
 1230 Remove bent rod.
 1245 Core 267.2-273.1m, retube $\frac{1}{2}$ hr.
 1500 Core 273.1-278.9m, retube $\frac{1}{2}$ hr.
 1615 Core 278.9-284.8m, retube $\frac{1}{2}$ hr.
 1800 Core 284.8-290.6m, retube $\frac{1}{2}$ hr.
 1945 Core 290.6-296.6m, retube $\frac{1}{2}$ hr.
 2200 Core 296.6-302.4m, retube $\frac{1}{2}$ hr.
 2345 Core 302.4-303.4m, retube $\frac{1}{2}$ hr.

18/07/91

2400 Attempt to core.
 0100 Stuck tube, break wireline at surface, remove wireline and tube.
 0330 P.O.O.H, lay down split pipe, change burnt bit, R.I.H.
 0900 Core 303.4-308.3m, retube $\frac{1}{2}$ hr.
 1030 Core 308.3-312.2m, retube $\frac{1}{2}$ hr.
 1200 Core 312.2-314.2m, retube $\frac{1}{2}$ hr.
 1315 Core 314.2-319.9m, retube $\frac{1}{2}$ hr.
 1615 Core 319.9-325.8m, retube $\frac{1}{2}$ hr.
 1915 Core 325.8-326.6m, retube $\frac{1}{2}$ hr.
 2000 Trip out of hole, bit change.
 2130 Replace damaged roller, rotation head.
 2230 R.I.H., with new bit.

19/07/91

2400 R.I.H.
 0045 Condition and circulate wash 12m to bottom.
 0100 Core 326.6-331.9m, retube $\frac{1}{2}$ hr.
 0245 Core 331.9-337.9m, retube $\frac{1}{2}$ hr.
 0430 Core 337.9-343.9m, retube $\frac{1}{2}$ hr.
 0600 Lube rig.
 0615 Core 343.9-349.6m, retube $\frac{1}{2}$ hr.
 0800 Core 349.6-349.8m, retube $\frac{1}{2}$ hr.
 0830 Core 349.8-355.4m, retube $\frac{1}{2}$ hr.
 1030 Core 355.4-361.0m, retube $\frac{1}{2}$ hr.
 1200 Core 361.0-361.5m, retube $\frac{1}{2}$ hr.
 1230 Core 361.5-367.5m, retube $\frac{1}{2}$ hr.
 1400 Core 367.5-373.5m, retube $\frac{1}{2}$ hr.
 1615 Core 373.5-379.3m, retube $\frac{1}{2}$ hr.
 1815 Core 379.3-385.3m, retube $\frac{1}{2}$ hr.
 2030 Core 385.3-391.3m, retube $\frac{1}{2}$ hr.
 2300 Core 391.3-395.0m, retube $\frac{1}{2}$ hr.

20/07/91

2400 Core 395.0-397.2m, retube $\frac{1}{2}$ hr.
 0115 Core 397.2-403.1m, retube $\frac{1}{2}$ hr.
 0330 Core 403.1-409.0m, retube $\frac{1}{2}$ hr.
 0545 Core 409.0-415.0m, retube $\frac{1}{2}$ hr.
 0800 Lube rig.
 0815 Core 415.0-420.4m, retube $\frac{1}{2}$ hr.
 1015 Stuck tube, attempt to release.
 1100 Pull out of hole.
 1200 Rod trip - stuck tube.
 1530 Break down - repair hyd hose.
 1600 Core 420.4-426.5m, retube $\frac{1}{2}$ hr.
 1915 Core 426.5-432.6m, retube $\frac{1}{2}$ hr.
 2115 Core 432.6-438.4m, retube $\frac{1}{2}$ hr.
 2330 Ream over dropped core 0.7m.

21/07/91

2400 Core 438.4-438.6m, retube $\frac{1}{2}$ hr.
 0100 Core 438.6-444.7m, retube $\frac{1}{2}$ hr.
 0300 Repair blown hyd hose.
 0330 Stuck tube.
 0430 Pull out of hole, free tube, replace landing ring, change to solid b/end packers, R.I.H.
 0930 Core 444.7-450.7m, retube $\frac{1}{2}$ hr.
 1130 Core 450.7-452.0m.
 1200 Core 452.0-456.7m, retube $\frac{1}{2}$ hr.
 1345 Core 456.7-462.5m.
 1600 Repair tube back end.
 1615 Core 462.5-474.2m, retube $\frac{1}{2}$ hr.
 1915 Replace spear sub.
 1930 Core 474.2-480.1m, retube $\frac{1}{2}$ hr.
 Excessive rod vibration in hole, remove one bent rod from drill string. Mix mud and circulate while drilling ahead with slow rod reus to overcome rod rattle.
 2300 Ream over dropped core 1.6m.
 2330 Remove leaking drill pipe from string.

22/07/91

2400 Retube.
 0030 Core 480.1-485.9m, retube $\frac{1}{2}$ hr.
 0200 Core 485.9-491.7m, retube $\frac{1}{2}$ hr.
 0330 Core 491.7-497.6m, retube $\frac{1}{2}$ hr.
 0530 Core 497.6-503.6m, retube $\frac{1}{2}$ hr.
 0730 Core 503.6-509.5m, retube $\frac{1}{2}$ hr.
 0930 Core 509.5-515.3m, retube $\frac{1}{2}$ hr.
 1115 Service rig.
 1130 Core 515.3-517.0m.
 1200 Core 517.0-521.2m, retube $\frac{1}{2}$ hr.
 1300 Core 521.2-527.1m, retube $\frac{1}{2}$ hr.
 1500 Core 527.1-533.0m, retube $\frac{1}{2}$ hr.
 1715 Core 533.0-536.5m, twist off.
 2015 Pull out of hole, top of fish at 111m, broken box
 2030 Make fishing tool.

23/07/91

2400 R.I.H. with fishing tap, fish, pull out of hole, retube, R.I.H.
0215 Core 536.5-538.8m, retube $\frac{1}{2}$ hr.
0330 Core 538.8-544.7m, retube $\frac{1}{2}$ hr.
0515 Core 544.7-546.7m, retube $\frac{1}{2}$ hr.
0645 Lost DP pressure, pull out of hole, find split pipe, R.I.H.
0830 Core 546.7-550.8m, retube $\frac{1}{2}$ hr.
1000 Core 550.8-556.5m, retube $\frac{1}{2}$ hr.
1130 Core 556.5-558m.
1200 Core 558.0-562.4m, retube $\frac{1}{2}$ hr.
1315 Core 562.4-568.5m, retube $\frac{1}{2}$ hr.
1530 Core 568.5-574.4m, retube $\frac{1}{2}$ hr.
1745 Core 574.4-580.3m, retube $\frac{1}{2}$ hr.
2000 Core 580.3-586.4m, retube $\frac{1}{2}$ hr.
2230 Core 586.4-589.4m.

24/07/91

2400 Core 589.4-592.2m, retube $\frac{1}{2}$ hr.
0045 Core 592.2-598.1m, retube $\frac{1}{2}$ hr.
0245 Core 598.1-604.0m, retube $\frac{1}{2}$ hr.
0445 Core 604.0-609.8m, retube $\frac{1}{2}$ hr.
0645 Core 609.8-612.3m, retube $\frac{1}{2}$ hr.
0815 Core 612.3-614.8m, retube $\frac{1}{2}$ hr.
0945 Core 614.8-616.0m T.D.
1100 Condition and circulated, mix and displace new mud into hole,
P.O.O.H.
1430 Service r/angle gear box and trans.
1500 Set up wireline and logs.

25/07/91

0600 Complete wireline logs, rig down.
0830 Rig released.

APPENDIX 1B

TIME SUMMARY

SHEA 1

OPERATION	HOURS	PERCENTAGE
Rig Up, Tear Down Skid	17.5	5.6
Drilling	6.5	2.1
Reaming	1	0.3
Coring	188	60.3
Circulate and Condition	4.75	1.5
Trips	32.75	10.5
Repair Rig	9.75	3.1
Rig Maintenance	3.25	1.0
Deviation Survey	0	0
Logging and Perforating	6.5	2.1
Rig Up and Run Casing/Tubing	10	3.2
Cementing	0.5	0.2
Nipple and Test Bops, Casing etc.	5	1.6
Pick Up/Lay Down DP/DC, BHA	0	0
Drill Stem Test	0	0
Loss Circulation	0	0
Squeeze and Plug Back, Cementing	0	0
Fishing	2.5	0.8
Control Pressure	0	0
Wait on Orders, Tools etc.	12.5	4.01
Wait on Weather	0	0
Completion	0	0
Plug and Abandon	0	0
Test Formation Shoe	0.5	0.2
Down Hole Trouble	6.5	2.1
Surface Trouble	4.5	1.4
TOTAL	312	100

APPENDIX 2

Drilling Rig Specifications

ROCKDRIL RIG 23 SPECIFICATIONS - EP 5W-N APACHE. MODEL 228-38-41. Draw-Works

Walker Neer. Single Drum draw-works, 450 H.P. driven through Allison 750 series power shift transmission.

- Drill Line - 1", 4 line string up
- 10" (254mm) wide x 42" (1067mm) double brakes with 2,350 sq.ins. (15161 sq.cm.) braking surface area with water splash cooling system.

2. Power System

1 Caterpillar VB 3408-DITA Turbo-charged Diesel engine giving 460 H.P. at 2000 rpm.

- Exhaust system fitted with spark arrestors
- Exhaust water spray
- Air starter motor
- Flame proof alternators

3. Transmission

Allison Series 750 Automatic, 5 speed with Torque convertor, remote mounted.

4. Hydraulics

- Primary pump, variable volume that delivers power to the top head drive hydraulic motor
- Secondary pumps, fixed volume supplying power to levelling jacks, auxiliary winch, pipe boom most raise cylinders, tork chief (hydraulically actuated make up/breakout wrenches)

5. Top Head Drive - 2 speed

- Low Range - 10,700 ft/lbs maximum torque, infinitely variable speeds 0-130 rpm.
- High Range - 3100 ft/lbs maximum torque, infinitely variable speeds 0-450 rpm.
- Drive is through a two-speed gearbox, powered by Axial piston hydraulic motor. Motor controlled and driven by a variable volume hydraulic pump.
- Dynamic drilling load capacity 170,00 lbs (77,111kg) indicated string weight at 80 rpm.
- Quick change, side loading mud 3000 psi swivel assembly. Gooseneck is equipped with Halliburton 2" plug at centreline of drill string to facilitate running wireline coring and logging tools, and also drill stem tests, under pressure.

- 6 1/8" O.D. Quill with 4½ A.P.I. pin down. Quill equipped with wrench flats and locking means to prevent rotation when drilling with down hole motor.
- Tracked in from legs of mast, lubricated needle bearings. Rollers and wear pads adjustable to assure accurate drill string alignment.

6. Mast

- Made to meet or exceed A.P.I. A4 standard.
- Height top of slips to bottom of crown beam, 18.6 metres.
- Static pull capacity - 227,600lb 105,240kg.
- Max Dynamic (drilling) load per weight indicator 146,550lb (66,470kg).
- Max casing load per weight indicator - 219,800lb (99,700kg).
- Seven sheave crown, 5 sheaves grooved for 1" drilling line, two sheaves for catline.
- Ladder to crown, complete with safely climbing device.
- Capacity to handle range 3 tubulars to 14.4m long.

7. Hydraulic Catline Winch (Auxiliary)

- 8,000lb lifting capacity.
- Control valve mounted on drillers console.
- 8,000lb capacity, swinging job boom mounted approx. 20" below crown with 3 ft. swing radius.

8. Pipe Handling Boom

- Hydraulic powered and controlled, transfers all tubulars from pipe racks, trailers, etc., to drill string centre line and vice-versa.
- Boom accomodates 2 3/8" through 9 5/8" O.D. tubing including all drill pipe, collars, tubing.
- Hydraulically actuated jaws hold pipe during transfer and while making up with top-head drive.
- Hand adjustable relief valve and pressure gauge installed to prevent crushing of thin well casing.
- Lifting capacity 3500lb (1590kg).

9. Weight Indicator

- Remote gauge to capacity of Rig near drillers position.

10. Hydraulic Levelling Jacks

- Four extra heavy duty hydraulic jacks with 12" stroke mounted at front and rear of trailer.

11. Mud System - 3000 PSI WP

- 3" (76mm) standpipe installed in mast.
- 3" (76mm) flex-hose connects standpipe to 3" (76mm) mud-line on deck.
- Deckline complete with pressure gauge, valve, and half union for connecting mud line to pump discharge.
- 3 x 2" (51mm) threaded openings in deck line for wash hose, drill stem test valve, etc.

12. Apache-Torkchief model 50-30 hydraulic make-up/breakdown wrenches

- Adjustable make-up torque 0-30,000ft/lb.
- Adjustable breakout torque 0-50,000ft/lb.
- Complete with gauge for torque readout.
- Accommodated tubulars 3½" to 7½" O.D.
- Mounted to bottom of mast and can be raised and lowered 6".
- Can be moved back into mast to clear drill string area.

13. Compressed Air System

- 12 CFM x 125 PSI driven by Rig engine.
- 19 ¾" CFM Auxiliary driven by 240 volt 50Hz explosion proof motor.

14. Slips

- 18 ¾" slip bowl.
- 10 ¾" manual operated slip bodies with 9 5/8 casing inserts.
- Split bushing and sufficient air operated slip bodies, inserts, etc., to handle all tubular sizes - 2 ¾" to 7".

15. Tri-Axle Drop Deck Semi Trailer Carrier (without Rig Mounted)

- Total weight 35,320kg (with rod handling boom).
- Prime mover - Max cab height of 2.7m with 1.321 turn-table height.
- Length (with mast together - off main road use only) 21.3 metres.
- Length with top section of mast removed 14.24m (for main highway transport).
- Width 2.4 metres.

16. Substructure

- Ramp/jacking floor combination rated to 570,000lb capacity, with 3.4 metres clear working height below slip bowl.

17. Control Equipment

No. 1 Totco 3 pen drilling recorder - penetration - weight on bit - pump pressure.

No. 1 Totco pitometer with high-low alarm system.

No. 1 Totco 0-7 degree and 0-14 degree survey units.

18. Tubular Equipment

No. 24 D.C. 4 ¾" x 2 5/16" with ¾" IF connection.

No. 18 D.C. 6½" x 2½" with 4" IF connection.

No. 1000 metres ¾" D.P. grade E x 13.3lb/ft.

No. set of necessary rotary subs for tubulars.

No. 2000 meters CHD101 plus necessary barrels, tubes, handling equipment, etc.

19. BOP's and Equipment

- No. 1 Shaffer spherical annular preventor, 9" x 5000 PSI.
- No. 1 Shaffer single ram 9" x 5000 PSI dressed with blind ram rubbers.
- No. 1 Shaffer single ram 9" x 5000 PSI dressed with 3½" rams - 4½" rams - 7" rams.
- No. 1 Koomey accumulator unit for BOP control, type HAD-800 complete with control manifold and remote panel mounted at drillers station.
- No. 1 Drill adaptor spool 9" x 5000 PSI with 2 1/16" x 5000 PSI and 3 1/8" x 5000 PSI studded outlets.
- No. 1 choke manifold 3" x 5000 PSI complete with 2 x adjustable chokes.
- No. 2 2" x 6000 PSI chiksans for kill line.
- No. 3" x 6000 PSI chiksans for choke line.

20. Surface Equipment

- No. 2 Sets of slips to handle 7" and 9 5/8" casing.
- No. 1 Necessary cup testers for 5" - 7" and 9 5/8" casing.
- No. 1 Bowen series 150 overshot - 5 5/8" SH.

21. Mud Pumps

- No. 1 OPI 350 D.G. Triplex pump, skid mounted, driven by Detroit 6V92 TA remotely controlled from drillers panel. Dressed with 6" and 4½" pistons and liners.
- No. 1 Oilwell 314 St Triplex pump, skid mounted driven by Detroit 6V53 remotely controlled from drillers panel. Dressed with 3" plungers.

22. Transportation Equipment

- No. 2 Toyota Landcruiser.
- No. 1 6 x 6 Man semi-trailer.
- No. 1 6 x 6 Leader winch truck with gooseneck dolly to suit.
- No. 1 Cat. D941 Loader/Crane combination.

23. Mud System

- No. 4 Mud tanks - 400 bbl capacity.
- 6" section manifolds.
- 8 x mud mixing guns.
- 4 x Electric mud agitators.
- 8 x SEB Brandt desilters.
- 1 x Brandt Double shale shaker.
- 1 x Centrifuges "Gasmaster" Degaser.
- 2 x Mission 4 x 5 Centrifugal pumps - Electrically driven.

24. Miscellaneous

- No. 1 Water storage tank.
- No. 3 Fuel storage tanks.
- No. 1 Warehouse barrack.
- No. 1 Workshop barrack.

25. Camp Facilities

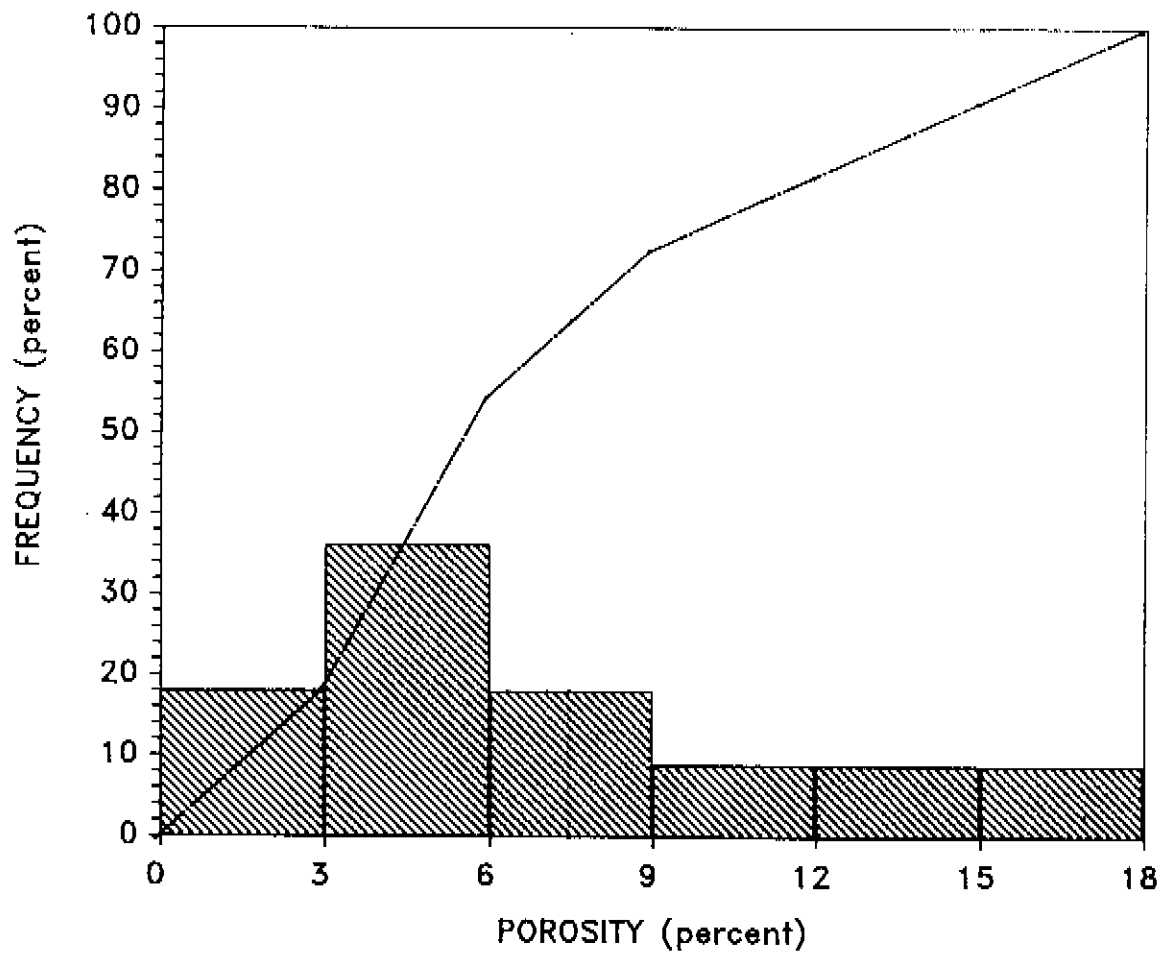
One fully equipped and air-conditioned camp comprising the following:

- 1 x 12m Kitchen Diner
- 1 x 6m Recreation
- 1 x 12m Office/Ablution
- 1 x 4.8m Ablution/Washcar
- 4 x 12m 5-man Bunkhouse
- 1 x 3m Female Ablution
- 1 x 6m Toolpushers Office
- 1 Television and video
- 1 Pressure Pump
- 1 1000 gallon water tank
- 1 Distribution board and wiring

All other supplies, labour and consumables, excluding food.

HELIUM INJECTION POROSITY HISTOGRAM

CLIENT PACIFIC OIL & GAS PTY LTD
WELL SHEA-1
DATE AUGUST 1991
FILE No CAP-91-03

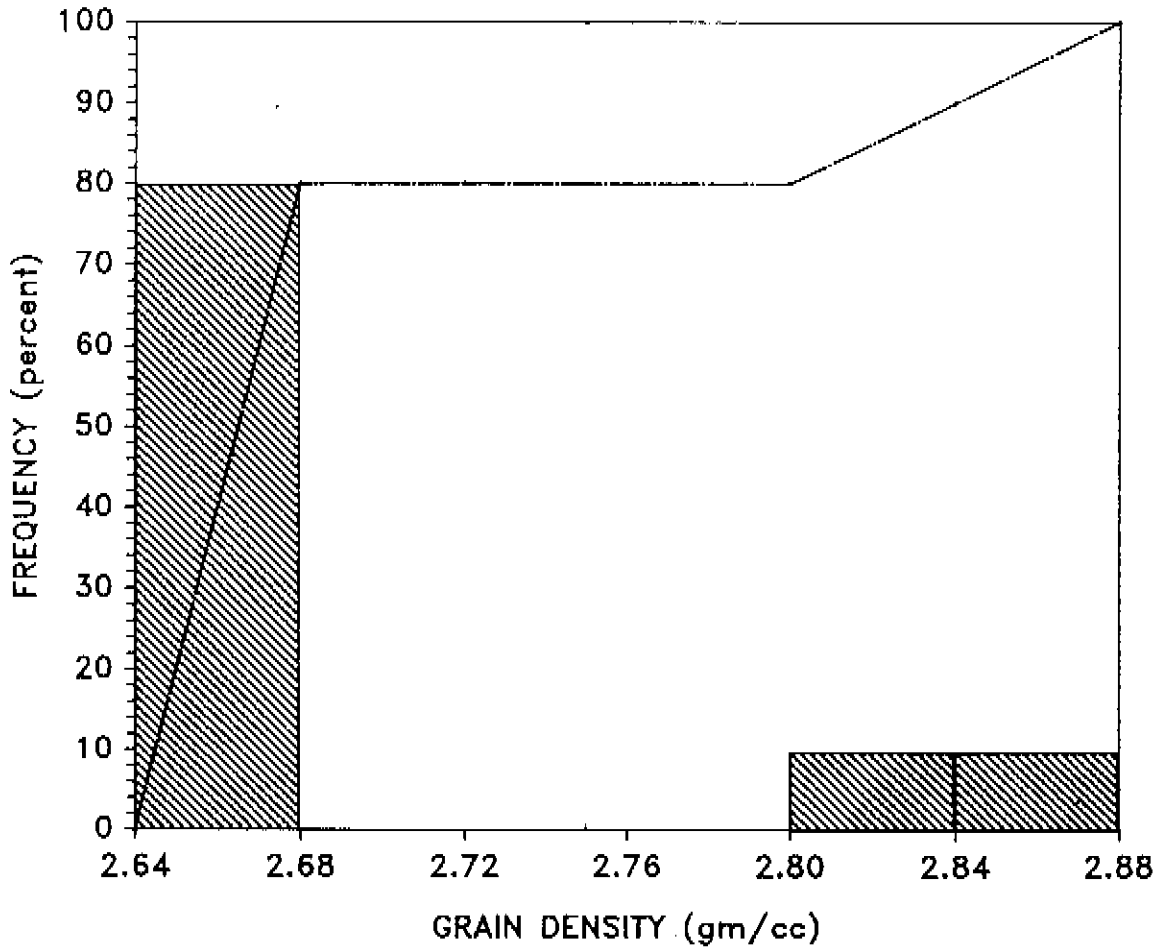


..... Arithmetic Mean (7.4%)
-.-.- Cumulative Frequency
Minimum Porosity 1.7%, Maximum Porosity 16.5%

GEOTECH

GRAIN DENSITY HISTOGRAM

CLIENT	PACIFIC OIL & GAS PTY LTD
WELL	SHEA-1
DATE	AUGUST 1991
FILE No	CAP-91-03



Arithmetic Mean (2.75gm/cc)
 --- Cumulative Frequency
 Minimum 2.64gm/cc, Maximum 3.29gm/cc

Grain density data greater than 2.88 is not graphically represented

GEOTECH

PETROGRAPHY REPORT

SHEA-1

Prepared for:

Pacific Oil & Gas Pty Ltd

September 1991

GEOTECH GEOTECHNICAL
SERVICES PTY LTD

125 Burswood Road, Victoria Park, Western Australia 6100

Telephone (09) 362 5222
Facsimile (09) 362 5908

Sample 3229048

Lithology FINE QUARTZ ARENITE

Sorting mostly excellent

Grainsize 0.25mm

Grainshape rounded-euhedral interlocking.

Constituents

Framework dominant

QUARTZ dominant, as monocrystalline fine to medium sand with equant rounded to euhedral shapes after overgrowths, epitaxial silica growth common. Narrow band of coarse sand.

ACCESSORIES TOURMALINE , rare rounded 0.2mm. ZIRCON? with opaque margin.

Matrix/Cement minor

CARBONATE sporadic cement to quartz, as isolated infillings , with some replacement of quartz. Rare examples suggestive of clastic nature.

Porosity macroporosity can be significant, and probably interconnected.

Diagenesis extensive silica overgrowth followed by sporadic carbonate crystallization, locally filling macropores.

Sample 3229050

Lithology	FINE QUARTZ ARENITE
Sorting	excellent
Grainsize	0.25mm
Grainshape	rounded to angular interlocking
Framework	dominant
QUARTZ	dominant, as monocrystalline fine sand sizes, plus epitaxial overgrowths common producing partial quartzite fabric. Shapes are slightly elongate.
ACCESSORIES	TOURMALINE AND OPAQUES, rare subrounded, fine sand size.
Matrix/Cement	very minor
CARBONATE	sporadic cement to quartz, as isolated infillings with some replacement of quartz.
Porosity	macroporosity can be significant, probably interconnected.
Diagenesis	extensive silica overgrowth followed by sporadic carbonate crystallization, locally filling macropores.

The arenite also contains in the slide a 0.5mm width discontinuous iron stained fine CARBONATE band, and adjacent a similar dimension SHALEY layer.

Sample 3229051

Lithology	FINE QUARTZ ARENITE
Sorting	excellent
Grainsize	0.25mm
Grainshape	subrounded to angular interlocking.
Framework	dominant
QUARTZ	dominant as monocrystalline fine sand sizes, with former rounded to subangular shapes mostly overgrown epitaxially.
ACCESSORIES	TOURMALINE and OPAQUES as rare rounded fine sand.
Matrix/Cement	minor
CARBONATE	very sporadic cement to quartz, infilling isolated macropores, slight corrosion of quartz. rare clastic carbonate.
CLAY	very restricted patches of coarse ?kaolin filling macropores over 0.3mm areas.
Porosity	macroporosity significant and interconnected.
Diagenesis	extensive silica overgrowth followed by very minor carbonate or kaolin deposition.

Sample 3229064

Lithology	CARBONATED CEMENTED QUARTZ SANDSTONE
Sorting	moderate
Grainsize	0.25-0.5mm
Grainshape	rounded
Framework	major
QUARTZ	dominant, most monocrystalline, fine to medium sand sizes, well rounded mostly matrix supported, some epitaxial silica overgrowths, part corroded by carbonate matrix.
ACCESSORIES	TOURMALINE and OPAQUES, rare rounded fine sand size.
Matrix/Cement	major
CARBONATE	dominant, coarsely (0.05mm) interlocking non porous mosaic locally significant penetration of quartz clast/overgrowth. Rims quartz in clay dominant matrix areas.
CLAY	minor local patches of coarse vermiform ?kaolin infilling macropores, restricted contact with quartz.
Porosity	macroporosity varies from negligible in carbonate cemented part, to major in part of formerly ?clay cemented matrix, retaining lining of carbonate on clasts.
Diagenesis	Silica overgrowths preceded carbonate crystallization, with clay deposition last.

APPENDIX 3

Bit Record

APPENDIX 3

BIT RECORD

SHEA 1

RUN NO.	BIT NUMBER	BRAND	TYPE	SERIAL NUMBER	SIZE (INCHES)	DEPTH ON (METRES)	DEPTH OFF (METRES)	R.P.M.	W.O.B. (x 1000 LBS)	PUMP PRESSURE (PSI)
1	1	REED	ROLLER	-	8.5	0.0	8.5	-	-	-
2	2	HUGHES	J3	K08EJ	6.0	8.5	72.0	45	2-5	300
3	3	LYEAR	SERIES 6	816701	101mm	72.0	258.0	400-500	9	350-400
4	4	LYEAR	SERIES 9	946702	101mm	258.0	303.4	400-450	3-6	500
5	5	LYEAR	4 STEP	100702	101mm	303.4	326.6	400	4-8	400-500
6	6	LYEAR	SERIES 6	816702	101mm	326.6	616	350-500	3-4	500

NOTES: R.P.M. = Revolutions per minute
W.O.B. = Weight on bit

APPENDIX 4

Source Rock Analysis Results

ROCK-EVAL PYROLYSIS DATA (one run)

WELLNAME = SHEA 1

DATE OF JOB = SEPTEMBER 1991

DEPTH(m)	No.	TMAX	S1	S2	S3	S1+S2	S2/S3	PI	PC	TOC	HI	OI
15.00	3229001	433	0.14	4.77	0.17	4.91	28.06	0.03	0.41	1.13	422	15
20.00	3229002	433	0.08	4.51	0.48	4.59	9.40	0.02	0.38	1.14	396	42
25.00	3229003	434	0.06	2.88	0.31	2.94	9.29	0.02	0.24	0.77	374	40
30.00	3229004	433	0.07	3.07	0.25	3.14	12.28	0.02	0.26	0.78	394	32
35.00	3229005	437	0.10	3.53	0.74	3.63	4.77	0.03	0.30	1.00	353	74
40.00	3229006	432	0.29	3.45	0.30	3.74	11.50	0.08	0.31	0.87	397	34
45.00	3229007	435	0.16	5.48	0.22	5.64	24.91	0.03	0.47	1.15	477	19
50.00	3229008	436	0.17	4.62	0.66	4.79	7.00	0.04	0.40	1.00	462	66
55.00	3229009	434	0.20	5.16	0.46	5.36	11.22	0.04	0.44	1.19	434	39
60.00	3229010	435	0.16	3.77	0.64	3.93	5.89	0.04	0.33	0.96	393	67
65.00	3229011	435	0.13	2.66	0.53	2.79	5.02	0.05	0.23	0.75	355	71
70.00	3229012	435	0.29	7.60	0.16	7.89	47.50	0.04	0.65	1.42	535	11
75.60	3229013	441	0.51	14.54	0.45	15.05	32.31	0.03	1.25	2.36	616	19
79.14	3229014	442	0.36	11.18	0.34	11.54	32.88	0.03	0.96	1.87	598	18
84.97	3229015	443	0.46	17.98	0.67	18.44	26.84	0.02	1.53	2.62	686	26
89.90	3229016	443	0.67	22.29	0.71	22.96	31.39	0.03	1.91	3.45	646	21
95.08	3229017	435	0.44	9.65	0.19	10.09	50.79	0.04	0.84	1.65	585	12
99.97	3229018	443	0.69	20.83	0.66	21.52	31.56	0.03	1.79	3.08	676	21
104.98	3229019	441	0.54	13.93	0.65	14.47	21.43	0.04	1.20	2.25	619	29
109.97	3229020	435	0.43	10.16	0.21	10.59	48.38	0.04	0.88	1.72	591	12
114.98	3229021	434	0.79	10.73	0.24	11.52	44.71	0.07	0.96	1.98	542	12
120.02	3229022	441	0.90	15.73	0.80	16.63	19.66	0.05	1.38	2.39	658	33
124.98	3229023	443	1.14	16.79	0.86	17.93	19.52	0.06	1.49	2.70	622	32
130.01	3229024	443	1.22	18.13	0.93	19.35	19.49	0.06	1.61	2.78	652	33
134.95	3229025	442	2.06	22.68	0.88	24.74	25.77	0.08	2.05	3.57	635	25
140.00	3229026	439	1.57	14.53	0.53	16.10	27.42	0.10	1.34	2.46	591	22
144.98	3229027	440	0.74	19.59	0.97	20.33	20.20	0.04	1.69	3.13	626	31
150.01	3229028	437	1.00	13.32	0.41	14.32	32.49	0.07	1.19	2.11	631	19
155.04	3229029	435	0.78	10.25	0.49	11.03	20.92	0.07	0.92	1.78	576	28
160.05	3229030	436	0.77	10.38	0.57	11.15	18.21	0.07	0.93	1.94	535	29
165.01	3229031	431	0.53	5.18	0.40	5.71	12.95	0.09	0.47	1.04	498	38
170.07	3229032	438	0.33	2.61	1.77	2.94	1.47	0.11	0.24	1.00	261	177
174.97	3229033	437	0.48	4.79	0.27	5.27	17.74	0.09	0.44	0.97	494	28
180.01	3229034	433	0.84	3.49	0.24	4.33	14.54	0.19	0.36	0.75	465	32
184.98	3229035	439	0.38	3.78	0.59	4.16	6.41	0.09	0.35	1.12	338	53
190.02	3229036	435	0.29	3.13	0.17	3.42	18.41	0.08	0.28	0.80	391	21
195.01	3229037	437	0.46	5.30	0.30	5.76	17.67	0.08	0.48	1.27	417	24
200.08	3229038	432	0.88	3.33	0.22	4.21	15.14	0.21	0.35	0.74	450	30

ROCK-EVAL PYROLYSIS DATA (one run)

WELLNAME = SHEA 1

DATE OF JOB = SEPTEMBER 1991

DEPTH(m)	No.	TMAX	S1	S2	S3	S1+S2	S2/S3	PI	PC	TOC	HI	OI
204.98	3229039	435	0.32	3.51	0.15	3.83	23.40	0.08	0.32	0.80	439	19
210.02	3229040	429	0.48	4.47	0.21	4.95	21.29	0.10	0.41	1.08	414	19
215.05	3229041	432	0.74	11.30	0.26	12.04	43.46	0.06	1.00	1.86	608	14
220.01	3229042	438	0.79	9.09	0.30	9.88	30.30	0.08	0.82	1.68	541	18
225.03	3229043	434	1.10	6.16	0.35	7.26	17.60	0.15	0.60	1.19	518	29
230.06	3229044	431	0.48	2.46	0.28	2.94	8.79	0.16	0.24	0.55	447	51
235.04	3229045	434	0.20	2.93	0.10	3.13	29.30	0.06	0.26	0.74	396	14
239.97	3229046	432	0.52	4.6								
260.04	3229053	437	0.60	3.86	1.61	4.46	2.40	0.13	0.37	1.42	272	113
265.00	3229054	nd	nd	nd	nd	nd	nd	nd	nd	0.26	nd	nd
270.02	3229055	nd	nd	nd	nd	nd	nd	nd	nd	0.35	nd	nd
275.01	3229056	nd	nd	nd	nd	nd	nd	nd	nd	0.28	nd	nd
285.01	3229057	nd	nd	nd	nd	nd	nd	nd	nd	0.38	nd	nd
290.00	3229058	nd	nd	nd	nd	nd	nd	nd	nd	0.34	nd	nd
295.00	3229059	nd	nd	nd	nd	nd	nd	nd	nd	0.36	nd	nd
300.00	3229060	nd	nd	nd	nd	nd	nd	nd	nd	0.32	nd	nd
305.00	3229061	nd	nd	nd	nd	nd	nd	nd	nd	0.44	nd	nd
310.00	3229062	nd	nd	nd	nd	nd	nd	nd	nd	0.25	nd	nd
314.98	3229071	nd	nd	nd	nd	nd	nd	nd	nd	0.40	nd	nd
320.00	3229072	nd	nd	nd	nd	nd	nd	nd	nd	0.24	nd	nd
325.01	3229073	nd	nd	nd	nd	nd	nd	nd	nd	0.28	nd	nd
329.98	3229074	nd	nd	nd	nd	nd	nd	nd	nd	0.36	nd	nd
334.97	3229075	425	0.98	2.32	0.49	3.30	4.73	0.30	0.27	0.81	286	60
340.00	3229076	433	0.22	1.05	0.29	1.27	3.62	0.17	0.11	0.51	206	57
345.03	3229077	nd	nd	nd	nd	nd	nd	nd	nd	0.31	nd	nd
350.11	3229078	nd	nd	nd	nd	nd	nd	nd	nd	0.47	nd	nd
355.00	3229079	nd	nd	nd	nd	nd	nd	nd	nd	0.44	nd	nd
360.00	3229080	435	0.28	1.44	0.09	1.72	16.00	0.16	0.14	0.60	240	15
365.01	3229081	nd	nd	nd	nd	nd	nd	nd	nd	0.43	nd	nd
370.00	3229082	nd	nd	nd	nd	nd	nd	nd	nd	0.48	nd	nd
375.03	3229083	437	0.33	1.48	0.70	1.81	2.11	0.18	0.15	0.65	228	108
379.99	3229084	nd	nd	nd	nd	nd	nd	nd	nd	0.46	nd	nd
385.00	3229085	436	0.38	1.57	0.10	1.95	15.70	0.19	0.16	0.62	253	16
389.97	3229086	433	0.36	1.40	0.13	1.76	10.77	0.20	0.15	0.63	222	21
394.98	3229087	438	0.44	1.45	0.19	1.89	7.63	0.23	0.16	0.54	269	35
400.00	3229088	nd	nd	nd	nd	nd	nd	nd	nd	0.48	nd	nd
405.00	3229089	435	0.69	1.38	0.52	2.07	2.65	0.33	0.17	0.57	242	91
410.05	3229090	432	0.56	1.32	0.25	1.88	5.28	0.30	0.16	0.57	232	44
414.97	3229091	438	1.27	3.14	0.20	4.41	15.70	0.29	0.37	1.09	288	18

ROCK-EVAL PYROLYSIS DATA (one run)

WELLNAME = SHEA 1

DATE OF JOB = SEPTEMBER 1991

DEPTH(m)	No.	TMAX	S1	S2	S3	S1+S2	S2/S3	PI	PC	TOC	HI	OI
420.00	3229092	442	1.76	7.75	0.41	9.51	18.90	0.19	0.79	2.21	351	19
424.97	3229093	nd	nd	nd	nd	nd	nd	nd	nd	0.16	nd	nd
430.00	3229094	nd	nd	nd	nd	nd	nd	nd	nd	0.12	nd	nd
435.01	3229095	nd	nd	nd	nd	nd	nd	nd	nd	0.16	nd	nd
440.00	3229096	nd	nd	nd	nd	nd	nd	nd	nd	0.19	nd	nd
444.98	3229097	nd	nd	nd	nd	nd	nd	nd	nd	0.42	nd	nd
450.10	3229098	nd	nd	nd	nd	nd	nd	nd	nd	0.16	nd	nd
455.03	3229099	nd	nd	nd	nd	nd	nd	nd	nd	0.11	nd	nd
459.96	3229100	nd	nd	nd	nd	nd	nd	nd	nd	0.28	nd	nd
465.02	3229101	394	1.89	1.87	0.41	3.76	4.56	0.50	0.31	0.54	346	76
469.99	3229102	384	1.81	2.66	0.26	4.47	10.23	0.40	0.37	0.85	313	31
475.05	3229103	443	2.84	13.10	0.08	15.94	163.75	0.18	1.32	3.79	346	2
479.99	3229104	440	3.37	17.03	0.16	20.40	106.44	0.17	1.69	4.70	362	3
484.98	3229105	441	2.98	20.37	0.37	23.35	55.05	0.13	1.94	6.13	332	6
489.99	3229106	439	2.60	15.02	0.62	17.62	24.23	0.15	1.46	5.28	284	12
495.00	3229107	442	2.46	13.35	0.21	15.81	63.57	0.16	1.31	4.07	328	5
500.00	3229108	432	2.87	8.12	0.38	10.99	21.37	0.26	0.91	2.11	385	18
504.96	3229109	437	3.60	15.22	0.51	18.82	29.84	0.19	1.56	4.51	337	11
510.02	3229110	442	2.84	16.25	0.82	19.09	19.82	0.15	1.58	5.38	302	15
514.97	3229112	445	2.19	13.35	0.73	15.54	18.29	0.14	1.29	4.26	313	17
519.99	3229113	446	3.66	18.42	0.99	22.08	18.61	0.17	1.83	5.97	309	17
524.98	3229114	436	3.36	8.50	1.12	11.86	7.59	0.28	0.98	5.15	165	22
529.98	3229115	444	2.66	6.34	0.30	9.00	21.13	0.30	0.75	2.40	264	13
535.00	3229116	441	4.29	8.89	0.53	13.18	16.77	0.33	1.09	2.94	302	18
539.97	3229117	433	4.07	7.10	0.49	11.17	14.49	0.36	0.93	2.18	326	22
545.00	3229118	436	5.15	8.05	0.30	13.20	26.83	0.39	1.10	2.18	369	14
549.98	3229120	428	3.80	4.79	0.63	8.59	7.60	0.44	0.71	1.54	311	41
555.06	3229121	435	4.46	6.43	0.32	10.89	20.09	0.41	0.90	2.13	302	15
560.02	3229122	439	4.43	7.32	0.22	11.75	33.27	0.38	0.98	2.61	280	8
564.98	3229123	444	3.60	6.24	0.22	9.84	28.36	0.37	0.82	2.80	223	8
570.04	3229124	426	2.36	3.43	1.15	5.79	2.98	0.41	0.48	1.30	264	88
574.97	3229125	431	5.38	7.19	0.40	12.57	17.98	0.43	1.04	2.36	305	17
579.96	3229126	423	5.22	5.39	0.38	10.61	14.18	0.49	0.88	1.54	350	25
584.99	3229127	444	2.53	6.07	0.39	8.60	15.56	0.29	0.71	3.63	167	11
589.95	3229128	429	7.92	11.18	0.41	19.10	27.27	0.41	1.59	4.03	277	10
594.99	3229129	431	5.52	10.64	1.11	16.16	9.59	0.34	1.34	4.43	240	25
599.95	3229130	434	2.79	5.17	0.55	7.96	9.40	0.35	0.66	2.93	176	19
605.02	3229131	420	8.97	8.66	0.38	17.63	22.79	0.51	1.46	3.21	270	12
610.00	3229132	nd	nd	nd	nd	nd	nd	nd	nd	0.46	nd	nd
615.00	3229133	nd	nd	nd	nd	nd	nd	nd	nd	0.30	nd	nd

APPENDIX 5

Reservoir Analysis and Petrography Results

FINAL CORE ANALYSIS REPORT
WELL: SHEA-1

Prepared for:

Pacific Oil & Gas Pty Ltd

August 1991

GEOTECH GEOTECHNICAL
SERVICES PTY LTD

125 Burswood Road, Victoria Park, Western Australia 6100

Telephone (09) 362 5222
Facsimile (09) 362 5908

IGEOTECH GEOTECHNICAL SERVICES PTY LTD

125 Burswood Road, Victoria Park, Western Australia 6100

A16.

Telephone (09) 362 5222
Facsimile (09) 362 5908

August 27, 1991

Pacific Oil & Gas Pty Ltd
Private Box 509
Box Hill
VIC 3128

Attention: Shane Hibbird.

Dear Shane,

Re: Final core analysis report
Well: Shea-1


Please find attached the final core analysis report for your well Shea-1.

Eleven core samples were received in our Perth laboratory on 20th August 1991. Fluid saturations were determined by the retort method, and porosity and permeability measurements were conducted on plug samples.

This report consists of tabular data, a porosity permeability cross-plot, and histograms for porosity, permeability and grain density.

The petrographic report will be sent under separate cover when complete. Meanwhile if you have any questions about this data or any other service, please do not hesitate to contact us.

Yours sincerely,



Andy Bourke
Director

CORE ANALYSIS DATA

COMPANY: PACIFIC OIL & GAS COUNTRY: _____ DATE: 22-8-91

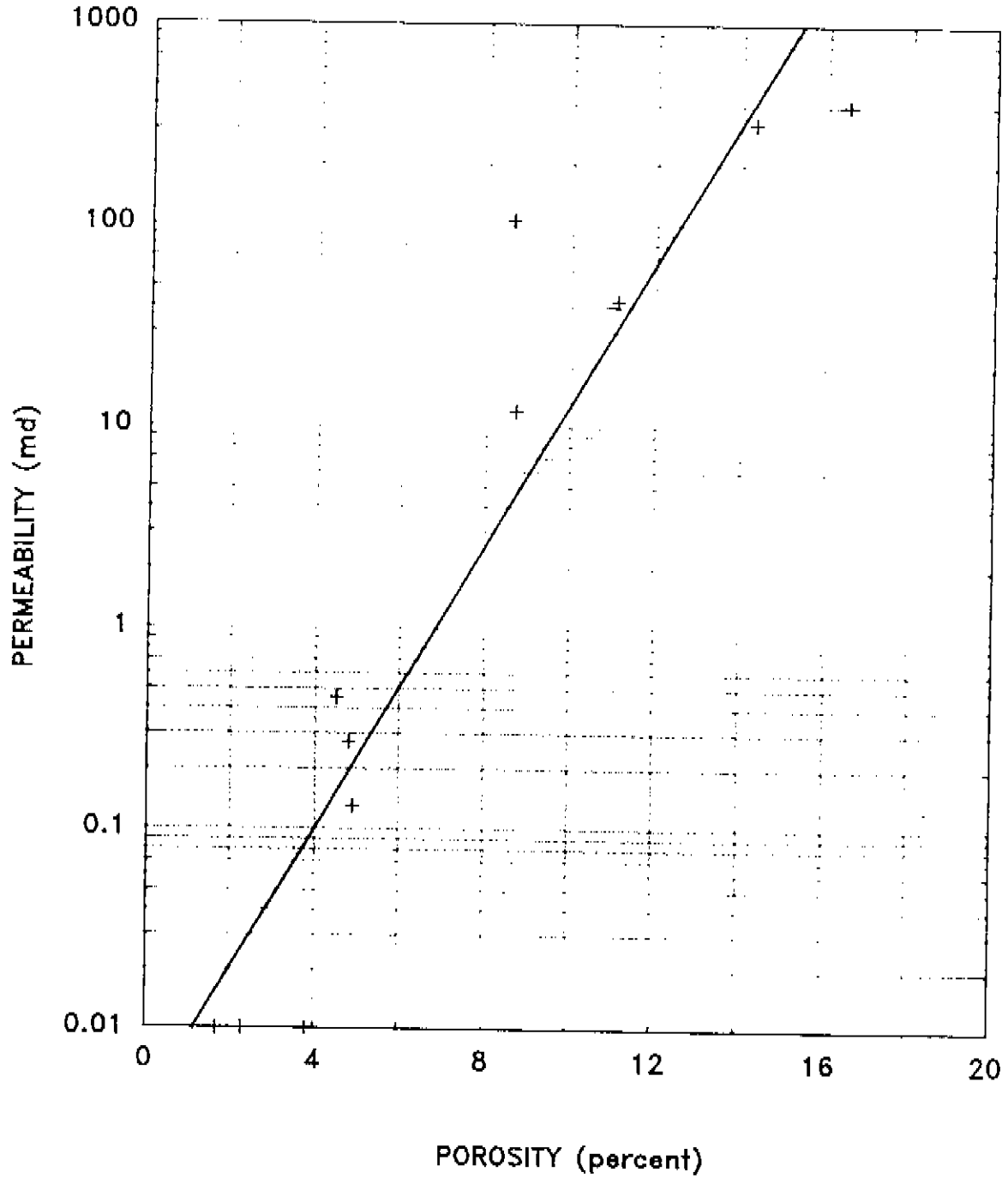
WELL: SHEA-1 STATE: _____ FILE No.: CAP-91-03

FIELD: _____ CORE INTERVAL (Metres): _____

DEPTH (metres)	POROSITY %	SUMMATION OF FLUIDS POROSITY	GRAIN DENSITY	PERM (md) to air		RESIDUAL SATURATION (% pore vol)		SAMPLE NO.
				KH	KV	Oil	Water	
245.61	14.3		2.67		322	Tr	67.2	3229048
248.86	11.1		2.67		42	4.7	32.9	3229050
247.30	16.5		2.66		398	1.3	33.3	3229051
267.26	2.3		2.86		<0.01	Tr	17.5	3229064
269.55	1.7		3.29		<0.01	11.5	45.4	3229065
271.53	8.7		2.84		12	Tr	15.9	3229066
276.16	3.8		2.64		<0.01	13.4	20.3	3229067
278.25	4.9		2.67		0.13	Tr	14.2	3229068
281.45	4.8		2.66		0.27	0.9	6.9	3229069
282.70	4.5		2.65		0.45	0.8	5.6	3229070
279.21	8.6		2.65		105	Tr	1.4	3229111

POROSITY vs PERMEABILITY

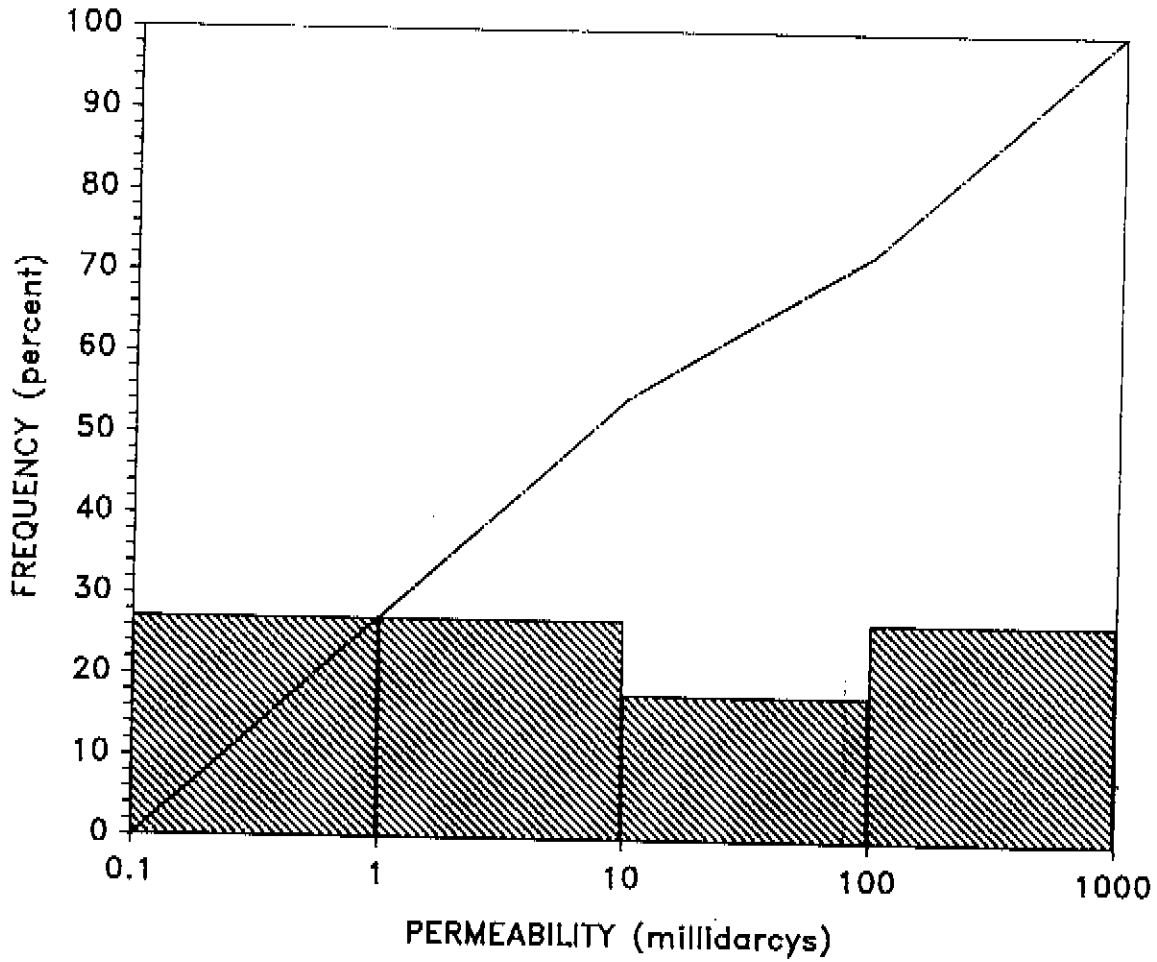
CLIENT PACIFIC OIL & GAS PTY LTD
WELL SHEA-1
DATE AUGUST 1991
FILE No CAP-91-03



GEOTECH

HORIZONTAL AIR PERMEABILITY HISTOGRAM

CLIENT PACIFIC OIL & GAS PTY LTD
WELL SHEA-1
DATE AUGUST 1991
FILE No CAP-91-03



--- Arithmetic Mean (80.0md)
-*- Cumulative Frequency
Minimum Ka <0.01md, Maximum Ka 398md

GEOTECH

Sample 3229065

Lithology	SANDY OOLITIC "LIMESTONE"
Sorting	poor
Grainsize	0.1-0.5mm
Grainshape	rounded to euhedral.
Framework	minor
QUARTZ	dominant, monocrystalline very fine to medium sand, habit rounded to euhedral after silica overgrowths, matrix supported, commonly enclosed in ooliths of carbonate/ ?limonite impregnated carbonate or ?chamosite.
Matrix/Cement	dominant
CARBONATE	dominant, medium to coarse grained non porous interlocking, also evidence of veining or pore filling. Carbonate also prominent in ooliths to 2mm, mainly as nucleus + - quartz, with oolith wall often composed of ?chamosite or oxidised equivalent. Negligible corrosion of clasts.
CHAMOSITE	accessory, forms oolith walls, rarely dominant component.
OPAQUES	accessory, in some oolith structures, trace as fines in matrix carbonate.
Porosity	macroporosity essentially lacking, some coarse pores due to artificial plucking?
Diagenesis	Siliceous overgrowths on quartz clasts have followed the formation of ooliths. There was subsequently recrystallization of carbonate within and outside the ooliths

Sample 3229066

Lithology	CARBONATED CEMENTED QUARTZ SANDSTONE
Sorting	moderate
Grainsize	0.25-0.6mm
Grainshape	rounded
Framework	major
QUARTZ	dominant, mainly monocrystalline, medium to coarse sand sizes. commonly well rounded, with some epitaxial overgrowths, grains mostly framework supported.
matrix/Cement	major
CARBONATE	dominant, coarsely interlocking macropore filling, some evidence of several generations, based on colour zoning. Corrosions of quartz very minor.
CLAY	minor, isolated patches of coarse ?kaolin flakes showing microporosity.
Porosity	some macroporosity , artificially induced? some microporosity in the clay cement.
Diagenesis	silica overgrowths followed by carbonate ?recrystallization/clay deposition.

The section also includes a band of a very fine non porous QUARTZ ARENITE or QUARTZITE.

SAMPLE 3229067

Lithology	QUARTZ ARENITE
Sorting	moderate
Grainsize	0.15-0.5mm
Grainshape	rounded to interlocking.
Framework	dominant
QUARTZ	dominant, monocrystalline , fine to medium sand, framework supported quartzite fabric due to ubiquitous silica overgrowths. Some gross banding of coarser and finer sand, coarser quartz clasts well rounded.
ACCESSORIES	TOURMALINE , trace , rounded fine sand. ZIRCON subhedral.
Matrix /Cement	negligible
Silica	see above
Porosity	macropores sporadic, not connected.
Diagenesis	silica overgrowths.

Sample 3229068

Lithology	QUARTZ ARENITE
Sorting	poor
Grainsize	0.15-0.6mm
Grainshape	rounded to interlocking.
Framework	dominant
QUARTZ	dominant, monocrystalline, fine to coarse sand, rounded, ubiquitous silica overgrowths , framework supported,
TOURMALINE	trace, rounded fine sand.
Matrix /Cement	accessory
CLAY	major, sporadic ?kaolin filling macropores.
CARBONATE	accessory, very restricted single orientation masses to 0.75mm showing some replacement of quartz clast, also associated with clay cement.
Porosity	macroporosity and microporosity negligible due to extent of silica overgrowths.
Diagenesis	mainly epitaxial silica, some subsequent clay and carbonate crystallization.

Sample 3229069

Lithology	BANDED QUARTZ ARENITE
Sorting	moderate
Grainsize	0.15-0.6mm
Grainshape	rounded to interlocking
Framework	dominant to major
QUARTZ	dominant, monocrystalline, fine to coarse sand, roughly banded, coarse quartz well rounded, with epitaxial silica significant, or lacking where clay cement is present. Mostly framework supported silica overgrowths more extensive with fine quartz producing quartzite fabric.
CARBONATE	trace, rounded 0.3mm clast
TOURMALINE	trace, fine sand, rounded.
Matrix/Cement	minor to trace
CARBONATE	major, patches across 2mm area of fine arenite totally infilling macropores. Uniform extinction, some corrosion of clasts, otherwise rare.
CLAY	major, sporadic, most abundant as kaolin cement to coarse round quartzes, vermiform with little corrosion, reaches 2x 0.25mm areas. Also more restricted pore filling to fine arenite.
Porosity	macroporosity quite minor, and not connected.
Diagenesis	silica overgrowths dominant diagenetic activity subsequent clay and carbonate precipitation minor.

Sample 3229070

Lithology QUARTZ ARENITE

Sorting poor

Grainsize 0.15-1mm

Grainshape coarse rounded, fine interlocking.

Framework dominant

QUARTZ dominant, mostly monocrystalline, several polycrystalline coarse sand sizes, dimensions from very fine to coarse sand, some banding based on sizing. habits rounded to euhedral after epitaxial growths; quartzite fabric for fine sand bands.

ACCESSORIES TOURMALINE trace, medium sand, rounded; OPAQUES subhedral. ZIRCON fine.

Matrix/Cement accessory

CARBONATE dominant, isolated pockets of macropore cement in quartzite, corrosion of former, spotted with fine ores.

OPAQUES accessory, spotted in carbonate,

Porosity macroporosity is major in some of the very poorly sorted bands. In the well sorted notably fine quartzite, it is negligible.

Diagenesis Dominated by silica overgrowths, restricted late carbonate formation.

Sample 3229111

Lithology	QUARTZ ARENITE
Sorting	poor
Grainsize	0.15-2mm
Grainshape	rounded to subrounded, interlocking
Framework	dominant
QUARTZ	dominant, monocrystalline, fine to very coarse, coarse rounded to fine subrounded. most with epitaxial overgrowths giving framework supported quartzite texture. Poorly sorted giving mortar texture.
TOURMALINE	trace, fine sand, rounded.
Matrix/Cement	accessory
CLAY	dominant, isolated coarse ?kaolin totally infilling macropores around coarse rounded quartz clasts slight replacement of overgrowths?
OPAQUES	trace, clusters of isometric grains grown across clast contacts.
CARBONATE	trace.
Porosity	macroporosity, very sporadic, showing interconnections however.
Diagenesis	dominated by epitaxial silica, subsequent very limited kaolin deposition.

APPENDIX 6

Geological Descriptions

GEOLOGICAL DESCRIPTION

<u>DEPTH (m)</u>	<u>LITHOLOGICAL DESCRIPTION</u>	<u>SHOW DETAILS</u>
BUKALORKMI SANDSTONE		
0-10	Moderately weathered interbedded mudstone and siltstone. Minor very fine sandstone. Generally purple brown-medium gray in colour. Not sampled.	
McMINN FORMATION KYALLA MEMBER		
10-72	Olive gray 5Y3/2 - medium dark gray N4 - medium blueish gray 5B5/1 interbedded micaceous mudstone and siltstone. Minor very fine sandstone. 30% medium sand size dark brown mica flakes on occasional bedding planes within mudstone. Trace weathering to brownish gray clay 5YR4/1. Trace moderate brown iron staining on occasional bedding plane/joint surfaces.	
72.92 -101	Well indurated interbedded dark gray N3 micaceous, carbonaceous very finely laminated mudstone and light gray N2 finely laminated coarse siltstone. Trace very fine, very thin quartzose sand layers in some siltstone interbeds. Approximately 50:50 ratio mudstone to siltstone. 5% brown sericite mica flakes up to 1mm in size on bedding surfaces. Trace very fine pyrite-disseminated and grain aggregates <1mm. Siltstone occurs as interbeds <1mm to 100mm thick, usually with scoured base and fining upwards to mudstone where cycle is not truncated by overlying siltstone interbeds. Lenticular siltstone bedding relatively common. Interval essentially composed of many small upwards fining cycles with erosional bases, scour and fill common sedimentary structures. Rare small scale cross bedding in siltstone. Ptygmatically folded siltstone infill of synaeresis cracks up to 30mm long common. Small scale synsedimentary faulting of occasional siltstone interbeds. Small load casts at base of siltstones. Rare slip planes within mudstone-polished surface with lineation.	Barely discernable diesel odour on freshly broken surfaces of mudstone towards base of interval

101 -116.1	Essentially as 76-101m with gradational decrease in siltstone interbed thickness and frequency of occurrence. Mudstone intervals up to 600mm thick, usually less than 100mm thick.	Occasional pin point oil bleeds. No odour.
	Joints 30 degrees to core axis @ 111.1 to 111.3m parallel to core axis @ 111.0 to 114m parallel to core axis @ 107.5 to 109.0m parallel to core axis @ 105.2 to 107m.	
116.1 -131.67	Well indurated medium gray N5 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone with occasional very light gray N7 to light gray N6 siltstone interbeds from <1mm to 150mm thick. Siltstone 10 to 15% of core. Siltstone interbeds show fining upwards grading to mudstone. Cyclic. Siltstone interbeds are usually finely laminated with occasional cross bedding and scour base. Synaeresis cracks and load casts common. Minor very fine to fine grained disseminated pyrite - rare grain aggregates <1mm in size. Rare slip planes in mudstone.	Occasional pin point oil bleeds. No odour to weak diesel odour on freshly broken surfaces. Dull yellow fluorescence on most siltstone interbeds.
131.67 -148.11	Well indurated medium gray N5 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone with occasional very light gray N7 to light gray N6 siltstone interbeds. Siltstone 5% of core. Siltstone interbeds upwards fining to mudstone. Cyclic. Siltstone interbeds are usually finely laminated with scour base. Synaeresis cracks and load casts common. Occasional carbonate? veins less than 2mm thick, usually irregular, some planar @ 70 degrees to core axis. @ 20 degrees to core axis. @ 45 degrees to core axis.	Weak diesel odour on freshly broken surfaces. Dull yellow fluorescence on most siltstone interbeds.
148.11 -151.87	Well indurated medium gray N5 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone. Gradual increase in the number and thickness of siltstone interbeds from interval above, 5% to 60% of total core. Siltstone interbeds upwards fining to mudstone, cyclic. Siltstone interbeds are usually finely laminated with scour base. Synaeresis cracks and load casts common. 20mm thick siltstone interbed @ 156.25m with flaser bedding. Rare slip planes in mudstone.	Trace/minor pin point oil bleeds. Very weak diesel odour from freshly broken surfaces. Dull yellow fluorescence on most siltstone interbeds.

151.87 -161.4	Well indurated interbedded medium gray N5 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone, very light gray N7 to light gray N6 finely laminated siltstone and occasionally silty very fine sandstone. 60% mudstone, 30% siltstone 10% silty very fine sandstone. Yellowish gray 5Y7/2 to light gray N6 silty very fine sandstone at 151.87 to 152.6m. Siltstone occurs as interbeds <1mm to 100mm thick with erosional, scoured bases, fining upwards to mudstone. Lenticular siltstone beds, rare small scale cross bedding. Ptygmatically folded synaeresis cracks common. Load casts. Occasional slip plane in mudstones.	Trace/minor pin point oil bleeds. Very weak to weak diesel odour on freshly broken surfaces. Minor dull yellow fluorescence on most siltstone interbeds.
161.4 -183.0	Well indurated interbedded medium gray N5 to dark gray N3 micaceous, carbonaceous, very finely laminated mudstone, very light gray N7, light brownish gray 5YR7/1 to light gray N6 finely laminated siltstone and silty very fine sandstone. 50% siltstone, 30% mudstone and 20% silty very fine sandstone. Larger silty very fine sandstone interbeds at, 161.99 to 162.06m 165.34 to 165.43m 167.97 to 168.05m Siltstone interbeds show upwards fining with erosional scour bases and load casts. Ptygmatically folded synaeresis cracks common. Flaser bedding present in coarser interbeds. Trace fine disseminated and grain aggregate pyrite <1mm in size.	166.3 to 166.43m minor oil bleed, 40% core surface smeared with hydrocarbon from numerous pin point bleeds, associated speckled moderate yellow fluorescence from siltstone. Minor dull to moderate yellow fluorescence in most siltstones and sandstones. Rare blue white fluorescent specks. SAMPLE SEALED
183 -190.6	Well indurated interbedded medium gray N5 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone and light gray N7 to very light gray N8 finely laminated coarse siltstone, muddy siltstone and silty very fine sandstone. 30% siltstone, 30% silty mudstone, 30% mudstone and 10% silty very fine sandstone. Siltstone interbeds show upwards fining with erosional scour bases and load casts. Ptygmatically folded synaeresis cracks common. Rare slip planes in mudstone.	Trace pin point oil bleeds. Dull yellow fluorescence in most siltstone and sandstone interbeds.

190.6
-237.7

Well indurated interbedded medium gray N5 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone and light gray N7 to very light gray N8 finely laminated coarse siltstone - muddy siltstone. 50% mudstone to 50% siltstone. Siltstone and mudstone interbeds up to 250mm thick but generally less than 10mm thick. Interbeds generally occur in packets of thin interbeds 2 to 3m thick separated by packets of thick interbeds up to 2 to 3m in thickness. Interval of thick interbeds up to 100mm thick of mudstones to silty very fine sandstones, 127.15 to 129.7m. Siltstones upwards fining with erosional scour base and load casts. Ptygmatically folded synaeresis cracks common. Trace fine grained pyrite. Rare slip planes in mudstone. Vertical slip plane with well defined slickensides at 231.11 to 231.2m.

Trace pin point bleeds. Minor dull yellow fluorescence on most siltstone interbeds. Very weak diesel odour on freshly broken surfaces.

237.7
-242.05

Well indurated interbedded dark gray N3 micaceous, carbonaceous very finely laminated mudstone and very light gray N8 to light gray N7 finely laminated coarse siltstone interbeds generally less than 10mm thick. 70% mudstone to 30% siltstone. Siltstone upwards fining with erosional scour base and load casts. Ptygmatically folded synaeresis cracks common. Rare slip planes in mudstone.

Trace pin point bleeds. Weak diesel odour on freshly broken surfaces. Dull yellow fluorescence on siltstones.

242.05 -245.42	Well indurated interbedded dark gray N3 micaceous, carbonaceous very finely laminated mudstone, medium light gray N6 to medium gray N5 finely laminated muddy siltstone and very light gray N8 to light gray N7 finely laminated siltstone. 80% mudstone, 15% muddy siltstone and 5% siltstone. Siltstone upwards fining with erosional scour bases and load casts. Ptygmatically folded synaeresis cracks common.	Minor pin point bleeds. Weak diesel odour on freshly broken surfaces. Siltstones show yellow fluorescence as follows. 242.0-242.4m Trace bright yellow and blue-white specks of fluorescence. 242.4-243.6m Trace bright yellow and minor blue-white fluorescence becoming more abundant downhole. 243.6-245.45m moderate-abundant blue-white fluorescent specks. 244.35-244.5m bright yellow fluorescence. 245.28-245.32m bright yellow fluorescence.
-------------------	--	--

McMINN FORMATION MOROAK SANDSTONE

245.42 -249.63	Indurated to well indurated light brownish gray 5YR7/1 well rounded and generally well sorted fine to very coarse sandstone, dominantly medium sandstone. 5% to locally 10% intergranular porosity from visual estimate. 20mm dark gray N3 mudstone interbed at 247.98 to 248.0m, 20 to 50mm selvage to interbed with no fluorescence. Vertical fracture from 245.52 to 249.63m. Occasional bitumen? stained horizontal fractures.	Moderate-strong sulfurous-oily odour. 245.43-249.35m and 249.47-249.57m dull yellow fluorescence. 245.43-245.5m, 245.95m on a fracture, 247.94-248.01m, 249.35-249.45m and 249.57- 249.63m bright yellow fluorescence.
249.63 -250.76	Well indurated interbedded very light gray N8 to light gray N7 finely laminated silty very fine sandstone and dark gray N3 very finely laminated micaceous, carbonaceous mudstone. 70% sandstone interbeds generally less than 10mm thick but up to 100mm thick to 30% mudstone interbeds generally less than 20mm thick. Erosional scour bases to sandstone interbeds, Ptygmatically folded synaeresis cracks and load casts common.	Trace pin point bleeds. Weak diesel odour on freshly broken surfaces.

250.63 -252.0	Transitional zone from above with mudstones becoming dominant by 250.76m	
252.0 -257.36	Well indurated medium dark gray N4 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone and silty mudstone. Rare/minor very light gray N8 to light gray N7 finely laminated muddy siltstone to siltstone interbeds 2 to 4mm thick increasing in thickness and frequency of occurrence downhole, maximum thickness is 200mm. Interbeds have erosional scoured bases and load casts. Ptygmatically folded synaeresis cracks are common.	Trace pin point bleeds. Weak diesel odour on freshly broken surfaces. 253.12-253.17m bright yellow fluorescence. 253.33-253.58m moderate yellow fluorescence.
257.36 -260.15	Well indurated interbedded dark gray N3 micaceous, carbonaceous very finely laminated mudstone, medium light gray N6 to medium gray N5 finely laminated muddy siltstone and very light gray N8 to light gray N7 finely laminated siltstone. 50% siltstone to 50% mudstone. Siltstone upwards fining with erosional scour bases and load casts. Ptygmatically folded synaeresis cracks very abundant.	Trace pin point bleeds. Weak diesel odour on freshly broken surfaces.
260.15 -263.72	Well indurated interbedded medium dark gray N4 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone and light gray N7 finely laminated siltstone. 90% mudstone to 10% siltstone. Siltstone upwards fining with erosional bases and load casts. Occasional ptygmatically folded synaeresis cracks.	Trace pin point bleeds. Weak diesel odour on freshly broken surfaces. Dull yellow fluorescence on siltstones.
263.72 -263.98	Well indurated grain supported oolite bed. Individual oolites up to 4mm in diameter in a muddy matrix. very light gray N8 core with a thin very finely laminated medium dark gray N4 outer shell. Milky quartz replacement of oolite cores between 263.72 and 263.75m. Minor pyrite replacement of oolites throughout interval but less common downhole. Minor carbonate cement.	
263.98 -264.45	Well indurated interbedded medium dark gray N4 to dark gray N3 micaceous, carbonaceous very finely laminated mudstone and light gray N7 finely laminated siltstone. 60% mudstone to 40% siltstone. Siltstone upwards fining with erosional bases and load casts. Occasional ptygmatically folded synaeresis cracks.	Trace pin point bleeds. Weak diesel odour on freshly broken surfaces. Dull yellow fluorescence on siltstones.
264.45 -264.83	Well indurated massive medium light gray N5 to light gray N6 very fine sandy siltstone.	Dull yellow fluorescence.

- 264.83 Well indurated medium gray N4 very finely
-266.21 aminated muddy siltstone, occasional dark
gray N3 very finely laminated mudstone
interbeds less than 10mm thick. 265.5m,
30mm thick lens of coarse sand size
oolites as 263.72 to 263.98m
- 266.2 Well indurated interbedded very light gray Weak diesel odour
-266.92 N8 to light gray N7 finely laminated on freshly broken
siltstone and dark gray N3 very finely surfaces. Dull
laminated micaceous, carbonaceous mudstone yellow fluorescence.
and minor very fine to medium sandstone
interbeds generally less than 10mm thick.
50% mudstone to 50% siltstone. interbeds
generally less than 20mm thick. Erosional
scour bases to sandstone interbeds,
Ptygmatically folded synaeresis cracks and
load casts common.
- 266.92 Well indurated interbedded light gray N7 266.84-267.5m minor
-278.16 to medium gray N5 massive medium to coarse pin point oil
silty sandstone separated by intervals up bleeds.
to 800mm thick of thinly interbedded silty 267.2-267.5m
very fine to medium sandstone less than abundant live oil
50mm thick and 20mm thick interbeds of pin point bleeds
dark gray N3 mudstone, sandstone dominant extruding to
5-10%, locally 20% porosity from visual (patches) smear
estimate. Intragranular porosity. Locally over core in 10
coarse laminations and cross bedding up to minutes after
60mm high. Locally minor flaser bedding. extraction. Medium
Occasional horizons within sandstones with to coarse sandstone
rare angular to rounded dark gray N3 with approximately
mudstone clasts 20 by 30mm in size. 10% porosity.
Ptygmatically folded synaeresis cracks, moderate to bright
load casts and scours common, slip planes yellow fluorescence.
rare, in mudstones. Intervals less than 275.8-277.8m
300mm thick, of grain supported oolite abundant pin point
beds as described previously. Sandstones bleeds in sandstone.
possess rare horizontal fractures, most
sandstone intervals have vertical
fractures that appear confined within the
sands. Minor fine grained disseminated
pyrite, also occurs as grain aggregates up
to several mm's in size.
- 278.16 Well indurated light gray N7 massive silty Minor pin point
-282.89 medium to coarse sandstone. Minor granule bleeds. Minor
layers. Thickly laminated in parts. Poorly diesel odour on
defined small scale (less than 100mm) freshly broken
cross bedding. Minor flaser bedding. surfaces. Dull
Highly variable intragranular porosity yellow fluorescence.
from 5% to 20%. Rare thin dark gray N3
very finely laminated mudstone interbeds
less than 5mm thick. Vertical irregular
fracture throughout.

- 316.22 Well indurated interbedded dark gray N3 Trace pin point
-332.5 micaceous, carbonaceous very finely bleeds in coarser
laminated mudstone, medium light gray N6 material. Weak
to medium gray N5 finely laminated muddy to moderate diesel
siltstone and very light gray N8 to light odour on freshly
gray N7 finely laminated siltstone. 10% broken surfaces.
siltstone, generally less than 50mm thick Dull to moderately
to 90% mudstone. Occasional light gray N7 bright yellow
silty very fine sandstone interbeds up to fluorescence in
340mm thick, internally sandstone often silty sandstone.
has slumped and chaotic bedding, small
scale synsedimentary folding and faulting
associated with slumping. Siltstone
upwards fining with erosional scour bases
load casts and low angle cross bedding
(in two largest sandstone intervals,
321.0-321.26m and 332.16-332.5m). Flaser
bedding in siltstones and lenticular
bedding in mudstones common.
Joint, 30 degrees to core axis @
323.3-323.7m.
- 332.5 Well indurated interbedded dark gray N3 Trace pin point
-346.6 micaceous, carbonaceous very finely bleeds in coarser
laminated mudstone, medium light gray N6 material. Weak
to medium gray N5 finely laminated muddy to moderate diesel
siltstone and very light gray N8 to light odour on freshly
gray N7 finely laminated siltstone. 50% broken surfaces.
siltstone, generally less than 20mm, Dull
(average less than 5mm) thick to 50% yellow
mudstone. Occasional light gray N7 silty fluorescence in
very fine sandstone interbeds up to 300mm silty sandstone.
thick, internally sandstone often has
slumped and chaotic bedding, small scale
synsedimentary folding and faulting
associated with slumping. 335.99 to
336.26m, silty very fine sandstone with
subrounded silty mudstone elongated clasts
up to 30 by 10mm in size. Siltstone
upwards fining with erosional scour bases
load casts and cross bedding common in
coarser intervals. Flaser bedding in
siltstones and lenticular bedding in
mudstones common.
- 346.6 Well indurated interbedded medium gray N5 Trace pin point
-379.2 to dark gray N3 very finely laminated bleeds, very weak
micaceous, carbonaceous mudstone to silty diesel odour.
mudstone and very light gray N8 to light
gray N7 finely laminated siltstone. 70%
mudstone to 30% siltstone. Interbeds less
than 100mm thick, generally in the order
flaser bedding, small scale cross bedding
and occasional contorted/slumped internal
laminations. Lenticular siltstone bedding,
slip planes and rare ptymatically folded
siltstone infilled synaeresis cracks in
mudstone.
Joint at 30 degrees to core axis at
363.84-363.92m.

- 379.2 Well indurated interbedded medium gray N5 Weak diesel odour
-402 to dark gray N3 very finely laminated on freshly broken
micaceous, carbonaceous mudstone and very surfaces.
light gray N8 to light gray N7 finely
laminated siltstone. 90% mudstone to 10%
siltstone. Siltstone interbeds less than
50mm thick with erosional scour bases,
small scale cross bedding common, and load
casts. Slip planes common, at least 7/m in
places, no synaeresis cracks.
- 402 Well indurated very finely laminated Minor to locally
-422.1 micaceous, carbonaceous dark gray N3 to common pin point
grayish black N2 mudstone. Interval of bleeds. Weak to
very finely laminated, light gray N7 moderate diesel
mudstone from 414.3m grading to dark gray odour on freshly
mudstone at 415.0m. Interval of very broken surfaces.
finely laminated, very thinly interbedded
light gray N7 and grayish black N2
mudstone between 416.8 and 418.2m, 90%
light gray to 10% grayish black mudstone.
Minor pyrite nodules and veinlets up to a
maximum size of 10mm by 40mm, elongated
parallel to bedding, i.e. horizontal.
Several small planar normal faults with
3-4mm displacements at 30 degrees to core
axis between 417.2 and 417.4m.
- 422.1 Well indurated, interbedded very finely Weak diesel odour
-427.0 laminated micaceous, carbonaceous dark gray on freshly broken
N3 to grayish black N2 mudstone and very joint surfaces.
finely laminated light gray N7 to light
bluish gray 5B7/1 claystone. Claystone
initially subordinate, becoming dominant
towards base of interval as interbeds up
to 200mm thick. Minor pyrite nodules
usually less than 5mm in size. Irregular
joint at 30 degrees to core axis at 422.25m
- 427.0 Well indurated very finely laminated light Very weak to
-437.3 gray N7 to light bluish gray 5B7/1 moderate diesel
claystone with dark gray N3 to grayish odour on freshly
black N2 very finely laminated mudstone broken surfaces.
interbeds less than 100mm thick. 70%
claystone to 30% mudstone. Minor pyrite,
finely disseminated and as nodules up to
10mm in diameter.
Joint at 30 degrees to core axis at
431.64-431.77m.
Claystone is tough, breaks with conchoidal
fracture.

437.3 Well indurated very finely laminated light gray N7 to light bluish gray 5B7/1 claystone with minor to 5% dark gray very finely laminated mudstone interbeds less than 20mm thick. Minor pyrite, finely disseminated and as nodules up to 10mm in diameter. Numerous joints at angles up to 40 degrees to the core axis between 437.3 and 448.4m. Highly fractured zone between 444.8 and 446.2m-brecciated with numerous irregular carbonate veins less than 1mm thick infilling the fractures.

Weak to moderate diesel odour on freshly broken surfaces.

450.8 Well indurated very finely laminated light gray N7 to light bluish gray 5B7/1 claystone as above with a gradual increase in the number and thickness of very finely laminated dark gray N7 mudstone interbeds. Minor pyrite, finely disseminated and as spherical nodules less than 10mm in diameter.

Weak to moderate diesel odour on freshly broken surfaces.

Joints/fractures:

80 degrees to core axis at 463.22m
460.7m
461.4m
60 degrees to core axis at 465.9m
30 degrees to core axis at 464.2-464.4m

"MIDDLE" VELKERRI FORMATION

468.9 Well indurated very finely laminated, highly carbonaceous, micaceous grayish black N2 to black N1 mudstone. Occasional pyrite nodules, elongated parallel to bedding, i.e. horizontal, occasionally over 80mm wide by 40mm thick. Core is very uniform and non-descript. Rare thin medium gray N5 very finely laminated mudstone interbeds less than 10mm thick. Minor white carbonate, (calcite?) veins/veinlets generally 1-2mm thick, planar and parallel to bedding. Planar calcite? vein 3mm thick at 30 degrees to core axis between 502.35 and 502.5m. Gouge?- 4mm thick interval of brownish black 5YR2/1 "flaky" indurated mudstone confined by knife sharp upper and lower contacts within well indurated grayish black mudstone. No signs of relative movement, at 513.54m. Contorted/chaotic bed, 514.33 to 514.37m. Joints/fractures: 80 degrees to core axis at 512.50m 70 degrees to core axis at 501.10m 60 degrees to core axis at 501.30m 50 degrees to core axis at 507.90m 50 degrees to core axis at 508.65m 45 degrees to core axis at 501.5-501.6m Occasional slip plane surfaces.

Minor pin point oil bleeds. Moderate diesel odour on freshly broken surfaces.

525.2
-568.6

Well indurated very finely laminated medium dark gray N4 to grayish black N2 carbonaceous, micaceous mudstone. Rare medium light gray N6 to light gray N7 very finely laminated interbeds less than 5mm thick, becoming more common to 15% of core at 532.1m. Interval from 525.22m to 525.95m very finely laminated, light bluish gray 5B8/1 mudstone, intense very fine fracturing throughout core with calcite? infilling, 4-5mm calcite and pyrite (10%) infilled vertical fracture confined to this interval, interval has gradational upper contact over 50mm and knife sharp lower contact. Interval from 532.1 to 533.0m possess several interbeds of brownish gray 5YR4/1 to dark gray N3 mudstone. Medium light gray to light gray interbeds become rare again below 533.0m, where core is dark gray N3 in colour. Towards base of interval, occur numerous, less than 10mm thick, very finely laminated light gray N6 to very light gray claystone interbeds separated by medium gray N5 mudstone interbeds of similar thickness to 568.6m where light gray material dominates core. 1% pyrite, finely disseminated, often concentrated within 20 to 30mm thick selvages to occasional very thin black N1 mudstone interbeds, less than 5mm thick. Pyrite also occurring as nodules, occasionally over 80mm wide by 40mm thick, elongated parallel to bedding laminations. 1 to 3% very fine mica flakes. Light gray N6 to medium gray N5 "dirty" carbonate (calcite?) horizontal vein between 541.25 and 541.36m, upper and lower contacts between vein material and mudstone is essentially planar, but irregular in fine detail-brecciated. Abundant angular mudstone rafts throughout vein. Occasional slip plane surfaces generally along bedding surfaces. Planar joint at 30 degrees to core axis at 540.2-540.75m with white calcite? infill 2-3mm thick. Planar joint at 20 degrees to core axis between 527.8 and 528.1m. 20mm thick highly fractured very finely laminated brownish black 5YR2/1 claystone interbed at 534.44m. 10mm thick interbed, 40% light bluish gray 5B7/1 clayey matrix and 60% sub-rounded, poorly sorted fine to coarse sand size black mudstone clasts, grain supported at 535.93m at the base of 50mm thick light bluish gray 5B7/1 claystone interbed.

Minor pin point bleeds. Weak to moderate diesel odour on freshly broken surfaces.

568.6 -604	<p>Well indurated very finely laminated, highly carbonaceous, micaceous grayish black N2 to black N1 mudstone. Core is very uniform and non-descript. Interval of significant hydrocarbon shows-see "Show Details" between 578.33 and 582.15m. Oil bleeds mainly confined to several interbeds of very finely laminated brownish black 5YR2/1 silty? mudstone, 578.33 to 578.85m, 579.3 to 579.46m, 579.56 to 579.96m, 580.3 to 581.6m and 582.0 to 582.15m. Between 580.95 and 580.98 occurs an interbed of grain supported spherical mudstone clasts up to 7mm in diameter in a medium to light gray clayey matrix. Rare thin medium gray N5 very finely laminated mudstone interbeds less than 10mm thick. Rare white carbonate, (calcite?) veins/veinlets generally 1-2mm thick and planar. Occasional slip planes approximately one per meter. Rare, becoming more common with depth, recrystallised carbonate beds/horizontal veins? up to 100mm thick. Contacts with surrounding mudstone often irregular in detail. Dense mudstone clasts less than 2mm in size occurring in carbonate.</p>	<p>Moderate to strong diesel odour on freshly broken surfaces. Minor pin point oil bleeds in dark gray to grayish black. Significant light oil bleeding and gas bubbling out of bedding plane partings within brownish black silty mudstone interbeds. Significant bleeds at 578.505m at 578.63-579.0m at 579.7-579.81m Strong pin point bleeds at 579.0-579.7m. 580.3-580.7m. Numerous small bleeds and gas bubbles at 580.7-581m. Numerous small bleeds at 581.3-581.6m. Very dull white fluorescence over brownish black interbeds. Bright white fluorescence on all oil bleeds in interval from 578.33 to 582.15m.</p>
---------------	---	--

LOWER VELKERRI FORMATION

- 604.0 Well indurated interbedded transitional Trace diesel odour
-609.0 zone from dark gray N3 to grayish black N2 on freshly broken
very finely laminated mudstone to light surfaces.
bluish gray 5B7/2 claystone. Locally
chaotic bedding, generally 5 to 10mm thick
dark gray to grayish black mudstone
interbeds up to 40% of core. Rare very
light gray N7, very fine siltstone
lenticular interbeds. Small scale (3-4mm
throw), syn-sedimentary normal faulting
common. Thin carbonate beds less than 4mm
thick common. Irregular white carbonate
veins up to 4mm thick common. Slip planes
common, red brown translucent material
less than 1mm thick, coating slip planes
between 606.6-606.7m.
- 609.0 Well indurated very finely laminated light
-616.0 bluish gray 5B7/2 micaceous claystone with
5% fine to medium sand size black grains
throughout. Three interbeds less than
100mm thick of very finely laminated dark
gray N3 to grayish black N2 mudstone,
deeply scoured upper contact with
overlying claystone. between 615.0 and
616.0m. Occasional slip planes, carbonate
veins as above and minor pyrite. Massive
pyrite and claystone, 50% pyrite to 50%
claystone between 609.8 and 610.0m.

APPENDIX 7

Core Tally

SHEA 1 CORE TALLY

RUN #	INTERVAL	CORE RECOVERED	LENGTH DRILLED	CUM. RECOVERY	CUM. DRILLED
1	72.92	77.67	4.73	4.73	4.75
2	77.67	80.80	3.24	3.13	7.88
3	80.80	84.00	3.20	3.20	11.08
4	84.00	89.90	5.90	5.90	16.98
5	89.90	95.80	5.97	5.90	22.88
6	95.80	101.70	5.98	5.90	28.78
7	101.70	107.70	5.97	6.00	34.78
8	107.70	113.60	5.90	5.90	40.68
9	113.60	119.60	5.75	6.00	46.68
10	119.60	125.50	6.17	5.90	52.58
11	125.50	131.40	5.90	5.90	58.48
12	131.40	137.40	5.93	6.00	64.48
13	137.40	143.30	5.80	5.90	70.38
14	143.30	149.20	4.48	5.90	76.28
15	149.20	153.90	6.17	4.70	80.98
16	153.90	160.10	6.15	6.20	87.18
17	160.10	166.20	6.20	6.10	93.28
18	166.20	172.30	6.01	6.10	99.38
19	172.30	178.30	6.05	6.00	105.38
20	178.30	184.40	6.11	6.10	111.48
21	184.40	190.40	6.05	6.00	117.48
22	190.40	196.30	5.98	5.90	123.38
23	196.30	202.20	5.87	5.90	129.28
24	202.20	208.20	5.91	6.00	135.28
25	208.20	214.10	6.08	5.90	141.18
26	214.10	220.13	6.02	6.03	147.21
27	220.13	226.00	5.98	5.87	153.08
28	226.00	231.80	5.80	5.80	158.88
29	231.80	237.70	5.93	5.90	164.78
30	237.70	243.60	5.94	5.90	170.68
31	243.60	249.00	5.40	5.40	176.08
32	249.00	255.00	5.99	6.00	182.08
33	255.00	258.60	3.63	3.60	185.68
34	258.60	261.30	2.70	2.70	188.38
35	261.30	267.20	5.93	5.90	194.28
36	267.20	273.10	5.70	5.90	200.18
37	273.10	278.90	6.05	5.80	205.98
38	278.90	284.80	5.92	5.90	211.88
39	284.80	290.70	5.87	5.90	217.78
40	290.70	296.60	5.94	5.90	223.68
41	296.60	302.40	5.80	5.80	229.48
42	302.40	308.80	5.60	6.40	235.88
43	308.80	311.40	3.80	2.60	238.48
44	311.40	314.20	2.09	2.80	241.28
45	314.20	319.90	5.70	5.70	246.98
46	319.90	325.80	5.90	5.90	252.88
47	325.80	326.60	0.90	0.80	253.68
48	326.60	331.90	5.20	5.30	258.98
49	331.90	337.90	6.10	6.00	264.98
50	337.90	343.90	5.60	6.00	270.98
51	343.90	349.60	5.64	5.70	276.68
52	349.60	349.80	0.32	0.20	276.88

SHEA 1 CORE TALLY

RUN #	INTERVAL	CORE RECOVERED	LENGTH DRILLED	CUM. RECOVERY	CUM. DRILLED
53	349.80	355.40	5.90	282.85	282.48
54	355.40	361.50	6.18	289.03	288.58
55	361.50	367.50	6.01	295.04	294.58
56	367.50	373.50	6.01	301.05	300.58
57	373.50	379.30	5.86	306.91	306.38
58	379.30	385.30	6.00	312.91	312.38
59	385.30	391.30	6.04	318.95	318.38
60	391.30	397.20	5.87	324.82	324.28
61	397.20	403.10	5.90	330.72	330.18
62	403.10	409.00	6.00	336.72	336.08
63	409.00	415.00	5.35	342.07	342.08
64	415.00	420.40	6.25	348.32	347.48
65	420.40	426.20	5.82	354.14	353.28
66	426.20	432.30	6.15	360.29	359.38
67	432.30	438.40	4.98	365.27	365.48
68	438.40	438.60	0.80	366.07	365.68
69	438.60	444.70	5.68	371.75	371.78
70	444.70	450.70	6.03	377.78	377.78
71	450.70	456.70	5.90	383.68	383.78
72	456.70	462.50	5.84	389.52	389.58
73	462.50	468.50	6.03	395.55	395.58
74	468.50	474.20	5.70	401.25	401.28
75	474.20	480.10	4.07	405.32	407.18
76	480.10	485.90	5.45	410.77	412.98
77	485.90	491.70	6.17	416.94	418.78
78	491.70	497.60	5.90	422.84	424.68
79	497.60	503.60	6.02	428.86	430.68
80	503.60	509.50	5.98	434.84	436.58
81	509.50	515.30	5.80	440.64	442.38
82	515.30	521.20	5.90	446.54	448.28
83	521.20	527.10	5.90	452.44	454.18
84	527.10	533.00	5.92	458.36	460.08
85	533.00	538.80	5.80	464.16	465.88
86	538.80	544.70	3.22	467.38	471.78
87	544.70	546.70	4.70	472.08	473.78
88	546.70	550.80	3.85	475.93	477.88
89	550.80	556.50	6.17	482.10	483.58
90	556.50	562.40	5.90	488.00	489.48
91	562.40	568.50	5.88	493.88	495.58
92	568.50	574.40	5.95	499.83	501.48
93	574.40	580.30	5.90	505.73	507.38
94	580.30	586.40	6.02	511.75	513.48
95	586.40	592.20	5.66	517.41	519.28
96	592.20	598.10	6.00	523.41	525.18
97	598.10	604.00	5.95	529.36	531.08
98	604.00	609.80	5.75	535.11	536.88
99	609.80	616.00	0.00	535.11	543.08