



PETRO DIVISION

24 APR 1991

RB

STRINGY BARK NO 1

PEP 123

WELL COMPLETION

REPORT

WCR
STRINGY BARK-1
(W1041)



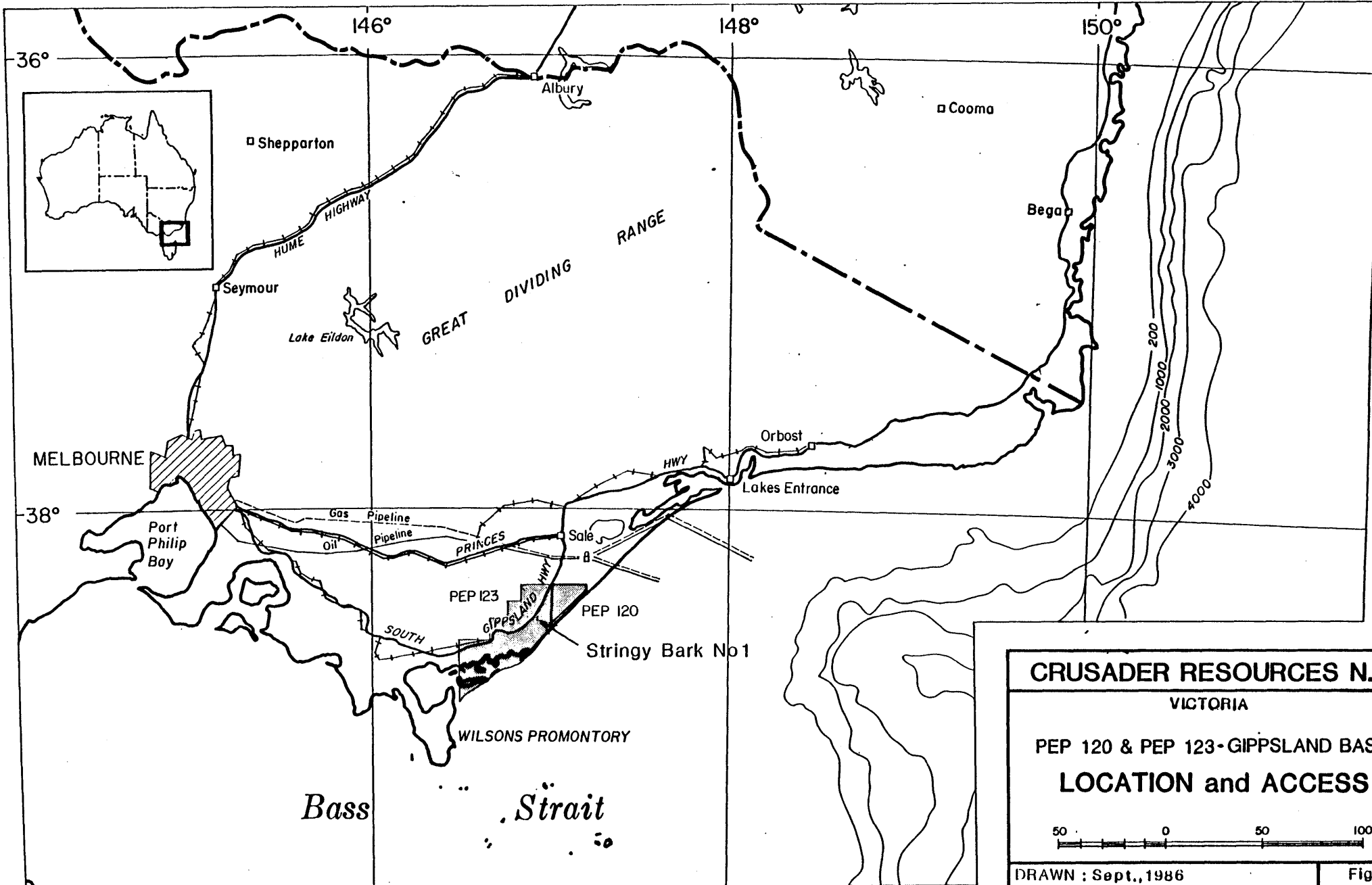
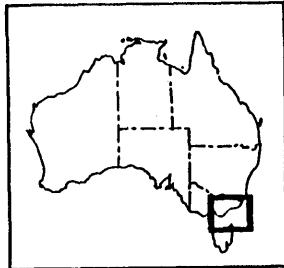
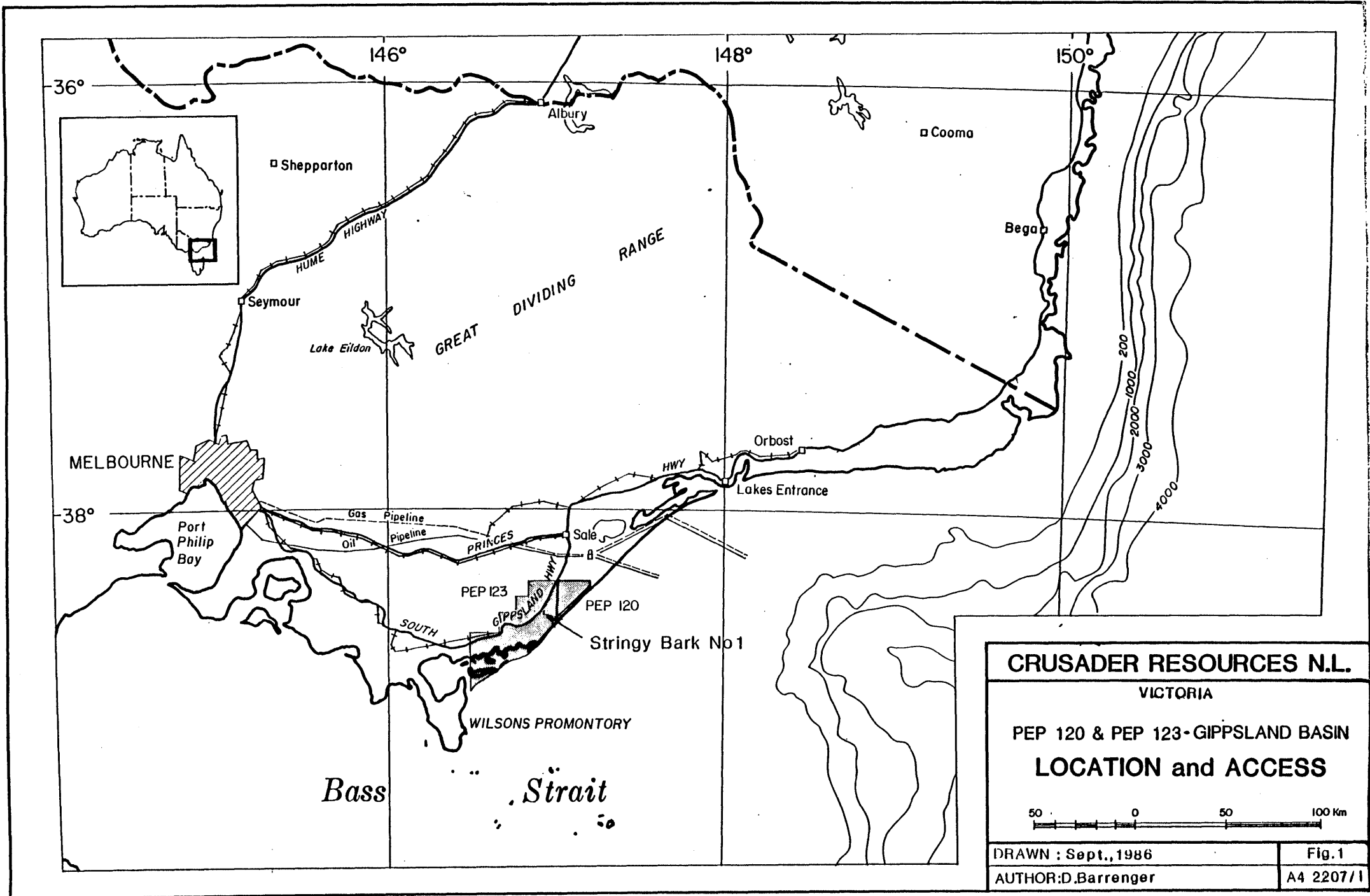
Crusader
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PETROLEUM DIVISION

24 APR 1991
STRINGY BARK NO. 1

PEP 123
WELL COMPLETION
REPORT

CRUSADER RESOURCES N.L.
MARCH 1991



CRUSADER RESOURCES N.L.	
VICTORIA	
PEP 120 & PEP 123-GIPPSLAND BASIN	
LOCATION and ACCESS	
50 0 50 100 Km	
DRAWN : Sept., 1986	Fig. 1
AUTHOR: D. Barrenger	A4 2207/1

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LIST OF ENCLOSURES

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near Top Latrobe Group - Time Structure
- ✓ Enclosure 2: Stringy Bark Prospect,
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- ✓ Enclosure 3: Stringy Bark No. 1 Composite Well Log
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1. Daily Operations Reports
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11. Well Location Survey

1. ABSTRACT:

Stringy Bark No. 1 was drilled for Crusader Resources N.L. by Drillcorp Pty. Ltd. in PEP 123 Victoria, approximately 45 km south of the town of Sale and 5 km northeast of Woodside (Figure 1).

The closest wells to Stringy Bark No. 1 are Woodside South No. 1 (8 km to the south) and the stratigraphic well Woodside No. 12 (8 km to the east) (Figure 2).

No shows were recorded in either well. The only hydrocarbons recorded from nearby onshore wells were gas flows up to 100 MCFD from the Strzelecki Group at North Seaspray No. 1 immediately to the northeast of PEP 120 and minor oil recoveries reported from Woodside No. 2 and Sunday Island No. 1 to the southwest in PEP 123. The nearest accumulations offshore are the marginally economic Dolphin and Perch oilfields and the uneconomic Golden Beach gas field.

Drilling commenced on November 14 1990 and total depth of 1047 metres was reached on November 24 1990 in Cretaceous Age Strzelecki Group sediments. The rig was released on November 26 1990. (Figure 3)

The well was located on the Stringy Bark prospect, a small top Latrobe culmination on an east plunging anticline. The prospect shows four-way-dip closure and had potential for significant additional fault closure due to faulting to the west.

The primary target was a seismically defined barrier/bar sand at the top of the Latrobe Group. Sands of a barrier/bar were intersected by the well. Mapped areal closure of the prospect is about 0.75 square kilometres, with a maximum vertical closure of 20 metres. (Enclosure 1, Figure 4)

The sands at the top of the Latrobe Group are the reservoirs for the Dolphin and Perch oilfields and also for the Golden Beach gasfield and the giant Barracouta gasfield.

A secondary target was identified. A seismically defined anomaly was mapped at an intra Latrobe level (Enclosure 2, Figure 4) and showed four-way-dip closure. It appeared to be an erosional remnant of some feature, possibly a barrier/bar or volcanic flow. No evidence of either of these lithotypes was seen in the well and, although a thick coal is present at this level, the seismic anomaly remains unexplained.

Intra Latrobe oil accumulations are present at Tarwhine No. 1, Luderick No. 1 and the Barracouta field.

The section encountered was generally as predicted with the Latrobe Group sands being well developed and having good reservoir quality, however, no oil or gas shows were recorded from them (Enclosures 3, 4 & 5).

The Older Volcanics were encountered and found to be considerably thicker than prognosed. The well had to be deepened beyond its prognosed total depth of 870 metres. It was hoped that the Yarram Formation would be present beneath the Volcanics and that this might contain hydrocarbons. The Yarram was not present and the Strzelecki Group was encountered immediately underlying volcanics.

After penetrating four metres into the Top Latrobe Group sand a drill stem test was run even though no hydrocarbon shows were seen. There were several reasons for this:-

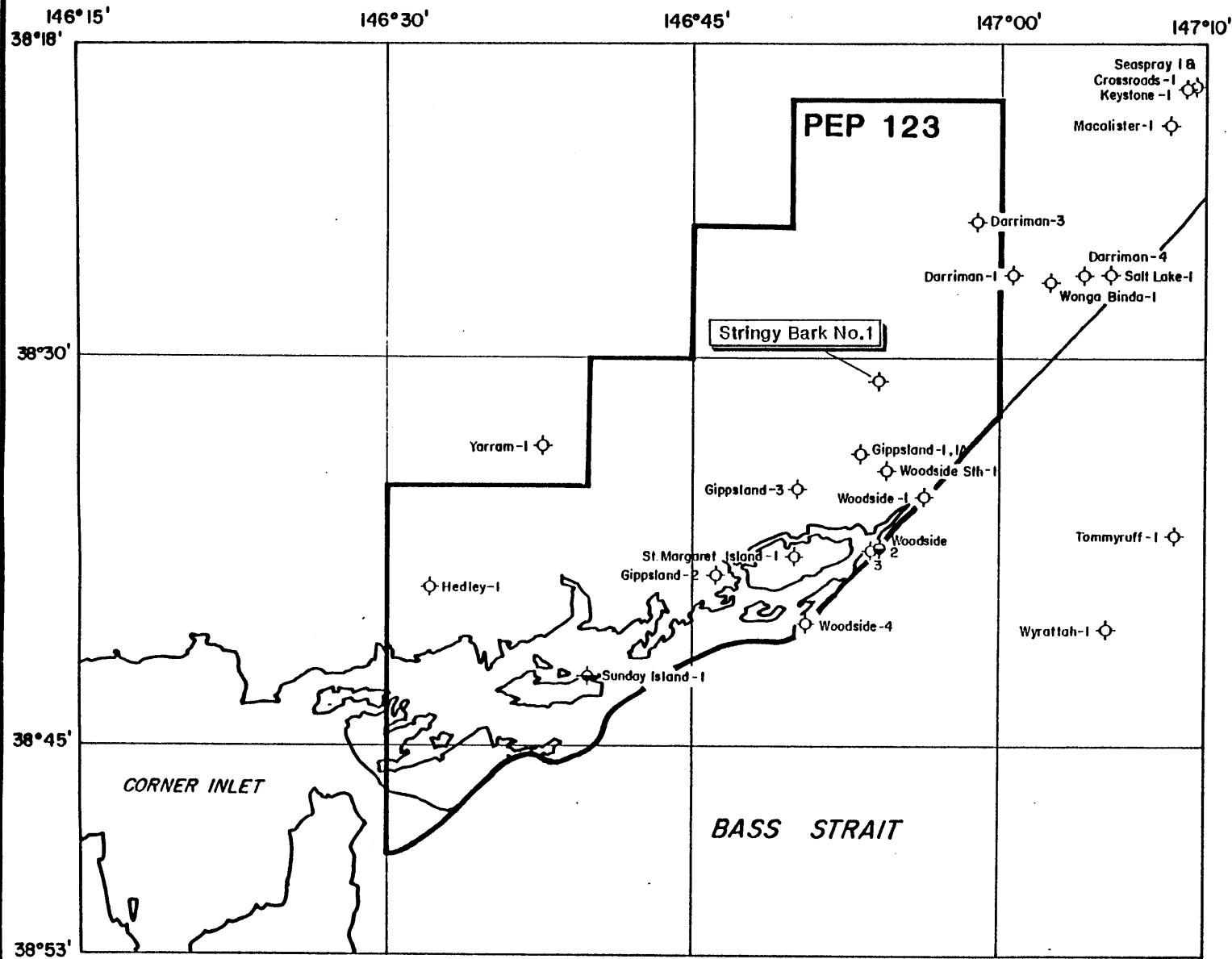
- .. It was felt that hydrocarbon shows could be difficult to see in the highly permeable sand.
- .. The very fresh artesian waters have high resistivities and electric logs may have trouble identifying hydrocarbons;
- .. Poor hole conditions were expected. The success of bottom hole tests is at least double that of straddle tests. (The well does show very poor hole conditions which lead to the cancellation of the density/neutron wireline logging run).

DST No. 1: 363-375m (366-378m logger) recovered 2.18 bbls mud; 1.18 bbls formation water. The small recovery is due to plugging of the tool's perforations by the calcareous claystones of the overlying marine section. This problem also occurred during the testing of Wonga Binda No. 1 two years previously.

After reaching total depth, wireline logs and a velocity survey were run.

The geological analysis, wireline logs and DST results indicate that all prospective sands are water saturated. The sonic log reads exceptionally high values for travel times through the sand sections. This is due to the completely unconsolidated nature of these sands.

Cement plugs were set across the top of the Older Volcanics, the casing shoe and at surface, and the well was abandoned.



LOCATION MAP



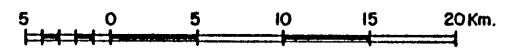
LEGEND

- ◆ Oil show
- ◇ Dry hole

CRUSADER RESOURCES N.L.

VICTORIA
PEP 123 - ONSHORE GIPPSLAND BASIN

LOCATION MAP
STRINGY BARK No.1



DRAWN: May, 1986	Figure 2
REVISED: Oct, 1990	A4 2116

2. WELL CARD: STRINGY BARK NO. 1

LATITUDE:	38° 31' 02.31"S	STATUS:	P & A
LONGITUDE:	146° 54' 01.77"E	OPERATOR:	Crusader
LINE/SP NO.:	GCR87B-107/1496	PARTNERS:	OGMD, Omega
LEASE:	PEP 123	DRILLER:	Drillcorp
PRESENT LEASE:	A/A	RIG:	23
PRESENT OPERATOR:	A/A	ELEVATION (K.B.):	39m
SPUD:	14/11/90	ELEVATION (G.L.):	36m
COMPLETION:	26/11/90	TOTAL DEPTH:	1050m
TARGET:	Top Latrobe four way dip closure	DATA SOURCE:	Drilling

FORMATION TOPS:

	<u>Depth (K.B.)</u> (m)	<u>Depth (S.S.)</u> (m)	<u>Thickness</u> (m)
Lakes Entrance Fm:			
Seacombe Marl Mbr.	319.5	-280.5	47.0
Giffard Mbr.	366.5	-327.5	7.0
Latrobe Group:			
Traralgon Fm.	373.5	-334.5	517.0
Older Volcanics	890.5	-851.5	127.5
Strzelecki Group	1018.0	-979.0	32.0+

Engineering Data:

DST and wireline tests:

DST #1: 363-375m, (366-378m logger) Top Latrobe Group. Tool opened with moderate blow (bottom of the bucket). Though it slowed the blow remained moderate until the tool was shut-in after 120 minutes. No pre-flow. The shut-in period was 60 minutes. Recovered 2.18 bbls mud and 1.18 bbls slightly muddy water. Blocking of perforation by claystone was evident.

Hole and casing:

17½" hole to 10m. Hand dug and 16" conductor pipe set at 6m prior to rig on location
12¼" hole to 173m, 9 5/8" casing set at 171m.
8½" hole to 1047m (T.D.) (driller).

Mud properties:

12¼" Hole. Type - gel and caustic - wt 9.0 ppg, vis 51-90 secs, Ph 10.0
8½" Hole. Type - low solid salt polymer - wt 9.1-9.5 ppg, vis 45 secs, Ph 9.0-10.5, Chlorides 5000-20,000 Mg/l.

Plugs:

No. 1: 860-920m 131 sacks
No. 2: 161-221m 73 sacks + 2% Ca Cl.
No. 3: Surface 20 sacks + welded cap.

Wireline logs, BPB:

DLL-MLL-Sonic-GR-CAL 170-1050m (GR to 12m)

Velocity survey, velocity data: 18 levels

Mud Logging, Halliburton:

1:200 scale. Surface -1047m T.D. (driller)

Conventional cores:

Nil.

Sidewall cores:

Nil.

Hydrocarbon shows:

Nil.

Hydrocarbon analyses:

Nil.

Water analyses:

DST No. 1 resistivity: 2.057 ohm metres,
conductivity: 4860 micro siemens/cm
chlorides: 148 mg/l

Measured temps:

39°C at 374m (DST No. 1)

47°C at 1050m 7 hours after circulation stopped.

Palynology/Palaeontology

Nil.

Remarks:

Located on a top Latrobe four-way-dip closure. A seismically interpreted barrier sand is present at top Latrobe and this was penetrated by the well. The sand is well developed with excellent reservoir quality. No gas or oil shows were recorded while drilling. A drill stem test was run immediately after penetrating the top of the Latrobe Group to test the uppermost sands. Formation water and mud were recovered. No hydrocarbon shows were recorded from this or any other zone. The well drilled through 127.5m of volcanics at the base of the Latrobe Group and into the Strzelecki Group. The Yarram Formation is, therefore, absent at this location. The hole is badly caved due to the unconsolidated nature of the formations. This contributed to the unrealistic readings as made by the sonic log.

3. GENERAL DATA:

Well Name: Stringy Bark No. 1

Name and address of Operator: Crusader Resources N.L.
27th Level
12 Creek Street
BRISBANE QLD. 4000

Interests: Crusader Resources N.L. 37.5%
Omega Oil Ltd. 37.5%
OGM Development Pty. Ltd. 25.0%

Petroleum Title: PEP 123, Victoria

Location: 38° 31' 02.32" South
146° 54' 01.77" East

Elevations: Ground level: 36 metres
Kelly bushing: 39 metres

Dates: Spudded: 14.11.90
T.D. reached: 24.11.90
Rig released: 26.11.90

Total Depth: 1050 metres - wireline logger
1047 metres - driller

Status: Plugged and abandoned.

4. ENGINEERING DATA:

4.1 Engineering Summary

Stringy Bark No. 1 spudded at 0900 hrs on November 14 1990 with fresh water-gel mud (Figure 3). Six metres of 16" conductor pipe had been pre-cemented in 17½" hole drilled to a depth of 10 metres. 12¼" Hole was drilled to 173m. Salt and polypac had been added to the mud system.

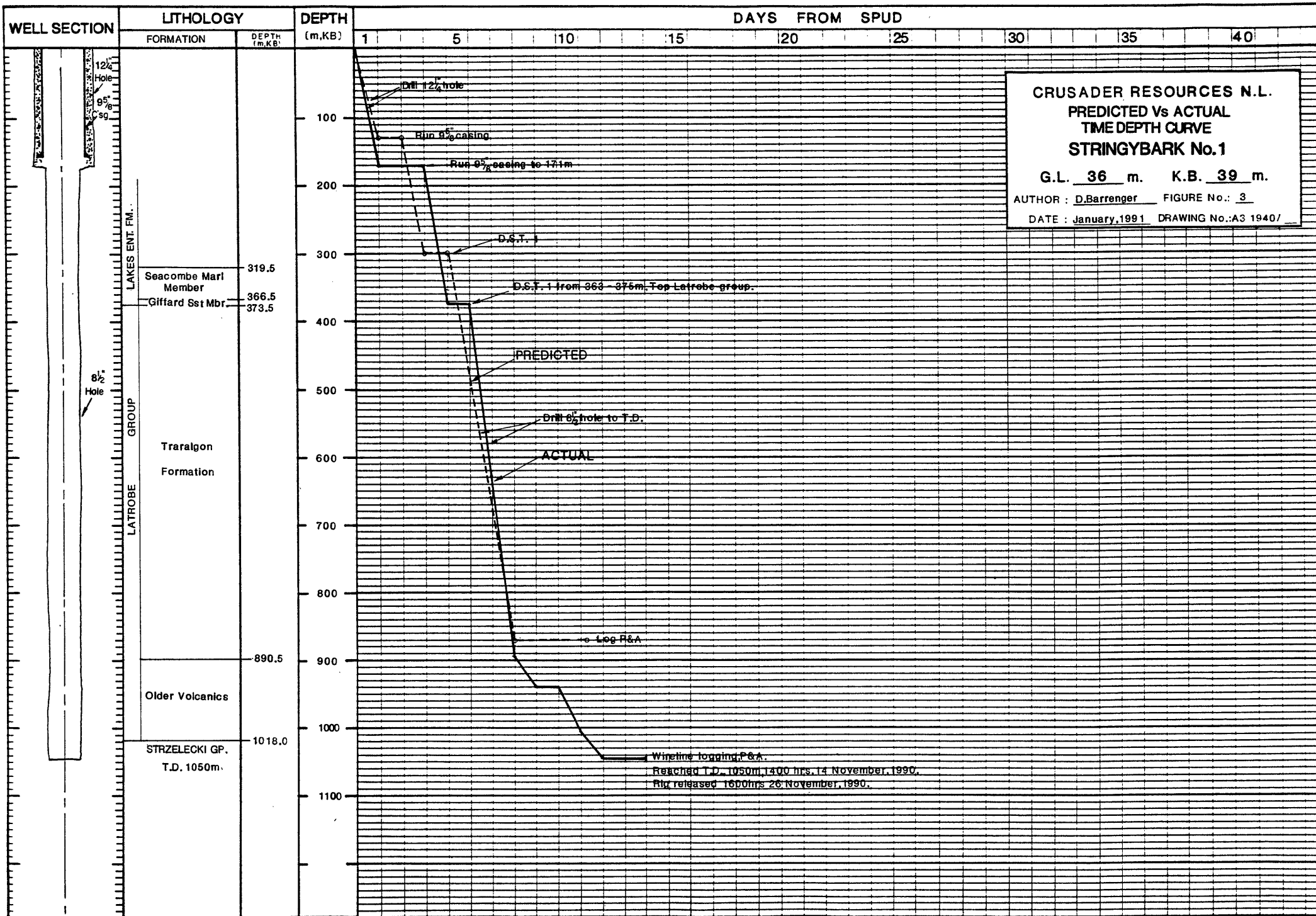
Fourteen joints of 9 5/8" casing (47 bbls, N80, R3) were run and cemented at 171m on 15.11.90. BOP's were installed and after repairing a leak, were tested from 250 to 1500 psi. The hydril was tested to 1000 psi.

Picked up 8½" hole and continued drilling to 375m, top of Latrobe Group, at which point the bit was pulled to run a drillstem test.

A successful DST was run over the interval 363-357m. Plugging was evident from the shape of the chart, the small-fluid recovery, 2.18 bbls mud and 1.18 bbls formation water, and visual inspection of the tool showing claystone blocking many of the perforations.

Drilling of 8½" hole continued to 644m where caving of the hole caused the drill string to become stuck. The pipe was pulled free and drilling continued to 970m before pulling out for a new bit. It was found that the hole had deviated at the top of the volcanics from 1° to 2.25°. This caused some problems when tripping. Continued drilling to 1047m, driller's total depth, reached at 1400 hrs on 24.11.90.

Wireline logs and a velocity survey were run. Three plugs were run and the well was abandoned. The rig was released at 1600 hrs on 26.11.90.



CRUSADER RESOURCES N.L.
PREDICTED Vs ACTUAL
TIME DEPTH CURVE
STRINGYBARK No.1
 G.L. 36 m. K.B. 39 m.
 AUTHOR : D.Barrenger FIGURE No.: 3
 DATE : January, 1991 DRAWING No.: A3 1940/

Reached T.D. 1050m, 1400 hrs, 14 November, 1990.
 Rig released 1600hrs 26 November, 1990.

4.2 Rig Data

Contractor: Drillcorp Ltd.
41 Buckingham Drive
PERTH. W.A. 6065.

Rig: 24

Type: Franks Cabot Explorer, Carrier Mounted

Drawworks: Cabot Split Drawworks Drilling/Tripping
Drums
Model 1D58/150-2
2 Detroit Diesel GM6V-71N
Belt compound

Capacity: 5,000' - (1,600m)

Rotary Table: Gardner-Denver No. RT-18, 18" opening

Derrick: Cabot 98' - 150' (30-46m)
96 x 150,000 lb capacity
4 leg telescoping

Mud Pumps: Ideco MM450 Duplex 7¼" x 12"
Powered by 2 6-71GM

B.O.P.: Shaffer Type 'E' Double Gate,
10" x 3,000 psi
1) Annular Shaffer 10" x 3,000 psi
2) Annular Regan 9" x 3,000 psi

B.O.P. Control: Koomey 80 Gallon, 8 Bottles, with 2 air
Pumps

Tubulars Available: 4,000' (1219m) x 4½" pipe grade 'E'
16.60 lb/ft

Drill Collars: 22 x 6¼, 2. 3/4" x 30', 4½" XH conn.

4.3 Drilling Data

a) Hole Size and Depths:

Conductor hole: 17½" to 10m from KB
Surface hole: 12¼" to 171m from KB
Main hole: 8½" to 1,047m from KB

b) Casing & Cementing Record:

16" Conductor: Grade: Welded sheet
(set prior to Depth: 6m below ground
move in)
9 5/8" surface Weight: 47lbs/ft
Grade: N 80
Thread: Butt
No Joints: 14
Accessories: Guide shoe, float
collar and
centralizers
Shoe Depth: 171m
Cement: 313 sacks and
173 sacks with CaCl
as a tail slurry

c) Mud Summary:

The hole was spudded with a fresh water gel mud.

Salt was added from 48m to inhibit the clay formations. Polypac was used for viscosity. At 173m the mud weight was 9.3 ppg, chlorides 12,000 mg/l. This salt water biopolymer mud was used to total depth.

Upon drilling out the casing shoe the mud weight was 8.5 ppg with chlorides of 15,000 mg/l.

At 375m the mud weight was raised to 9.2 ppg and chlorides were 20,000 mg/l, due to tight hole on wiper tip.

At 644m the drill string became stuck when sand caved in above the bit. After pulling free the mud was conditioned by adding prehydrated bentonite.

By 846m chlorides had dropped to 10,000 mg/l.

By 935m mudweight was 9.4 ppg and chlorides 9,000 mg/l and dropping.

At total depth the mud weight was 9.5 ppg and chlorides were 5,000 mg/l.

d) Water Supply:

Water was pumped from the local farmer's water bore onto the site.

e) Formation Testing:

One drill stem test was run during the drilling of the well.

DST No. 1:-

Interval: 363-375m driller (366-378m logger)

Date: 19.11.90

Tester: Halliburton

Formation: Top Latrobe Group

Type: Conventional off bottom

Water Cushion: Nil

Times: Initial flow 2 hours

Initial closed 1 hour

Pressures: Initial hydrostatic -594.4 psi

First initial -322.2 psi

Final flow -509.9 psi

First closed in -526.8 psi

Final hydrostatic -594.4 psi

Results: Tool opened with a strong blow, decreasing to moderate throughout.

Recovery: 2.18 bbls of mud

1.18 bbls of dirty formation water.

f) Abandonment Plugs:

Plug No. 1: 860-920 metres, 131 sacks across base Latrobe Group/top Volcanics.

Plug No. 2: 141-201 metres, tagged at 161 metres, 73 sacks + 2% CaCl across casing shoe.

Plug No. 3: Surface, 20 sacks.

5. GEOLOGICAL DATA:

5.1 Geological Summary:

Stringy Bark No. 1 spudded on November 15 1990 into loose sands of the Quaternary cover/Boisdale Formation (Figure 5). At 80 metres coquina were intersected. These form the Jemmys Point Formation. Shells and some sands remained the dominant lithologies to the casing shoe depth. The top of the Tambo River Formation, if this Formation is even present, was not seen. Nor was the top of the Gippsland Limestone.

10 Metre cuttings samples were collected throughout the well.

After drilling the 12¼" hole to 173.0m, 9 5/8" surface casing was set at 171.0m and 8½" hole was drilled to total depth.

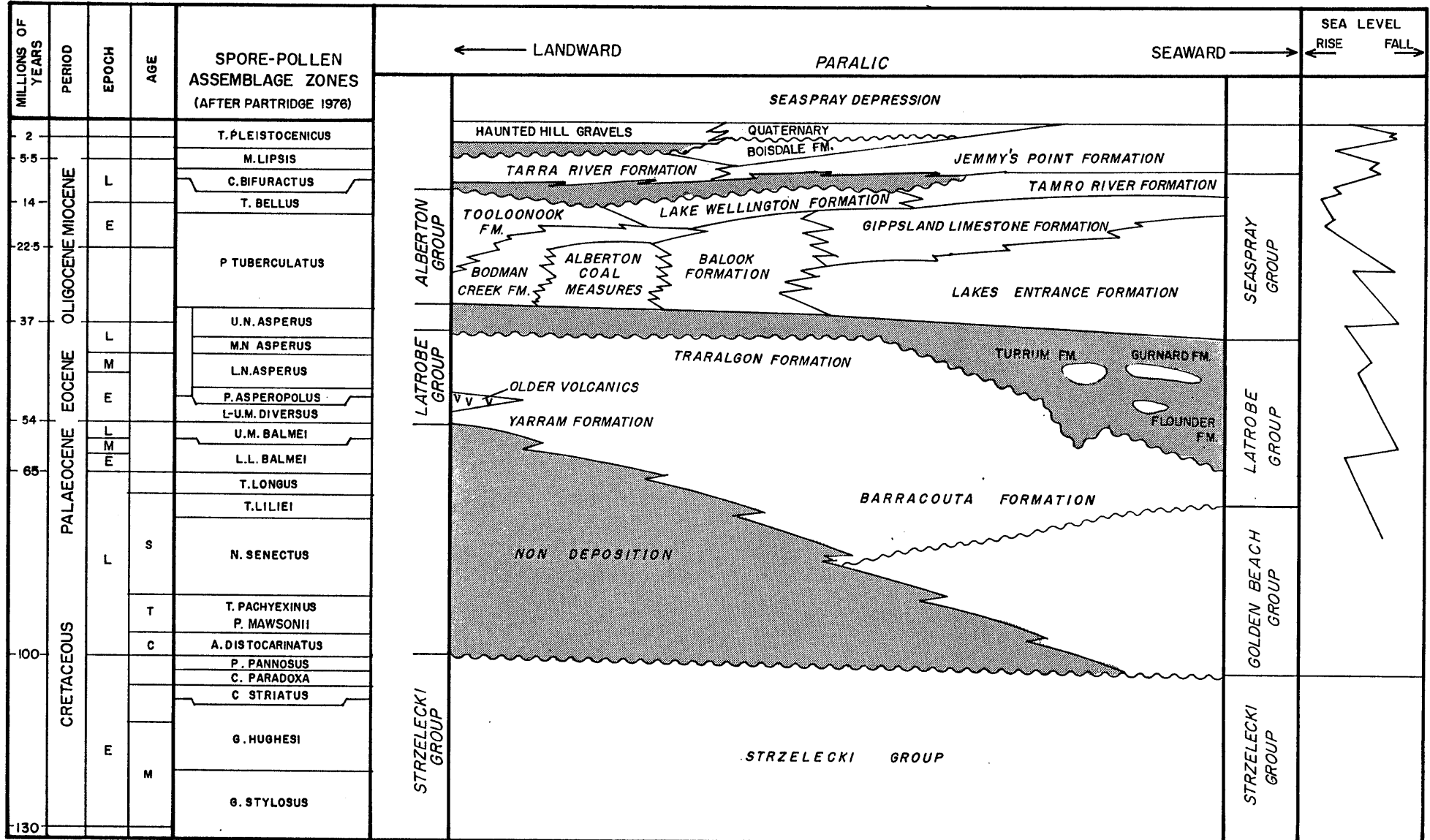
Upon drilling out the casing shoe a completely new lithology was encountered. Crystalline limestones, believed to be from the Gippsland Limestone, were drilled. There were large amounts of cavings of shells and sands while drilling the 12¼" hole.

The Seacombe Marl Member of the Lakes Entrance Formation was encountered at 317.0m (driller) with a dramatic decrease in drilling rate (Enclosure 3) and a change in lithology from very calcareous claystones and crystalline limestones to 100% calcareous claystones. The carbonate content decreases towards the base of the Lakes Entrance and glauconite content increases.

The Giffard Sandstone member (believed to be the equivalent of the Gurnard Formation) was encountered at 370m (driller) and consists of 100% claystone with abundant fine pyrite and glauconite and some loose quartz grains.

The top of the Latrobe Group (Traralgon Formation) was intersected at 372m (driller) with a rapid increase in the rate of penetration and a change to coarse quartz sand. No coal was intersected at the very top of the Latrobe suggesting that the seismically mapped barrier sand is present at Stringy Bark No. 1. A drill stem test was run over the top of the Latrobe. The tool became partially plugged by claystones from the Lakes Entrance Formation and fluid recoveries were small - 2.18 bbls of mud; 1.81 bbls of slightly muddy formation water.

STRATIGRAPHIC UNITS - GIPPSLAND BASIN



L - Late M - Middle E - Early

(Modified from THOMPSON and WALKER 1982)

A4 2209

Figure 4

A mix of sands, coals and claystones were drilled to 687m (driller). From there down coals became rare.

The Older Volcanics were intersected at 887m (driller) and consisted of fresh and weathered basalt. A drilling break occurred at 920m (driller) and a sample consisting of sand and gravel was collected. The wireline logs do not show any evidence of this sand. There were no shows, so drilling continued.

It was deemed necessary to drill through the Older Volcanics to investigate the hydrocarbon potential of the underlying strata. Permission was obtained to deepen the well beyond the prognosed 870m.

The Yarram Formation is not present below volcanics at this location. The Strzelecki Group was intersected at 1018m (logger) and consisted of volcanolithic sandstones and siltstones with poor reservoir quality and no shows. Total depth of 1050m (logger) was reached on December 15 1990, still in the Strzelecki Group.

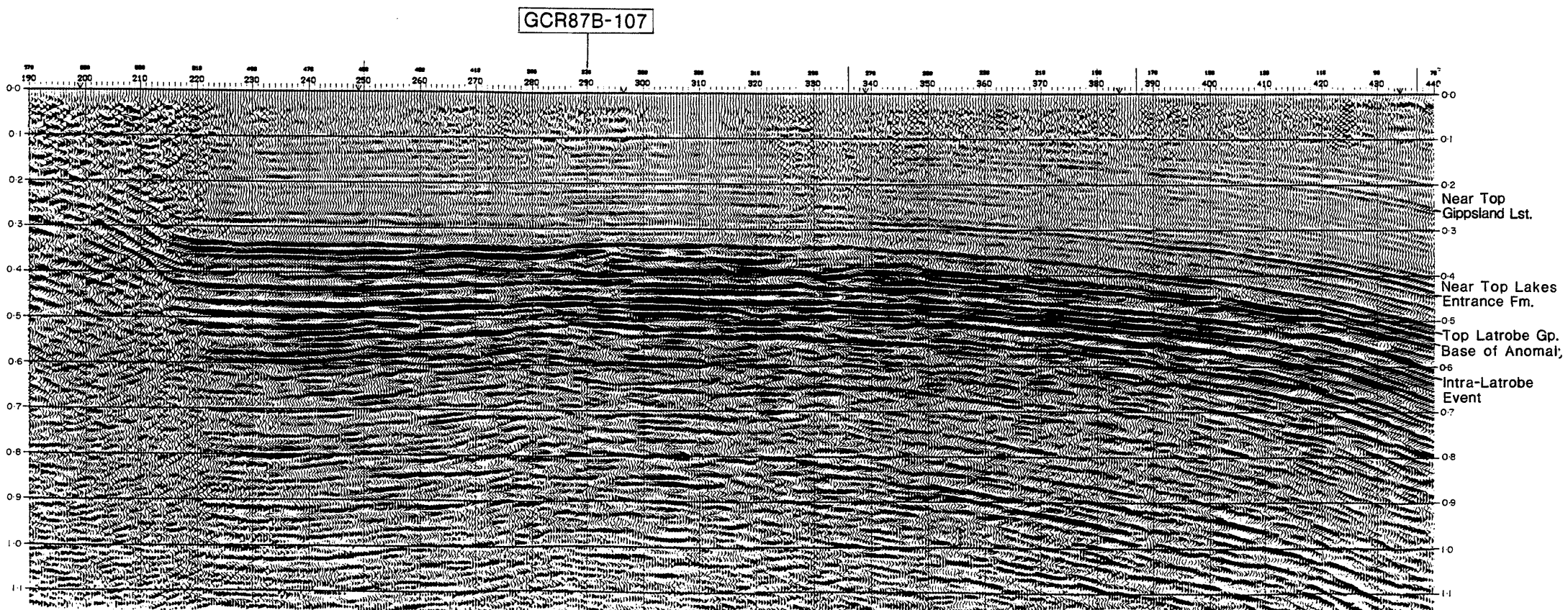
Wireline logs and a velocity survey were run. Due to the very poor hole conditions no other logs were run. The sonic tool was adversely affected by the unconsolidated nature of sands and by poor hole conditions. Sonic travel time readings were often too high.

Sample monitoring and gas detection while drilling indicated there were no significant hydrocarbon accumulations in any of the sands penetrated and this was confirmed by the wireline logs and drill stem test results.

The well was plugged and abandoned and the rig released on December 16 1990.

5.2 Reasons for Drilling:

Stringy Bark No. 1 was drilled to test for hydrocarbons in a top Latrobe Group feature believed to be a buried barrier sand (Figure 4). The well location is just within the four-way-dip closure mapped at the top of the Latrobe Group level (Enclosure 1).



CRUSADER LIMITED
 VICTORIA - PEP 123
STRINGY BARK PROSPECT
LINE GCR89A-05
MIGRATED STACK

Nov, 1989

Figure 5

A potential for increased reserves through stratigraphic trapping existed where fine grained lagoonal sediments deposited at the back of the barrier may have provided a westerly seal for the clean barrier sands. The overlying marine Lakes Entrance Formation is the seal in all other directions.

A secondary objective was identified. A seismically defined 'anomaly', Anomaly 1, was mapped at an intra Latrobe level (Enclosure 2) and shows four-way-dip closure. It appears to be an erosional remnant of some feature that may have been a barrier deposit. Seismic events immediately above the strong seismic reflector representing the top of the paleo-topographic feature display onlap. The maximum thickness of the feature is 35m.

No significant accumulations of hydrocarbons have yet been discovered in the onshore Gippsland Basin but offshore from PEP 120 are several marginally economic oil and gas fields, Golden Beach, Whiptail, Tarwhine, Dolphin and Perch. The sands at the top of the Latrobe Group are the reservoirs for all these fields.

Onshore, gas flowed at up to 100,000 cubic feet per day from the Strzelecki Group in North Seaspray No. 1 but other wells in the area failed to encounter the reservoir sand suggesting a strong stratigraphic component in its distribution. In the south of the permit minor oil shows were reported from Sunday Island No. 1 and Woodside No. 2.

5.3 Stratigraphy:

(All Depths are in Metres)

Age	Group/Formation	Top KB	Top MSL	Thickness
Pliocene	<u>Sale Group</u> Boisdale	Near Surface	+ 36.0	75.0
Pliocene	Jemmys Point	78.0	- 42.0	?
Miocene	<u>Seaspray Group</u> Tambo River	Not r e c o g n i z e d		
Miocene	Gippsland Lst.	?152.0	-113.0	167.5
Oligocene	Lakes Entrance: Seacombe Marl Mbr.	319.5	-280.5	47.0
	Giffard Mbr.	366.5	-327.5	7.0
Eocene	<u>Latrobe Group</u> Traralgon	373.5	-334.5	517.0
Paleocene	Older Volcanics	890.5	-851.5	127.5
Cretaceous	<u>Strzelecki Group</u>	1018.0	-979.0	32.0+
	Total Depth	1050		

5.4 Descriptive Stratigraphy:Boisdale Formation (Pliocene) Near Surface - 78.0m:

Sand, greyish yellow, multicoloured, iron-stained, quartz, coarse to very coarse, sub-angular to rounded, becoming well rounded with depth, 20% volcanolithics, grey clay matrix present towards the base of the formation, unconsolidated.

Jemmy's Point Formation (Pliocene) 78.0 - ?152.0m

This description applies to the interval between the base of the Boisdale Formation and the top of the Gippsland Limestone. It includes the Tambo River Formation if this is present at the Stringy Bark No. 1 location.

Sand and shells with downwards increasing shell content.

10% Sand clear, quartz, medium, grey clay matrix, loose.

90% Shells, gastropods, bivalves, bryzoa, coral, echinoids, mixed with the clay and sands, unconsolidated coquina.

Tambo River Formation (Miocene) Not recognized.

This formation may not be present in Stringy Bark No. 1 (see Jemmy's Point above).

Gippsland Limestone (Miocene) ?152.0 - 319.5m

The top of the Gippsland Limestone was intersected while drilling the 12¼" hole. The abundant shell cavings at that time 'masked' the top of the formation.

152.0 - 173.0m (12¼" hole)

Shells and medium quartz sand as described above, however samples include abundant calcite crystals and abundant glauconite.

173.0 - 250m (8½" hole)

Calcareous claystone, light brown to brown, fossiliferous, hard to occasionally soft where argillaceous, trace glauconite. Crystal size diminished and clay content increases with depth, trace to abundant glauconite.

250.0 - 319.5m

Dominantly argillaceous Calcilutite, dark grey to light grey, some fine to medium size crystals, grading to calcarenite, trace glauconite, trace black speck, very soft, sticky, dispersive.

Calcareous claystone, argillaceous, calcilutite grades downwards to claystone, dark to medium grey, soft, sticky.

Lakes Entrance Formation (Oligocene) 319.5 - 373.5m

Seacombe Marl Member 319.5 - 366.5m

Claystone (Marl), very calcareous, dark to medium grey, soft, sticky, good trace glauconite. As glauconite content increases with depth colour changes to greenish bluish grey.

Giffard Member 366.5-373.5m

Claystone, greenish bluish grey, soft, sticky, abundant glauconite and finely disseminated pyrite, rare loose quartz grains, coarse, well rounded.

Latrobe Group 373.5 - 1018.0mTraralgon Formation (Eocene) 373.5 - 890.5m

373.5 - 607m Sand, Claystone and Coal

Sand, white to clear, coarse to very coarse, occasionally medium, occasionally pebbles, angular to sub-rounded, large grains rounded, loose, occasionally trace mica.

Claystone, dark brown, dispersive, silty to very silty, carbonaceous.

Coal, brown, blocky, soft to dispersive.

607 - 890.5m Sand and Claystone

Sand, white to clear, coarse to very coarse, occasionally medium, occasionally pebbles, angular to sub-rounded, large grains rounded, loose, occasionally trace mica.

Claystone, dark brown, dispersive, silty to very silty, carbonaceous.

Older Volcanics (Paleocene) 890.5 - 1018.0m

890.5 - 980.0m Basalt

Weathered, dark reddish-brown to dark reddish-purple, appears as soft sticky clay with occasional firm chips. Becomes hard and crystalline with depth. From 940m it becomes vari-coloured, often dark grey and greenish. Between 922 - 924m fast drilling was encountered. A sand/gravel was caught at the surface. Yellowish brown quartz, coarse to pebbly at base, sub-angular. This is not identifiable on the wireline logs.

980 - 1003m Volcanics

Dark bluish and greenish grey, increasingly siliceous, fine to medium crystalline, green and red minerals. Very even drilling rate from 980m.

1003 - 1010m ?Igneous

Fast drilling encountered, very dark green, abundant loose, angular quartz, coarse crystalline. Possibly a vein or weathered surface.

1010 - 1018.0m Volcanics

Dark bluish and greenish grey, increasingly siliceous, fine to medium crystalline, green and red minerals.

Strzelecki Group (Cretaceous) 1018.0 - 1050.0m

Sandstone, Claystone and Siltstone

Sandstone, medium green grey, 60% quartz, clear, angular, 40% lithics, green grey, sub-angular to rounded. White to light grey clay matrix, ?trace feldspar, firm to friable and usually unconsolidated.

Siltstone, dark greenish grey, very argillaceous, soft to firm grades to claystone.

Claystone, dark brown, silty, moderately hard.

5.5 Formation Evaluation:

(a) Mud Logging

Mudlogging services were provided by Halliburton Geodata. Basic rate of penetration, pit level, FID, total gas and FID chromatography services were provided as well as lagged sample collection, description and processing. Cuttings were collected at 10m intervals throughout the well. These were examined for oil and gas indications, described, air dried and split into one set of paper sample packets for the Department of Industry and Economic Planning and two sets of sample trays retained by Crusader Resources N.L..

(b) Wireline Logging

The following logs were run by BPB Instruments (Australia) Pty. Ltd. at total depth:

DLL-MLL-SONIC-GR-CAL 1050-170m (GR TO 12m)
(Enclosure 3)

(c) Velocity Survey

The velocity survey was run by Velocity Data Pty. Ltd. using BPB'S cable. 18 Levels were shot (Appendix 10 - Enclosure 3).

(d) Temperatures

The following temperatures were recorded:
DST No. 1: 39°C at 374m
Wireline logs: 47°C at 1050m 7 hours after circulation stopped.

The wireline logging result gives an estimated extrapolated bottom hole temperature of 50°C. This is assuming the same rate of temperature rebound as Wonga Binda No. 1.

5.6 Reservoir Potential:

The wireline logs and samples indicated the sands of the Latrobe Group had good porosity and permeability with clean sands having only minor amounts of clay matrix and lithic fragments. The sands are so unconsolidated that the sonic log is unable to read true sonic values. (It is postulated that the energy level of sound waves is too low to be recorded by the 1.5m (5') tool sensor).

Drilled sands of the Strzelecki Group had poor porosities and permeabilities and in general had a high proportion of lithic fragments, feldspar and clay matrix.

Samples from the upper Gippsland Limestone section and the Boisdale-Jemmy's Point-Tambo River section indicate very good reservoir quality but a lack of 'seals'. (See Appendix 8).

5.7 Hydrocarbon Shows:

No gas peaks or background gas were recorded while drilling.

Very minor trip gases only were recorded after pulling out for bits in the Older Volcanics. (Enclosure 4).

No indications of oil or fluorescence were observed from any lithology and no solvent cut was obtained from coals.

Wireline logs indicated all potential reservoir sands to be water saturated and a DST run at the top of the Latrobe Group recovered formation water.

5.8 Contribution to Geologic Concepts:

There is fair agreement between lithologically picked tops and those picked from the wireline logs. The Older Volcanics was considerably thicker than the predicted 40m. The Traralgon Formation thickness was as predicted and, along with the Older Volcanics, demonstrates a major thickening of the Latrobe Group from south to north in the vicinity of the Stringy Bark location.

The Lakes Entrance Formation is clearly defined by the drill rate and lithology at Stringy Bark No. 1 and this has enabled a re-evaluation of this formation top regionally. The Giffard Member (previously referred to as the Giffard Sandstone Member) was easily identified by its characteristic abundance of glauconite, fine pyrite and good trace of well-rounded, coarse quartz grains. This Member is not a sandstone unit.

The Traralgon Formation does not have coal at the very top of the Formation. Wonga Binda No. 1 is the only other well in the PEP 120/123 area lacking coal at the top of the formation. This confirms the seismic model of a sand buildup (barrier) at the Stringy Bark location.

The Older Volcanics are reddish and purplish brown, deeply weathered and have erratic drill rates in the upper section. At about 977m the drill rate becomes quite uniform and the Volcanics become greenish and distinctly more siliceous. Two intervals had exceptionally high drill rates. The first at around 922m appeared to be a local sedimentary feature. Both however may simply be coarse crystalline-quartz-rich veins. They have no significance for petroleum exploration.

The Yarram Formation is absent this far south.

The Gippsland Limestone is coarse crystalline calcarenite at the top and becomes gradually finer crystalline and argillaceous calcitulate and calcareous claystone towards the base.

The pick of the top of Gippsland Limestone and the presence of the Tambo River Formation are uncertain.

6. CONCLUSIONS:

Stringy Bark No. 1 was located at a crestal position on a structure showing four-way-dip closure at all mapped horizons. The interpretation also predicted a sand build-up, perhaps of a barrier, at the top of the Latrobe and this is apparently confirmed by the drilling results. An intra Latrobe anomaly appeared to be an eroded remnant of some feature, perhaps a barrier sand or even a volcanic flow. No conclusions could be drawn from the drilling of the well other than that a sedimentary sequence was encountered.

It was thought that east to west migrating hydrocarbons would be caught by and channelled into the top Latrobe Stringy Bark No. 1 closure by the barrier complex, however, this was not the case.

PE902059

This is an enclosure indicator page.
The enclosure PE902059 is enclosed within the
container PE902058 at this location in this
document.

The enclosure PE902059 has the following characteristics:

- ITEM_BARCODE = PE902059
- CONTAINER_BARCODE = PE902058
 - NAME = Stringy Bark Prospect Time Structure
Map
 - BASIN = OTWAY
 - PERMIT =
 - TYPE = SEISMIC
 - SUBTYPE = HRZN_CONTR_MAP
 - DESCRIPTION = Stringy Bark Prospect Time Structure
Map
 - REMARKS =
 - DATE_CREATED = 1/09/89
 - DATE_RECEIVED = 24/04/91
 - W_NO = W1041
 - WELL_NAME = Stringy bark-1
 - CONTRACTOR = Crusader resources N.L
 - CLIENT_OP_CO = Crusader resources N.L

(Inserted by DNRE - Vic Govt Mines Dept)

PE902060

This is an enclosure indicator page.
The enclosure PE902060 is enclosed within the
container PE902058 at this location in this
document.

The enclosure PE902060 has the following characteristics:

- ITEM_BARCODE = PE902060
- CONTAINER_BARCODE = PE902058
- NAME = Stringy Bark Prospect Time Structure
Map
- BASIN = OTWAY
- PERMIT =
- TYPE = SEISMIC
- SUBTYPE = HRZN_CONTR_MAP
- DESCRIPTION = Stringy Bark Prospect Time Structure
Map
- REMARKS =
- DATE_CREATED = 1/09/89
- DATE_RECEIVED = 24/04/91
- W_NO = W1041
- WELL_NAME = Stringy bark-1
- CONTRACTOR = Crusader resources N.L
- CLIENT_OP_CO = Crusader resources N.L

(Inserted by DNRE - Vic Govt Mines Dept)

PE600857

This is an enclosure indicator page.
The enclosure PE600857 is enclosed within the
container PE902058 at this location in this
document.

The enclosure PE600857 has the following characteristics:

ITEM_BARCODE = PE600857
CONTAINER_BARCODE = PE902058
 NAME = Composite Well log
 BASIN = OTWAY
 PERMIT =
 TYPE = WELL
 SUBTYPE = COMPOSITE_LOG
 DESCRIPTION = Composite Well log
 REMARKS =
 DATE_CREATED = 26/11/90
 DATE_RECEIVED = 24/04/91
 W_NO = W1041
 WELL_NAME = Stringy bark-1
 CONTRACTOR = Crusader resources N.L
 CLIENT_OP_CO = Crusader resources N.L

(Inserted by DNRE - Vic Govt Mines Dept)

PE600858

This is an enclosure indicator page.
The enclosure PE600858 is enclosed within the
container PE902058 at this location in this
document.

The enclosure PE600858 has the following characteristics:

- ITEM_BARCODE = PE600858
- CONTAINER_BARCODE = PE902058
 - NAME = Stringy Bark no 1 Mud Log
 - BASIN = OTWAY
 - PERMIT =
 - TYPE = WELL
 - SUBTYPE = MUD_LOG
 - DESCRIPTION = Stringy Bark no 1 Mud Log
 - REMARKS =
- DATE_CREATED = 24/11/90
- DATE_RECEIVED = 24/04/91
 - W_NO = W1041
 - WELL_NAME = Stringy bark-1
 - CONTRACTOR = GEARHART PTY LTD
 - CLIENT_OP_CO = CRUSADER RESOURCES NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE600859

This is an enclosure indicator page.
The enclosure PE600859 is enclosed within the
container PE902058 at this location in this
document.

The enclosure PE600859 has the following characteristics:

- ITEM_BARCODE = PE600859
- CONTAINER_BARCODE = PE902058
 - NAME = Wellsite Geological Striplog
 - BASIN = OTWAY
 - PERMIT =
 - TYPE = WELL
 - SUBTYPE = WELL_LOG
 - DESCRIPTION = Wellsite Geological Striplog
 - REMARKS =
- DATE_CREATED = 25/11/90
- DATE_RECEIVED = 24/04/91
 - W_NO = W1041
 - WELL_NAME = Stringy bark-1
 - CONTRACTOR = Crusader resources N.L
 - CLIENT_OP_CO = Crusader resources N.L

(Inserted by DNRE - Vic Govt Mines Dept)

*Daily Operations
Reports*

APPENDIX 1

DAILY OPERATIONS REPORTS

CRUSADER RESOURCES N.L.

DAILY DRILLING REPORT

WELL: STRINGER BARK I	RIG: DRILLCORP 24	DEPTH: 0	SUPERVISOR: G NICOT	DAYS FROM SPUD: 0
DATE: 13. 11. 90	DEPTH: 1500 m	PROGRESS: 0	GEOLOGIST: D. BARRINGER	DEPTH LAST CASING: 0

A	TIME ALLOCATION		OPER. CODE	OPERATIONS FROM 0700 - 0700 hrs.
	STARTED	ELAPSED		
	0600			Move rig onto new location
		2300		Rig up Rig up power swivel to drill rat hole
	2300	0430		Drill rat hole and lay down power swivel
	0430	0700		Install flow line - Pick new swivel modified connections on goose neck and Kelly hose

B	MUD WT.	VISCOSITY				A.P.I.	IONS ppm			M B E	SAND %	pH	SOLIDS %	OIL	HTHP W.L.	REMARKS
	ppg	MF.	PV	YIELD	GEL	W.L.	Ca ⁺	K ⁺	Cl ⁻							

C	RUN No.	SERIAL No.	SIZE INCHES	TYPE	BOTTOM HOLE ASSEMBLY											
	RUN No.	NOZZLE	W.O.B. tonnes	RPM	PROG m/hr	VOL gal/min	PRESS. p.s.i.	DEPTH IN (m) OUT (m)		TOTAL m hr.		BIT T B D			REMARKS	

D	INSTRUMENT TYPE	DEPTH SURVEY	POSITION INSTRUMENT	INCLIN.	AZIMUTH	T V D	HORIZONTAL DISPLACEMENT	COORDINATES		DOG LEG	REMARKS
					N --- E			N(+) / S(-) E(+) / W(-)			

E	REMARKS / LITHOLOGY

CRUSADER RESOURCES N.L.

DAILY DRILLING REPORT

WELL: <u>1 STINGY BARK 1</u>	RIG: <u>DRILLCORP 24</u>	DEPTH: <u>173m</u>	SUPERVISOR: <u>G. NICOT</u>
DATE: <u>14.11.90</u>	DEPTH: <u>1500m</u>	PROGRESS: <u>173m</u>	GEOLOGIST: <u>D. BARRINGER</u>
			DAYS FROM SPUD: <u>1</u>
			DEPTH LAST CASING: <u>1</u>

A TIME ALLOCATION			OPER. CODE	OPERATIONS FROM 0700 - 0700 hrs.
STARTED	ELAPSED			
0700	2 ✓	1		Make up bit. Weld on plowline.
0900	6 ✓	2		Drill 12 1/4 hole to 57m
1500	1 1/2 ✓	10		Run survey at 48m
1530	4 1/2 ✓	2		Drill to 123m
20.00	1 1/2 ✓	10		Run survey
2030	3 ✓	2		Drill to 173m
2330	1 ✓	1		Circulate
0030	2 1/2 ✓	6		wiper trip to surface
0300	1 1/2 ✓	5		Circulate hole clean
0430	1 1/2 ✓	10		Run survey at 170m
0500	2 ✓	6		POOH
0700				

B MUD WT. (ppg)	VISCOSITY				A.P.I. W.L.	IONS ppm			M B E	SAND %	pH	SOLIDS %	OIL	H T H P W.L.	REMARKS
	MF.	PV	YIELD	GEL		Ca ⁺⁺	K ⁺	Cl ⁻							
9.2	60	12	16	6 20	-	80		1200	16	1	10	2			

C RUN No. SERIAL No. SIZE INCHES TYPE				BOTTOM HOLE ASSEMBLY													
1 RRB1141				12 1/4	S1365	BIT. BIT SUB - 15 x 6 1/2 DC											
RUN No.	NOZZLE	W.O.B. tonnes	RPM	PROG m/hr	VOL gal/min	PRESS. p.s.i.	DEPTH IN (m) OUT (m)		TOTAL m hr.		BIT T B D			REMARKS			
1	3x16	2 1/8	100	161	260 300	400	6	173	167	13.5	3	3	I	10mm per connection.			

D INSTRUMENT TYPE	DEPTH SURVEY	POSITION INSTRUMENT	INCLIN.	AZIMUTH		T V D	HORIZONTAL DISPLACEMENT	COORDINATES			DOG LEG	REMARKS
				N--E				N(+)/S(-)	E(+)/W(-)			
TOTC	48		0									
	120		1/4									
	170		C									

E REMARKS / LITHOLOGY

SURFACE TO 80 M SANDS GRADING DOWN TO CLAYS

80 M TO 173 M FOSSILIFEROUS CLAYSTONE AND COQUINA.

TOP GIPPSLAND LST APPROX 80m

CRUSADER RESOURCES N.L.

DAILY DRILLING REPORT

WELL: STRONGY BARK 1	RIG: DAIICORP 24	DEPTH: 173	SUPERVISOR: G. NICOT	DAYS FROM SPUD: 2
DATE: 15.11.90	DEPTH: 1500 m	PROGRESS: 0	GEOLOGIST: D. BARRINGER	DEPTH LAST CASING: 95 171m

A	TIME ALLOCATION		OPER. CODE	OPERATIONS FROM 0700 - 0700 hrs.
	STARTED	ELAPSED		
	0730	1 1/2	12	Rig up casing equipment
	1030	3	12	Run 9 5/8 Cas
	1100	1/2	21	Nipple up Madhuburton cementing head
	1200	1	1	Circulate and drop viscosity to 40
	1230	1/2	12	Hook up line to cementing unit and test
	1330	1	12	Perform cementing job
				20 bbls water base spudflush followed by a lead slurry slurry neat yield 1.18
				160 cc (28 lbs) Tail slurry yield 1.18 - 173 cc with 2% CaCl
				Cement getting firm before end of mixing
	1730	4	13	W.O.C.
				Stack off Landing JT. Cut conductor, lay out Landing JT. Install blades head, weld on.
	2400	6 1/2	14	
	0700	7 1/2		Start to nipple up BOPs. Dimensions between stud hole on casing head and mud spool slightly different has to fabricate a double stud adapter from Perth.

B	MUD WT.	VISCOSITY				A.P.I.	IONS ppm			M B E	SAND %	pH	SOLIDS %	OIL	HTHP W.L.	REMARKS
	PPG	MF.	PV	YIELD	GEL	W.L.	Ca ⁺⁺	K ⁺	Cl ⁻							
	9.6	40														

C	RUN No.	SERIAL No.	SIZE INCHES	TYPE	BOTTOM HOLE ASSEMBLY														
					RUN No.	NOZZLE	W.O.B. tonnes	RPM	PROG. m/hr	VOL gal/min	PRESS. p.s.i.	DEPTH IN (m) OUT (m)		TOTAL m hr.		BIT T B D			REMARKS

D	INSTRUMENT TYPE	DEPTH SURVEY	POSITION INSTRUMENT	INCLIN.	AZIMUTH	T V D	HORIZONTAL DISPLACEMENT	COORDINATES			DOG LEG	REMARKS
					N - E			N(+) / S(-)	E(+) / W(-)			

E	REMARKS / LITHOLOGY

CRUSADER RESOURCES N.L.

DAILY DRILLING REPORT

WELL: <u>S</u>	RIG: <u>DRILLCORP24</u>	DEPTH: <u>173 m</u>	SUPERVISOR: <u>G. NICOT</u>
DATE: <u>16.11.90</u>	DEPTH: <u>1500 m</u>	PROGRESS: <u>NIL</u>	GEOLOGIST: <u>D. BARRINGER</u>
			DAYS FROM SPUD: <u>3</u>
			DEPTH LAST CASING: <u>95 / 171 m</u>

TIME ALLOCATION : OP : OPERATIONS FROM 0700 - 0700hrs
 started : elapsed : CODE :

16.00	9 ✓	21	Wait on adaptor flange While waiting, pressure test choke manifold, kelly cock, standpipe to 1500psi and change out swivel.
21.30	5.5 ✓	14	Nipple up BOPs
22.00	.5 ✓	22	Change out upper kelly cock
22.30	.5 ✓	14	Function test BOPs
01.00	2.5 ✓	15	Make up cup tester and attempt to test.
04.30	3.5 ✓	22	Repair BOPs
06.00	1.5 ✓	15	Pressure test pipe rams, hydril, HCR valve 250 psi and 1500 psi. OK.
07.00	1 ✓	15	Laid down cup tester, pick up kelly, test upper kelly cock 2000psi. OK.

B	MUD WT.		VISCOSITY				A.P.I.	IONS ppm			M B E	SAND %	pH	SOLIDS %	OIL	H T H P W.L.	REMARKS
	ppg		MF.	PV	YIELD	GEL	W.L.	Ca ⁺	K ⁺	Cl ⁻							
	8.5							80		15000			10.5				
C	RUN No.	SERIAL No.	SIZE INCHES	BOTTOM HOLE ASSEMBLY													
D	INSTRUMENT TYPE	DEPTH SURVEY	POSITION INSTRUMENT	INCLIN.	AZIMUTH	T V D	HORIZONTAL DISPLACEMENT	COORDINATES			DOG LEG	REMARKS					
					N --- E			N(+) / S(-)	E(+) / W(-)								
E	REMARKS / LITHOLOGY																

CRUSADER RESOURCES N.L.

DAILY DRILLING REPORT

WELL: STRINGY BARK 1	RIG: DRILL CORP 24	DEPTH: 355 m	SUPERVISOR: G. NICOT
DATE: 17.11.90	DEPTH: 1500 m	PROGRESS: 182 m	GEOLOGIST: D. BARRINGER
			DAYS FROM SPUD: 4
			DEPTH LAST CASING: 9 5/8 171 m

A	TIME ALLOCATION		OPER. CODE		OPERATIONS FROM 0700 - 0700 hrs.
	STARTED	ELAPSED			
09.00		2 ✓	14		Rig down testing lines and rig up flow line.
12.00		3 ✓	6		Make up new B.H.A. and run in hole. Tag cement.
15.00		3 ✓	12		Drill out F.C./Shoe and cement. Conditioned mud.
18.00		3 ✓	2		Drill 8.5 hole from 173m to 225m.
19.30		1.5 ✓	8		Drawworks Engine #2 failed. Pull into Csg to repair
21.30		2 ✓	2		Drill to 264m.
22.00		.5 ✓	10		Run survey at 254m.
23.00		1 ✓	2		Drill to 284m.
23.30		.5 ✓	8		Repair make up chain.
00.30		1 ✓	2		Drill to 302m and circulate sample.
01.00		.5 ✓	2		Drill to 312m.
01.30		.5 ✓	5		Circulate sample.
02.30		1 ✓	2		Drill to 325m.
03.00		.5 ✓	5		Circulate sample.
03.30		.5 ✓	2		Drill to 335m.
04.00		.5 ✓	8		Repair stand pipe line.
07.00		3 ✓	2		Drill to 355m.

B	MUD WT. PPG	VISCOSITY				A.P.I. W.L.	IONS ppm			M B E	SAND %	PH	SOLIDS %	OIL	HTHP W.L.	REMARKS
		MF.	PV	YIELD	GEL		Ca ⁺⁺	K ⁺	Cl ⁻							
	8.8	14	8	12	3 17	8	140		12000	7.5	.75	10.5	1			Drill out cement

C															BOTTOM HOLE ASSEMBLY									
RUN No.	SERIAL No.	SIZE INCHES	TYPE																					
2	WGL457	8.5	S31G	BIT. BIT SUB - 2 x 6 1/4 DC - 8 1/2 STAB. 16 x 6 1/4 DC.																				

RUN No.	NOZZLE	W.O.B. tonnes	RPM	PROG m/hr	VOL gal/min	PRESS. p.s.i.	DEPTH		TOTAL		BIT			REMARKS
							IN (m)	OUT (m)	m	hr.	T	B	D	
2	3x11	20	100	220	500	173	IN	182	12					10 mn / Connection Drill out cement

D	INSTRUMENT TYPE	DEPTH SURVEY	POSITION INSTRUMENT	INCLIN.	AZIMUTH	T V D	HORIZONTAL DISPLACEMENT	COORDINATES			DOG LEG	REMARKS
					N---E			N(+)/S(-)	E(+)/W(-)			
	TOTCO	254		1/4								

E REMARKS / LITHOLOGY

173 - 317. Giffstard Limestone, crystalline, hard to occasionally soft where argillaceous.

317 - 355 Very calcareous chrystone (mud), sticky soft.

CRUSADER RESOURCES N.L.

DAILY DRILLING REPORT

WELL: STRINGY BARK #1	RIG: DRILLCORP 24	DEPTH: 627m	SUPERVISOR: G. NICOT	DAYS FROM SPUD: 6
DATE: 19.11.90	DEPTH: 1500m	PROGRESS: 252m	GEOLOGIST: D. BARRINGER	DEPTH LAST CASING: 9 5/8 171

A	TIME ALLOCATION STARTED | ELAPSED	OPER. CODE	OPERATIONS FROM 0700 - 0700 hrs.
----------	--------------------------------------	------------	---

TIME ALLOCATION started	ELAPSED	OP CODE	OPERATIONS FROM 0700 - 0700hrs
07.30	.5 ✓	16	Performed DST#1. Pull packer loose at 07.37.
10.00	2.5 ✓	6	POOH. Chain out.
12.00	2 ✓	16	Laid down DST tool.
14.30	2.5 ✓	6	Make up bit#3 and RIH.
16.00	1.5 ✓	2	Drill from 375 to 396.
16.30	.5 ✓	10	Run survey.
23.30	7 ✓	2	Drill to 528m.
24.00	.5 ✓	10	Run survey.
07.00	7 ✓	2	Drill to 627m.

B	MUD WT.		VISCOSITY			A.P.I.	IONS ppm			M B E	SAND %	pH	SOLIDS %	OIL	H T H P W.L.	REMARKS
	ppg	MF.	PV	YIELD	GEL	W.L.	Ca ⁺⁺	K ⁺	Cl ⁻							
	9+	42	12	12	3 / 6	7	180		14000	4	2	9	3.5			

C															
RUN No.	SERIAL No.	SIZE INCHES	TYPE	BOTTOM HOLE ASSEMBLY											
3	AA4803	8 1/2	HP136	BIT. BIT SUB - 2 x 6 1/4 DC. STAB. 16 x 6 1/4 DC.											
RUN No.	NOZZLE	W.O.B. tonnes	RPM	PROG m/hr	VOL gal/min	PRESS. p.s.i.	DEPTH IN (m) OUT (m)		TOTAL m hr.		BIT T B D			REMARKS	
3	3 x 11	10	80		220	600	375	IN	252	11					

D	INSTRUMENT TYPE	DEPTH SURVEY	POSITION INSTRUMENT	INCLIN.	AZIMUTH	T V D	HORIZONTAL DISPLACEMENT	COORDINATES			DOG LEG	REMARKS
					N --- E			N(+) / S(-)	E(+) / W(-)			
		384		1/4								
	TOTED	520		1/4								

E	
REMARKS / LITHOLOGY	
375 - 405 m	100% sand, trace coal
405 - 460 m	60% clay, 20% coal, 20% sand
460 - 535 m	80% sand, 15% clay, 5% coal
535 - 537 m	Claystone / siltstone (? Volcanics)
537 - 562 m	100% sand
562 - 605 m	50% clay, 30% coal, 20% sand
605 - 627 m	80% sand, 20% clay

*Bit & Hydraulic
Record*

BIT AND
HYDRAULICS
RECORD

APPENDIX 2

BIT AND HYDRAULICS RECORD



COUNTY GIPPSLAND BASIN		FIELD WILDCAT		STATE VICTORIA		SECTION	TOWNSHIP YARRAM	RANGE	LOCATION STRINGY BARK		WELL NO. 1
CONTRACTOR DRILLCORP			RIG NO. 2	OPERATOR CRUSADER RESOURCES			TOOLPUSHER M. DENNIS		SALESMAN		
SPUD 14/11/90	UNDER SURF.	UNDER INTER. 95/8	SET SAND ST.	REACHED T.D. 24/11/90	PUMP NO. 1 TSM 500	LINER 5 1/2	PUMP NO. 2 PULAMETER MM450		LINER	PUMP POWER	TYPE MUD F/W GEL
DRILL PIPE 4 1/2		TOOL JOINTS	SIZE 4 1/2	TYPE XH	O.D. 6	DRILL COLLARS	NUMBER 6 1/4	O.D. 2 3/4	I.D.	LENGTH 44 9 ft.	DRAWWORKS POWER

asking ...

formation and our holes down ever problems. rock bit performance, drill selection, drill sis, hydraulics and recommen- the best bit rotary speed. ration is tail- ou, your loca- ir rig.

es Tool Com- ntative is your for drilling ... wherever

lements of
**IS TOOL
IPANY**
in, Texas
S.A.

NO.	SIZE	MAKE	TYPE	JET 32ND IN	SERIAL	DEPTH OUT m	m	HOURS	m /HR	ACCUM DRLG. HRS.	WT. 1000 LBS.	R P M	VERT DEV.	PUMP PRESS	PUMP OPER- ATION	S P M		MUD			DULL. COND.			FORMATIO REMARKS
																1	2	WT.	VIS.	W.L.	T	B	O		OTHER
1	12 1/4	REED	S13 GT	3x16	EB1141	173	167	13.5	12.3	13.5	2.8	100		400	S	50		9.0	51.90		3.3	I	RR.	SANDSTONE GRAVELS
*2	8 1/2	REED	S31 G	3x11	NGU457	375	202	16	12.6	29.5	5.20	90	1/4	600	S	40		8.9	45	6.6	1	I		LIMESTONE
3	8 1/2	REED	HP13GT	3x11	AA4803	940	565	47.5	12.0	77	15.20	90	1/4	950	S	42		9.7	48	6.8	5	3 1/4		SAND, COAL
4	8 1/2	REED	HP13GT	3x11	BR4163	966	26	9.5	2.7	36.5	15.20	90	1	800	S	45		9.3	44	7	6	5	I	VOLCANICS
5	8 1/2	HIC	ATJ 22	9,11,12	A84517	1047	81	14.5	5.5	101	20.25	75	1 1/4	1000	S	46		9.5	42	7.4	1	2	I	VOLCANICS SAND IS TALE
*6	BIT NO 2 CONES JAMMED AT ONE STAGE AND EACH CONE CARRIES A FLAT FACE.																							

Deviation Record

APPENDIX 3

DEVIATION RECORD

STRINGY BARK NO. 1

DEVIATION RECORD

Depth (m)	Deviation from Vertical
48	0°
120	$\frac{1}{4}$ °
170	0°
254	$\frac{1}{4}$ °
384	$\frac{1}{4}$ °
520	$\frac{1}{4}$ °
880	1°
933	2 $\frac{1}{4}$ °
960	2°
1035	1 $\frac{1}{4}$ °

Mud Record

APPENDIX 4

MUD RECORD

M-I Drilling Fluids Company - FDC

CASING INTERVAL ASSISTANCE S0001

Type	Size	CsgTD	CsgTVD	Hole	Bit	MudWt	Mud	Daily Cost	Calc Cost	Diff	Day	Date	TD	TVD
					12.250	8.7	200	719	720	1	1	11/14/90		
					12.250	9.2	202	878	879	1	2	11/15/90	173	173
F	9.625	171	171		8.500		202		117	117	3	11/16/90	171	171
F	9.625	171	171		8.500	8.5	202	265	265	0	4	11/17/90	171	171
F	9.625	171	171		8.500	8.8	202	1393	1393	0	5	11/18/90	330	330
F	9.625	171	171		8.500	9.2	233	383	661	278	6	11/19/90	375	375
F	9.625	171	171		8.500	9.1	233	536	567	31	7	11/20/90	569	569
F	9.625	171	171		8.500	9.3	233	1422	1422	0	8	11/21/90	846	846
F	9.625	171	171		8.500	9.4	233	872	872	0	9	11/22/90	935	935
F	9.625	171	171		8.500	9.4	233		0	0	10	11/23/90	943	943
F	9.625	171	171		8.500	9.4	233	573	573	0	11	11/24/90	984	984
F	9.625	171	171		8.500	9.5	233	98	157	59	12	11/25/90	1047	1047

===== PRODUCT SUMMARY =====

Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT Well : SOC
 Well Name : STRINGY BARK -1 Field/Block : PEP 123 Location : VICTORIA

SUMMARY OF PRODUCT USAGE FOR INTERVAL FROM 11/14/90 - 11/16/90, m - 171 m

WATER-BASE PROD	SIZE	AMOUNT	UNIT COST	PROD COST
Calcium Chloride	25KG SK	6	19.49	116.94
Caustic Soda	25KG SK	3	24.75	74.25
M-I GEL	25KG SK	48	19.30	926.40
POLYPAC	50# SK	5	98.50	492.50
Sodium Chloride	50KG SK	10	10.50	105.00

*** INTERVAL WATER-BASE MUD COST TOTAL = 1,715.09

*** TOTAL MUD COST FOR INTERVAL = 1,715.09

===== M-I Drilling Fluids Company FIELD DATA COMMUNICATIONS SYSTEM =====

01/01

===== PRODUCT SUMMARY =====

Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT Well : SOC
Well Name : STRINGY BARK -1 Field/Block : PEP 123 Location : VICTORIA

=====

BREAKDOWN OF COST BY PRODUCT GROUP 11/14/90 - 11/16/90, m - 171 m

WATER BASE MUD PRODUCTS

	Cost	% Total
SALT	105.00	6.1
ALKALINITY CONTROL	74.25	4.3
POLYMERS	492.50	28.7
GEL	926.40	54.0
WATER BASE MUD TOTAL COST	1,715.09	100.0

=====

M-I Drilling Fluids Company FIELD DATA COMMUNICATIONS SYSTEM

=====

01/01

===== PRODUCT SUMMARY =====
 Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT Well : SO
 Well Name : STRINGY BARK -1 Field/Block : PEP 123 Location : VICTORIA
 =====

SUMMARY OF PRODUCT USAGE FOR INTERVAL FROM 11/17/90 - 11/25/90, 171 m - 1047 m

WATER-BASE PROD	SIZE	AMOUNT	UNIT COST	PROD COST
Calcium Chloride	25KG SK	3	19.49	58.47
Caustic Soda	25KG SK	8	24.75	198.00
Lime	25KG SK	3	7.20	21.60
M-I GEL	25KG SK	37	19.30	714.10
POLY SAL	25KG SK	36	43.09	1551.24
POLYPAC	50# SK	28	98.50	2758.00
Sodium Chloride	50KG SK	58	10.50	609.00

*** INTERVAL WATER-BASE MUD COST TOTAL = 5,910.41

*** TOTAL MUD COST FOR INTERVAL = 5,910.41

===== M-I Drilling Fluids Company FIELD DATA COMMUNICATIONS SYSTEM 01/01 =====

===== PRODUCT SUMMARY =====
 Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT Well : S00
 Well Name : STRINGY BARK -1 Field/Block : PEP 123 Location : VICTORIA
 =====

BREAKDOWN OF COST BY PRODUCT GROUP 11/17/90 - 11/25/90, 171 m - 1047 m

WATER BASE MUD PRODUCTS

	Cost	% Total
SALT	609.00	10.3
ALKALINITY CONTROL	198.00	3.4
POLYMERS	4,309.24	72.9
GEL	714.10	12.1
MISCELLANEOUS	80.07	1.4
WATER BASE MUD TOTAL COST	5,910.41	100.0

===== M-I Drilling Fluids Company FIELD DATA COMMUNICATIONS SYSTEM 01/01. =====

===== PRODUCT SUMMARY =====
 Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT Well : SOC
 Well Name : STRINGY BARK -1 Field/Block : PEP 123 Location : VICTORIA

SUMMARY OF PRODUCT USAGE FOR INTERVAL FROM 11/14/90 - 11/25/90, m - 1047 m

WATER-BASE PROD	SIZE	AMOUNT	UNIT COST	PROD COST
Calcium Chloride	25KG SK	9	19.49	175.41
Caustic Soda	25KG SK	11	24.75	272.25
Lime	25KG SK	3	7.20	21.60
M-I GEL	25KG SK	85	19.30	1640.50
POLY SAL	25KG SK	36	43.09	1551.24
POLYPAC	50# SK	33	98.50	3250.50
Sodium Chloride	50KG SK	68	10.50	714.00

*** INTERVAL WATER-BASE MUD COST TOTAL = 7,625.50

*** TOTAL MUD COST FOR INTERVAL = 7,625.50

===== PRODUCT SUMMARY =====

Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT Well : S00
Well Name : STRINGY BARK -1 Field/Block : PEP 123 Location : VICTORIA

=====

BREAKDOWN OF COST BY PRODUCT GROUP 11/14/90 - 11/25/90, m - 1047 m

WATER BASE MUD PRODUCTS

	Cost	% Total
SALT	714.00	9.4
ALKALINITY CONTROL	272.25	3.6
POLYMERS	4,801.74	63.0
GEL	1,640.50	21.5
MISCELLANEOUS	197.01	2.6
WATER BASE MUD TOTAL COST	7,625.50	100.0

===== M-I Drilling Fluids Company FIELD DATA COMMUNICATIONS SYSTEM =====

01/01, =====

===== PRODUCT SUMMARY =====

Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT Well : S0001
Well Name : STRINGY BARK -1 Field/Block : PEP 123 Location : VICTORIA

BREAKDOWN OF PRODUCT USAGE BY GROUP 11/14/90 - 11/25/90, m - 1047 m
WATER BASE MUD

PRODUCT CATEGORY PRODUCTS USED

SALT
Sodium Chloride

ALKALINITY CONTROL
Caustic Soda

POLYMERS
POLY SAL POLYPAC

GEL
M-I GEL

MISCELLANEOUS
Calcium Chloride Lime

=====

M-I Drilling Fluids Company FIELD DATA COMMUNICATIONS SYSTEM

01/01/80

=====

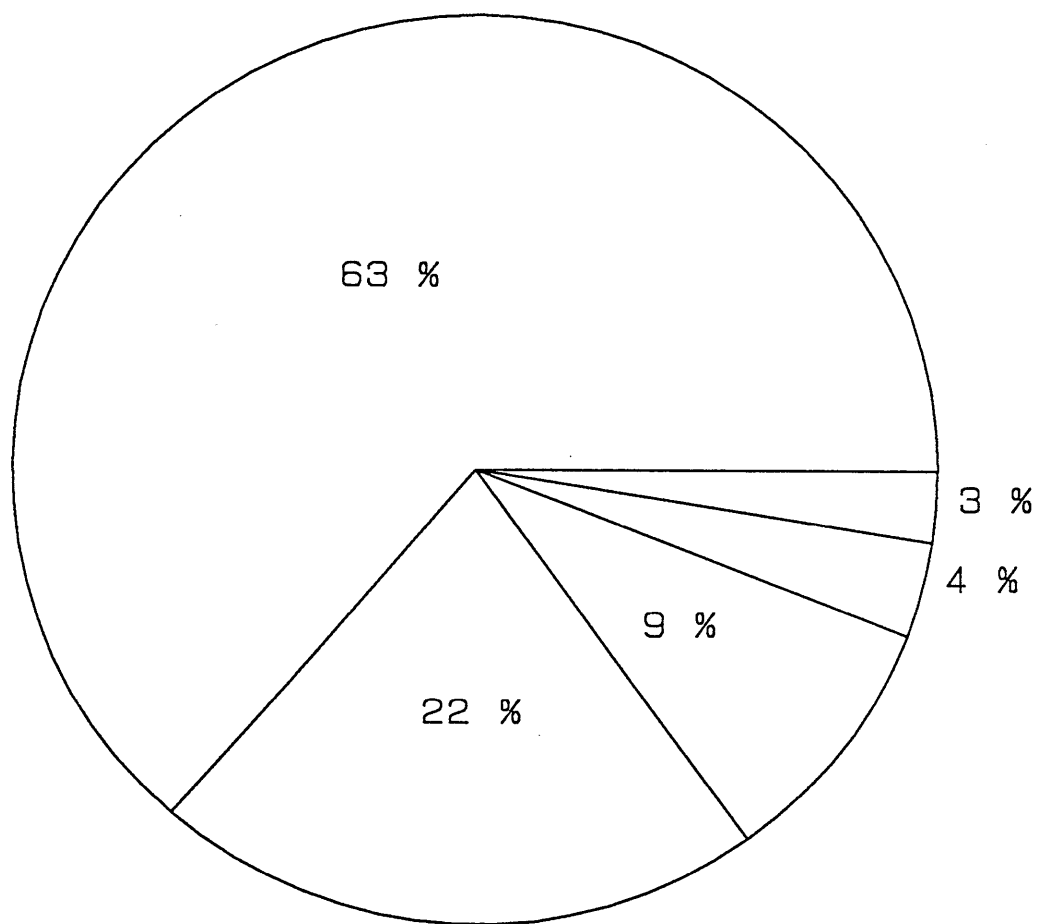


Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1
Legal : WILDCAT
Field/Block : PEP 123
Location : VICTORIA

COST ANALYSIS

BREAKDOWN OF COST BY PRODUCT GROUP 11/14/90 - 11/25/90

m - 1047 m



WATER BASE MUD PRODUCTS

POLYMERS	63 %
GEL	22 %
SALT	9 %
ALKALINITY CONTROL	4 %
MISCELLANEOUS	3 %



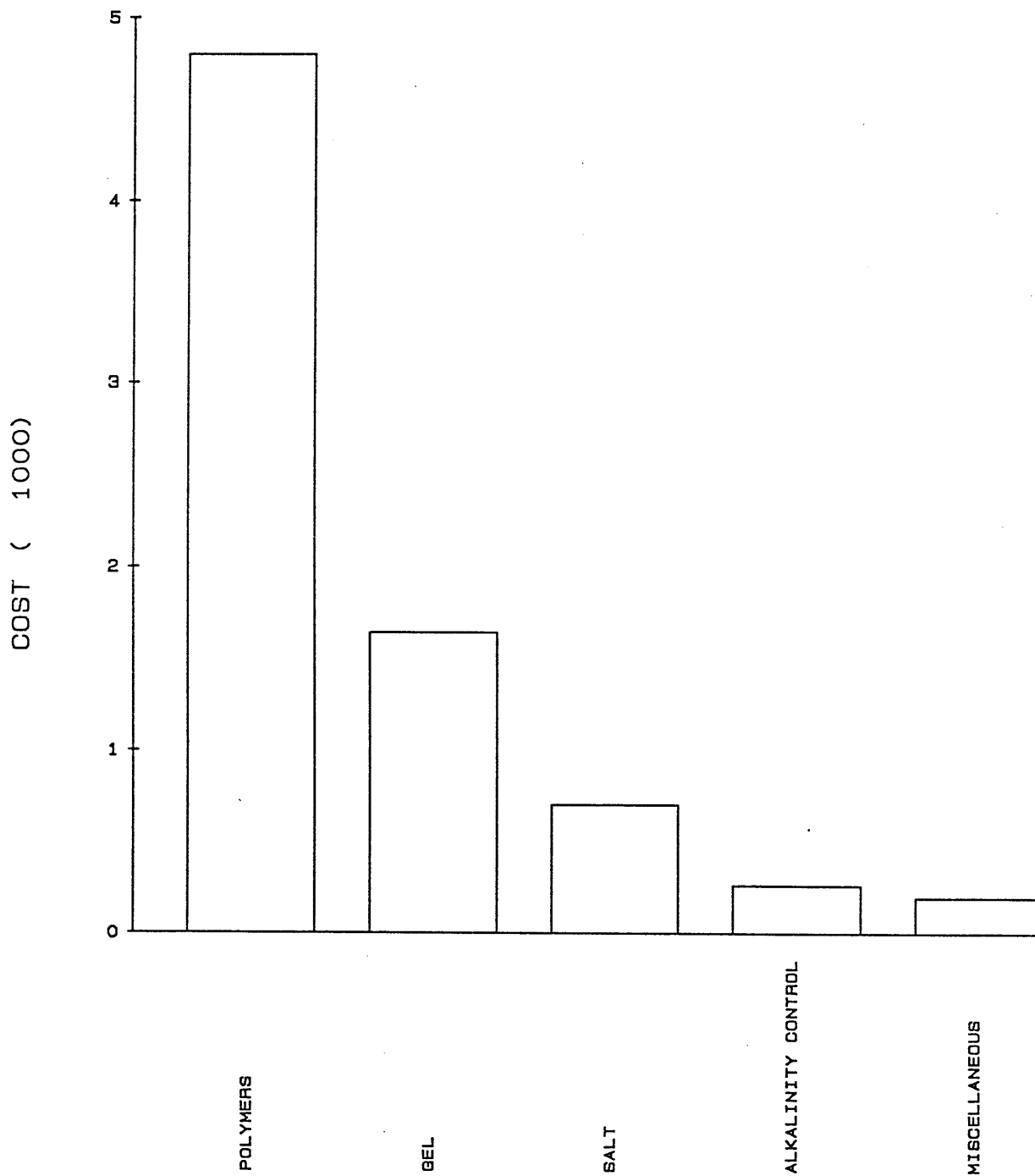
Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1
Legal : WILDCAT
Field/Block : PEP 123
Location : VICTORIA

COST ANALYSIS

BREAKDOWN OF COST BY PRODUCT GROUP 11/14/90 - 11/25/90

m - 1047 m

WATER BASE MUD PRODUCTS



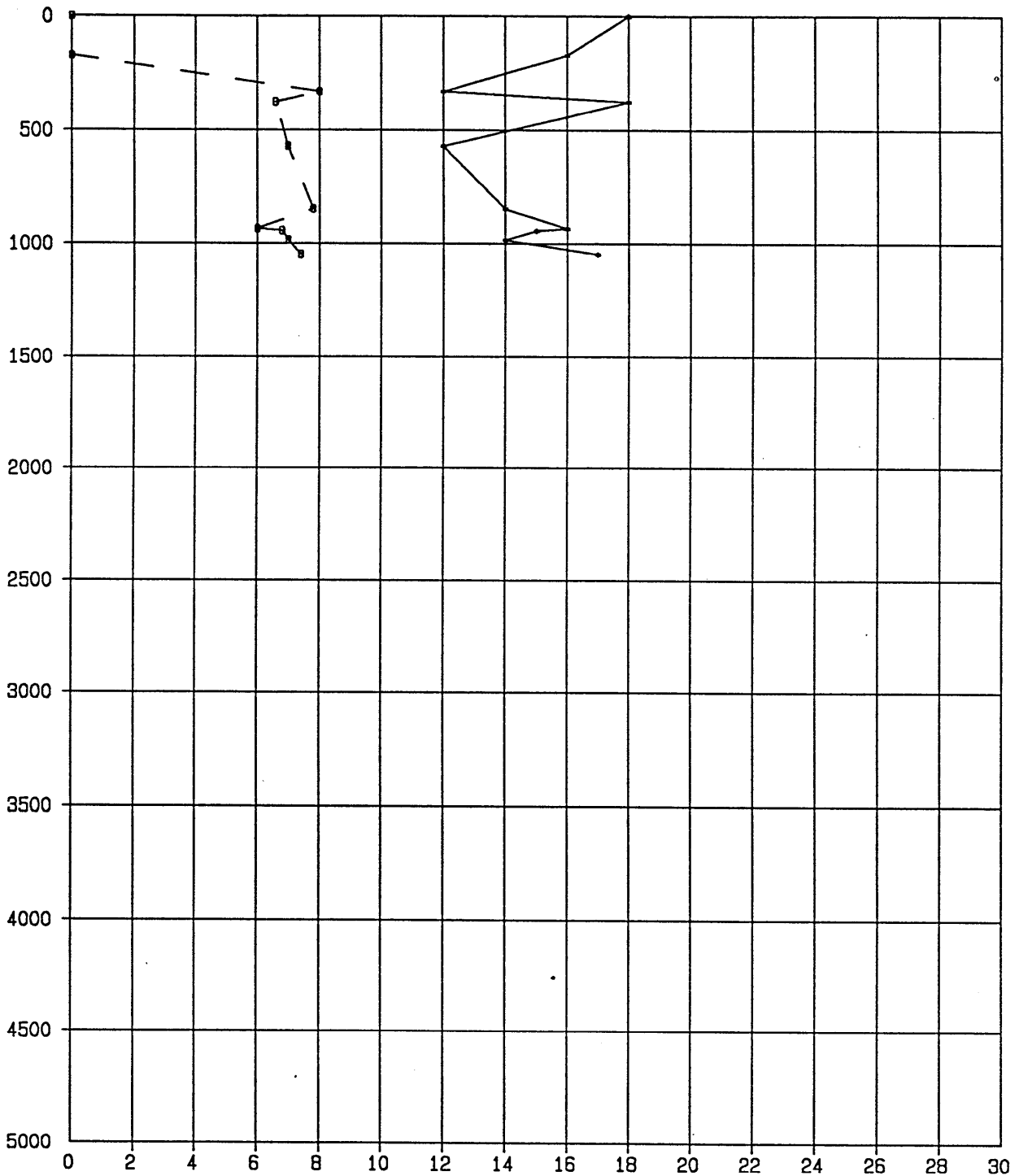


Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1
Legal : WILDCAT
Field/Block : PEP 123
County/State : VICTORIA

DRILLING FLUID PARAMETERS

— YP
θ—θ FLUID LOSS

METERS



=====HYDRAULICS RECAP=====

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

	11/14/90	11/15/90	11/16/90	11/17/90	11/18/90	11/19/90	11/20/90	11/21/90	11/22/90
*Date									
*Depth -m	0	173	171	171	330	375	569	846	935
*Days Since Spud	1	2	3	4	5	6	7	8	9
*RHEOLOGICAL PROPERTIES									
Mud Weight -ppg	8.7	9.2	0.0	8.5	8.8	9.2	9.1	9.3	9.4
Plastic Visc -cps	23	12	0	0	8	13	12	10	8
Yield Point -lb/100ft2	18	16	0	0	12	18	12	14	16
Zero Gel -lb/100ft2	2	2	0	0	2	2	2	2	3
n-factor	0.6688	0.5475	***	***	0.5305	0.5343	0.6280	0.5406	0.4657
K -lb/100ft2-rpm ² n	0.8598	1.1449	***	***	0.8732	1.3765	0.6119	1.0078	1.4747
*FLOW DATA									
Flow Rate -gpm	0	148	0	0	254	233	233	217	222
Min Flow Rate -gpm	***	***	***	***	193	134	173	153	95
Max Flow Rate -gpm	***	958	***	***	326	417	338	350	366
Pump Pressure -psi	0	200	0	0	500	800	650	750	750
Pump -hhp	***	17	***	***	74	109	88	95	97
*PRESSURE LOSSES									
Drill String -psi	***	21	***	***	53	56	70	68	72
Bit -psi	***	50	***	***	680	590	590	520	550
Annulus -psi	***	2	***	***	16	24	23	34	44
Total System -psi	***	73	***	***	749	670	683	622	666
*BIT HYDRAULICS									
Nozzles -1/32 inch	/ /	16/16/16	/ /	/ /	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11
Nozzles -1/32 inch	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Bit Pressure %	***	27	***	***	135	74	90	69	73
Bit -hhp	***	5	***	***	100	81	80	66	71
Bit HSI (Index)	***	0.00	***	***	1.80	1.40	1.40	1.20	1.30
Jet Velocity -m/sec	***	24.6	***	***	89.2	81.8	81.8	76.2	78.0
Impact Force -lbs	***	57	***	***	339	298	295	261	276
*DRILL COLLARS ANNULUS									
Velocity -m/min	***	10.0	***	***	57.2	52.4	52.4	48.8	50.0
Critical Vel -m/min	***	64.5	***	***	73.4	93.8	76.0	78.9	82.3
*DRILL PIPE ANNULUS									
Velocity -m/min	***	8.0	***	***	34.4	31.6	31.6	29.4	30.1
Critical Vel -m/min	***	59.2	***	***	61.8	77.3	60.9	65.5	71.4
*HOLE CLEANING									
Slip Velocity -m/min	***	14.4	***	***	20.7	12.7	19.1	16.4	11.8
Rising Velocity -m/min	***	-6.5	***	***	13.7	18.9	12.5	13.0	18.3
Lifting Capacity -%	***	***	***	***	40	60	40	44	61
Cuttings Conc -%	***	***	***	***	1.60	1.16	1.40	1.34	0.24
Penetration Rate -m/hr	***	5.0	***	***	10.0	10.0	8.0	8.0	2.0
*CASING SHOE PRESSURES									
ECD -ppg	***	9.2	***	***	9.0	9.4	9.3	9.5	9.6
ECD+Cuttings -ppg	***	***	***	***	9.2	9.6	9.4	9.6	9.6
*TOTAL DEPTH PRESSURES									
ECD -ppg	***	9.3	***	***	9.1	9.6	9.3	9.5	9.7
ECD+Cuttings -ppg	***	***	***	***	9.3	9.7	9.5	9.7	9.7
*MUD VOLUMES									
Drill String -bbl	***	6	5	5	14	16	26	40	44
Annulus -bbl	***	64	22	22	49	56	88	134	149
Total Hole -bbl	***	70	27	27	63	72	114	174	193

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

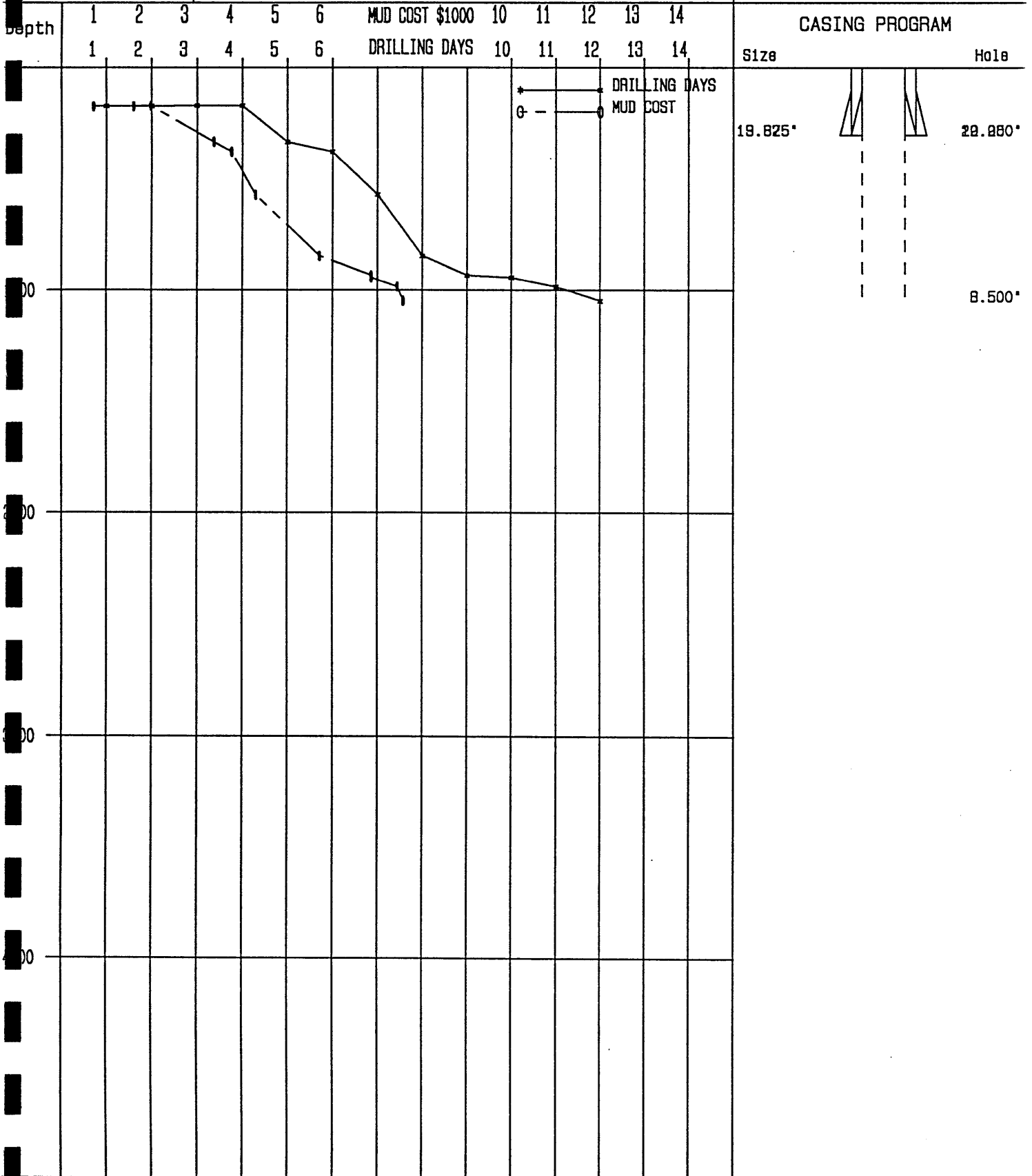
Description : WILDCAT
Location : VICTORIA

	11/23/90	11/24/90	11/25/90
*Date			
*Depth -m	943	984	1047
*Days Since Spud	10	11	12
*RHEOLOGICAL PROPERTIES			
Mud Weight -ppg	9.4	9.4	9.5
Plastic Visc -cps	11	9	10
Yield Point -lb/100ft2	15	14	17
Zero Gel -lb/100ft2	3	3	4
n-factor	0.5639	0.5361	0.5208
K -lb/100ft2-rpm ² n	0.9223	0.9401	1.1791
*FLOW DATA			
Flow Rate -gpm	222	233	238
Min Flow Rate -gpm	108	111	82
Max Flow Rate -gpm	366	344	384
Pump Pressure -psi	750	900	1000
Pump -hhp	97	122	139
*PRESSURE LOSSES			
Drill String -psi	80	83	91
Bit -psi	550	670	700
Annulus -psi	42	41	54
Total System -psi	672	794	845
*BIT HYDRAULICS			
Nozzles -1/32 inch	11/11/11	9/11/12	9/11/12
Nozzles -1/32 inch	/ /	/ /	/ /
Bit Pressure %	73	74	70
Bit -hhp	71	91	98
Bit HSI (Index)	1.30	1.60	1.70
Jet Velocity -m/sec	78.0	85.9	87.7
Impact Force -lbs	276	319	337
*DRILL COLLARS ANNULUS			
Velocity -m/min	50.0	52.4	53.6
Critical Vel -m/min	82.3	77.5	86.4
*DRILL PIPE ANNULUS			
Velocity -m/min	30.1	31.6	32.3
Critical Vel -m/min	68.7	65.8	74.0
*HOLE CLEANING			
Slip Velocity -m/min	13.5	14.5	9.5
Rising Velocity -m/min	16.6	17.0	22.7
Lifting Capacity -%	55	54	71
Cuttings Conc -%	0.26	0.13	0.29
Penetration Rate -m/hr	2.0	1.0	3.0
*CASING SHOE PRESSURES			
ECD -ppg	9.6	9.6	9.7
ECD+Cuttings -ppg	9.6	9.6	9.8
*TOTAL DEPTH PRESSURES			
ECD -ppg	9.7	9.6	9.8
ECD+Cuttings -ppg	9.7	9.7	9.8
*MUD VOLUMES			
Drill String -bbl	45	47	50
Annulus -bbl	150	157	168
Total Hole -bbl	195	204	218



Operator : CRUSADER RESOURCES Depth: 1047
 Well Name : STRINGY BARK -1 TVD : 1047
 Field : PEP 123 Date : 01/01/80
 Location : WILDCAT By :
 County : File : S0001
 State :

WELL DATA



M-I DRILLING FLUIDS RECAP

Operator : CRUSADER RESOURCES
 Well Name : STRINGY BARK -1
 Contractor: DRILCORP
 Descript : WILDCAT
 Location : VICTORIA
 Spud Date : 11/14/90
 Sales Engr: GALAO H.

Csg MD (m) O.D.(in)
 12 13.375
 171 9.625

Page : 1 - 1
 Report Date: 01/01/80
 API Well No: - -
 Warehouse : WELSHPOOL
 Dist Engr : BURKE P.
 Well No : S0001

=====																						
Mud Type : Water Base																						
Date (1990)	Depth m	Wt ppg	FV s/qt	PV 60 F	YP lb/100ft2	Gels 10s/10m	API	HHP	So1 %	Water %	Oil %	Sand %	MBT ppb	pH	Pm	Pf	Mf	Chlor mg/L	Ca mg/L	Cost Daily	Cumul	
=====																						
11/14	-	8.7	90	23	18	3	13	NC	-	2	98	0	0	30.0	10	0.8	0.8	1.0	2000	60	719	719
SPUD : Prepare to spud in.																						
11/15	173	9.2	90	12	16	6	20	NC	-	2	98	-	1	16.0	10	0.4	0.4	.6	12000	80	878	1598
TVD: 173 CIRCULATING:																						
11/16	171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVD: 171 BOP'S :																						
11/17	171	8.5	-	-	-	-	-	-	-	-	-	-	-	10.5	-	-	-	-	15000	80	265	1980
TVD: 171 BOP'S : Work on BOP's.																						
11/18	330	8.8	44	8	12	3	7	8	-	1	99	-	.75	7.5	10.5	1.8	1.8	1.3	12000	140	1393	3373
TVD: 330 DRILLING : RIH with bit. Drill float collar, cmt, shoe. Drill ahead.																						
11/19	375	9.2	46	13	18	3	6	6.6	-	2.5	97.5	-	.75	10.0	10.5	1.7	1.7	.18	20000	120	383	3757
TVD: 375 DST : Drill ahead to 375m. Wiper trip. DST.																						
11/20	569	9.1	42	12	12	3	6	7.0	-	3.5	96.5	-	2	4.0	9	0.5	0.5	.15	14000	180	536	4293
TVD: 569 DRILLING : Run open DST #1 at 375m. RIH drill ahead.																						
11/21	846	9.3	45	10	14	4	7	7.8	-	3.5	96.5	-	2.5	10.0	9.0	0.3	0.3	.03	10000	160	1422	5715
TVD: 846 DRILLING : Drill ahead.																						
11/22	935	9.4	45	8	16	4	14	6	-	2.5	97.5	-	1	12.0	9.0	0.4	0.4	.35	9000	160	872	6864
TVD: 935 DRILLING :																						
11/23	943	9.4	48	11	15	5	18	6.8	-	3	97	-	1.25	10.0	9	0.3	0.3	.15	7500	160		6864
TVD: 943 DRILLING : Drill ahead. POOH for rig repairs at 943m.																						

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

M-I DRILLING FLUIDS RECAP

Page : 1 - 2
Report Date: 01/01/80

Daily Mud Additions

Date (1990)	Depth	Calcium Chlorde 25KG SK	Caustic Soda 25KG SK	M-I GEL 25KG SK	Lime 25KG SK	POLYPAC 50# SK	POLY SAL 25KG SK	Sodium Chlorde 50KG SK
11/14	-	...	1	36	...	...	...	...
11/15	173	...	2	12	...	5	...	10
11/16	171	6	...	...	...	...	...	...
11/17	171	...	1	7	3	...	...	8
11/18	330	...	...	...	...	11	5	9
11/19	375	...	...	...	...	5	...	16
11/20	569	...	1	...	...	3	5	3
11/21	846	...	2	18	...	5	7	22
11/22	935	...	1	12	...	1	12	...
11/23	943	...	...	...	...	...	...	...

M-I DRILLING FLUIDS RECAP

Operator : CRUSADER RESOURCES
 Well Name : STRINGY BARK -1
 Contractor: DRILCORP
 Descript : WILDCAT

Page : 2 - 1
 Report Date: 01/01/80
 API Well No: - -
 Warehouse : WELSHPOOL

Date (1990)	Depth m	Wt ppg	FV s/qt	PV 80 F	YP lb/100ft2	Gels 10s/10m	API	HTHP	Mud Type : Water Base					pH	Pm	Pf	Mf	Chlor mg/L	Ca mg/L	Cost		
									Sol %	Water %	Oil %	Sand %	MBT ppb							Daily	Cumul	
11/24	984	9.4	44	9	14	4	11	7	-	3.5	96.5	-	.75	9.0	9.5	0.4	0.4	.25	5900	140	573	7437
TVD:	984		DRILLING		: Drill ahead.																	
11/25	1047	9.5	42	10	17	8	16	7.4	-	4.5	95.5	-	.75	9.0	9.5	0.4	0.4	.25	5000	180	98	7567
TVD:	1047		LOGGING		: TD at 1047 meters. Log. Plug and abandon.																	

M-I DRILLING FLUIDS RECAP

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Page : 2 - 2
Report Date: 01/01/80

Daily Mud Additions

Date (1990)	Depth	Calcium Chloride 25KG SK	Caustic Soda 25KG SK	POLYPAC 50# SK	POLY SAL 25KG SK
11/24	984	...	3	2	7
11/25	1047	3	...	1	...

===== WATER BASE MUD REPORT ===== Day : 1 =====

M-I Drilling Fluids Company - - Date : 11/14/90 Depth : m
 FIELD DATA COMMUNICATIONS SYSTEM Well No. : S0001 Spud : 11/14/90 Activity : SPUD

Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT
 Well Name : STRINGY BARK -1 Field/Area : PEP 123 Location : VICTORIA

Bit : 12.250 " CASING MUD VOLUME (bb1)
 Jets: / / / / / 32nd" Casing OD : " Liner OD : " Hole Volume :
 Drill Pipe 1 OD : " 0 m Casing ID : " Liner ID : " Pits Volume :
 Drill Pipe 2 OD : " m Casing TD : m Liner TD : m Circulating Volume : 85
 Drill Collar OD : " m Casing TVD : m Liner TVD : m Mud : FW SPUD MUD

MUD PROPERTIES : CIRCULATION DATA SOLIDS ANALYSIS
 Sample From : PIT 24:00 1/2 Flow Rate (gpm) : 1/2 NaCl % : 0.1 D-So1 % :-0.7
 Flow Line Temp : 60 °F 1/2 DP Annular Vel (m/min) : 1/2 NaCl (ppb) : 1.1 D-So1 (ppb) :-6.8
 Depth/TVD (m) : 1/2 DC Annular Vel (m/min) : 1/2 KCl % : 0.0 Wt Mt1 % :N/A
 Mud Weight (ppg) : 8.7 1/2 DP Critical Vel(m/min) : 1/2 KCl (ppb) : 0.0 Wt Mt1 (ppb) :N/A
 Funnel Vis (s/qt) : 90 @ 60 °F 1/2 DC Critical Vel(m/min) : 1/2 LGS % : 2.6 Avg SG : 2.60
 Plastic Vis (cps) : 23 @ 60 °F 1/2 Circ. Pressure (psi) : 1/2 LGS (ppb) :23.9 Chem (ppb) : 0.0
 YP/0s Gel (lb/100ft2) : 18 / 2 1/2 Bottoms Up (min) : 1/2 Bent % : 3.4 I/R :-0.202
 10s/10m Gel (lb/100ft2) : 3 / 13 1/2 Total Circ Time (min) : 1/2 Bent (ppb) :30.8

API F Loss (cc/30 min) : NC 1/2
 HTHP F Loss (cc/30 min) : @ °F 1/2 PRODUCTS USED LAST 24 HOURS 1/2 SOLIDS EQUIPMENT Size Hours
 Cake API/HTHP (32nd") : 2 1/2 M-I GEL 25KG SK 36 1/2 Shaker #1: B100
 Solids (%vol) : 2 1/2 Caustic Soda 25KG SK 1 1/2 Shaker #2: S80
 Oil/Water (%vol) : 0 /98 1/2 1/2 Shaker #3:
 Sand (%vol) : 0 1/2 1/2 Shaker #4:
 MBT (ppb) : 30.0 1/2 1/2 Mud Cleaner:
 pH : 10 @ 60 °F 1/2 1/2 Centrifuge:
 Alkal. Mud (Pm) : 0.8 1/2 1/2 Desander:
 Alkal. Filtrate (Pf/Mf) : .55 / 1.0 1/2 1/2 Desilter:
 Chlorides (mg/l) : 2000 1/2 1/2 Degasser:
 Hardness Ca : 60 1/2 1/2

1/2 MUD VOLUME ACCT (bb1)
 1/2 Oil Added:
 1/2 Water Added:
 1/2 Mud Built: 115
 1/2 n-Factor : 0.669 1/2 Mud Received:
 1/2 k-Factor (lb/100ft2-rpm): 0.85977 1/2 Mud Disposed:

REMARKS :
 Prepare to spud in.
 The Drilcorp rig #24 was moved onto location at Woodside and rigged up.
 The spud mud was mixed and the rathole drilled and the well was spudded at
 04:00 hours on the 14th November 1990.
 About 30 barrels of spud mud was lost on the surface when drilling the
 rathole.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 719 Cumul Cost : 719 =====

===== WATER BASE MUD REPORT =====

Day : 2 =====

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

Well No. : S0001

Date : 11/15/90 Depth : 173 m
Spud : 11/14/90 Activity : CIRCULATING

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 12.250 "		CASING		MUD VOLUME (bbl)
Jets:16/16/16/ / / 32nd"		Casing OD : 13.375"	Liner OD : "	Hole Volume : 70
Drill Pipe 1 OD : 4.500 " 34 m		Casing ID : 12.618"	Liner ID : "	Pits Volume : 111
Drill Pipe 2 OD : " m		Casing TD : 12 m	Liner TD : m	Circulating Volume : 181
Drill Collar OD : 6.250 " 139 m		Casing TVD : 12 m	Liner TVD : m	Mud : FW-GEL MUD

MUD PROPERTIES :

CIRCULATION DATA

SOLIDS ANALYSIS

Sample From : PIT 01:00	1/2	Flow Rate (gpm) :	148	1/2	NaCl % : 0.6	D-So1 % : 4.2
Flow Line Temp : 70 °F	1/2	DP Annular Vel (m/min) :	8.5	1/2	NaCl (ppb) : 6.5	D-So1 (ppb) : 38.2
Depth/TVD (m) : 173 /173	1/2	DC Annular Vel (m/min) :	10.0	1/2	KCl % : 0.0	Wt Mt1 % : N/A
Mud Weight (ppg) : 9.2	1/2	DP Critical Vel(m/min) :	60.0	1/2	KCl (ppb) : 0.0	Wt Mt1 (ppb) : N/A
Funnel Vis (s/qt) : 90 @ 60 °F	1/2	DC Critical Vel(m/min) :	64.5	1/2	LGS % : 5.7	Avg SG : 2.60
Plastic Vis (cps) : 12 @ 60 °F	1/2	Circ. Pressure (psi) :	200	1/2	LGS (ppb) : 51.9	Chem (ppb) : 2.0
YP/0s Gel (lb/100ft2) : 16 / 2	1/2	Bottoms Up (min) :	18.2	1/2	Bent % : 1.3	I/R : 2.121
10s/10m Gel (lb/100ft2) : 6 / 20	1/2	Total Circ Time (min) :	51.4	1/2	Bent (ppb) : 11.8	

API F Loss (cc/30 min) : NC
HTHP F Loss (cc/30 min) : @ °F
Cake API/HTHP (32nd") : 3
Solids (%vol) : 2
Oil/Water (%vol) : /98
Sand (%vol) : 1
MBT (ppb) : 16.0
pH : 10 @ 60 °F
Alkal. Mud (Pm) : 0.4
Alkal. Filtrate (Pf/Mf) : .3 / .6
Chlorides (mg/l) : 12000
Hardness Ca : 80
:
:
:
:
:
n-Factor : 0.547
k-Factor (lb/100ft2-rpm) : 1.14493

PRODUCTS USED LAST 24 HOURS

M-I GEL 25KG SK 12
Caustic Soda 25KG SK 2
Sodium Chloride 50KG SK 10
POLYPAC 50# SK 5

SOLIDS EQUIPMENT Size Hours

Shaker #1: B100
Shaker #2: S80
Shaker #3:
Shaker #4:
Mud Cleaner:
Centrifuge:
Desander:
Desilter:
Degasser:

MUD VOLUME ACCT (bbl)

Oil Added:
Water Added: 80
Mud Built:
Mud Received:
Mud Disposed:

REMARKS :

The 12 1/4" hole was drilled to 48 meters and a deviation survey was taken which showed 0 degrees deviation.
Salt was added to inhibit the clay formation encountered from this depth and Polypac was used for viscosity.

M-I Sales Engineer : GALAO.H

Warehouse: WELSHPOOL

Daily Cost :

878

Cumul Cost :

1598

===== WATER BASE MUD REPORT =====

Day : 3 =====

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

Well No. : S0001

Date : 11/16/90 Depth : 171 m
Spud : 11/14/90 Activity : BOP'S

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "		CASING		MUD VOLUME (bbl)
Jets: / / / / / 32nd"		Casing OD : 9.625" Liner OD :	"	Hole Volume : 27
Drill Pipe 1 OD : 4.500 " 32 m		Casing ID : 8.681 " Liner ID :	"	Pits Volume : -27
Drill Pipe 2 OD : " m		Casing TD : 171 m Liner TD :	m	Circulating Volume :
Drill Collar OD : 6.250 " 139 m		Casing TVD : 171 m Liner TVD :	m	Mud : FW-GEL MUD

MUD PROPERTIES :

CIRCULATION DATA

SOLIDS ANALYSIS

Sample From	:	:	1/2	Flow Rate (gpm) :	1/2
Flow Line Temp	:	°F	1/2	DP Annular Vel (m/min) :	1/2
Depth/TVD (m) :	171	/171	1/2	DC Annular Vel (m/min) :	1/2
Mud Weight (ppg) :			1/2	DP Critical Vel(m/min) :	1/2
Funnel Vis (s/qt) :	@ 60	°F	1/2	DC Critical Vel(m/min) :	1/2
Plastic Vis (cps) :	@ 60	°F	1/2	Circ. Pressure (psi) :	1/2
YP/0s Gel (lb/100ft2) :	/		1/2	Bottoms Up (min) :	1/2
10s/10m Gel (lb/100ft2) :	/		1/2	Total Circ Time (min) :	1/2
API F Loss (cc/30 min) :			1/2		1/2
HTHP F Loss (cc/30 min) :	@	°F	1/2	PRODUCTS USED LAST 24 HOURS	1/2
Cake API/HTHP (32nd") :			1/2	Calcium Chloride 25KG SK 6	1/2
Solids (%vol) :			1/2		1/2
Oil/Water (%vol) :	/		1/2		1/2
Sand (%vol) :			1/2		1/2
MBT (ppb) :			1/2		1/2
pH :			1/2		1/2
Alkal. Mud (Pm) :			1/2		1/2
Alkal. Filtrate (Pf/Mf) :	/		1/2		1/2
Chlorides (mg/l) :			1/2		1/2
Hardness Ca :			1/2		1/2
:			1/2		1/2
:			1/2		1/2
:			1/2		1/2
:			1/2		1/2
n-Factor :			1/2		1/2
k-Factor (lb/100ft2-rpm) :			1/2		1/2

SOLIDS EQUIPMENT	Size	Hours
Shaker #1:	B100	
Shaker #2:	S80	
Shaker #3:		
Shaker #4:		
Mud Cleaner:		
Centrifuge:		
Desander:		
Desilter:		
Degasser:		

MUD VOLUME ACCT (bbl)
Oil Added:
Water Added:
Mud Built:
Mud Received:
Mud Disposed:

REMARKS :

The hole was circulated clean and the 9 5/8" casing was run without problems.
The mud was conditioned by reducing the gel strength prior to cementing the casing.
The BOP's were then nipped up.

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M-I Sales Engineer : GALAO.H	Warehouse: WELSHPOOL	Daily Cost : 0	Cumul Cost : 0
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===== WATER BASE MUD REPORT =====

Day : 4 =====

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

- -
Well No. : S0001

Date : 11/17/90 Depth : 171 m
Spud : 11/14/90 Activity : BOP'S

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "		CASING	MUD VOLUME (bb1)
Jets: / / / / / 32nd"		Casing OD : 9.625" Liner OD :	" Hole Volume : 27
Drill Pipe 1 OD : 4.500 " 32 m		Casing ID : 8.681 " Liner ID :	" Pits Volume : -27
Drill Pipe 2 OD : " m		Casing TD : 171 m Liner TD :	m Circulating Volume :
Drill Collar OD : 6.250 " 139 m		Casing TVD : 171 m Liner TVD :	m Mud : FW-GEL MUD

MUD PROPERTIES :		CIRCULATION DATA		SOLIDS ANALYSIS	
Sample From	: PIT 23:00	1/2	Flow Rate (gpm) :	1/2	
Flow Line Temp	: °F	1/2	DP Annular Vel (m/min) :	1/2	
Depth/TVD (m)	: 171 /171	1/2	DC Annular Vel (m/min) :	1/2	
Mud Weight (ppg)	: 8.5	1/2	DP Critical Vel(m/min) :	1/2	
Funnel Vis (s/qt)	:	1/2	DC Critical Vel(m/min) :	1/2	
Plastic Vis (cps)	:	1/2	Circ. Pressure (psi) :	1/2	
YP/0s Gel (lb/100ft2)	: /	1/2	Bottoms Up (min) :	1/2	
10s/10m Gel (lb/100ft2)	: /	1/2	Total Circ Time (min) :	1/2	
API F Loss (cc/30 min)	:	1/2		1/2	
HTHP F Loss (cc/30 min)	: @ °F	1/2	PRODUCTS USED LAST 24 HOURS	1/2	SOLIDS EQUIPMENT Size Hours
Cake API/HTHP (32nd")	:	1/2	M-I GEL 25KG SK 7	1/2	Shaker #1: B100
Solids (%vol)	:	1/2	Caustic Soda 25KG SK 1	1/2	Shaker #2: S80
Oil/Water (%vol)	: /	1/2	Sodium Chloride 50KG SK 8	1/2	Shaker #3:
Sand (%vol)	:	1/2	Lime 25KG SK 3	1/2	Shaker #4:
MBT (ppb)	:	1/2		1/2	Mud Cleaner:
pH	: 10.5@ 60 °F	1/2		1/2	Centrifuge:
Alkal. Mud (Pm)	:	1/2		1/2	Desander:
Alkal. Filtrate (Pf/Mf)	: /	1/2		1/2	Desilter:
Chlorides (mg/l)	: 15000	1/2		1/2	Degasser:
Hardness Ca	: 80	1/2		1/2	
:	:	1/2		1/2	MUD VOLUME ACCT (bb1)
:	:	1/2		1/2	Oil Added:
:	:	1/2		1/2	Water Added:
:	:	1/2		1/2	Mud Built: 100
n-Factor	:	1/2		1/2	Mud Received:
k-Factor (lb/100ft2-rpm)	:	1/2		1/2	Mud Disposed:

REMARKS :
Work on BOP's.
The BOP's were nipped up and tested. During this time 100 barrels of brine was mixed up.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 265 Cumul Cost : 1980 =====

===== WATER BASE MUD REPORT =====

Day : 5

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

Well No. : S0001

Date : 11/18/90 Depth : 330 m
Spud : 11/14/90 Activity : DRILLING

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "	CASING	MUD VOLUME (bb1)
Jets:11/11/11/ / / 32nd"	Casing OD : 9.625" Liner OD : "	Hole Volume : 63
Drill Pipe 1 OD : 4.500 " 193 m	Casing ID : 8.681 " Liner ID : "	Pits Volume : 129
Drill Pipe 2 OD : " m	Casing TD : 171 m Liner TD : m	Circulating Volume : 192
Drill Collar OD : 6.250 " 137 m	Casing TVD : 171 m Liner TVD : m	Mud : FW-GEL MUD

MUD PROPERTIES :

CIRCULATION DATA

SOLIDS ANALYSIS

Sample From : FL 21:00 ½	Flow Rate (gpm) : 254 ½	NaCl % : 0.6	D-So1 % : 1.7
Flow Line Temp : 80 °F ½	DP Annular Vel (m/min) : 36.5 ½	NaCl (ppb) : 6.7	D-So1 (ppb) : 15.6
Depth/TVD (m) : 330 /330 ½	DC Annular Vel (m/min) : 57.2 ½	KCl % : 0.0	Wt Mt1 % : N/A
Mud Weight (ppg) : 8.8 ½	DP Critical Vel(m/min) : 62.5 ½	KCl (ppb) : 0.0	Wt Mt1 (ppb) : N/A
Funnel Vis (s/qt) : 44 @ 80 °F ½	DC Critical Vel(m/min) : 73.4 ½	LGS % : 2.7	Avg SG : 2.60
Plastic Vis (cps) : 8 @ 80 °F ½	Circ. Pressure (psi) : 500 ½	LGS (ppb) : 24.4	Chem (ppb) : 3.0
YP/0s Gel (lb/100ft2) : 12 / 2 ½	Bottoms Up (min) : 8.1 ½	Bent % : 0.6	I/R : 1.851
10s/10m Gel (lb/100ft2) : 3 / 7 ½	Total Circ Time (min) : 31.7 ½	Bent (ppb) : 5.8	

API F Loss (cc/30 min) : 8 ½
HTHP F Loss (cc/30 min) : @ °F ½
Cake API/HTHP (32nd") : 2 ½
Solids (%vol) : 1 ½
Oil/Water (%vol) : /99 ½
Sand (%vol) : .75 ½
MBT (ppb) : 7.5 ½
pH : 10.5@ 60 °F ½
Alkal. Mud (Pm) : 1.8 ½
Alkal. Filtrate (Pf/Mf) : .8 / 1.3 ½
Chlorides (mg/l) : 12000 ½
Hardness Ca : 140 ½

PRODUCTS USED LAST 24 HOURS

Sodium Chloride 50KG SK 9
POLY SAL 25KG SK 5
POLYPAC 50# SK 11

SOLIDS EQUIPMENT

Shaker #1:	S40	14
Shaker #2:	S60	14
Shaker #3:		
Shaker #4:		
Mud Cleaner:		
Centrifuge:		
Desander:		14
Desilter:		14
Degasser:		

n-Factor : 0.531 ½
k-Factor (lb/100ft2-rpm): 0.87322 ½

MUD VOLUME ACCT (bb1)
Oil Added:
Water Added: 72
Mud Built:
Mud Received:
Mud Disposed:

REMARKS :

RIH with bit. Drill float collar, cmt, shoe. Drill ahead.
After the BOP's were successfully tested the S31G bit was run into the hole and tagged cement at 157 meters. The float collar, cement and shoe were drilled and the mud was conditioned to drill ahead.
A survey was taken at 254 meters which showed an angle of 1/4 degree.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 1393 Cumul Cost : 3373 =====

===== WATER BASE MUD REPORT ===== Day : 6 =====

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

Well No. : S0001

Date : 11/19/90 Depth : 375 m
Spud : 11/14/90 Activity : DST

Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT
Well Name : STRINGY BARK -1 Field/Area : PEP 123 Location : VICTORIA

Bit : 8.500 "		CASING	MUD VOLUME (bb1)
Jets:11/11/11/ / / 32nd"		Casing OD : 9.625" Liner OD :	" Hole Volume : 72
Drill Pipe 1 OD : 4.500 " 238 m		Casing ID : 8.681 " Liner ID :	" Pits Volume : 114
Drill Pipe 2 OD : " m		Casing TD : 171 m Liner TD :	m Circulating Volume : 186
Drill Collar OD : 6.250 " 137 m		Casing TVD : 171 m Liner TVD :	m Mud : SW BIOPOLYMER MUD

MUD PROPERTIES :		CIRCULATION DATA		SOLIDS ANALYSIS	
Sample From	: FL 14:45 ½	Flow Rate (gpm)	: 233 ½	NaCl %	: 0.9 D-Sol % : 4.2
Flow Line Temp	: 80 °F ½	DP Annular Vel (m/min)	: 33.5 ½	NaCl (ppb)	: 10.9 D-Sol (ppb) : 38.2
Depth/TVD (m)	: 375 /375 ½	DC Annular Vel (m/min)	: 52.4 ½	KCl %	: 0.0 Wt Mt1 % : N/A
Mud Weight (ppg)	: 9.2 ½	DP Critical Vel(m/min)	: 78.3 ½	KCl (ppb)	: 0.0 Wt Mt1 (ppb) : N/A
Funnel Vis (s/qt)	: 46 @ 80 °F ½	DC Critical Vel(m/min)	: 93.8 ½	LGS %	: 5.2 Avg SG : 2.60
Plastic Vis (cps)	: 13 @ 80 °F ½	Circ. Pressure (psi)	: 800 ½	LGS (ppb)	: 47.0 Chem (ppb) : 3.0
YP/Os Gel (1b/100ft2)	: 18 / 2 ½	Bottoms Up (min)	: 10.1 ½	Bent %	: 0.6 I/R : 3.397
10s/10m Gel (1b/100ft2)	: 3 / 6 ½	Total Circ Time (min)	: 33.5 ½	Bent (ppb)	: 5.8
API F Loss (cc/30 min)	: 6.6 ½	PRODUCTS USED LAST 24 HOURS		SOLIDS EQUIPMENT Size Hours	
HTHP F Loss (cc/30 min)	: @ °F ½	Sodium Chloride	50KG SK 16	Shaker #1:	S40 10
Cake API/HTHP (32nd")	: 2 ½	POLYPAC	50# SK 5	Shaker #2:	S60 10
Solids (%vol)	: 2.5 ½			Shaker #3:	
Oil/Water (%vol)	: /97.5 ½			Shaker #4:	
Sand (%vol)	: .75 ½			Mud Cleaner:	
MBT (ppb)	: 10.0 ½			Centrifuge:	
pH	: 10.5@ 80 °F ½			Desander:	10
Alkal. Mud (Pm)	: 1.7 ½			Desilter:	10
Alkal. Filtrate (Pf/Mf)	: .1 / .18 ½			Degasser:	
Chlorides (mg/l)	: 20000 ½				
Hardness Ca	: 120 ½				
:	: ½			MUD VOLUME ACCT (bb1)	
:	: ½			Oil Added:	
:	: ½			Water Added:	10
:	: ½			Mud Built:	
n-Factor	: 0.534 ½			Mud Received:	
k-Factor (1b/100ft2-rpm)	: 1.37652 ½			Mud Disposed:	

REMARKS :

Drill ahead to 375m. Wiper trip. DST.
At 375 meters it was decided to run a DST. The mud weight was raised to 9.2 ppg because of tight hole experienced on a wiper trip.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 383 Cumul Cost : 3757 =====

===== WATER BASE MUD REPORT =====

Day : 7

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

Well No. : S0001

Date : 11/20/90 Depth : 569 m
Spud : 11/14/90 Activity : DRILLING

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "		CASING	MUD VOLUME (bb1)
Jets:11/11/11/ / / 32nd"		Casing OD : 9.625" Liner OD : "	Hole Volume : 114
Drill Pipe 1 OD : 4.500 " 432 m		Casing ID : 8.681 " Liner ID : "	Pits Volume : 153
Drill Pipe 2 OD : " m		Casing TD : 171 m Liner TD : m	Circulating Volume : 267
Drill Collar OD : 6.250 " 137 m		Casing TVD : 171 m Liner TVD : m	Mud : SW BIOPOLYMER MUD

MUD PROPERTIES :		CIRCULATION DATA		SOLIDS ANALYSIS	
Sample From	: FL 03:00 ½	Flow Rate (gpm)	: 233 ½	NaCl %	: 0.7 D-Sol % : 4.5
Flow Line Temp	: 80 °F ½	DP Annular Vel (m/min)	: 33.5 ½	NaCl (ppb)	: 7.7 D-Sol (ppb) : 41.4
Depth/TVD (m)	: 569 /569 ½	DC Annular Vel (m/min)	: 52.4 ½	KCl %	: 0.0 Wt Mt1 % : N/A
Mud Weight (ppg)	: 9.1 ½	DP Critical Vel(m/min)	: 61.8 ½	KCl (ppb)	: 0.0 Wt Mt1 (ppb) : N/A
Funnel Vis (s/qt)	: 42 @ 80 °F ½	DC Critical Vel(m/min)	: 76.0 ½	LGS %	: 4.8 Avg SG : 2.60
Plastic Vis (cps)	: 12 @ 80 °F ½	Circ. Pressure (psi)	: 650 ½	LGS (ppb)	: 43.8 Chem (ppb) : 3.0
YP/0s Gel (1b/100ft2)	: 12 / 2 ½	Bottoms Up (min)	: 15.9 ½	Bent %	: -0.1 I/R : 9.199
10s/10m Gel (1b/100ft2)	: 3 / 6 ½	Total Circ Time (min)	: 48.1 ½	Bent (ppb)	: -0.6
API F Loss (cc/30 min)	: 7.0 ½	-----		-----	
HTHP F Loss (cc/30 min)	: @ °F ½	PRODUCTS USED LAST 24 HOURS		SOLIDS EQUIPMENT Size Hours	
Cake API/HTHP (32nd")	: 2 ½	Caustic Soda	25KG SK 1 ½	Shaker #1:	S40 10
Solids (%vol)	: 3.5 ½	Sodium Chloride	50KG SK 3 ½	Shaker #2:	S60 10
Oil/Water (%vol)	: /96.5 ½	POLY SAL	25KG SK 5 ½	Shaker #3:	
Sand (%vol)	: 2 ½	POLYPAC	50# SK 3 ½	Shaker #4:	
MBT (ppb)	: 4.0 ½			Mud Cleaner:	
pH	: 9 @ 80 °F ½			Centrifuge:	
Alkal. Mud (Pm)	: 0.5 ½			Desander:	10
Alkal. Filtrate (Pf/Mf)	: .1 / .15 ½			Desilter:	10
Chlorides (mg/l)	: 14000 ½			Degasser:	
Hardness Ca	: 180 ½			-----	
	: ½			MUD VOLUME ACCT (bb1)	
	: ½			Oil Added:	
	: ½			Water Added:	
	: ½			Mud Built:	
n-Factor	: 0.628 ½			Mud Received:	
k-Factor (1b/100ft2-rpm)	: 0.61195 ½			Mud Disposed:	

REMARKS :

Run open DST #1 at 375m. RIH drill ahead.
The open DST # 1 was run successfully and the DST tool was pulled out of the hole. A new bit was picked up and run in the hole to drill ahead. Polypac was used to increase the viscosity and reduce the filtrate. At this stage no Gel was able to be prehydrated because there was only one mud pit which was the active system.

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M-I Sales Engineer : GALAO.H	Warehouse: WELSHPOOL	Daily Cost : 536	Cumul Cost : 4293
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===== WATER BASE MUD REPORT =====

Day : 8

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

Well No. : S0001

Date : 11/21/90 Depth : 846 m
Spud : 11/14/90 Activity : DRILLING

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "		CASING		MUD VOLUME (bbl)
Jets:11/11/11/ / / 32nd"		Casing OD : 9.625"	Liner OD : "	Hole Volume : 174
Drill Pipe 1 OD : 4.500 " 709 m		Casing ID : 8.681 "	Liner ID : "	Pits Volume : 91
Drill Pipe 2 OD : " m		Casing TD : 171 m	Liner TD : m	Circulating Volume : 265
Drill Collar OD : 6.250 " 137 m		Casing TVD : 171 m	Liner TVD : m	Mud : SW BIOPOLYMER MUD

MUD PROPERTIES :

CIRCULATION DATA

SOLIDS ANALYSIS

Sample From : FL 03:00 ½	Flow Rate (gpm) : 217 ½	NaCl % : 0.5	D-Sol % : 5.8
Flow Line Temp : 90 °F ½	DP Annular Vel (m/min) : 31.2 ½	NaCl (ppb) : 5.4	D-Sol (ppb) : 52.9
Depth/TVD (m) : 846 /846 ½	DC Annular Vel (m/min) : 48.8 ½	KCl % : 0.0	Wt Mt1 % : N/A
Mud Weight (ppg) : 9.3 ½	DP Critical Vel(m/min) : 66.3 ½	KCl (ppb) : 0.0	Wt Mt1 (ppb) : N/A
Funnel Vis (s/qt) : 45 @ 80 °F ½	DC Critical Vel(m/min) : 78.9 ½	LGS % : 6.6	Avg SG : 2.60
Plastic Vis (cps) : 10 @ 80 °F ½	Circ. Pressure (psi) : 750 ½	LGS (ppb) : 60.1	Chem (ppb) : 3.0
YP/0s Gel (lb/100ft2) : 14 / 2 ½	Bottoms Up (min) : 25.9 ½	Bent % : 0.5	I/R : 4.705
10s/10m Gel (lb/100ft2) : 4 / 7 ½	Total Circ Time (min) : 51.3 ½	Bent (ppb) : 4.1	

API F Loss (cc/30 min) : 7.8 ½	PRODUCTS USED LAST 24 HOURS	SOLIDS EQUIPMENT	Size	Hours
HTHP F Loss (cc/30 min) : @ °F ½	M-I GEL 25KG SK 18	Shaker #1:	S40	23
Cake API/HTHP (32nd") : 2 ½	Caustic Soda 25KG SK 2	Shaker #2:	S60	23
Solids (%vol) : 3.5 ½	Sodium Chloride 50KG SK 22	Shaker #3:		
Oil/Water (%vol) : /96.5 ½	POLY SAL 25KG SK 7	Shaker #4:		
Sand (%vol) : 2.5 ½	POLYPAC 50# SK 5	Mud Cleaner:		
MBT (ppb) : 10.0 ½		Centrifuge:		
pH : 9.0 @ 80 °F ½		Desander:		23
Alkal. Mud (Pm) : 0.3 ½		Desilter:		23
Alkal. Filtrate (Pf/Mf) : .01 / .03 ½		Degasser:		
Chlorides (mg/l) : 10000 ½				
Hardness Ca : 160 ½				

		MUD VOLUME ACCT (bbl)
		Oil Added:
		Water Added:
		Mud Built: 150
n-Factor : 0.541 ½		Mud Received:
k-Factor (lb/100ft2-rpm): 1.00779 ½		Mud Disposed:

REMARKS :

Drill ahead.
The mud weight was maintained at 9.2 ppg with salt additions. At 644 meters a very loose sand was encountered and the drill string became stuck.
The pipe was worked free and the mud was conditioned by adding prehydrated bentonite which could now be mixed in a separate tank.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 1422 Cumul Cost : 5715 =====

===== WATER BASE MUD REPORT ===== Day : 9 =====

M-I Drilling Fluids Company - - Date : 11/22/90 Depth : 935 m
 FIELD DATA COMMUNICATIONS SYSTEM Well No. : S0001 Spud : 11/14/90 Activity : DRILLING

Operator : CRUSADER RESOURCES Contractor : DRILCORP Description : WILDCAT
 Well Name : STRINGY BARK -1 Field/Area : PEP 123 Location : VICTORIA

Bit : 8.500 " CASING MUD VOLUME (bbl)
 Jets:11/11/11/ / / 32nd" Casing OD : 9.625" Liner OD : " Hole Volume : 193
 Drill Pipe 1 OD : 4.500 " 798 m Casing ID : 8.681 " Liner ID : " Pits Volume : 113
 Drill Pipe 2 OD : " m Casing TD : 171 m Liner TD : m Circulating Volume : 306
 Drill Collar OD : 6.250 " 137 m Casing TVD : 171 m Liner TVD : m Mud : SW BIOPOLYMER MUD

MUD PROPERTIES :		CIRCULATION DATA		SOLIDS ANALYSIS	
Sample From	: FL 04:25 ½	Flow Rate (gpm)	: 222 ½	NaCl %	: 0.4 D-Sol % : 6.4
Flow Line Temp	: 80 °F ½	DP Annular Vel (m/min)	: 31.9 ½	NaCl (ppb)	: 4.8 D-Sol (ppb) :58.5
Depth/TVD (m)	: 935 /935 ½	DC Annular Vel (m/min)	: 50.0 ½	KCl %	: 0.0 Wt Mt1 % :N/A
Mud Weight (ppg)	: 9.4 ½	DP Critical Vel(m/min)	: 72.1 ½	KCl (ppb)	: 0.0 Wt Mt1 (ppb) :N/A
Funnel Vis (s/qt)	: 45 @ 80 °F ½	DC Critical Vel(m/min)	: 82.3 ½	LGS %	: 7.4 Avg SG : 2.60
Plastic Vis (cps)	: 8 @ 80 °F ½	Circ. Pressure (psi)	: 750 ½	LGS (ppb)	: 67.5 Chem (ppb) : 3.5
YP/Os Gel (lb/100ft2)	: 16 / 3 ½	Bottoms Up (min)	: 28.2 ½	Bent %	: 0.6 I/R :4.337
10s/10m Gel (lb/100ft2)	: 4 / 14 ½	Total Circ Time (min)	: 57.9 ½	Bent (ppb)	: 5.5
API F Loss (cc/30 min)	: 6 ½	PRODUCTS USED LAST 24 HOURS		SOLIDS EQUIPMENT Size Hours	
HTHP F Loss (cc/30 min)	: @ °F ½	M-I GEL	25KG SK 12	Shaker #1:	S40 23
Cake API/HTHP (32nd")	: 2 ½	Caustic Soda	25KG SK 1	Shaker #2:	S60 23
Solids (%vol)	: 2.5 ½	POLY SAL	25KG SK 12	Shaker #3:	
Oil/Water (%vol)	: /97.5 ½	POLYPAC	50# SK 1	Shaker #4:	
Sand (%vol)	: 1 ½			Mud Cleaner:	
MBT (ppb)	: 12.0 ½			Centrifuge:	
pH	: 9.0 @ 80 °F ½			Desander:	23
Alkal. Mud (Pm)	: 0.4 ½			Desilter:	23
Alkal. Filtrate (Pf/Mf)	: .1 / .35 ½			Degasser:	
Chlorides (mg/l)	: 9000 ½				
Hardness Ca	: 160 ½				
:	: ½				
:	: ½				
:	: ½				
:	: ½				
n-Factor	: 0.466 ½			MUD VOLUME ACCT (bbl)	
k-Factor (lb/100ft2-rpm)	: 1.47474 ½			Oil Added:	
				Water Added:	
				Mud Built:	55
				Mud Received:	
				Mud Disposed:	

REMARKS :
 At 849 meters drilling stopped for rig repairs. After the repairs were completed, drilling recommenced to 935 meters.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 872 Cumul Cost : 6864 =====

===== WATER BASE MUD REPORT ===== Day : 10 =====

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

- -
Well No. : S0001

Date : 11/23/90 Depth : 943 m
Spud : 11/14/90 Activity : DRILLING

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "		CASING	MUD VOLUME (bb1)
Jets:11/11/11/ / / 32nd"		Casing OD : 9.625" Liner OD : "	Hole Volume : 195
Drill Pipe 1 OD : 4.500 " 806 m		Casing ID : 8.681 " Liner ID : "	Pits Volume : 57
Drill Pipe 2 OD : " m		Casing TD : 171 m Liner TD : m	Circulating Volume : 252
Drill Collar OD : 6.250 " 137 m		Casing TVD : 171 m Liner TVD : m	Mud : SW BIOPOLYMER MUD

MUD PROPERTIES :		CIRCULATION DATA		SOLIDS ANALYSIS	
Sample From	: FL 04:30 ½	Flow Rate (gpm)	: 222 ½	NaCl %	: 0.3 D-Sol % : 6.9
Flow Line Temp	: 80 °F ½	DP Annular Vel (m/min)	: 31.9 ½	NaCl (ppb)	: 4.0 D-Sol (ppb) : 62.9
Depth/TVD (m)	: 943 /943 ½	DC Annular Vel (m/min)	: 50.0 ½	KCl %	: 0.0 Wt Mt1 % : N/A
Mud Weight (ppg)	: 9.4 ½	DP Critical Vel(m/min)	: 69.5 ½	KCl (ppb)	: 0.0 Wt Mt1 (ppb) : N/A
Funnel Vis (s/qt)	: 48 @ 80 °F ½	DC Critical Vel(m/min)	: 82.3 ½	LGS %	: 7.5 Avg SG : 2.60
Plastic Vis (cps)	: 11 @ 80 °F ½	Circ. Pressure (psi)	: 750 ½	LGS (ppb)	: 68.5 Chem (ppb) : 2.5
YP/0s Gel (lb/100ft2)	: 15 / 3 ½	Bottoms Up (min)	: 28.4 ½	Bent %	: 0.3 I/R : 5.596
10s/10m Gel (lb/100ft2)	: 5 / 18 ½	Total Circ Time (min)	: 47.7 ½	Bent (ppb)	: 3.0

API F Loss (cc/30 min)	: 6.8 ½	PRODUCTS USED LAST 24 HOURS	SOLIDS EQUIPMENT	Size	Hours
HTHP F Loss (cc/30 min)	: @ °F ½				
Cake API/HTHP (32nd")	: 2 ½		Shaker #1:	B80/S40	6
Solids (%vol)	: 3 ½		Shaker #2:	S60/S30	6
Oil/Water (%vol)	: /97 ½		Shaker #3:		
Sand (%vol)	: 1.25 ½		Shaker #4:		
MBT (ppb)	: 10.0 ½		Mud Cleaner:		
pH	: 9 @ 80 °F ½		Centrifuge:		
Alkal. Mud (Pm)	: 0.3 ½		Desander:		6
Alkal. Filtrate (Pf/Mf)	: .05 / .15 ½		Desilter:		6
Chlorides (mg/l)	: 7500 ½		Degasser:		
Hardness Ca	: 160 ½				
:	: ½				
:	: ½		MUD VOLUME ACCT (bb1)		
:	: ½		Oil Added:		
:	: ½		Water Added:		
:	: ½		Mud Built:		
n-Factor	: 0.564 ½		Mud Received:		
k-Factor (lb/100ft2-rpm)	: 0.92231 ½		Mud Disposed:	45	

REMARKS :

Drill ahead. POOH for rig repairs at 943m.
More rig repairs were necessary at 943 meters when the rotary table failed and there was a delay in getting spare parts.
A new bit was run in the hole and reamed to bottom.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 0 Cumul Cost : 6864 =====

===== WATER BASE MUD REPORT ===== Day : 11 =====

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

- -
Well No. : S0001

Date : 11/24/90 Depth : 984 m
Spud : 11/14/90 Activity : DRILLING

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "		CASING	MUD VOLUME (bb1)
Jets:9 /11/12/ / / 32nd"		Casing OD : 9.625" Liner OD : "	Hole Volume : 204
Drill Pipe 1 OD : 4.500 " 847 m		Casing ID : 8.681 " Liner ID : "	Pits Volume : 56
Drill Pipe 2 OD : " m		Casing TD : 171 m Liner TD : m	Circulating Volume : 260
Drill Collar OD : 6.250 " 137 m		Casing TVD : 171 m Liner TVD : m	Mud : SW BIOPOLYMER MUD

MUD PROPERTIES :		CIRCULATION DATA		SOLIDS ANALYSIS	
Sample From	: FL 03:00 ½	Flow Rate (gpm)	: 233 ½	NaCl %	: 0.3 D-Sol % : 7.1
Flow Line Temp	: 80 °F ½	DP Annular Vel (m/min)	: 33.5 ½	NaCl (ppb)	: 3.1 D-Sol (ppb) :64.6
Depth/TVD (m)	: 984 /984 ½	DC Annular Vel (m/min)	: 52.4 ½	KCl %	: 0.0 Wt Mt1 % :N/A
Mud Weight (ppg)	: 9.4 ½	DP Critical Vel(m/min)	: 66.6 ½	KCl (ppb)	: 0.0 Wt Mt1 (ppb) :N/A
Funnel Vis (s/qt)	: 44 @ 80 °F ½	DC Critical Vel(m/min)	: 77.5 ½	LGS %	: 7.6 Avg SG : 2.60
Plastic Vis (cps)	: 9 @ 80 °F ½	Circ. Pressure (psi)	: 900 ½	LGS (ppb)	:69.4 Chem (ppb) : 3.0
YP/0s Gel (lb/100ft2)	: 14 / 3 ½	Bottoms Up (min)	: 28.3 ½	Bent %	: 0.2 I/R :6.381
10s/10m Gel (lb/100ft2)	: 4 / 11 ½	Total Circ Time (min)	: 46.9 ½	Bent (ppb)	: 1.8
API F Loss (cc/30 min)	: 7 ½				
HTHP F Loss (cc/30 min)	: @ °F ½	PRODUCTS USED LAST 24 HOURS		SOLIDS EQUIPMENT Size Hours	
Cake API/HTHP (32nd")	: 2 ½	Caustic Soda	25KG SK 3	Shaker #1:	B80/S40 9
Solids (%vol)	: 3.5 ½	POLY SAL	25KG SK 7	Shaker #2:	S60/S30 9
Oil/Water (%vol)	: /96.5 ½	POLYPAC	50# SK 2	Shaker #3:	
Sand (%vol)	: .75 ½			Shaker #4:	
MBT (ppb)	: 9.0 ½			Mud Cleaner:	
pH	: 9.5 @ 80 °F ½			Centrifuge:	
Alkal. Mud (Pm)	: 0.4 ½			Desander:	9
Alkal. Filtrate (Pf/Mf)	: .02 / .25 ½			Desilter:	9
Chlorides (mg/l)	: 5900 ½			Degasser:	
Hardness Ca	: 140 ½				
:	: ½				
:	: ½			MUD VOLUME ACCT (bb1)	
:	: ½			Oil Added:	
:	: ½			Water Added:	10
:	: ½			Mud Built:	
n-Factor	: 0.536 ½			Mud Received:	
k-Factor (1b/100ft2-rpm)	: 0.94007 ½			Mud Disposed:	

REMARKS :
Drill ahead.
Another survey was taken at 984 meters which showed a build of 2 1/4 degrees.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 573 Cumul Cost : 7437 =====

===== WATER BASE MUD REPORT =====

Day : 12

M-I Drilling Fluids Company
FIELD DATA COMMUNICATIONS SYSTEM

Well No. : S0001

Date : 11/25/90 Depth : 1047 m
Spud : 11/14/90 Activity : LOGGING

Operator : CRUSADER RESOURCES
Well Name : STRINGY BARK -1

Contractor : DRILCORP
Field/Area : PEP 123

Description : WILDCAT
Location : VICTORIA

Bit : 8.500 "	CASING	MUD VOLUME (bb1)
Jets: 9 / 11/12 / / 32nd"	Casing OD : 9.625" Liner OD : "	Hole Volume : 218
Drill Pipe 1 OD : 4.500 " 910 m	Casing ID : 8.681 " Liner ID : "	Pits Volume : 52
Drill Pipe 2 OD : " m	Casing TD : 171 m Liner TD : m	Circulating Volume : 270
Drill Collar OD : 6.250 " 137 m	Casing TVD : 171 m Liner TVD : m	Mud : SW BIOPOLYMER MUD

MUD PROPERTIES :

CIRCULATION DATA

SOLIDS ANALYSIS

Sample From	: FL 16:00	1/2	Flow Rate (gpm)	: 238	1/2	NaCl %	: 0.2	D-So1 %	: 8.0
Flow Line Temp	: 80 °F	1/2	DP Annular Vel (m/min)	: 34.2	1/2	NaCl (ppb)	: 2.6	D-So1 (ppb)	: 72.9
Depth/TVD (m)	: 1047 / 1047	1/2	DC Annular Vel (m/min)	: 53.6	1/2	KCl %	: 0.0	Wt Mt1 %	: N/A
Mud Weight (ppg)	: 9.5	1/2	DP Critical Vel (m/min)	: 74.8	1/2	KCl (ppb)	: 0.0	Wt Mt1 (ppb)	: N/A
Funnel Vis (s/qt)	: 42 @ 80 °F	1/2	DC Critical Vel (m/min)	: 86.4	1/2	LGS %	: 8.4	Avg SG	: 2.60
Plastic Vis (cps)	: 10 @ 80 °F	1/2	Circ. Pressure (psi)	: 1000	1/2	LGS (ppb)	: 76.8	Chem (ppb)	: 3.0
YP/0s Gel (lb/100ft2)	: 17 / 4	1/2	Bottoms Up (min)	: 29.6	1/2	Bent %	: 0.1	I/R	: 7.204
10s/10m Gel (lb/100ft2)	: 8 / 16	1/2	Total Circ Time (min)	: 47.6	1/2	Bent (ppb)	: 0.9		
API F Loss (cc/30 min)	: 7.4	1/2			1/2				

PRODUCTS USED LAST 24 HOURS

SOLIDS EQUIPMENT

HTHP F Loss (cc/30 min)	: @ °F	1/2	POLYPAC	50# SK 1	1/2	Shaker #1:	B80/S40	Size	Hours
Cake API/HTHP (32nd")	: 2	1/2	Calcium Chloride	25KG SK 3	1/2	Shaker #2:	S60/S30		
Solids (%vol)	: 4.5	1/2			1/2	Shaker #3:			
Oil/Water (%vol)	: /95.5	1/2			1/2	Shaker #4:			
Sand (%vol)	: .75	1/2			1/2	Mud Cleaner:			
MBT (ppb)	: 9.0	1/2			1/2	Centrifuge:			
pH	: 9.5 @ 80 °F	1/2			1/2	Desander:		12	
Alkal. Mud (Pm)	: 0.4	1/2			1/2	Desilter:		7	
Alkal. Filtrate (Pf/Mf)	: .02 / .25	1/2			1/2	Degasser:			
Chlorides (mg/l)	: 5000	1/2			1/2				
Hardness Ca	: 180	1/2			1/2				

MUD VOLUME ACCT (bb1)

		1/2	Oil Added:		1/2
		1/2	Water Added:	10	1/2
		1/2	Mud Built:		1/2
n-Factor	: 0.521	1/2	Mud Received:		1/2
k-Factor (lb/100ft2-rpm)	: 1.17913	1/2	Mud Disposed:		1/2

REMARKS :

TD at 1047 meters. Log. Plug and abandon.
The Total depth was reached at 1047 meters when the logging program commenced.
After the logging was finished it was decided to plug and abandon Stringy Bark #1.

===== M-I Sales Engineer : GALAO.H Warehouse: WELSHPOOL Daily Cost : 98 Cumul Cost : 7567 =====



Time Analysis

APPENDIX 5

TIME ANALYSIS

STRINGY BARK NO. 1

TIME ANALYSIS

<u>Time Analysis</u>	<u>Time (hours)</u>	<u>Time (%)</u>
Drilling	106.0	36.0
Conditioning mud and circulating	12.5	4.2
Trips (excluding P & A)	43.5	14.7
Wait on parts	20.0	6.8
Rig repairs & service	8.5	2.9
Drill stem testing	15.0	5.1
Deviation surveys	5.0	1.7
Wireline logging	12.5	4.2
Run and cement casing	17.0	5.8
Nipple up and test BOP'S	24.0	8.1
Plug and abandon	31.0	10.5
	295.0	100.0

*Drill Stem Test
Reports*

APPENDIX 6

DRILL STEM TEST REPORTS

FORMATION TEST REPORT



HALLIBURTON RESERVOIR SERVICES



A Halliburton Company

Customer: CRUSADER OIL NL
Well Description: STRINGY BARK #1
Field Name: GIPPSLAND BASIN

TEST NO: DST #1
TEST DATE: 19-NOV-90
TICKET NO: 000381

HALLIBURTON
SERVICES

REPORT TICKET NO: 000381
BT-GAUGE TICKET NO: 000381
DATE: 19-11-90
HALLIBURTON CAMP: ADELAIDE
TESTER: T.Burke
WITNESS:

DRILLING CONTRACTOR: DRILLCORP
LEGAL LOCATION: 38 31' 2.33"S
146 54' 1.76"E

OPERATOR: CRUSADER OIL NL
LEASE NAME: STRINGY BARK
WELL NO: 1
TEST NO: 1
TESTED INTERVAL: 1191.00 - 1227.00 ft

FIELD AREA: GIPPSLAND BASIN
COUNTY/LSD:
STATE/PROVINCE: VICTORIA
COUNTRY: AUSTRALIA

NOTICE: THIS REPORT IS BASED ON SOUND ENGINEERING PRACTICES, BUT BECAUSE OF VARIABLE WELL CONDITIONS AND OTHER INFORMATION WHICH MUST BE RELIED UPON HALLIBURTON MAKES NO WARRANTY, EXPRESS OR IMPLIED AS TO THE ACCURACY OF THE DATA OR OF ANY CALCULATIONS OR OPINIONS EXPRESSED HEREIN. YOU AGREE THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DUE TO NEGLIGENCE OR OTHERWISE ARISING OUT OF OR IN CONNECTION WITH SUCH DATA, CALCULATIONS OR OPINIONS.

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SECTION 2: ANALYSIS

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SECTION 3: MECHANICAL GAUGE DATA

Gauge No.	8008	3.1
Gauge No.	8822	3.2
Gauge No.	7885	3.3

Date: 19-11-90

Ticket No: 000381

Page No: 1.1

SUMMARY OF TEST

Lease Owner: CRUSADER OIL NL

Lease Name: STRINGY BARK

Well No.: 1

Test No.: 1

County/LSD:

State/Province: VICTORIA

Country: AUSTRALIA

Formation Tested: LATROBE GROUP

Hole Temp: 102.00 F

Total Depth: 1230.00 ft

Net Pay: 9.80 ft

Gross Tested Interval: 1191.00 - 1227.00 ft

Perforated Interval (ft):

RECOVERY:

2.18bbl. MUD

1.18bbl. FORMATION WATER

REMARKS:

ALL DOWNHOLE PRESSURES ARE IN ABSOLUTE
PSIA.

PLUGGING OF LOWER TOOL STRING WAS
EVIDENT DURING FLOW PERIOD.

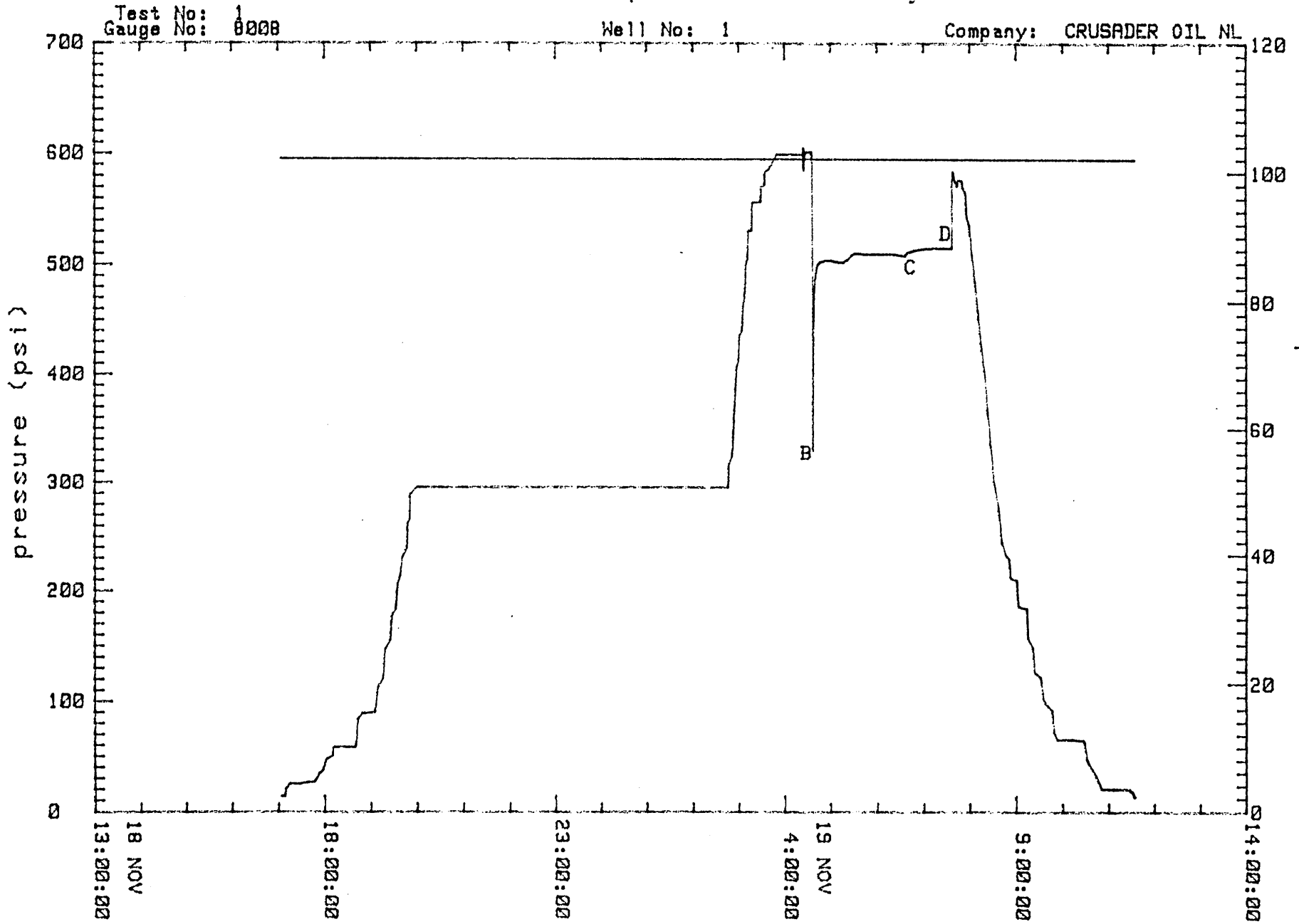
TEST PERIOD SUMMARY

Gauge No.: 8008 Depth: 1227.00 ft Blanked off : Yes
Hour of clock: 24

ID	PERIOD	DESCRIPTION	PRESSURE (psi)	DURATION (min)
A		Initial Hydrostatic	599.49	
B	1	Start Draw-down	328.97	
C		End Draw-down	507.82	119.71
C	2	Start Build-up	507.82	
D		End Build-up	515.78	60.11
E		Final Hydrostatic	575.93	

NOTE: for Pressure vs. Time Plot, see next page.

Pressure/Temperature History



Date: 19-11-90

Ticket No: 000381
temperature (F)

Page No: 1.3

TEST AND FORMATION DATA

Formation Tested: LATROBE GROUP
 All Depths Measured From: KELLY BUSHINGS
 Elevation: 0.00 ft
 Total Depth: 1230.00 ft
 Net Pay: 9.80 ft
 Hole or Casing Size: 8.500 in
 Gross Tested Interval: 1191.00 - 1227.00 ft
 Perforated Interval (ft):

HOLE FLUID

HOLE TEMPERATURE

Type:	DRILLING FLUID	Depth:	1227.00 ft
Weight:	9.20 lb/gal	Estimated:	95.00 F
Viscosity:	46 seconds	Actual:	102.00 F

HYDROCARBON PROPERTIES

CUSHION DATA

		TYPE	AMOUNT	WEIGHT
Oil Gravity (API):	0.0 @ 60 F			
Gas/Oil ratio (ScF/STB):	0.0	NIL		
Gas Gravity (SG):	0.75			

FLUID PROPERTIES FOR RECOVERED MUD AND WATER

SOURCE	RESISTIVITY	CHLORIDES	SG	PH
	@ F	PPM		
	@ F	PPM		
	@ F	PPM		
	@ F	PPM		
	@ F	PPM		
	@ F	PPM		

SAMPLER DATA

Surface Pressure:	0 psi
Volume of Gas:	0 ft ³
Volume of Oil:	0 cc
Volume of Water:	0 cc
Volume of Mud:	0 cc
Total Liquids:	0 cc

REMARKS:

ALL DOWNHOLE PRESSURES ARE IN ABSOLUTE
 PSIA.
 PLUGGING OF LOWER TOOL STRING WAS
 EVIDENT DURING FLOW PERIOD.

Date: 19-11-90





















Ticket No: 000381

Page No: 1.5

RATE HISTORY TABLE

Period No	Test Type	j	Prod Rate q(j) (bbl/d)	Duration (hrs)	Cum. Time t(j) (hrs)
		0	0.0	0.00	0.00
1	DD	1	3.4	1.99	1.99
2	BU	2	0.0	1.01	3.00

TEST STRING CONFIGURATION

	O.D. (in)	I.D. (in)	LENGTH (ft)	DEPTH (ft)
 DRILL PIPE.....	4.500	3.860	730.010	
 DRILL COLLARS.....	6.000	2.620	329.560	
 PUMP OUT REVERSING SUB.....	6.000	3.000	1.000	
 DRILL COLLARS.....	6.000	2.620	60.070	
 IMPACT REVERSING SUB.....	6.000	3.000	1.000	
 DRILL COLLARS.....	6.000	2.620	30.180	
 BAR CATCHER SUB.....	6.000	1.120	1.000	
 AP RUNNING CASE.....	5.000	2.250	4.140	1154.00
 CROSSOVER.....	5.000	2.200	1.000	
 DUAL CIP VALVE.....	5.000	0.870	4.870	
 SAMPLE CHAMBER.....	5.000	2.500	4.870	
 DRAIN VALVE.....	5.000	2.200	0.860	
 HYDROSPRING TESTER.....	5.000	0.750	5.310	1174.00
 AP RUNNING CASE.....	5.000	2.250	4.140	1175.00
 JAR.....	5.000	1.750	5.000	
 VR SAFETY JOINT.....	5.000	1.000	2.780	
 OPEN HOLE PACKER.....	6.000	1.530	5.850	1191.00
 ANCHOR PIPE SAFETY JOINT.....	5.000	1.500	4.300	
 PERFORATED TAIL PIPE.....	5.000	2.370	30.000	
 BLANKED-OFF RUNNING CASE.....	5.000	2.440	4.060	1227.00
TOTAL DEPTH				1230.00

Date: 19-11-90
Test No: 1

Ticket No: 000381

Page No: 1.7.1

OPERATOR JOB LOG

Type of Flow Measuring Device: .5"CER. CHOKE

TIME	CHOKE SIZE	SURFACE PRESSURE	GAS RATE	LIQUID RATE	REMARKS
HH:MM:SS	(in)	(psi)	(MCF/D)	(bbl/d)	

18-NOV-90

17:35:00

SURFACE PRESSURE = PSIG

17:35:00

MAKE UP TOOLS

18:15:00

TOOLS MADE UP, RUN IN HOLE

18:15:00

WAIT IN CASING

19-NOV-90

04:31:00

SET PACKER, 30000lb.

04:37:00

32/64

0.00

OPEN TOOL, STRONG BLOW

04:38:00

32/64

0.00

BLOW DECREASING SLIGHTLY

05:00:00

32/64

0.00

MODERATE BLOW

06:37:00

CLOSE TOOL FOR CIP

07:37:00

OPEN BYPASS, PULL FREE,

07:37:00

PULL OUT OF HOLE

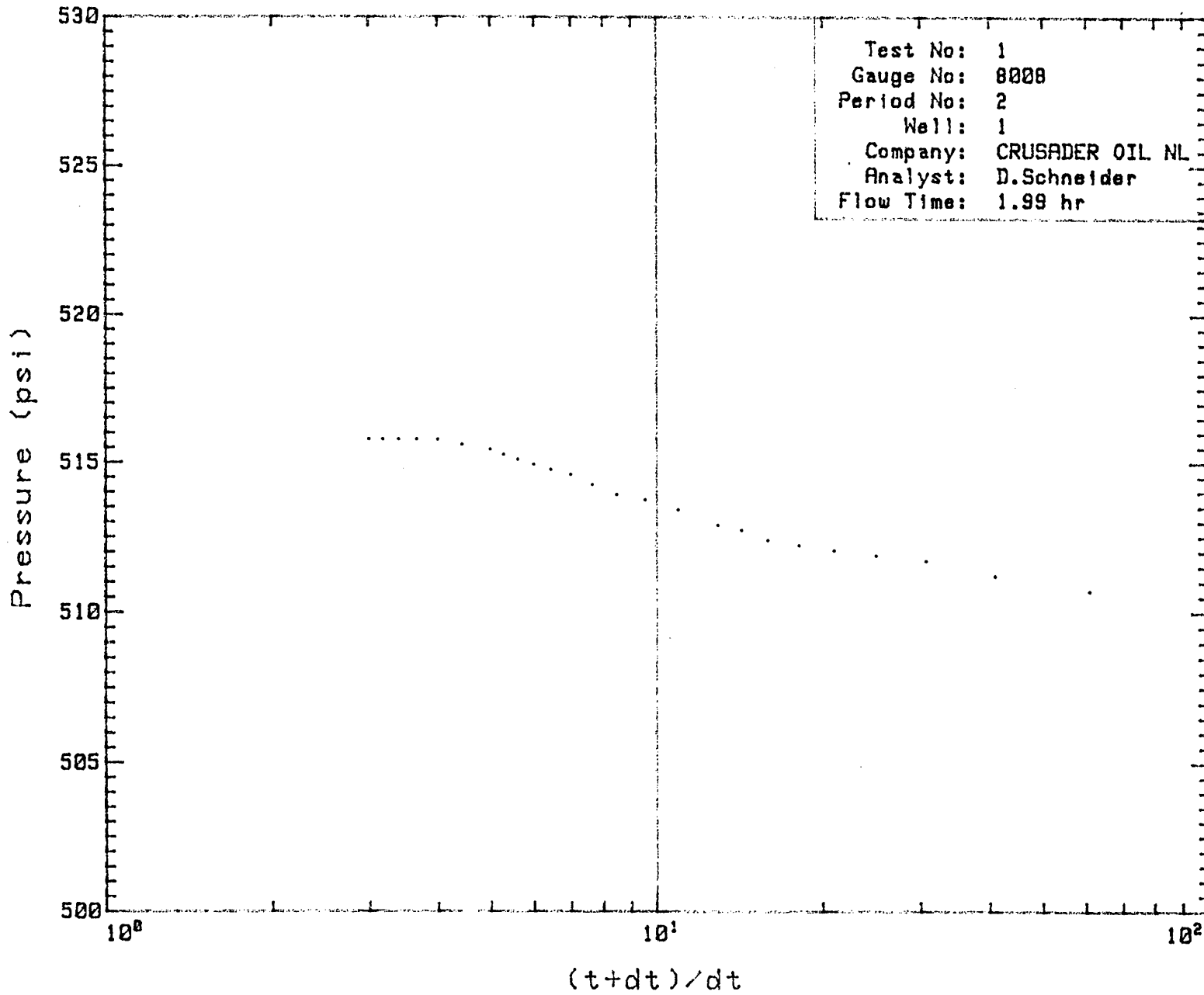
10:30:00

TOOL AT TABLE

11:45:00

TOOL LAID OUT

Pressure vs $\log((t+dt)/dt)$

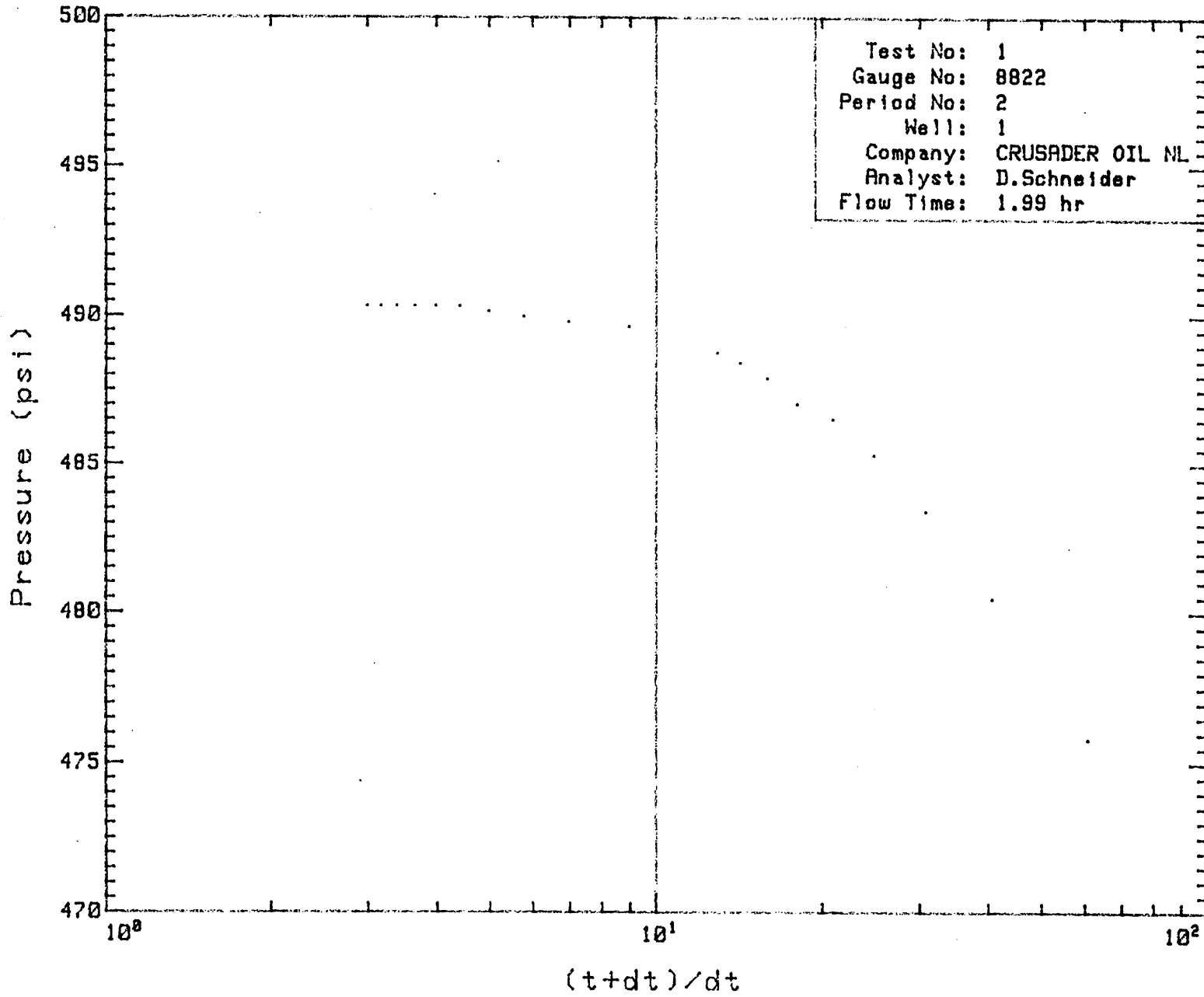


Date: 19-11-90

Ticket No: 000381

Page No: 2.2.1

Pressure vs $\log((t+dt)/dt)$



Date: 19-11-90

Ticket No: 000381

Page No: 2.2.2

Date: 19-11-90

Ticket No: 000381

Page No: 3.1

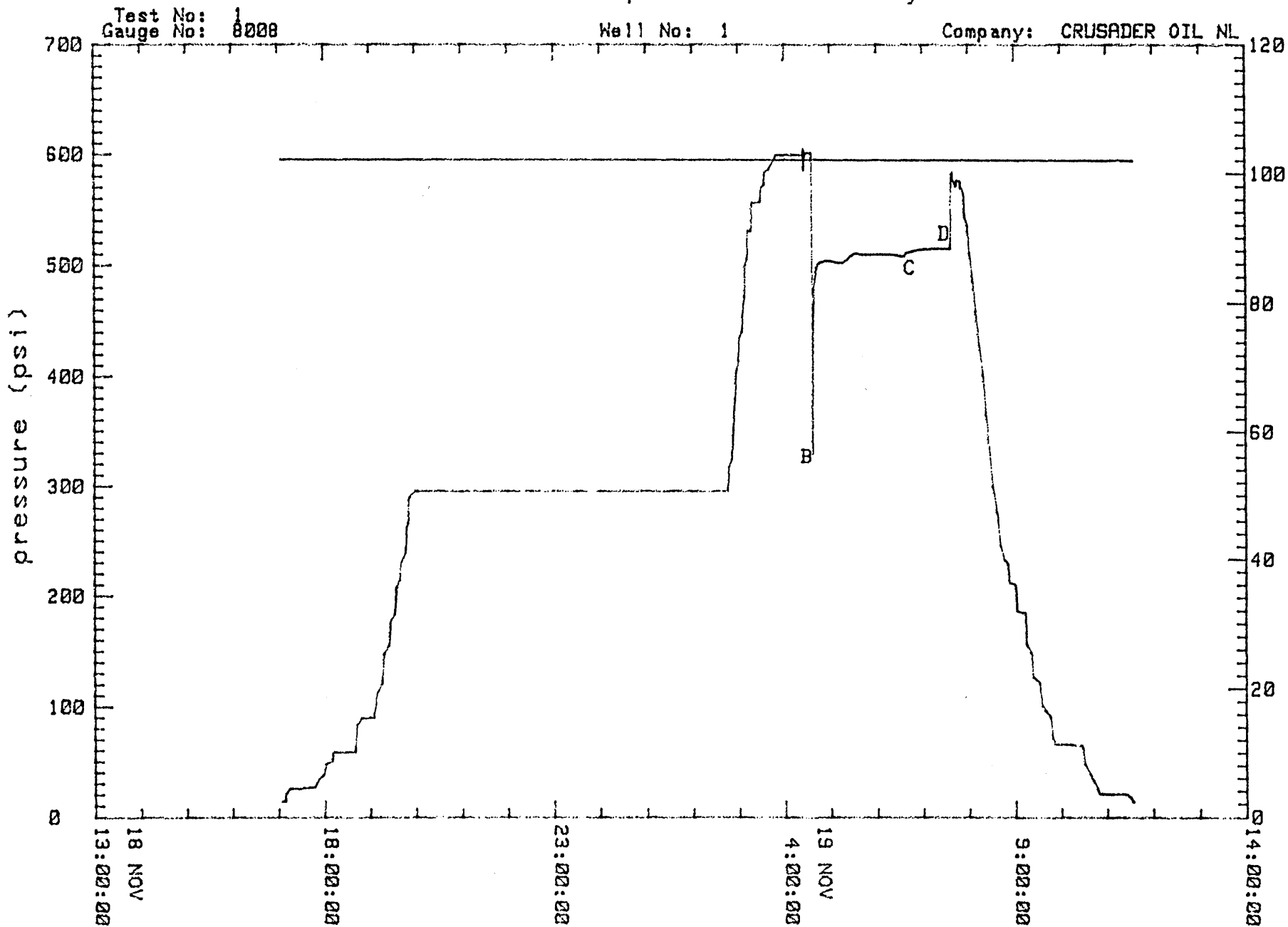
TEST PERIOD SUMMARY

Gauge No.: 8008 Depth: 1227.00 ft Blanked off : Yes
Hour of clock: 24

ID	PERIOD	DESCRIPTION	PRESSURE (psi)	DURATION (min)
A		Initial Hydrostatic	599.49	
B	1	Start Draw-down	328.97	
C		End Draw-down	507.82	119.71
C	2	Start Build-up	507.82	
D		End Build-up	515.78	60.11
E		Final Hydrostatic	575.93	

NOTE: for Pressure vs. Time Plot, see next page.

Pressure/Temperature History



Date: 19-11-90

Ticket No: 000381
temperature (F)

Page No: 3.1.0

Date: 19-11-90

Ticket No: 000381

Page No: 3.1.1

PRESSURE VS TIME

MECHANICAL gauge no.: 8008
Clock no.:

Gauge Depth: 1227.00 ft
24

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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18-NOV-90

Data Print Frequency: 1

17:04:53		13.688	102.0	
17:08:59		13.688	102.0	
17:09:46		20.622	102.0	
17:14:42		25.020	102.0	
17:27:49		25.189	102.0	
17:35:00				
17:35:00				
17:39:08		26.711	102.0	
17:47:15		27.219	102.0	
17:53:31		34.830	102.0	
17:57:55		37.198	102.0	
18:02:27		47.855	102.0	
18:10:45		50.561	102.0	
18:11:03		58.343	102.0	
18:15:00				
18:15:00				
18:29:54		58.343	102.0	
18:40:46		58.343	102.0	
18:43:19		83.718	102.0	
18:49:16		89.301	102.0	
18:59:58		90.147	102.0	
19:05:27		90.655	102.0	
19:09:25		112.649	102.0	
19:15:57		120.263	102.0	
19:18:41		147.337	102.0	
19:25:11		154.952	102.0	
19:27:26		177.967	102.0	
19:33:07		183.383	102.0	
19:35:11		207.416	102.0	
19:38:47		213.509	102.0	
19:41:09		230.436	102.0	
19:47:16		238.899	102.0	
19:48:27		262.768	102.0	
19:50:58		265.984	102.0	
19:51:27		289.008	102.0	
19:59:54		295.611	102.0	
20:29:52		295.611	102.0	
20:59:53		295.611	102.0	
21:29:54		295.611	102.0	
21:59:52		295.611	102.0	
22:29:53		295.611	102.0	
22:59:54		295.611	102.0	
23:29:52		295.611	102.0	
23:59:53		295.611	102.0	

SURFACE PRESSURE = PSIG
MAKE UP TOOLS

TOOLS MADE UP, RUN IN HOLE
WAIT IN CASING

9-NOV-90

00:29:54 295.611 102.0

Date: 19-11-90

Ticket No: 000381

Page No: 3.1.2

PRESSURE VS TIME

MECHANICAL gauge no.: 8008
Clock no.:

Gauge Depth: 1227.00 ft
24

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

00:59:52		295.611	102.0	
01:29:53		295.611	102.0	
01:59:54		295.611	102.0	
02:29:52		295.611	102.0	
02:46:23		295.611	102.0	
02:47:30		317.452	102.0	
02:51:35		324.225	102.0	
02:54:02		356.736	102.0	
02:55:48		381.122	102.0	
02:57:29		405.341	102.0	
03:00:15		414.317	102.0	
03:00:57		435.320	102.0	
03:04:49		440.570	102.0	
03:06:13		465.301	102.0	
03:08:16		471.908	102.0	
03:09:20		500.368	102.0	
03:11:54		505.450	102.0	
03:12:16		531.541	102.0	
03:17:01		531.033	102.0	
03:17:32		556.448	102.0	
03:28:50		557.295	102.0	
03:29:32		570.343	102.0	
03:33:53		572.206	102.0	
03:34:35		584.576	102.0	
03:39:53		586.101	102.0	
03:48:11		596.438	102.0	
03:49:53		599.488	102.0	
03:59:52		599.488	102.0	
04:09:52		599.488	102.0	
04:19:53		599.488	102.0	
04:24:06		599.488	102.0	
04:24:55		599.488	102.0	
04:25:19		604.911	102.0	
04:25:44		585.424	102.0	
04:26:06		603.556	102.0	
04:26:31		597.116	102.0	
04:27:17		599.658	102.0	
04:29:09		601.353	102.0	
04:31:00				SET PACKER, 30000lb.
04:34:13		601.691	102.0	
04:35:24		601.861	102.0	
04:37:00				OPEN TOOL, STRONG BLOW
04:37:00	0.00	328.966	102.0	*** Start of Period 1 ***
04:38:00				BLOW DECREASING SLIGHTLY
04:38:00	1.00	450.395	102.0	

Date: 19-11-90

Ticket No: 000381

Page No: 3.1.3

PRESSURE VS TIME

MECHANICAL gauge no.: 8008
Clock no.:

Gauge Depth: 1227.00 ft
24

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

04:39:00	2.00	476.820	102.0	
04:40:00	3.00	487.662	102.0	
04:41:00	4.00	492.575	102.0	
04:42:00	5.00	496.471	102.0	
04:43:00	6.00	499.182	102.0	
04:44:00	7.00	500.707	102.0	
04:45:01	8.02	501.554	102.0	
04:46:01	9.02	501.893	102.0	
04:47:01	10.02	502.740	102.0	
04:49:01	12.02	503.079	102.0	
04:51:01	14.02	503.417	102.0	
04:53:01	16.02	504.095	102.0	
04:55:01	18.02	504.264	102.0	
04:57:01	20.02	504.095	102.0	
04:59:01	22.02	504.095	102.0	
05:00:00				MODERATE BLOW
05:01:01	24.01	503.926	102.0	
05:03:01	26.01	503.587	102.0	
05:05:01	28.01	503.248	102.0	
05:07:01	30.01	502.909	102.0	
05:12:00	35.01	502.401	102.0	
05:17:00	40.00	502.570	102.0	
05:22:00	45.00	504.773	102.0	
05:27:00	50.00	508.500	102.0	
05:32:01	55.02	510.702	102.0	
05:37:01	60.02	510.363	102.0	
05:42:01	65.02	509.855	102.0	
05:47:01	70.01	510.025	102.0	
05:52:01	75.01	510.194	102.0	
05:57:00	80.01	510.194	102.0	
06:02:00	85.00	510.194	102.0	
06:07:00	90.00	510.025	102.0	
06:12:00	95.00	509.855	102.0	
06:17:01	100.02	509.855	102.0	
06:22:01	105.02	509.516	102.0	
06:27:01	110.02	509.178	102.0	
06:32:01	115.01	508.669	102.0	
06:36:42	119.71	507.822	102.0	
06:37:00				

MODERATE BLOW

CLOSE TOOL FOR CIP

*** End of Period 1 ***

*** Start of Period 2 ***

06:37:42	1.00	510.025	102.0	
06:38:42	2.00	510.702	102.0	
06:39:42	3.00	511.211	102.0	
06:40:44	4.03	511.719	102.0	
06:41:42	5.00	511.888	102.0	

Date: 19-11-90

Ticket No: 000381

Page No: 3.1.4

PRESSURE VS TIME

MECHANICAL gauge no.: 8008
Clock no.:

Gauge Depth: 1227.00 ft
24

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

06:42:42	6.00	512.058	102.0	
06:43:42	7.00	512.227	102.0	
06:44:44	8.02	512.396	102.0	
06:45:44	9.02	512.735	102.0	
06:46:44	10.02	512.905	102.0	
06:48:44	12.02	513.413	102.0	
06:50:44	14.02	513.752	102.0	
06:52:44	16.02	513.921	102.0	
06:54:44	18.02	514.260	102.0	
06:56:43	20.02	514.599	102.0	
06:58:43	22.02	514.768	102.0	
07:00:43	24.01	514.938	102.0	
07:02:43	26.01	515.107	102.0	
07:04:43	28.01	515.277	102.0	
07:06:43	30.01	515.446	102.0	
07:11:43	35.01	515.615	102.0	
07:16:43	40.00	515.785	102.0	
07:21:42	45.00	515.785	102.0	
07:26:42	50.00	515.785	102.0	
07:31:44	55.02	515.785	102.0	
07:36:44	60.02	515.785	102.0	
07:36:49	60.11	515.785	102.0	
07:37:00				
07:37:00				

OPEN BYPASS, PULL FREE,
PULL OUT OF HOLE

*** End of Period 2 ***

07:37:18		576.273	102.0	
07:38:04		581.357	102.0	
07:38:49		584.068	102.0	
07:39:58		578.984	102.0	
07:40:47		576.104	102.0	
07:41:31		575.934	102.0	
07:42:31		575.426	102.0	
07:44:22		571.529	102.0	
07:45:56		576.951	102.0	
07:50:05		576.273	102.0	
07:50:56		570.343	102.0	
07:54:36		565.598	102.0	
07:56:07		543.402	102.0	
07:59:39		536.285	102.0	
08:02:14		511.380	102.0	
08:06:15		486.307	102.0	
08:09:59		459.034	102.0	
08:14:17		430.069	102.0	
08:19:04		403.139	102.0	
08:23:13		366.389	102.0	
08:27:05		334.723	102.0	

Date: 19-11-90

Ticket No: 000381

Page No: 3.1.5

PRESSURE VS TIME

MECHANICAL gauge no.: 8008
Clock no.:

Gauge Depth: 1227.00 ft
24

Hour:

TIME	D TIME	PRESSURE	TEMP	COMMENTS
HH:MM:SS	(min)	(psi)	(F)	

19-NOV-90

Data Print Frequency: 1

08:31:27		300.352	102.0	
08:37:14		276.649	102.0	
08:41:05		246.347	102.0	
08:46:30		232.805	102.0	
08:51:13		229.589	102.0	
08:52:44		211.647	102.0	
09:01:09		209.955	102.0	
09:03:02		185.921	102.0	
09:14:12		184.060	102.0	
09:16:01		156.136	102.0	
09:21:52		149.537	102.0	
09:24:01		126.524	102.0	
09:31:57		122.632	102.0	
09:35:30		101.821	102.0	
09:40:06		96.745	102.0	
09:46:29		92.516	102.0	
09:49:16		72.383	102.0	
09:52:53		65.955	102.0	
10:07:54		65.786	102.0	
10:13:14		65.617	102.0	
10:28:31		64.602	102.0	
10:30:00				TOOL AT TABLE
10:31:58		48.024	102.0	
10:38:24		38.890	102.0	
10:42:43		33.646	102.0	
10:48:00		26.035	102.0	
10:50:29		21.299	102.0	
10:53:05		20.791	102.0	
10:59:48		20.453	102.0	
11:06:33		20.453	102.0	
11:19:49		20.453	102.0	
11:27:42		19.946	102.0	
11:28:31		18.423	102.0	
11:30:54		18.085	102.0	
11:32:12		16.394	102.0	
11:33:01		14.702	102.0	
11:33:20		13.857	102.0	
11:34:09		13.688	102.0	
11:34:21		13.688	102.0	
11:45:00				TOOL LAID OUT

Date: 19-11-90

Ticket No: 000381

Page No: 3.2

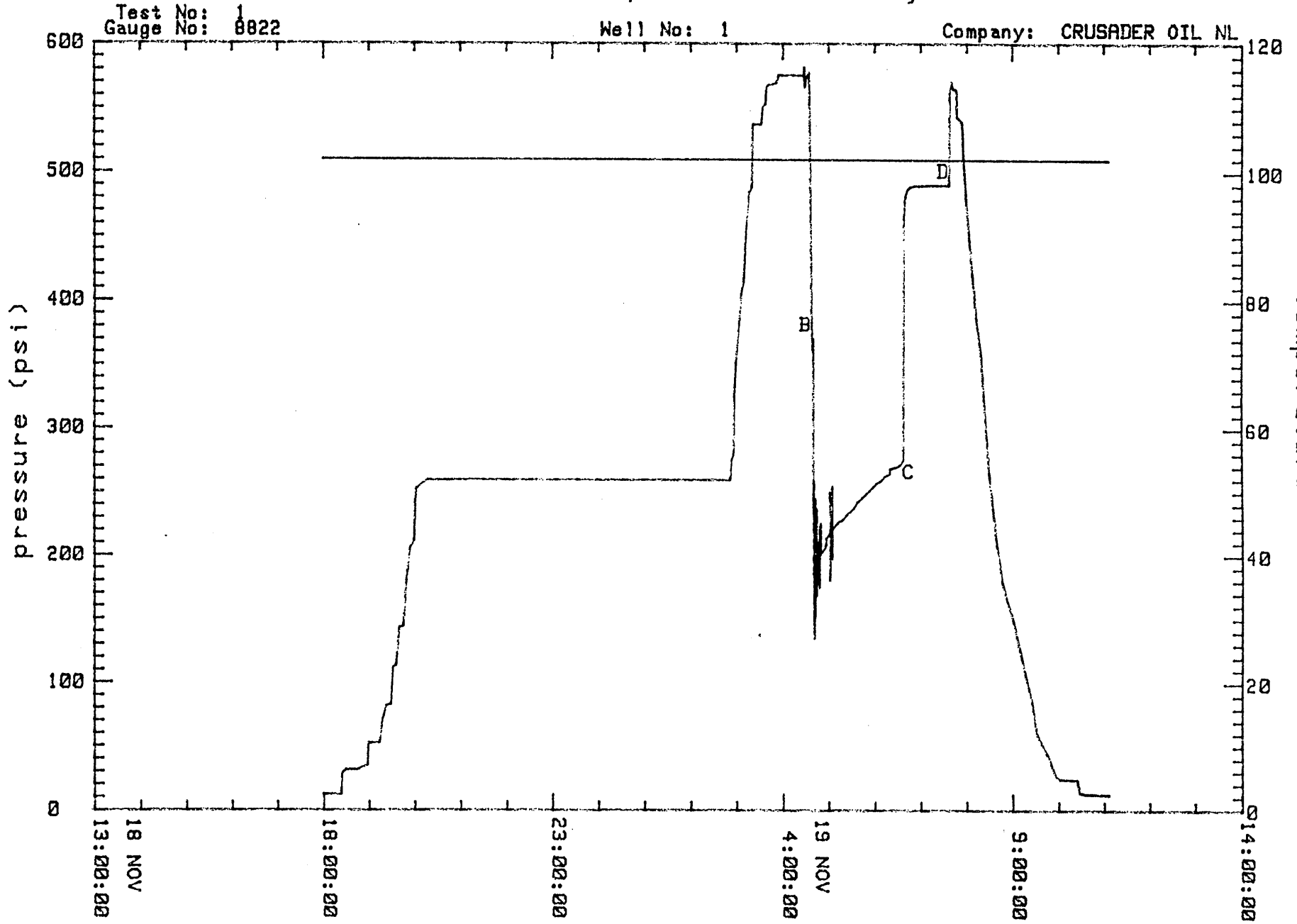
TEST PERIOD SUMMARY

Gauge No.: 8822 Depth: 1175.00 ft Blanked off : No
Hour of clock: 24

ID	PERIOD	DESCRIPTION	PRESSURE (psi)	DURATION (min)
A		Initial Hydrostatic	575.36	
B	1	Start Draw-down	383.55	
C		End Draw-down	275.00	119.61
C	2	Start Build-up	275.00	
D		End Build-up	490.35	60.48
E		Final Hydrostatic	566.90	

NOTE: for Pressure vs. Time Plot, see next page.

Pressure/Temperature History



Date: 19-11-90
Ticket No: 000381
Page No: 3.2.0

PRESSURE VS TIME

MECHANICAL gauge no.: 8822
 Clock no.:

Gauge Depth: 1175.00 ft
 24

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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18-NOV-90

Data Print Frequency: 1

17:35:00				SURFACE PRESSURE = PSIG
17:35:00				MAKE UP TOOLS
17:59:01		11.763	102.0	
18:15:00				TOOLS MADE UP, RUN IN HOLE
18:15:00				WAIT IN CASING
18:22:49		11.763	102.0	
18:23:46		28.677	102.0	
18:29:50		31.118	102.0	
18:44:01		31.118	102.0	
18:57:31		34.779	102.0	
18:58:53		52.208	102.0	
19:13:26		52.208	102.0	
19:17:28		71.549	102.0	
19:22:17		81.652	102.0	
19:28:38		83.045	102.0	
19:31:00		112.298	102.0	
19:35:39		113.343	102.0	
19:40:05		143.276	102.0	
19:44:51		143.972	102.0	
19:48:48		178.757	102.0	
19:53:36		205.700	102.0	
19:59:08		211.435	102.0	
20:00:30		242.357	102.0	
20:01:58		252.603	102.0	
20:15:35		259.375	102.0	
20:38:31		259.548	102.0	
21:00:14		259.722	102.0	
21:29:07		259.722	102.0	
21:57:54		259.722	102.0	
22:29:55		259.722	102.0	
23:02:48		259.722	102.0	
23:31:25		259.722	102.0	
23:59:10		259.722	102.0	

19-NOV-90

00:29:41		259.722	102.0	
00:57:20		259.722	102.0	
01:27:25		259.722	102.0	
01:54:35		259.722	102.0	
02:17:37		259.722	102.0	
02:37:07		259.722	102.0	
02:51:02		259.722	102.0	
02:52:43		275.519	102.0	
02:55:44		279.164	102.0	
02:56:21		321.497	102.0	
02:58:45		349.933	102.0	
03:02:37		381.127	102.0	

Date: 19-11-90

Ticket No: 000381

Page No: 3.2.2

PRESSURE VS TIME

MECHANICAL gauge no.: 8822
Clock no.:

Gauge Depth: 1175.00 ft
24

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

03:06:27		407.975	102.0	
03:08:54		413.516	102.0	
03:12:00		454.366	102.0	
03:15:57		484.120	102.0	
03:19:51		487.579	102.0	
03:21:05		537.190	102.0	
03:32:35		537.363	102.0	
03:33:50		551.703	102.0	
03:37:57		552.912	102.0	
03:39:00		567.593	102.0	
03:47:50		568.802	102.0	
03:52:39		569.838	102.0	
03:53:18		572.947	102.0	
03:54:41		575.364	102.0	
04:13:12		575.364	102.0	
04:24:35		575.364	102.0	
04:26:38		575.364	102.0	
04:27:23		575.364	102.0	
04:27:57		581.580	102.0	
04:28:42		566.212	102.0	
04:30:28		573.465	102.0	
04:31:00				SET PACKER, 30000lb.
04:34:04		577.264	102.0	
04:37:00				OPEN TOOL, STRONG BLOW

SET PACKER, 30000lb.

OPEN TOOL, STRONG BLOW

*** Start of Period 1 ***

04:37:00	0.00	383.552	102.0	
04:38:00				BLOW DECREASING SLIGHTLY
04:38:01	1.02	361.546	102.0	
04:38:53	1.88	370.731	102.0	
04:39:11	2.18	246.525	102.0	
04:39:36	2.60	241.663	102.0	
04:39:39	2.66	184.668	102.0	
04:40:14	3.23	258.854	102.0	
04:40:15	3.26	140.318	102.0	
04:40:40	3.67	240.968	102.0	
04:41:02	4.03	134.402	102.0	
04:41:04	4.06	188.145	102.0	
04:41:40	4.66	184.842	102.0	
04:41:52	4.87	183.103	102.0	
04:41:56	4.93	150.756	102.0	
04:42:05	5.08	244.962	102.0	
04:42:14	5.23	184.668	102.0	
04:42:33	5.56	183.799	102.0	
04:42:35	5.58	193.708	102.0	
04:42:39	5.64	176.322	102.0	
04:42:49	5.82	182.234	102.0	

BLOW DECREASING SLIGHTLY

Date: 19-11-90

Ticket No: 000381

Page No: 3.2.3

PRESSURE VS TIME

MECHANICAL gauge no.: 8822
Clock no.:

Gauge Depth: 1175.00 ft
24

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

04:43:40	6.66	182.408	102.0	
04:43:45	6.75	236.973	102.0	
04:43:54	6.90	167.976	102.0	
04:44:01	7.02	183.103	102.0	
04:45:02	8.03	186.059	102.0	
04:45:15	8.24	210.914	102.0	
04:45:20	8.33	186.928	102.0	
04:45:52	8.87	189.014	102.0	
04:45:58	8.96	204.136	102.0	
04:46:03	9.05	178.061	102.0	
04:46:12	9.20	183.799	102.0	
04:46:37	9.62	187.102	102.0	
04:46:55	9.92	192.665	102.0	
04:47:24	10.39	222.381	102.0	
04:47:33	10.54	174.236	102.0	
04:47:38	10.63	200.660	102.0	
04:48:50	11.83	200.834	102.0	
04:48:59	11.98	225.508	102.0	
04:49:06	12.10	202.398	102.0	
04:51:00	14.01	202.572	102.0	
04:53:00	16.01	203.788	102.0	
04:55:01	18.01	206.222	102.0	
04:56:12	19.20	207.959	102.0	
04:56:19	19.32	213.520	102.0	
04:57:01	20.01	214.041	102.0	
04:59:01	22.01	215.779	102.0	
05:00:00				MODERATE BLOW
05:01:01	24.01	218.385	102.0	
05:01:11	24.19	250.346	102.0	
05:01:22	24.37	179.974	102.0	
05:01:35	24.58	223.076	102.0	
05:03:53	26.88	223.250	102.0	
05:04:00	27.00	254.513	102.0	
05:04:05	27.09	196.662	102.0	
05:04:12	27.21	221.165	102.0	
05:05:01	28.01	221.513	102.0	
05:07:01	30.01	222.729	102.0	
05:09:01	32.02	224.119	102.0	
05:11:01	34.02	225.335	102.0	
05:13:01	36.02	226.725	102.0	
05:15:01	38.02	227.419	102.0	
05:17:01	40.02	227.941	102.0	
05:22:00	45.01	231.762	102.0	
05:27:00	50.00	234.541	102.0	
05:32:01	55.01	237.321	102.0	
05:37:00	60.00	242.184	102.0	

Date: 19-11-90

Ticket No: 000381

Page No: 3.2.4

PRESSURE VS TIME

MECHANICAL gauge no.: 8822

Gauge Depth: 1175.00 ft

Clock no.:

Hour:

24

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

05:42:01	65.02	245.136	102.0	
05:47:00	70.00	247.915	102.0	
05:52:01	75.02	250.867	102.0	
05:57:01	80.01	253.819	102.0	
06:02:00	85.00	257.118	102.0	
06:07:01	90.01	258.854	102.0	
06:12:00	95.00	262.153	102.0	
06:17:01	100.02	263.889	102.0	
06:19:23	102.38	264.930	102.0	
06:19:35	102.59	268.750	102.0	
06:22:00	105.01	268.750	102.0	
06:27:00	110.00	269.791	102.0	
06:32:01	115.01	271.180	102.0	
06:36:37	119.61	274.999	102.0	
06:37:00				

CLOSE TOOL FOR CIP

*** End of Period 1 ***

*** Start of Period 2 ***

06:37:38	1.02	466.650	102.0	
06:38:37	2.00	475.818	102.0	
06:39:38	3.02	480.488	102.0	
06:40:37	4.00	483.428	102.0	
06:41:38	5.02	485.331	102.0	
06:42:37	6.00	486.541	102.0	
06:43:38	7.02	487.060	102.0	
06:44:37	8.00	487.925	102.0	
06:45:38	9.02	488.444	102.0	
06:46:37	10.00	488.789	102.0	
06:51:38	15.02	489.654	102.0	
06:56:37	20.01	489.827	102.0	
07:01:37	25.00	490.000	102.0	
07:06:38	30.01	490.173	102.0	
07:11:37	35.00	490.346	102.0	
07:16:38	40.02	490.346	102.0	
07:21:39	45.04	490.346	102.0	
07:26:38	50.02	490.346	102.0	
07:31:37	55.01	490.346	102.0	
07:36:37	60.00	490.346	102.0	

OPEN BYPASS, PULL FREE,
PULL OUT OF HOLE

07:37:00				
07:37:00				
07:37:05	60.48	490.346	102.0	
07:37:50		557.576	102.0	
07:38:19		565.866	102.0	
07:40:28		570.011	102.0	
07:41:02		566.212	102.0	
07:41:41		566.902	102.0	

*** End of Period 2 ***

Date: 19-11-90

Ticket No: 000381

Page No: 3.2.5

PRESSURE VS TIME

MECHANICAL gauge no.: 8822

Gauge Depth: 1175.00 ft

Clock no.:

Hour:

24

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

07:42:39		565.175	102.0	
07:46:37		564.484	102.0	
07:47:27		542.892	102.0	
07:54:03		539.264	102.0	
07:55:45		510.748	102.0	
07:59:11		479.796	102.0	
08:03:26		448.310	102.0	
08:07:15		420.269	102.0	
08:12:07		386.498	102.0	
08:18:15		358.773	102.0	
08:22:06		326.180	102.0	
08:25:52		293.395	102.0	
08:29:28		265.451	102.0	
08:34:13		237.147	102.0	
08:39:22		208.133	102.0	
08:45:41		180.148	102.0	
08:52:35		165.715	102.0	
09:01:24		148.843	102.0	
09:09:21		126.571	102.0	
09:16:56		106.379	102.0	
09:24:51		85.658	102.0	
09:31:37		59.876	102.0	
09:38:05		51.685	102.0	
09:44:57		44.191	102.0	
09:51:09		34.256	102.0	
09:56:28		26.062	102.0	
10:01:15		24.144	102.0	
10:09:10		23.795	102.0	
10:25:00		23.272	102.0	
10:27:28		13.681	102.0	
10:30:00				
10:30:08		13.158	102.0	
10:33:18		12.984	102.0	
10:34:26		12.461	102.0	
10:36:30		12.461	102.0	
10:42:21		12.461	102.0	
10:54:03		11.937	102.0	
11:01:20		11.763	102.0	
11:05:49		11.763	102.0	
11:45:00				

TOOL AT TABLE

TOOL LAID OUT

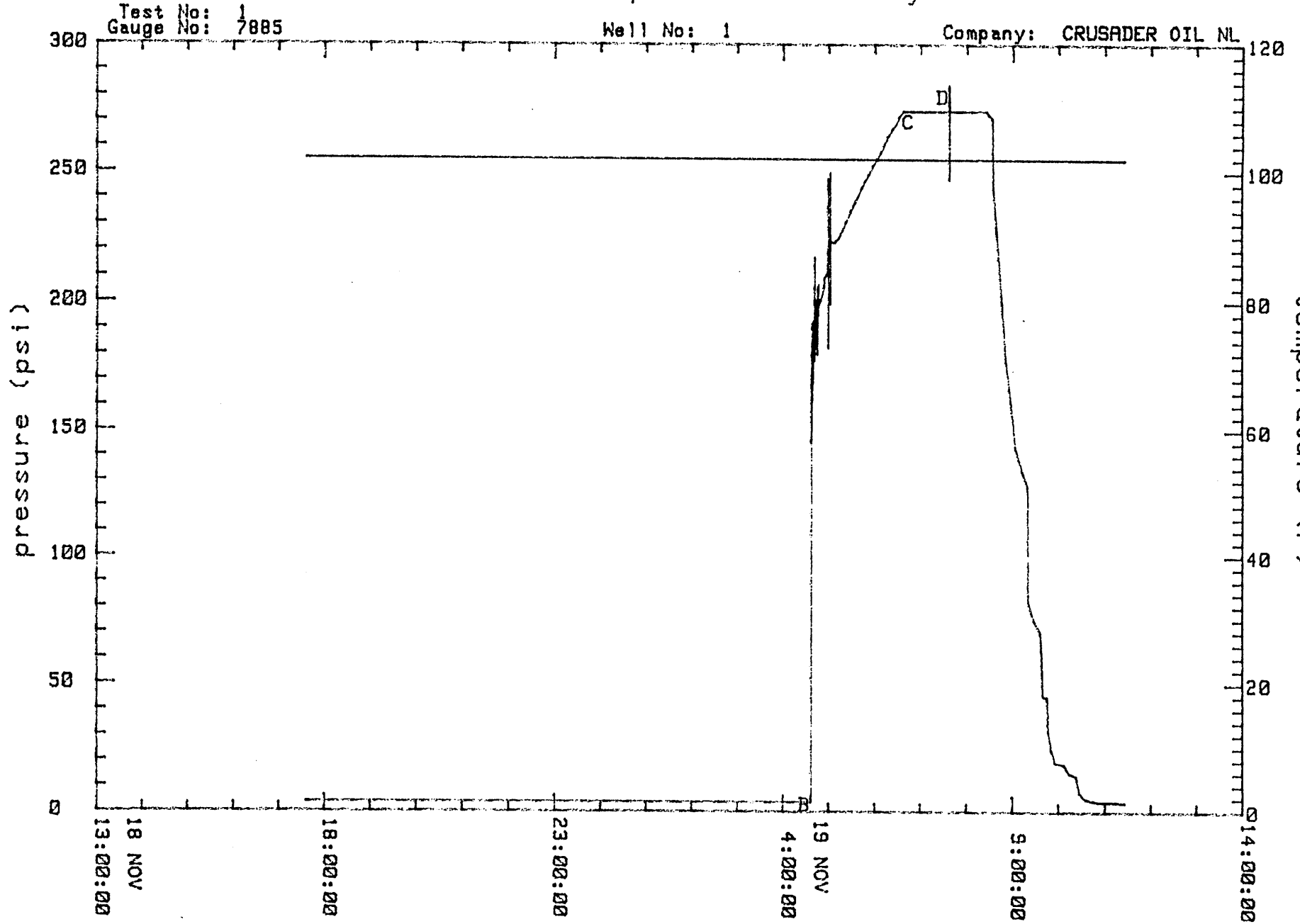
TEST PERIOD SUMMARY

Gauge No.: 7885 Depth: 1154.00 ft Blanked off : No
Hour of clock: 24

ID	PERIOD	DESCRIPTION	PRESSURE (psi)	DURATION (min)
A		Initial Hydrostatic	575.36	
B	1	Start Draw-down	3.44	
C		End Draw-down	273.98	119.52
C	2	Start Build-up	273.98	
D		End Build-up	273.98	60.39
E		Final Hydrostatic	566.90	

NOTE: for Pressure vs. Time Plot, see next page.

Pressure/Temperature History



Date: 19-11-90
Ticket No: 000381
Page No: 3.3.0

PRESSURE VS TIME

MECHANICAL gauge no.: 7885

Gauge Depth: 1154.00 ft

Clock no.:

Hour:

24

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS

18-NOV-90				Data Print Frequency: 1
17:35:00				SURFACE PRESSURE = PSIG
17:35:00				MAKE UP TOOLS
17:35:56		3.437	102.0	
18:05:55		3.437	102.0	
18:15:00				TOOLS MADE UP, RUN IN HOLE
18:15:00				WAIT IN CASING
18:35:56		3.437	102.0	
19:05:55		3.437	102.0	
19:35:56		3.437	102.0	
20:05:55		3.437	102.0	
20:35:56		3.437	102.0	
21:05:55		3.437	102.0	
21:35:56		3.437	102.0	
22:05:55		3.437	102.0	
22:35:56		3.437	102.0	
23:05:55		3.437	102.0	
23:35:56		3.437	102.0	
19-NOV-90				
00:05:55		3.437	102.0	
00:35:56		3.437	102.0	
01:05:55		3.437	102.0	
01:35:56		3.437	102.0	
02:05:55		3.437	102.0	
02:35:56		3.437	102.0	
03:05:55		3.437	102.0	
03:35:56		3.437	102.0	
04:05:55		3.437	102.0	
04:31:00				SET PACKER, 30000lb.
04:35:56		3.437	102.0	
04:37:00				OPEN TOOL, STRONG BLOW
				*** Start of Period 1 ***
04:37:00	0.00	3.437	102.0	
04:37:12	0.21	184.731	102.0	
04:37:20	0.33	145.247	102.0	
04:37:29	0.48	191.779	102.0	
04:37:36	0.59	160.586	102.0	
04:38:00				BLOW DECREASING SLIGHTLY
04:38:06	1.10	161.996	102.0	
04:38:13	1.22	169.223	102.0	
04:39:09	2.14	176.449	102.0	
04:39:10	2.17	192.836	102.0	
04:39:14	2.23	168.518	102.0	
04:39:17	2.29	171.162	102.0	
04:39:19	2.32	186.493	102.0	
04:39:32	2.53	177.507	102.0	
04:40:34	3.57	178.035	102.0	

PRESSURE VS TIME

MECHANICAL gauge no.: 7885

Gauge Depth: 1154.00 ft

Clock no.:

Hour:

24

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

04:40:50	3.84	180.502	102.0	
04:40:56	3.93	217.141	102.0	
04:41:06	4.11	177.330	102.0	
04:41:15	4.25	181.383	102.0	
04:41:31	4.52	201.115	102.0	
04:41:40	4.67	182.264	102.0	
04:42:09	5.15	184.555	102.0	
04:42:23	5.38	198.825	102.0	
04:42:30	5.50	185.612	102.0	
04:42:52	5.86	183.145	102.0	
04:43:01	6.01	200.586	102.0	
04:43:15	6.25	190.369	102.0	
04:44:24	7.41	192.483	102.0	
04:44:46	7.76	205.694	102.0	
04:44:51	7.85	179.621	102.0	
04:45:04	8.06	195.654	102.0	
04:45:52	8.86	195.126	102.0	
04:46:04	9.07	206.751	102.0	
04:46:12	9.19	199.177	102.0	
04:47:00	10.00	199.177	102.0	
04:49:01	12.02	200.586	102.0	
04:51:01	14.01	202.876	102.0	
04:53:00	16.00	205.518	102.0	
04:53:16	16.27	205.870	102.0	
04:53:20	16.33	209.040	102.0	
04:53:47	16.78	209.040	102.0	
04:55:00	18.00	209.921	102.0	
04:57:01	20.02	211.682	102.0	
04:58:20	21.33	213.091	102.0	
04:58:27	21.45	247.769	102.0	
04:58:32	21.54	182.264	102.0	
04:58:39	21.66	220.134	102.0	
04:59:22	22.37	219.430	102.0	
05:00:00				
05:00:28	23.47	218.021	102.0	
05:01:00	24.01	219.606	102.0	
05:01:13	24.21	249.881	102.0	
05:01:20	24.33	199.177	102.0	
05:01:24	24.39	225.064	102.0	
05:02:01	25.02	223.127	102.0	
05:07:01	30.01	222.599	102.0	
05:12:01	35.01	224.360	102.0	
05:17:01	40.01	227.352	102.0	
05:22:00	45.01	230.697	102.0	
05:27:00	50.00	234.394	102.0	
05:32:00	55.00	237.386	102.0	

MODERATE BLOW

Date: 19-11-90

Ticket No: 000381

Page No: 3.3.3

PRESSURE VS TIME

MECHANICAL gauge no.: 7885
Clock no.:

Gauge Depth: 1154.00 ft
24

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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19-NOV-90

Data Print Frequency: 1

05:37:00	60.00	240.554	102.0	
05:42:00	65.00	243.546	102.0	
05:47:00	70.00	246.537	102.0	
05:52:01	75.02	249.177	102.0	
05:57:01	80.02	252.168	102.0	
06:02:01	85.02	255.159	102.0	
06:07:01	90.01	257.447	102.0	
06:12:01	95.01	260.613	102.0	
06:17:01	100.01	263.956	102.0	
06:22:00	105.01	266.419	102.0	
06:27:00	110.00	268.705	102.0	
06:32:00	115.00	271.695	102.0	
06:36:31	119.52	273.982	102.0	
06:37:00				

CLOSE TOOL FOR CIP

*** End of Period 1 ***

*** Start of Period 2 ***

06:37:32	1.01	273.982	102.0	
06:41:31	5.00	273.982	102.0	
06:46:31	10.00	273.982	102.0	
06:56:33	20.02	273.982	102.0	
07:06:32	30.01	273.982	102.0	
07:16:32	40.01	273.982	102.0	
07:26:32	50.00	273.982	102.0	
07:36:31	60.00	273.982	102.0	
07:36:55	60.39	273.982	102.0	
07:37:00				
07:37:00				

OPEN BYPASS, PULL FREE,
PULL OUT OF HOLE

*** End of Period 2 ***

07:37:02		284.182	102.0	
07:37:07		247.241	102.0	
07:37:21		279.785	102.0	
07:37:37		276.444	102.0	
07:37:54		273.982	102.0	
07:49:06		273.982	102.0	
08:06:32		273.982	102.0	
08:26:32		273.982	102.0	
08:29:11		272.575	102.0	
08:33:06		271.520	102.0	
08:34:16		243.722	102.0	
08:38:36		227.881	102.0	
08:45:38		200.234	102.0	
08:50:52		177.330	102.0	
08:57:28		161.820	102.0	
09:03:50		142.602	102.0	
09:12:08		134.312	102.0	
09:19:29		128.315	102.0	

Date: 19-11-90

Ticket No: 000381

Page No: 3.3.4

PRESSURE VS TIME

MECHANICAL gauge no.: 7885

Gauge Depth: 1154.00 ft
24

Clock no.:

Hour:

TIME HH:MM:SS	D TIME (min)	PRESSURE (psi)	TEMP (F)	COMMENTS
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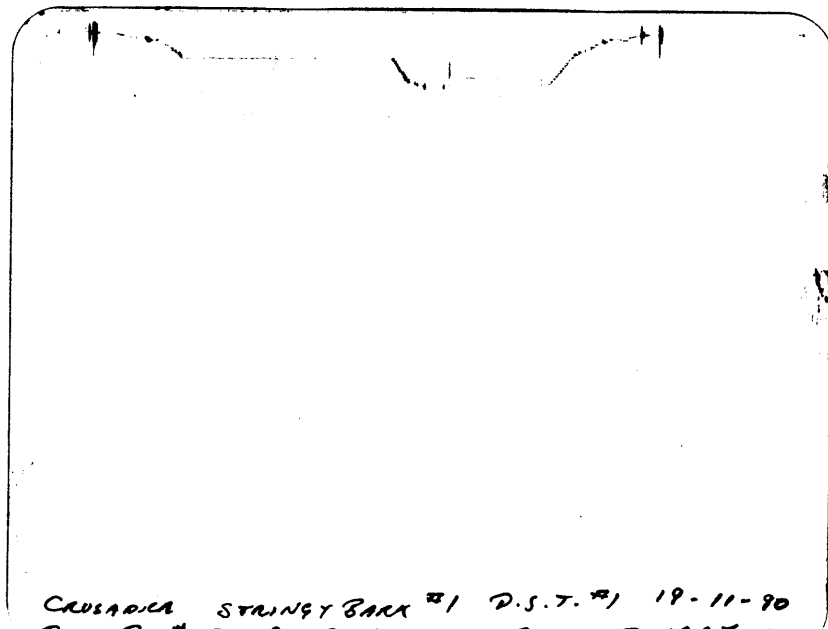
19-NOV-90

Data Print Frequency: 1

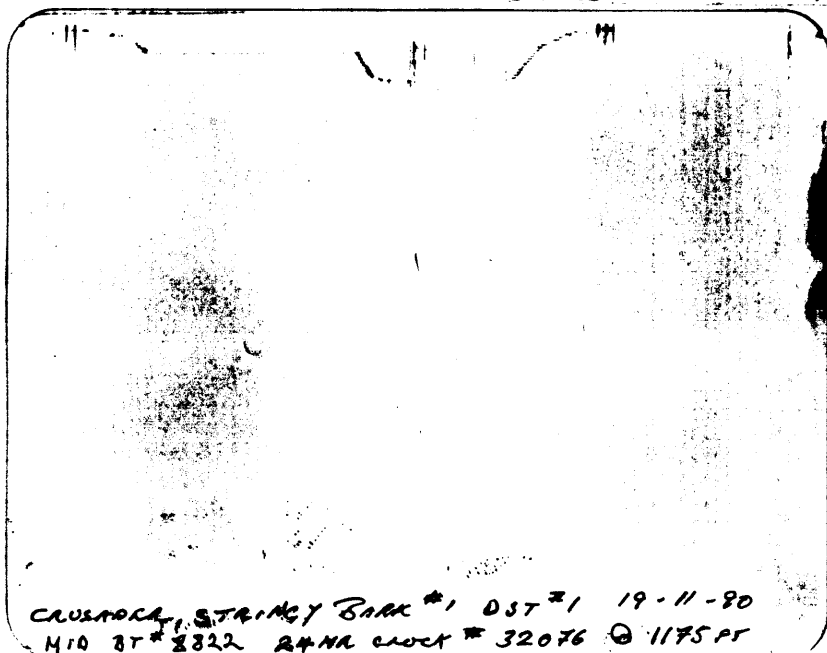
09:20:19		82.075	102.0	
09:27:56		75.189	102.0	
09:36:24		70.067	102.0	
09:39:35		45.158	102.0	
09:45:32		44.981	102.0	
09:46:33		32.080	102.0	
09:50:55		24.478	102.0	
09:55:34		19.351	102.0	
10:07:15		18.644	102.0	
10:14:24		15.108	102.0	
10:23:17		14.224	102.0	
10:26:50		7.327	102.0	
10:30:00				TOOL AT TABLE
10:35:27		5.028	102.0	
10:44:46		4.321	102.0	
10:51:33		3.790	102.0	
11:02:37		3.790	102.0	
11:15:26		3.790	102.0	
11:24:45		3.437	102.0	
11:26:07		3.437	102.0	
11:45:00				TOOL LAID OUT

TOOL AT TABLE

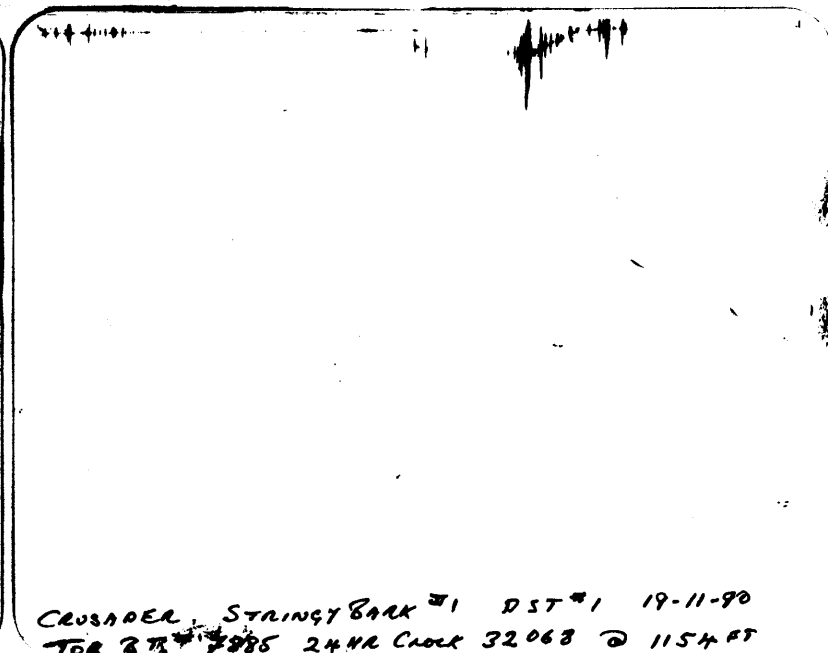
TOOL LAID OUT



CROCODER STRINGY BARK #1 D.S.T. #1 19-11-90
BT# 8008 24HR CLOCK 30075 @ 1227 FT



CROCODER STRINGY BARK #1 DST #1 19-11-90
MID BT# 8322 24HR CLOCK # 32076 @ 1175 FT



CROCODER STRINGY BARK #1 DST #1 19-11-90
TOP BT# 7985 24HR CLOCK 32068 @ 1154 FT

*Description of Cuttings
Samples*

APPENDIX 7

**DESCRIPTION OF
CUTTINGS SAMPLES**

STRINGY BARK NO. 1

CUTTINGS DESCRIPTIONS

DEPTH (M)	LITHOLOGY
20- 60	Sand, greyish yellow, multicoloured, oxidised, ironstained, quartz, coarse to very coarse, sub-angular to occ. rounded grading down to rounded and well rounded, 20% volcanoclastics.
60- 70	Sand, generally A/A except grey, suspect grey clay matrix in bottom section of the sands.
70- 80	Sand and clay. Sand medium and occasionally coarse (cavings). Generally A/A. Clay dispersive dark grey completely mixed with sand. Noncalcareous, trace coaly grains.
80- 90	Sand, very fossiliferous and minor grey clay. 20% Sand, grey, coarse, well-rounded quartz grains. 50% Medium sand with grey clay matrix, minor coal grains. 30% Fossil shells.
90- 100	A/A increasing shell content.
100- 110	90% Shells, no coarse sand grains. 10% Medium sand with grey clay matrix.
110- 120	A/A
120- 130	Shells with greyish brown sand/clay matrix fine-medium, quartz, angular.
130- 140	A/A
140- 150	A/A 5% Coal grains, sand medium.
150- 160	A/A Medium quartz sands and calcite crystals, abundant glauconite.
160- 173	Dominantly shells with lesser quartz sand and very little clay. Shells include gastropods, bivalves, bryzoa, coral, echinoids.
Casing 171m 12¼" hole 173m	
173- 180	Crystalline limestone, light brown to brown calcarenite, fossiliferous, hard to occ. soft where argillaceous, trace glauconite.

STRINGY BARK NO. 1 - CUTTINGS DESCRIPTIONS

2

DEPTH (m)	LITHOLOGY
180- 190	A/A 40% Argillaceous limestone medium grey, very soft, dispersive clay.
190- 200	A/A
200- 210	A/A 10% Argillaceous limestone only.
210- 220	A/A
220- 225	Limestone calcarenite, dark grey-light grey, brown grey, hard to occasionally soft where argillaceous medium
Wiper Trip	to coarse crystalline, abundant impurities such as glauconite and a black mineral (possibly coal fragments) good trace-abundant fossils.
225- 230	A/A
230- 240	A/A
240- 250	A/A
250- 260	A/A becoming finer crystalline and more impure in part.
Note:	Marls/calc. claystones washed from above samples.
260- 270	Limestone from calcilutite to calcarenite. Dominantly argillaceous calcilutite, dark grey to light grey, with fine to medium size calcite crystals, trace glauconite, very soft, sticky, dispersive, trace black specs.
270- 280	70% Dominantly very calcareous claystone/argillaceous limestone A/A. 30% limestone A/A.
280- 290	A/A
290- 300	A/A
300- 310	Increasingly argillaceous.
310- 320	Very calcareous claystone (marl), dark to medium grey, soft, sticky.
320- 330	A/A
330- 340	A/A
340- 350	A/A
350- 360	A/A. Becoming greenish to bluish in colour, as glauconite content increases.
360- 370	A/A. Increasingly dark green-grey as glauconite increases.

STRINGY BARK NO. 1 - CUTTINGS DESCRIPTIONS

3

DEPTH (m)	LITHOLOGY
370- 371	A/A.
371- 372	100% Claystone, very dark grey, bluish, very soft, slightly calcareous to calcareous, abundant, finely disseminated pyrite and glauconite, rare loose quartz grain.
372- 373	60% loose quartz <u>sand</u> , clear to frosty, coarse grained, subrounded to rounded. 40% Claystone A/A.
373- 375	100% Loose quartz <u>sand</u> , clear, light grey, pink, coarse-very coarse occasional pebbles. Good trace glauconite and pyrite (sometimes as large grains). No shows.
DST NO. 1	
375- 380	95% Loose quartz <u>sand</u> coarse to very coarse, occasionally medium, occasional pebbles, angular to subrounded, large grains more rounded. No show. 5% Brown coal, very dark brown soft to friable.
380- 390	100% <u>sand</u> A/A. Trace clay/claystone, brown to dark brown, dispersive no solid grains, silty to very silty, carbonaceous specks.
390- 400	90% Sand A/A 5% Brown coal 5% Clay.
400- 410	50% Sand A/A. 50% Clay A/A.
410- 420	10% Sand A/A. 30% Brown coal A/A blocky. 60% Clay A/A Often consolidated, soft.
420- 430	80% Clay/claystone, darker, not silty, organic rich 20% Sand A/A Trace coal A/A.
430- 440	50% Sand A/A. 50% Clay/claystone A/A
440- 450	80% Clay/claystone A/A 10% Sand 10% Claystone, very dark brown to very dark grey, slightly silty, organic rich (lignitic). Often consolidated, soft to dispersive.
450- 460	90% Clay/claystone grading to lignite 10% Sand (cavings).

STRINGY BARK NO. 1 - CUTTINGS DESCRIPTIONS

4

DEPTH (m)	LITHOLOGY
460- 470	50% Clay/claystone A/A 50% Sand, A/A.
470- 480	90% Sand, A/A 10% Clay/claystone A/A.
480- 490	100% Sand A/A Clay cavings, very dispersive.
490- 500	100% Sand A/A.
500- 510	50% Sand A/A 50% Clay/claystone, medium dark grey, very silty, very soft and sticky, trace carb. specks.
510- 520	100% Quartz sands, very coarse to pebbly, unconsolidated.
520- 530	A/A
530- 535	A/A
535- 536	Siltstone & sand cavings, trace green cuttings. 80% Siltstone, light brown, quartz, very argillaceous, dispersive to unconsolidated, trace green lithics, trace mica and coal (both possibly cavings). 20% Sand A/A.
536- 537	50% Siltstone A/A 50% Claystone (? volcanics), bluish green, firm abundant dark grains, occasional siliceous crystal - probably quartz, calcareous.
537- 540	100% Quartz sand, light brown to yellowish, coarse to very coarse, occ. pebbles, subangular, stained by dark brown ferruginous mineral, trace mica. Possibly contains a matrix of dark brown quartz silt and clay. Excellent visual porosity. No show.
540- 550	100% Sand A/A. Coarse to pebbly.
550- 560	A/A Becoming cleaner, light grey, clear.
560- 570	40% Clay/claystone A/A dispersive, trace pyrite. 20% Earthy coal/lignite A/A. 40% Sand A/A (cavings).
570- 590	70% Clay/claystone, A/A, silty. 20% Earthy coal, A/A. 10% Sand, A/A.

STRINGY BARK NO. 1 - CUTTINGS DESCRIPTIONS

5

DEPTH (m)	LITHOLOGY
580- 590	70% Sand, light grey, quartz, clear-frosted, unconsol., coarse, occ. very coarse, trace mica. 30% Clay/claystone, A/A.
590-600	80% Sand A/A, coarse - very coarse, A/A, trace mica, excellent visual porosity. 20% Clay/claystone, A/A.
600- 610	80% Sand A/A. 20% Clay/claystone, medium grey, dispersive, very silty (as above but distinct lack of coals causing brown colouration of claystone).
610- 620	100% Sand A/A, very pebbly.
20.11.90 627m 0700 hrs	
620- 630	100% Sand, very coarse. Trace coal cavings.
630- 640	70% Sand A/A 30% Coal, dark brown, soft, slight degree of fissility.
640- 650	80% Sand, 20% Coal. (Note hole problems so have changed strip log. Expected clay in this sample.)
650- 660	A/A, Clay washing out of sample, completely dispersive.
660- 670	A/A.
670- 680	A/A.
680- 690	100% Sand
690- 700	100% Sand
700- 710	100% Sand
710- 720	100% Sand, slightly dirty (clay)
730- 740	100% Sand
740- 750	100% Sand, slightly dirty (clay)
750- 760	100% Sand
760- 770	100% Sand, slightly dirty (clay)
770- 780	100% Sand

STRINGY BARK NO. 1 - CUTTINGS DESCRIPTIONS

6

DEPTH (m)	LITHOLOGY
780- 790	A/A
790- 800	A/A
800- 810	A/A (cleaner sample)
810- 820	A/A
820- 830	A/A, Trace coal
830- 840	A/A
840- 850	A/A (slightly dirty), Trace coal. ROP's indicate clay/claystone beds are present and that sands probably have a clay matrix. These disperse into the mud system.
850- 860	A/A
860- 870	A/A
870- 880	A/A. Trace of white quartz grains, angular, look like quartz from vein fillings.
880- 890	80% Sand A/A 20% Basalt, weathered, dark red brown, appears as soft sticky clay in mud and sometimes as firm chips.
890- 900	Basalt, A/A, includes good trace greenish blue claystone that looks very similar to that at 530m.
900- 910	Basalt A/A, some hard grains.
910- 920	Basalt A/A.
920- 922	100% Sand/gravel, light yellowish brown, quartz, coarse to pebbly, dominantly pebbles at base, angular - sub-angular, good trace, large yellow quartz grains that appear to be from vein fillings. Excellent porosity. No shows.
922- 930	100% Basalt, weathered at top, generally as clay, becoming increasingly fresh, dark red brown to dark reddish purple, hard, often crystalline (possibly pyroclastic).
930- 940	100% Basalt, fresh, very dark grey, hard, often finely crystalline.
New Bit 940m	Trip Gas 0.1 units, C ₁ 68 (91%), C ₂ 6 (8%), C ₃ 1 (1%).
940- 950	100% Basalt, fresh, varicoloured, very dark grey and often greenish, dark red brown and lighter shades of these colours, hard to very hard, visually crystalline. Rock chips are very small due to hardness.

STRINGY BARK NO. 1 - CUTTINGS DESCRIPTIONS

7

DEPTH (m)	LITHOLOGY
950- 960	A/A
960- 966 Trip for Bit	A/A. Trip gas 966 0.1 units C ₁ 23 ppm C ₂ 5 ppm
966- 970	A/A
970- 980	Hard drilling to 975m. 50% fresh basalt 50% weathered to clays, grey green, reddish brown and brownish purple, very soft to firm, grading to hard.
980- 990	Very even drilling rate. Change to (?) volcanics, very dark bluish and greenish grey, occ. very dark reddish brown (cavings), fine to medium crystalline, green and red minerals, appears increasingly siliceous.
990-1000	A/A
1000-1010	A/A. Fast drilling possibly due to vein (? igneous) siliceous rock. Medium to coarse crystalline, very dark green, translucent, siliceous, abundant quartz as loose grains (possibly as a quartz sand) frosted to clear, coarse, angular.
1010-1020	Volcanics. Very dark green, translucent, fine to medium crystalline, siliceous, moderately hard to hard. Abundant loose quartz grains and lithics.
1020-1030	80% Sandstone, medium green grey, 60% quartz, clear, 40% lithics, green and grey, angular quartz, subangular to rounded lithics, other varicoloured grains probably including feldspars, white to light grey clay matrix, firm to friable, dominantly unconsolidated. Very poor visual porosity and probably fair porosity if unconsolidated. No show. 20% <u>Claystone</u> , dark brown, silty, moderately hard.
1030-1040	A/A.
1040-1047	50% Sandstone A/A. 30% Siltstone, dark greenish grey, very argillaceous, very soft-firm. 20% Clay/claystone, A/A, very soft to moderately hard.
1047m T.D.	



Wireline Log Evaluation

APPENDIX 8

WIRELINER LOG EVALUATION

STRINGY BARK NO. 1
LATROBE GROUP
QUICK LOOK LOG ANALYSIS

GENERAL DATA

Matrix density = 2.65 g/cc
Fluid density = 1.0 g/cc
m = 2
n = 2
A = 1

GR Min 10
GR Max 180
R shale 60
Sonic shale 155

SP + 34 millivolts at 387m.

Measured temperatures: 39°C (102°F) at 374m
 47°C (117°F) at 1050m
 extrapolated BHT 51°C (124°F)

Rmf 0.79 ohm.m at 19.2°C (67°F)
 = 0.54 ohm.m at 102°F

Resistivity of Water

Rw SSP = 1.54 ohm.m at 102°F

Measured Rw = 2.057 ohm.m at 25°C (77°F) - DST No. 1
 = 1.58 ohm.m at 102°F

Also Rw = $\frac{Rmf}{Rxo}$ x Ro

At 412m = $\frac{0.54}{4}$ x 17
 = 2.3 ohm.m at 102°F

At 443m = 1.2 ohm.m at 102°F
At 463m = 1.54 ohm.m at 102°F
At 470m = 1.2 ohm.m at 102°F

Porosity

The sonic tool is unable to read true values in the unconsolidated and largely uncompacted formations of the Latrobe Group. It is suggested that energy levels are just enough to trigger the 3' sensor on the sonic tool and not enough to trigger the 5' sensor.

Porosities were determined in the clean sands from the resistivity logs. The assumption here is that $S_w = 100\%$ in these sands.

$$\text{Porosity} = \sqrt{\frac{R_w}{R_T}}$$

Water Saturation Calculation

An R_w of 1.54 ohm.m at 102°F was used. In clean sands this gives saturation of water as 100%. In those sands with higher gamma-ray the S_w is less than 100%. The reason for this is lithological. Higher resistivities only occur where the gamma-ray log indicates an increase in clay content. They are associated with large shifts in the sonic log indicating a much more compact sediment.

The shale resistivity as measured from the logs cannot compensate for the clay effect in the sands. This is due to a difference in the clay types from those of sands to those of shales and to a high carbonaceous content of sands having clay matrix.

Hole Conditions

The hole is in very poor condition. The very 'soft' nature of the sediments is the main cause for extensive caving of the borehole wall. The density-Neutron log was programmed but then abandoned on the basis of these hole conditions.

Level	Depth (metres)	MSFL (ohm.m)	RT (ohm.m)	GR (API)	Temp. (°F)	RW (ohm.m)	ΔT	Vclay %	Porosity %	Sw %
1	375	--	20	42	102	1.54	200	19	20	117
2	382	2.5	55	45	102	1.54	170	20	20	70
3	394	2.2	20	33	103	1.53	165	14	20	122
4	412	4	17	12	103	1.53	185	1	30**	100
5	443	8	18	13	104	1.51	180	2	29**	100
6	463	7	20	11	105	1.50	190	1	28**	100
7	470	9	20	12	106	1.49	183	1	28**	100
8	608	4	70	37	111	1.42	157	16	20	62
9	683	3	60	35	112	1.41	160	15	20	68
10	819	6	40	35	116	1.36	140	15	20	81
11	835	4	40	40	117	1.35	115	18	20	84

* 20% Porosities and Estimates

** Determined from Rw and Rt in
water saturated clean sands



Water Analysis

APPENDIX 9

WATER ANALYSIS



Australian Laboratory Services

CONSULTING ANALYTICAL CHEMISTS

LABORATORY REPORT

INCORPORATED
IN QUEENSLAND

Brisbane Head Office and Laboratory
32 Shand Street, Stafford, Q. 4053
P.O. Box 66, Everton Park, Q. 4053.
Phone: (07) 352 5577.
Fax: (07) 352 5109.
Perth Laboratory
Lot 197 Victoria Road, Malaga, W.A. 6062.
Phone: (09) 249 2988. Fax: (09) 249 2942.
Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814.
Phone: (077) 79 9155. Fax: (077) 799 729.

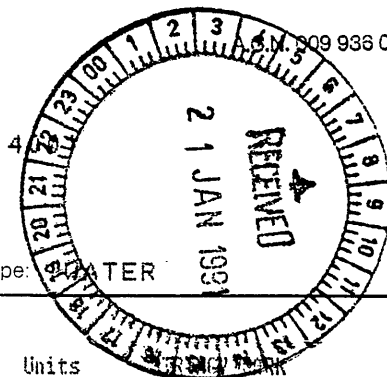
Charters Towers Laboratory
18 Drew Street, Charters Towers,
Phone: (077) 87 4155. Fax: (077) 87 4155.
Bendigo Laboratory
127A Victoria Street, Eaglehawk,
Phone: (054) 46 1390. Fax: (054) 46 1390.
Orange Laboratory
10 Leewood Drive, Orange, N.S.W.
Phone: (063) 631 722. Fax: (063) 631 722.

Client: CRUSADER LIMITED
Address: G P O BOX 703
BRISBANE
QLD

Contact: MR D BARRENGER

Order No.

Sample Type: WATER



4.4.909 936 029

Page 1 of

ENVIRONMENTAL
Batch Number: 280
Sub-batch: 0
No. of Samples: 1
Date Received: 20/12
Date Completed: 17/0

Method	Analysis description	Units	
EA-005	pH Value		7.30
EA-010	Conductivity @ 25°C	uS/cm	4860
ED-005	Calcium	ng/L	114
ED-010	Magnesium	ng/L	30.4
ED-015	Sodium	ng/L	988
ED-020	Potassium	ng/L	25.0
ED-037	Alkalinity (as CaCO3)	ng/L	516
ED-041	Sulphate	ng/L	47.4
ED-046	Chloride	ng/L	148
EG-005F	Cadmium - Filtered	ng/L	<0.01
EG-005F	Cobalt - Filtered	ng/L	<0.01
EG-005F	Copper - Filtered	ng/L	<0.01
EG-005F	Iron - Filtered	ng/L	0.24
EG-005F	Manganese - Filtered	ng/L	0.12
EG-005F	Lead - Filtered	ng/L	<0.01
EG-005F	Zinc - Filtered	ng/L	<0.01

SAMPLES AS RECEIVED

Comments:



This laboratory is accredited by the National Association of Testing Authorities, Australia. The tests indicated herein have been performed in accordance with its terms of registration. This Document shall not be reproduced except in full.

Signatory:

Perth Laboratory
0825

FORM

Well Velocity Survey

APPENDIX 10

WELL VELOCITY SURVEY

Velocity Data



WELL VELOCITY SURVEY

STRINGY BARK #1

PEP 123

VICTORIA

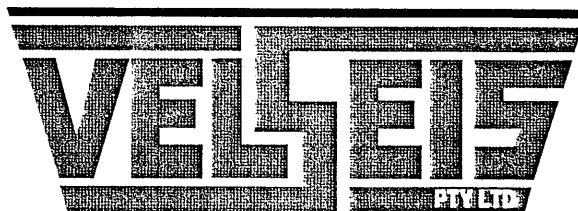
for

CRUSADER RESOURCES N/L

recorded by

VELOCITY DATA PTY. LTD.

processed by



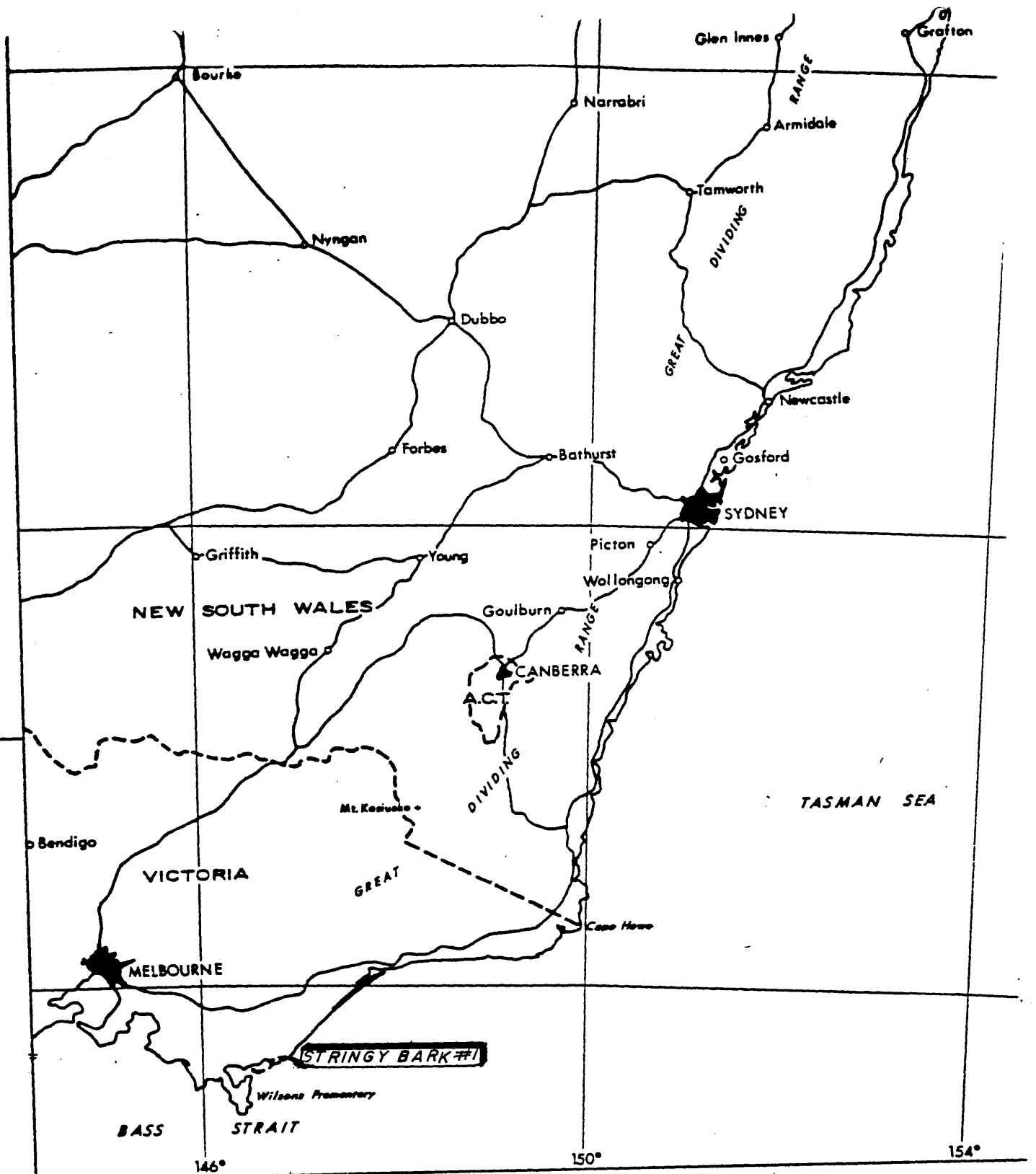
Integrated Seismic Technologies

Brisbane, Australia

January 25, 1991

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Enclosures				
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2.		Trace Display and First Arrival Plots		



STRINGY BARK # 1

CRUSADER RESOURCES NL

WELL LOCATION MAP

Scale 1:5,000,000

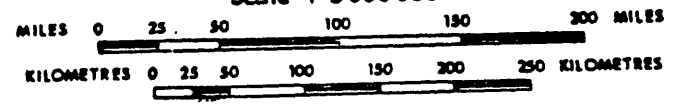
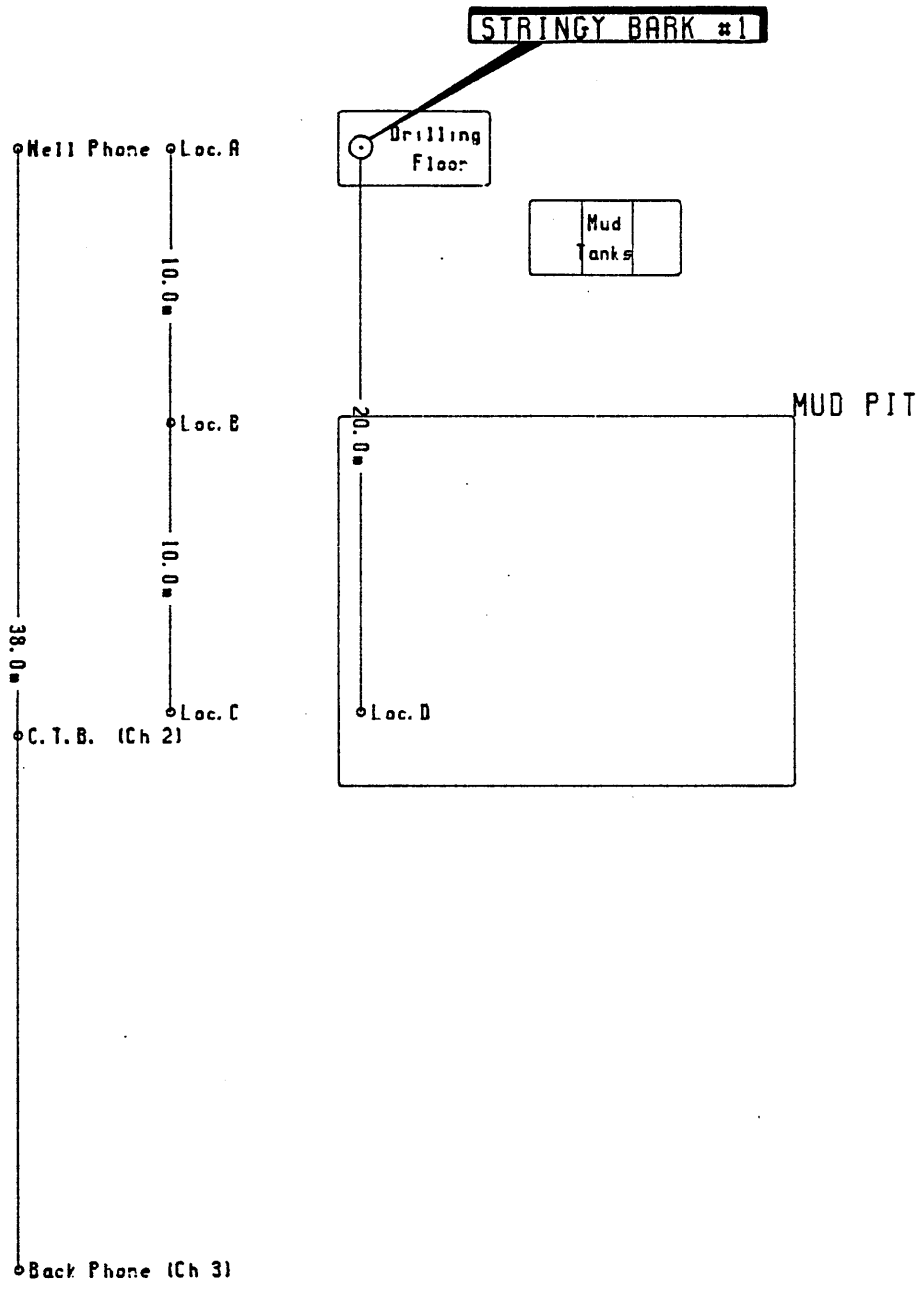


Figure 1



STRINGY BARK #1

CRUSADER
SHOT POINT LOCATION SKETCH



Figure 2

SUMMARY

Velocity Data Pty Ltd conducted a velocity survey for Crusader Resources N.L. in the Stringy Bark No1 well, PEP_123, Gippsland Basin, Victoria, Australia. The date of the survey was the 25th November 1990.

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

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

GENERAL INFORMATION

Name of Well	: Stringy Bark #1
Location (Figure 1)	: PEP 123, Gippsland Basin
Coordinates	: Latitude 038 31 02.31 : Longitude 146 54 01.77
Seismic Reference	: Line GCR87B-107/SP 1496
Date of Survey	: November 25 th , 1990.
Wireline Logging	: BPB Unit V1030
Weather	: Fine
Operational Base	: Brisbane
Operator	: N.Delfos
Shooter	: J.Brown
Client Representative	: Mr D Barrenger

EQUIPMENT**Downhole Tool**

Veldata Camlock 100 (90 mm)

Sensors:

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

Preamplifier:

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

Reference Geophone

Mark Products L1 4.5 Hz

Recording Instrument

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

RECORDING

Energy Source : Explosive, AN-60
Shot Location : Mud pit
Charge Size : 0.5/1 (125grm) sticks
Average Shot Depth : 1.2 metres
Average Shot Offset : 20.0 metres
Recording Geometry : Figure 2

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

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

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

PROCESSING**Elevation Data**

Elevation of KB : 39.0m above sea level
Elevation of Ground : 36.0m above sea level
Elevation of Seismic Datum : 0.0m above sea level
Depth Surveyed : 1049.0m below KB
Total Depth : 1050.0m below KB
Depth of Casing : 170.0m below KB
Sonic Log Interval : 12.0 to 1050.0m below KB

PROCESSING**Recorded Data**

Number of Shots Used : 23
Number of Levels Recorded : 18
Data Quality : Fair
Noise Level : Low

Correction for Instrument Delay and Shot Offset

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

- (i) Subtraction of the instrument delay (4msec) from the recorded arrival times
- (ii) geometric correction for non-verticality of ray paths resulting from shot offset.
- (iii) shot static correction to correct for the depth of shot below ground level at the well head using a correction velocity of 600 metres/sec
- (iv) readdition of the instrument delay (4msec).

Correction to Datum

The datum chosen was 0.0 metres ASL that is 39.0 metres below ground. This level was not shot during the survey and for the calculations a value of 42.8msecs was interpolated for the effective datum correction using the check shot levels that were taken near to datum. This value includes an instrumentation delay.

PROCESSING

Calibration of Sonic Log - Method

Sonic times were adjusted to checkshot times using polynomial derived least squares fit correction of the sonic transient times.

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

Calibration of Sonic Log - Results (Enclosure 1)

The discrepancies between shot and sonic interval velocities were abnormally high, however the condition of the hole was very poor with large areas of washout and in as much a poor tie was to be expected. The sonic log was not modified and the check shot results used as reference. The highest drift figure was 126.83 sec and the cumulative sonic drift over the logged portion of the well amounted to 39.7msecs. The bulk of this error was found to be between 520 and 720 metres below KB an area of large cycle skipping of the laterlog caliper.

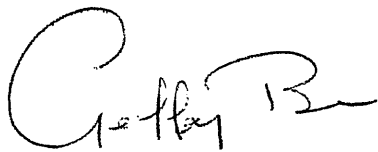
PROCESSING**Trace Playouts (Figure 4)**

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

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

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

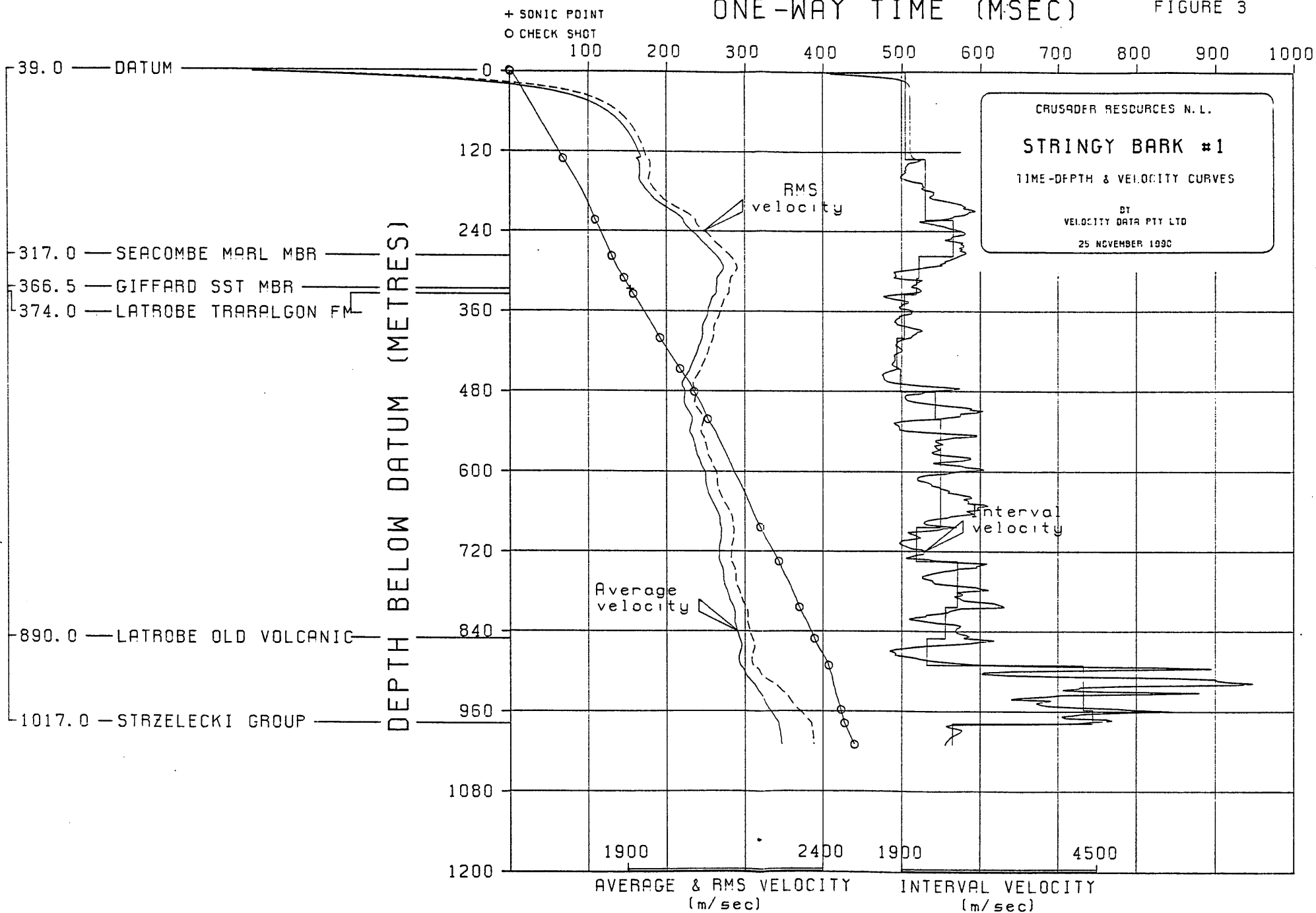
Figure 4D is a plot of selected surface traces. No filter or gain recovery has been applied.

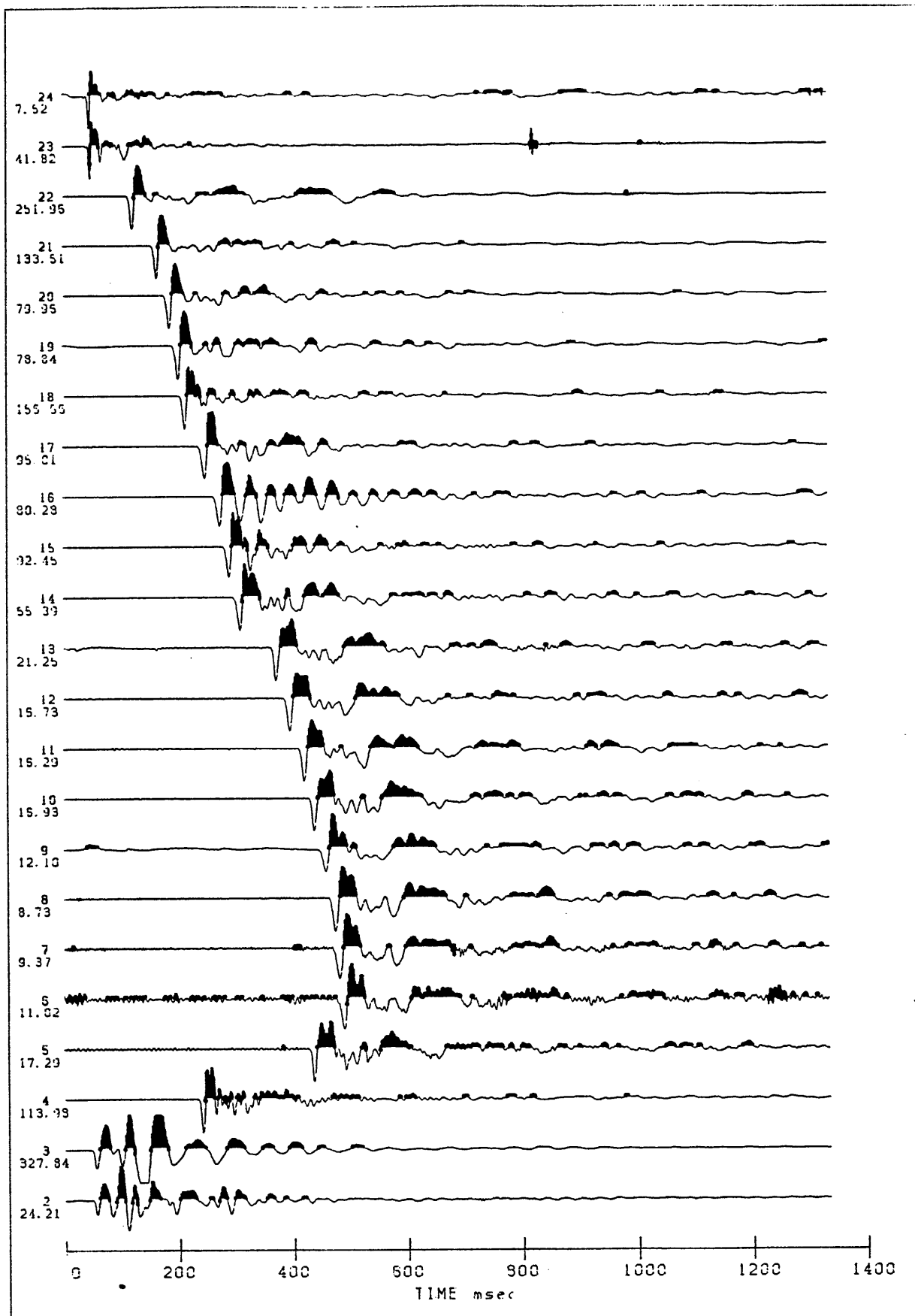


Geoffrey Bell
Geophysical Analyst.

ONE-WAY TIME (MSEC)

FIGURE 3



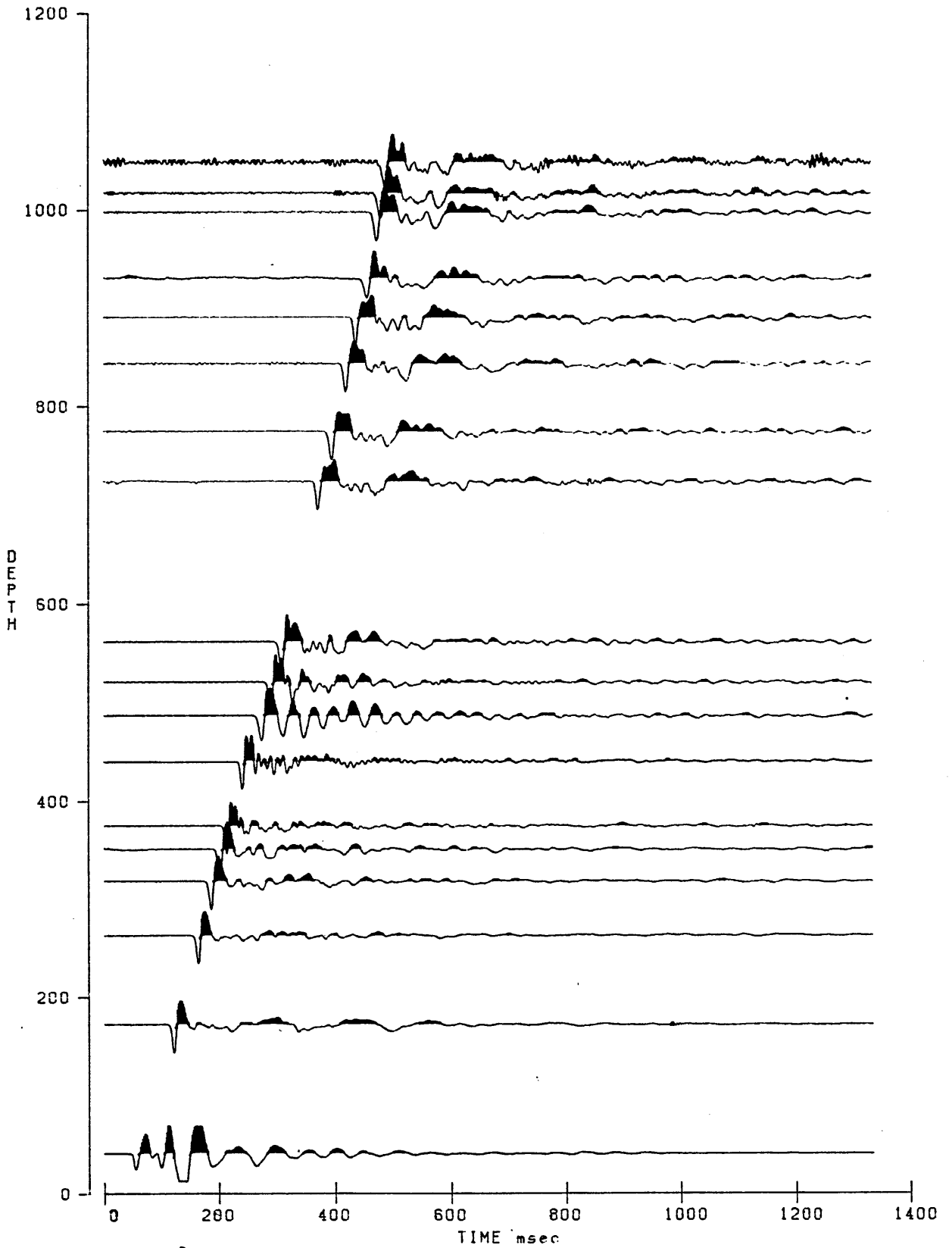


STRINGY BARK #1

VELOCITY SURVEY TRACE DISPLAY
Filter OUT-OUT
No gain recovery



Figure 4A

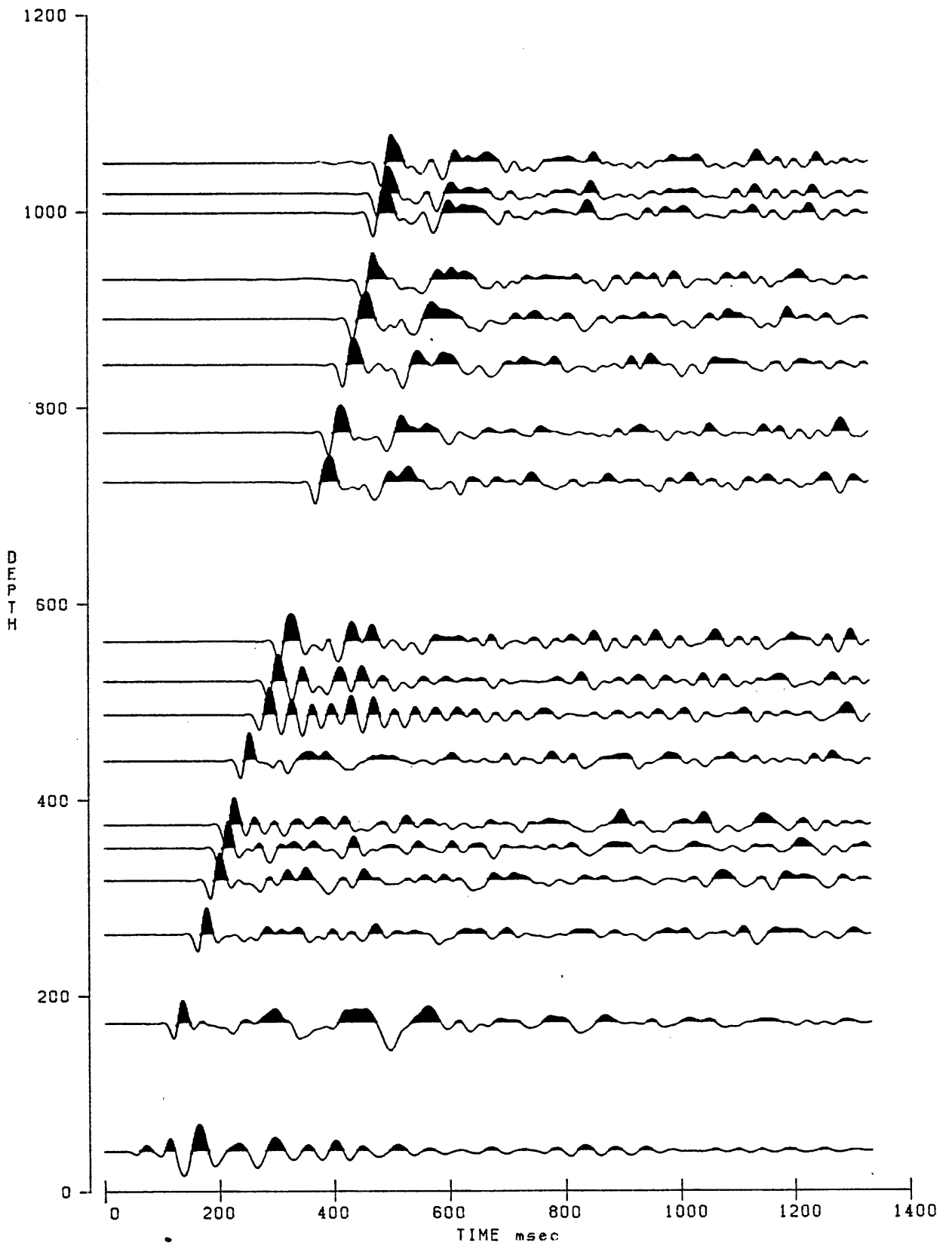


STRINGY BARK #1

VELOCITY SURVEY TRACE DISPLAY
Filter OUT-OUT
No gain recovery



Figure 4B



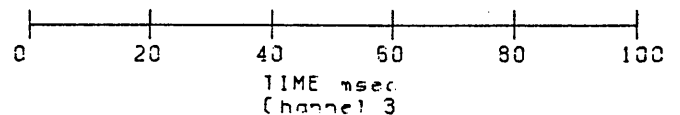
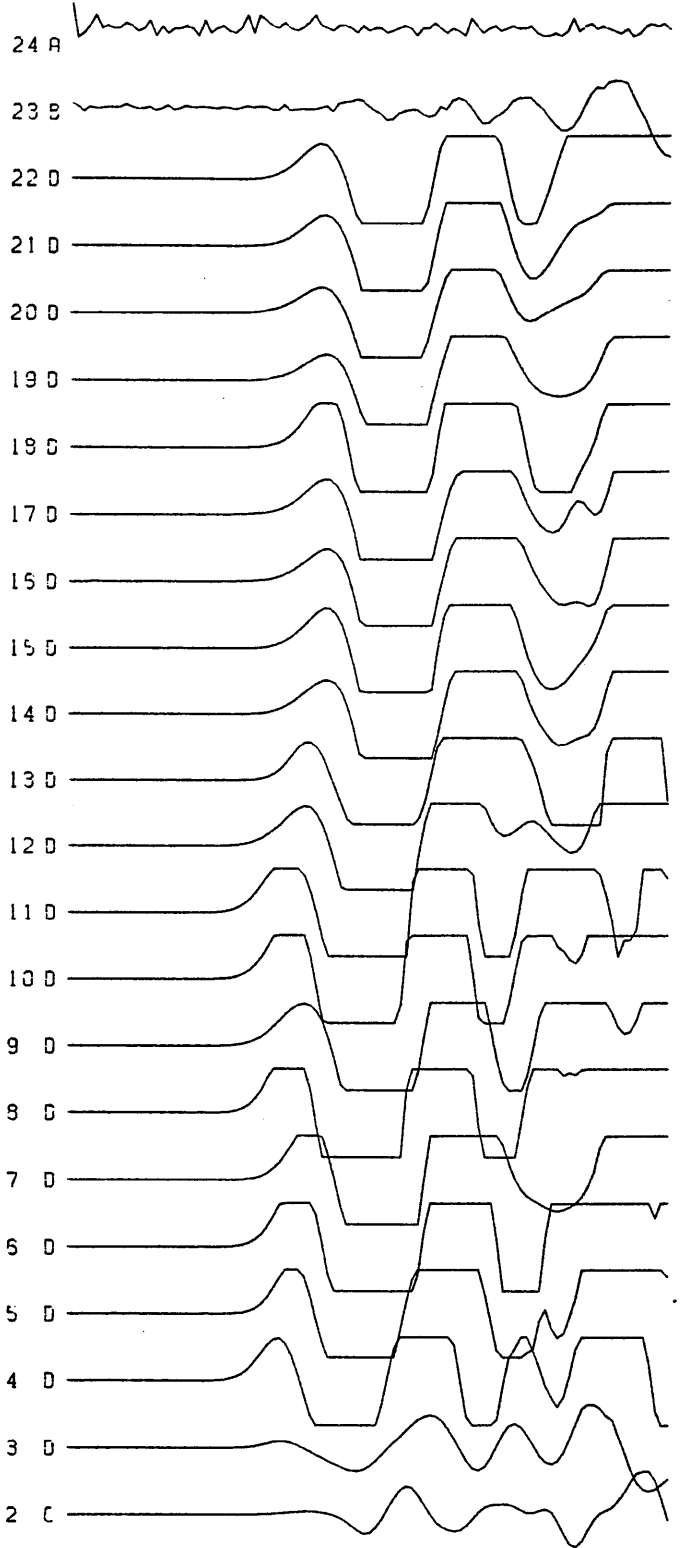
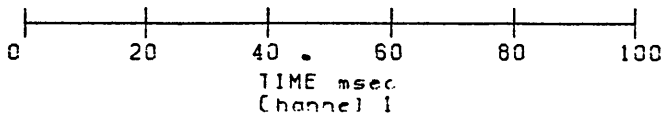
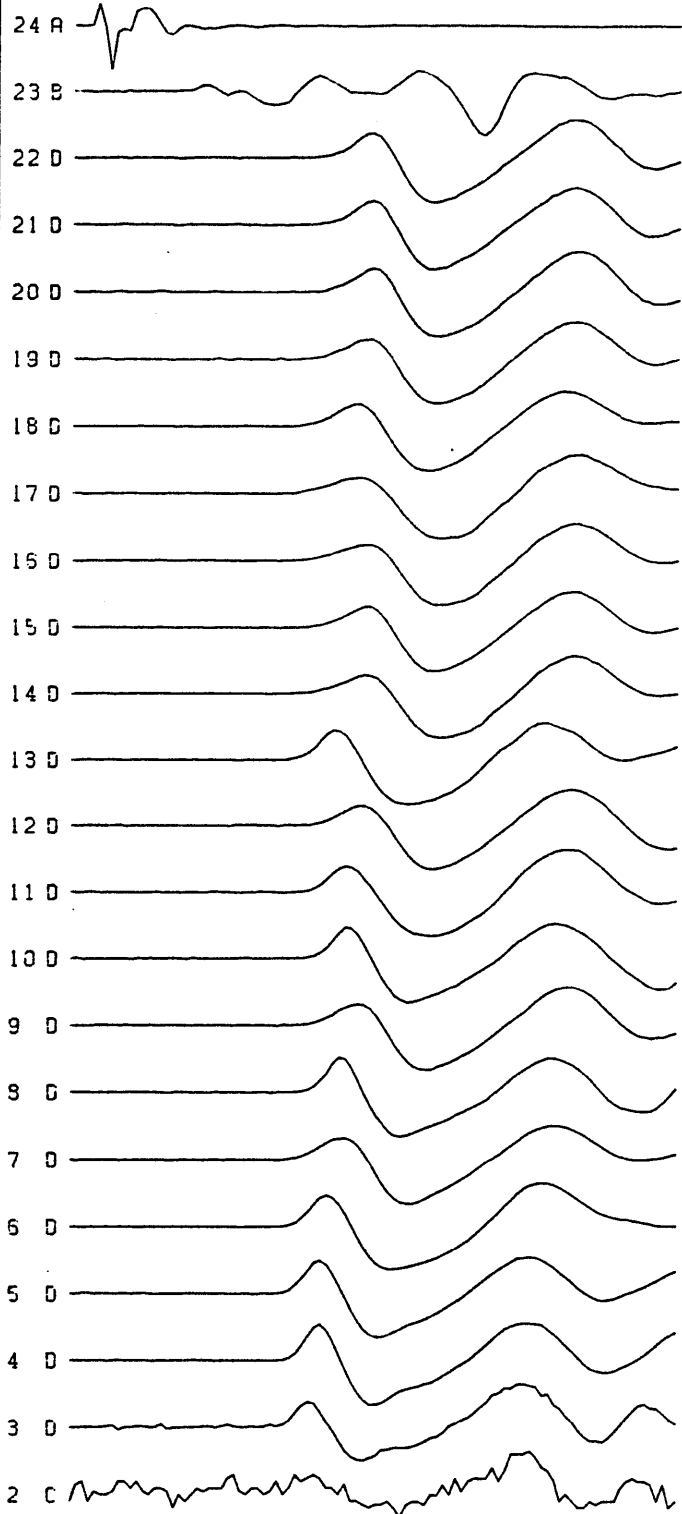
STRINGY BARK #1

VELOCITY SURVEY TRACE DISPLAY

Filter 5-40
Gain T^{2.0}



Figure 4C



STRINGY BARK #1

VELOCITY SURVEY TRACE DISPLAY

Auxiliary channels

Filter OUT-OUT



Figure 4D

TABLE 1. Time-Depth curve values

Well : STRINGY BARK #1

Client : CRUSADER RESOURCES N.L.

Survey units : METRES

Datum : 0.0

Calibrated sonic interval velocities used from 132.0 to 1010.0

Datum Depth	One-way time(ms)	-----VELOCITIES-----			Datum Depth	One-way time(ms)	-----VELOCITIES-----		
		Average	RMS	Interval			Average	RMS	Interval
2.0	2.1	956	956	956	82.0	43.4	1890	1911	2016
4.0	3.8	1066	1073	1204	84.0	44.4	1893	1914	2016
6.0	5.1	1168	1185	1445	86.0	45.4	1896	1916	2016
8.0	6.4	1258	1284	1637	88.0	46.4	1898	1918	2016
10.0	7.5	1336	1370	1775	90.0	47.4	1901	1920	2016
12.0	8.6	1403	1441	1868	92.0	48.3	1903	1922	2016
14.0	9.6	1459	1501	1927	94.0	49.3	1905	1924	2016
16.0	10.6	1508	1552	1963	96.0	50.3	1908	1926	2016
18.0	11.6	1549	1594	1985	98.0	51.3	1910	1928	2016
20.0	12.6	1585	1630	1998	100.0	52.3	1912	1930	2016
22.0	13.6	1615	1660	2005	102.0	53.3	1914	1931	2016
24.0	14.6	1642	1686	2010	104.0	54.3	1915	1933	2016
26.0	15.6	1666	1709	2012	106.0	55.3	1917	1934	2016
28.0	16.6	1687	1729	2014	108.0	56.3	1919	1936	2016
30.0	17.6	1705	1746	2015	110.0	57.3	1921	1937	2016
32.0	18.6	1722	1761	2015	112.0	58.3	1922	1939	2017
34.0	19.6	1737	1775	2016	114.0	59.3	1924	1940	2017
36.0	20.6	1750	1788	2016	116.0	60.2	1925	1941	2017
38.0	21.6	1762	1799	2016	118.0	61.2	1927	1942	2018
40.0	22.6	1774	1809	2016	120.0	62.2	1928	1944	2019
42.0	23.5	1784	1818	2016	122.0	63.2	1930	1945	2021
44.0	24.5	1793	1826	2016	124.0	64.2	1931	1946	2024
46.0	25.5	1802	1834	2016	126.0	65.2	1933	1948	2030
48.0	26.5	1810	1841	2016	128.0	66.2	1934	1949	2040
50.0	27.5	1817	1848	2016	130.0	67.1	1936	1951	2058
52.0	28.5	1824	1854	2016	132.0	68.9	1974	1950	2088
54.0	29.5	1831	1860	2016	134.0	67.8	1976	1952	2114
56.0	30.5	1837	1865	2016	136.0	68.9	1973	1950	1786
58.0	31.5	1842	1870	2016	138.0	70.1	1970	1948	1814
60.0	32.5	1848	1875	2016	140.0	71.1	1968	1946	1848
62.0	33.5	1853	1879	2016	142.0	72.3	1965	1944	1767
64.0	34.5	1857	1883	2016	144.0	73.3	1964	1943	1914
66.0	35.4	1862	1887	2016	146.0	74.5	1960	1940	1715
68.0	36.4	1866	1891	2016	148.0	75.6	1957	1937	1746
70.0	37.4	1870	1894	2016	150.0	76.7	1956	1936	1852
72.0	38.4	1874	1897	2016	152.0	77.8	1954	1935	1842
74.0	39.4	1877	1900	2016	154.0	78.9	1952	1932	1776
76.0	40.4	1881	1903	2016	156.0	80.0	1949	1930	1774
78.0	41.4	1884	1906	2016	158.0	81.3	1945	1926	1647
80.0	42.4	1887	1909	2016	160.0	82.4	1942	1924	1758

TABLE 1. Time-Depth curve values

Well : STRINGY BARK #1

Client : CRUSADER RESOURCES N.L.

Survey units : METRES

Datum : 0.0

Calibrated sonic interval velocities used from 132.0 to 1010.0

Datum Depth	One-way time(ms)	-----VELOCITIES-----			Datum Depth	One-way time(ms)	-----VELOCITIES-----		
		Average	RMS	Interval			Average	RMS	Interval
162.0	83.6	1939	1921	1704	242.0	117.9	2053	2056	3004
164.0	84.6	1938	1921	1897	244.0	118.5	2059	2064	3236
166.0	85.6	1938	1921	1946	246.0	119.2	2064	2070	2959
168.0	86.7	1937	1921	1878	248.0	119.8	2070	2078	3187
170.0	87.7	1938	1922	2032	250.0	120.6	2073	2081	2611
172.0	88.6	1941	1925	2230	252.0	121.4	2076	2085	2600
174.0	89.6	1942	1926	1976	254.0	122.0	2082	2092	3154
176.0	90.6	1942	1926	1921	256.0	122.7	2086	2096	2690
178.0	91.6	1943	1927	2063	258.0	123.4	2090	2101	2826
180.0	92.6	1943	1928	1962	260.0	124.0	2096	2109	3317
182.0	93.5	1946	1931	2277	262.0	124.7	2102	2116	3287
184.0	94.4	1950	1935	2308	264.0	125.4	2106	2121	2829
186.0	95.3	1951	1937	2107	266.0	126.1	2110	2125	2840
188.0	96.3	1951	1937	1969	268.0	126.8	2114	2130	2836
190.0	97.3	1954	1940	2188	270.0	127.4	2119	2137	3224
192.0	98.3	1954	1940	2014	272.0	128.0	2125	2144	3376
194.0	99.2	1956	1943	2188	274.0	128.7	2129	2149	2846
196.0	100.0	1960	1948	2444	276.0	129.3	2134	2155	3128
198.0	100.8	1964	1952	2473	278.0	130.0	2138	2160	2979
200.0	101.6	1969	1958	2573	280.0	130.6	2143	2165	3104
202.0	102.4	1972	1961	2347	282.0	131.4	2146	2168	2521
204.0	103.2	1977	1966	2541	284.0	132.1	2149	2172	2897
206.0	104.0	1982	1972	2675	286.0	132.9	2151	2174	2438
208.0	104.7	1986	1978	2650	288.0	133.6	2156	2179	3090
210.0	105.6	1989	1981	2343	290.0	134.4	2158	2182	2605
212.0	106.2	1996	1990	3109	292.0	135.1	2161	2184	2564
214.0	107.0	2000	1994	2513	294.0	135.9	2163	2187	2596
216.0	107.8	2003	1998	2449	296.0	136.7	2166	2189	2624
218.0	108.7	2006	2002	2390	298.0	137.6	2166	2189	2166
220.0	109.5	2010	2005	2451	300.0	138.7	2164	2187	1882
222.0	110.4	2011	2007	2180	302.0	139.6	2163	2186	2096
224.0	111.3	2013	2009	2274	304.0	140.8	2160	2183	1759
226.0	112.1	2016	2012	2362	306.0	141.7	2159	2182	2043
228.0	113.0	2019	2015	2397	308.0	142.7	2159	2182	2148
230.0	113.7	2023	2021	2742	310.0	143.6	2158	2181	2035
232.0	114.4	2028	2026	2741	312.0	144.7	2157	2180	1947
234.0	115.2	2031	2030	2575	314.0	145.9	2152	2175	1606
236.0	115.9	2037	2037	2991	316.0	146.9	2150	2174	1940
238.0	116.6	2041	2042	2753	318.0	148.0	2149	2172	1928
240.0	117.2	2047	2049	3073	320.0	149.1	2147	2170	1868

TABLE 1.

Time-Depth curve values

Page 3.

Well : STRINGY BARK #1

Client : CRUSADER RESOURCES N.L.

Survey units : METRES

Datum : 0.0

Calibrated sonic interval velocities used from 132.0 to 1010.0

Datum Depth	One-way time(ms)	-----VELOCITIES-----			Datum Depth	One-way time(ms)	-----VELOCITIES-----		
		Average	RMS	Interval			Average	RMS	Interval
322.0	150.2	2143	2167	1685	402.0	192.4	2089	2112	1996
324.0	151.5	2139	2163	1604	404.0	193.5	2088	2111	1850
326.0	152.6	2136	2160	1793	406.0	194.6	2087	2110	1849
328.0	153.6	2136	2160	2096	408.0	195.6	2086	2108	1902
330.0	154.6	2135	2159	1977	410.0	196.7	2084	2107	1881
332.0	155.7	2132	2156	1757	412.0	197.8	2083	2106	1840
334.0	156.9	2129	2153	1746	414.0	198.9	2082	2104	1802
336.0	158.1	2125	2149	1561	416.0	199.9	2081	2103	1893
338.0	159.4	2120	2145	1538	418.0	200.9	2080	2103	2069
340.0	160.7	2116	2141	1614	420.0	201.9	2080	2103	2001
342.0	161.7	2115	2140	1971	422.0	203.0	2079	2102	1881
344.0	162.7	2114	2139	1964	424.0	204.1	2078	2100	1837
346.0	163.7	2113	2138	1967	426.0	205.2	2076	2099	1814
348.0	164.7	2112	2137	1980	428.0	206.3	2075	2097	1805
350.0	165.7	2112	2137	2028	430.0	207.4	2074	2096	1855
352.0	166.8	2110	2135	1847	432.0	208.4	2073	2095	1867
354.0	168.0	2107	2132	1700	434.0	209.5	2071	2094	1834
356.0	169.0	2107	2131	1982	436.0	210.6	2070	2092	1811
358.0	170.1	2105	2129	1786	438.0	211.7	2069	2091	1840
360.0	171.0	2105	2130	2281	440.0	212.8	2068	2090	1810
362.0	171.9	2106	2131	2242	442.0	213.9	2066	2088	1779
364.0	172.9	2105	2129	1936	444.0	215.1	2064	2087	1749
366.0	174.0	2104	2128	1888	446.0	216.1	2064	2086	1968
368.0	175.0	2102	2127	1854	448.0	217.1	2064	2086	2038
370.0	176.1	2101	2125	1850	450.0	218.1	2063	2085	1929
372.0	177.2	2099	2123	1829	452.0	219.2	2062	2084	1803
374.0	178.3	2097	2121	1804	454.0	220.3	2060	2082	1782
376.0	179.5	2095	2119	1751	456.0	221.5	2059	2081	1794
378.0	180.6	2093	2117	1796	458.0	222.6	2058	2080	1781
380.0	181.7	2091	2116	1802	460.0	223.7	2056	2078	1807
382.0	182.7	2090	2115	1930	462.0	224.7	2056	2078	1893
384.0	183.8	2089	2113	1888	464.0	225.9	2054	2076	1763
386.0	184.7	2090	2114	2139	466.0	226.9	2053	2075	1883
388.0	185.6	2090	2114	2204	468.0	228.0	2052	2074	1834
390.0	186.6	2091	2114	2183	470.0	229.0	2053	2074	2128
392.0	187.5	2091	2115	2192	472.0	229.8	2054	2075	2333
394.0	188.5	2090	2114	1972	474.0	230.5	2056	2078	2844
396.0	189.5	2090	2113	1986	476.0	231.2	2059	2082	3121
398.0	190.4	2090	2113	2104	478.0	231.8	2062	2086	3191
400.0	191.4	2090	2113	2040	480.0	232.4	2065	2090	3341

TABLE 1.

Time-Depth curve values

Page 5.

Well : STRINGY BARK #1

Client : CRUSADER RESOURCES N.L.

Survey units : METRES

Datum : 0.0

Calibrated sonic interval velocities used from 132.0 to 1010.0

Datum Depth	One-way time(ms)	-----VELOCITIES-----			Datum Depth	One-way time(ms)	-----VELOCITIES-----		
		Average	RMS	Interval			Average	RMS	Interval
642.0	304.4	2109	2140	3152	722.0	338.2	2135	2168	2705
644.0	305.3	2109	2141	2258	724.0	339.1	2135	2168	2153
646.0	306.1	2110	2142	2508	726.0	340.1	2135	2168	2087
648.0	306.7	2113	2145	3195	728.0	341.0	2135	2168	2128
650.0	307.4	2115	2147	3086	730.0	341.9	2135	2168	2238
652.0	308.1	2116	2149	2762	732.0	342.8	2135	2168	2262
654.0	308.7	2118	2151	3107	734.0	343.6	2136	2169	2500
656.0	309.5	2120	2153	2723	736.0	344.2	2138	2172	3278
658.0	310.2	2121	2154	2755	738.0	345.1	2139	2172	2276
660.0	310.9	2123	2156	2834	740.0	345.7	2141	2174	3303
662.0	311.6	2125	2158	3080	742.0	346.3	2143	2177	3392
664.0	312.5	2125	2158	2204	744.0	347.0	2144	2178	2645
666.0	313.1	2127	2161	3107	746.0	347.9	2145	2179	2395
668.0	313.8	2129	2163	2879	748.0	348.7	2145	2179	2432
670.0	314.7	2129	2163	2234	750.0	349.6	2146	2180	2293
672.0	315.6	2129	2163	2173	752.0	350.3	2147	2181	2629
674.0	316.5	2129	2163	2179	754.0	351.3	2146	2180	2103
676.0	317.4	2130	2163	2329	756.0	352.3	2146	2180	1957
678.0	318.4	2129	2163	2004	758.0	353.3	2146	2180	2081
680.0	319.4	2129	2163	2096	760.0	354.2	2146	2180	2183
682.0	320.3	2129	2163	2109	762.0	355.1	2146	2179	2097
684.0	321.1	2130	2164	2671	764.0	356.1	2146	2179	2079
686.0	321.6	2133	2167	3395	766.0	356.9	2146	2180	2451
688.0	322.3	2134	2169	2891	768.0	357.8	2147	2180	2303
690.0	323.3	2134	2168	2048	770.0	358.7	2147	2180	2136
692.0	324.3	2134	2168	1990	772.0	359.6	2147	2180	2234
694.0	325.3	2133	2167	1969	774.0	360.2	2149	2182	3274
696.0	326.3	2133	2167	2054	776.0	360.7	2151	2186	3870
698.0	327.0	2135	2169	3005	778.0	361.5	2152	2187	2738
700.0	327.9	2135	2169	2221	780.0	362.3	2153	2188	2368
702.0	328.8	2135	2169	2136	782.0	363.0	2154	2189	2791
704.0	329.8	2135	2169	2053	784.0	363.9	2154	2189	2220
706.0	330.8	2134	2168	1884	786.0	364.6	2156	2191	2924
708.0	331.9	2133	2167	1889	788.0	365.3	2157	2192	2895
710.0	332.9	2133	2167	2059	790.0	366.2	2157	2192	2277
712.0	333.8	2133	2166	2082	792.0	367.1	2158	2192	2218
714.0	334.8	2133	2166	2083	794.0	367.8	2159	2194	2818
716.0	335.7	2133	2166	2167	796.0	368.5	2160	2195	2985
718.0	336.7	2133	2166	2118	798.0	369.1	2162	2197	3026
720.0	337.4	2134	2167	2548	800.0	369.8	2164	2199	3137

TABLE 1.

Time-Depth curve values

Page 6.

Well : STRINGY BARK #1

Client : CRUSADER RESOURCES N.L.

Survey units : METRES

Datum : 0.0

Calibrated sonic interval velocities used from 132.0 to 1010.0

Datum Depth	One-way time(ms)	-----VELOCITIES-----			Datum Depth	One-way time(ms)	-----VELOCITIES-----		
		Average	RMS	Interval			Average	RMS	Interval
802.0	370.4	2165	2201	3030	882.0	401.6	2196	2238	2125
804.0	371.0	2167	2203	3285	884.0	402.2	2198	2240	3359
806.0	371.7	2169	2205	3101	886.0	403.0	2199	2240	2595
808.0	372.3	2170	2207	3166	888.0	404.0	2198	2240	1993
810.0	372.9	2172	2209	3231	890.0	404.8	2199	2240	2570
812.0	373.7	2173	2210	2605	892.0	405.2	2201	2244	4350
814.0	374.3	2175	2212	3090	894.0	405.6	2204	2250	5972
816.0	375.0	2176	2213	2874	896.0	405.9	2207	2255	5537
818.0	375.8	2176	2214	2460	898.0	406.2	2210	2260	6089
820.0	376.8	2176	2214	2196	900.0	406.9	2212	2262	3265
822.0	377.5	2178	2215	2762	902.0	407.9	2211	2261	1850
824.0	378.4	2177	2215	2113	904.0	409.0	2210	2260	1858
826.0	379.2	2178	2216	2627	906.0	409.6	2212	2262	3247
828.0	379.8	2180	2218	3177	908.0	410.0	2215	2267	5562
830.0	380.5	2181	2219	3036	910.0	410.4	2218	2272	5254
832.0	381.1	2183	2221	3383	912.0	410.8	2220	2276	4703
834.0	381.7	2185	2223	3165	914.0	411.2	2223	2280	5146
836.0	382.3	2187	2225	3181	916.0	411.5	2226	2285	5553
838.0	383.0	2188	2227	2982	918.0	411.9	2229	2290	5654
840.0	383.7	2189	2228	3020	920.0	412.3	2232	2295	5707
842.0	384.3	2191	2230	3159	922.0	412.6	2235	2300	5740
844.0	384.9	2193	2232	3226	924.0	413.1	2237	2303	4102
846.0	385.5	2194	2234	3247	926.0	414.1	2236	2302	2063
848.0	386.1	2196	2236	3261	928.0	414.5	2239	2305	4049
850.0	386.7	2198	2239	3631	930.0	414.9	2242	2310	5743
852.0	387.3	2200	2241	3130	932.0	415.4	2244	2313	4095
854.0	388.0	2201	2242	2853	934.0	415.7	2247	2318	5732
856.0	388.6	2203	2244	3279	936.0	416.1	2249	2323	5545
858.0	389.3	2204	2246	3127	938.0	417.0	2249	2323	2179
860.0	390.1	2205	2246	2559	940.0	417.9	2250	2323	2389
862.0	390.9	2205	2247	2364	942.0	418.4	2252	2325	3929
864.0	391.9	2204	2246	1936	944.0	419.0	2253	2327	3213
866.0	393.0	2204	2245	1977	946.0	419.5	2255	2329	3832
868.0	394.0	2203	2244	1885	948.0	420.2	2256	2331	3083
870.0	395.2	2202	2243	1761	950.0	421.0	2257	2331	2434
872.0	396.5	2199	2241	1534	952.0	421.5	2258	2333	3621
874.0	397.6	2198	2240	1807	954.0	422.0	2261	2336	3988
876.0	398.4	2199	2240	2330	956.0	422.5	2263	2339	4117
878.0	399.5	2198	2239	1840	958.0	423.0	2265	2342	4355
880.0	400.7	2196	2238	1716	960.0	423.4	2267	2345	4397

TABLE 1.

Time-Depth curve values

Page 7.

Well : STRINGY BARK #1

Client : CRUSADER RESOURCES N.L.

Survey units : METRES

Datum : 0.0

Calibrated sonic interval velocities used from 132.0 to 1010.0

Datum Depth	One-way time(ms)	-----VELOCITIES-----			Datum Depth	One-way time(ms)	-----VELOCITIES-----		
		Average	RMS	Interval			Average	RMS	Interval
962.0	423.9	2269	2348	4374	986.0	431.1	2287	2369	3421
964.0	424.3	2272	2351	4470	988.0	431.7	2289	2371	3483
966.0	425.2	2272	2351	2205	990.0	432.3	2290	2373	3410
968.0	425.8	2273	2353	3319	992.0	432.8	2292	2374	3410
970.0	426.4	2275	2355	3664	994.0	433.4	2293	2376	3382
972.0	426.9	2277	2357	3593	996.0	434.0	2295	2378	3282
974.0	427.5	2279	2359	3821	998.0	434.7	2296	2379	3230
976.0	428.0	2281	2362	3965	1000.0	435.3	2297	2380	3225
978.0	428.5	2282	2364	3480	1002.0	435.9	2299	2382	3196
980.0	429.3	2283	2364	2807	1004.0	436.5	2300	2383	3178
982.0	429.9	2284	2366	3015	1006.0	437.2	2301	2384	3160
984.0	430.5	2286	2367	3403	1008.0	437.8	2302	2386	3142

VELSEIS PTY LTD

WELL SURVEY CALCULATIONS Page 1

Company : CRUSADER RESOURCES N.L.
 Well : STRINGY BARK #1
 Elevations : Datum : 0.0 Ground : 36.0 Kelly : 39.0
 Shot data : Location Elevation Offset
 A 36.0 2.0
 B 36.0 10.0
 C 36.0 20.0
 D 35.0 20.0

Latitude : 038 31 02.31
 Longitude : 146 54 01.77
 Rig identification : DRILLCORP #23
 Energy source : AN60
 Logger : BPB #V1030
 Near surface velocity
 for shot statics: 600
 Instrument delay: 4.0 ms

Survey date : 25-NOV-90
 Survey units : METRES
 Times in milliseconds.

SHOT CALCULATIONS

Shot No	Geophone depth		Shot Locn	Shot Depth	TIMES				Check shot interval		Velocities						
	Kelly	Datum			Record	Corr.	Avg.	Below datum	Distance	Time	Average	RMS	Interval				
DATUM																	
	39.0	0.0					42.8	0.0									
2	40.0	1.0	C	0.7	50.0	45.5				1.0	1.1						909.1
3	40.0	1.0	D	1.2	44.0	42.3											
23	40.0	1.0	B	0.7	45.0	44.7											
24	40.0	1.0	A	0.7	42.0	43.1	43.9	1.1					909.1	909.1			
22	171.0	132.0	D	1.2	108.0	110.9	110.9	68.1	131.0	67.0			1938.3	1942.8			1955.2
21	262.5	223.5	D	1.2	149.0	152.2	152.2	109.4	91.5	41.3			2043.0	2050.0			2215.5
									54.5	21.1							2582.9
SEACOMBE MARL MBR																	
20	317.0	278.0	D	1.2	170.0	173.3	173.3	130.5					2130.3	2145.2			2115.4
19	350.0	311.0	D	1.2	185.5	188.9	188.9	146.1	33.0	15.6			2128.7	2142.0			2115.4
									24.0	11.5							2087.0
LATROBE TRARALGON FM																	
18	374.0	335.0	D	1.2	197.0	200.4	200.4	157.6					2125.6	2138.0			1924.2
4	440.0	401.0	D	1.2	232.0	235.4			66.0	34.3							
17	440.0	401.0	D	1.2	230.5	233.9	234.7	191.9					2089.6	2101.4			
16	486.0	447.0	D	1.2	256.5	259.9	259.9	217.1	46.0	25.2			2059.0	2071.3			1825.4
15	520.0	481.0	D	1.2	274.5	278.0	278.0	235.2	34.0	18.1			2045.1	2057.1			1878.5
14	561.0	522.0	D	1.2	292.0	295.5	295.5	252.7	41.0	17.5			2065.7	2078.1			2342.9
13	723.0	684.0	D	1.2	359.0	362.5	362.5	319.7	162.0	67.0			2139.5	2153.8			2417.9
12	774.0	735.0	D	1.2	383.5	387.0	387.0	344.2	51.0	24.5			2135.4	2148.7			2081.6
11	843.0	804.0	D	1.2	409.5	413.1	413.1	370.3	69.0	26.1			2171.2	2187.3			2643.7
									47.0	19.0							2473.7
LATROBE OLD VOLCANIC																	
5	890.0	851.0	D	1.2	428.0	431.6											
10	890.0	851.0	D	1.2	429.0	432.6	432.1	389.3					2186.0	2202.1			

VELSEIS PTY LTD

WELL SURVEY CALCULATIONS Page 2

Company : CRUSADER RESOURCES N.L.
 Well : STRINGY BARK #1
 Elevations : Datum : 0.0 Ground : 36.0 Kelly : 39.0
 Shot data : Location Elevation Offset
 A 36.0 2.0
 B 36.0 10.0
 C 36.0 20.0
 D 35.0 20.0

Latitude : 038 31 02.31
 Longitude : 146 54 01.77

Survey date : 25-NOV-90
 Survey units : METRES
 Times in milliseconds.

Rig identification : DRILLCORP #23
 Energy source : AN60
 Logger : BPB #V1030
 Near surface velocity
 for shot statics: 600
 Instrument delay: 4.0 ms

SHOT CALCULATIONS

Shot No	Geophone depth		Shot Locn	Shot Depth	TIMES				Check shot interval		Velocities		
	Kelly	Datum			Record	Corr.	Avg.	Below datum	Distance	Time	Average	RMS	Interval
10	890.0	851.0	D	1.2	429.0	432.6	432.1	389.3			2186.0	2202.1	
9	930.0	891.0	D	1.2	446.5	450.1	450.1	407.3	40.0	18.0	2187.6	2203.0	2222.2
8	997.0	958.0	D	1.2	462.0	465.6	465.6	422.8	67.0	15.5	2265.8	2315.2	4322.6
STRZELECKI GROUP													
7	1017.0	978.0	D	1.2	466.5	470.1	470.1	427.3	20.0	4.5			4444.4
6	1049.0	1010.0	D	1.2	479.0	482.6	482.6	439.8	32.0	12.5	2288.8	2347.8	2560.0
											2296.5	2354.0	

Company : CRUSADER RESOURCES N.L.
 Well : STRINGY BARK #1
 Elevations : Datum : 0.0 Ground : 36.0 Kelly : 39.0

Latitude : 038 31 02.31
 Longitude : 146 54 01.77

Survey date : 25-NOV-90
 Survey units : METRES
 Times in milliseconds.

SONIC DRIFT

Geophone depth		Check shot times		Check shot interval		Sonic	Interval sonic drift	Cumulative	
Kelly	Datum	Average	Below datum	Distance	Time	Int. time	usec/m	--- msec	drift msec
DATUM									
39.0	0.0	42.8	0.0						
40.0	1.0	43.9	1.1	1.0	1.1				
171.0	132.0	110.9	68.1	131.0	67.0				
262.5	223.5	152.2	109.4	91.5	41.3	46.7	-59.02	-5.4	-5.4
				54.5	21.1	20.9	3.67	0.2	-5.2
SEACOMBE MARL MBR									
317.0	278.0	173.3	130.5	33.0	15.6	15.6	0.00	0.0	-5.2
350.0	311.0	188.9	146.1	24.0	11.5	14.5	-125.00	-3.0	-8.2
LATROBE TRARALGON FM									
374.0	335.0	200.4	157.6	66.0	34.3	37.9	-54.55	-3.6	-11.8
440.0	401.0	234.7	191.9	46.0	25.2	27.7	-54.35	-2.5	-14.3
486.0	447.0	259.9	217.1	34.0	18.1	18.7	-17.65	-0.6	-14.9
520.0	481.0	278.0	235.2	41.0	17.5	22.7	-126.83	-5.2	-20.1
561.0	522.0	295.5	252.7	162.0	67.0	81.6	-90.12	-14.6	-34.7
723.0	684.0	362.5	319.7	51.0	24.5	26.6	-41.18	-2.1	-36.8
774.0	735.0	387.0	344.2	69.0	26.1	31.5	-78.26	-5.4	-42.2
843.0	804.0	413.1	370.3	47.0	19.0	17.9	23.40	1.1	-41.1
LATROBE OLD VOLCANIC									
890.0	851.0	432.1	389.3	40.0	18.0	19.0	-25.00	-1.0	-42.1
930.0	891.0	450.1	407.3	67.0	15.5	17.4	-28.36	-1.9	-44.0
997.0	958.0	465.6	422.8	20.0	4.5	4.7	-10.00	-0.2	-44.2
STRZELECKI GROUP									
1017.0	978.0	470.1	427.3	32.0	12.5	8.0	140.62	4.5	-39.7
1049.0	1010.0	482.6	439.8						

Company : CRUSADER RESOURCES N.L.
 Well : STRINGY BARK #1
 Elevations : Datum : 0.0 Ground : 36.0 Kelly : 39.0

Latitude : 038 31 02.31
 Longitude : 146 54 01.77

Survey date : 25-NOV-90
 Survey units : METRES
 Times in milliseconds.

SONIC CALIBRATION

Geophone depth		Interval Distance	Original sonic times		Adjusted sonic times		Velocities		
Kelly	Datum		Interval	Cumulative	Interval	Calibrated	Average	RMS	Interval
DATUM									
39.0	0.0								
		1.0							909.1
40.0	1.0							909.1	909.1
		131.0						1938.3	1942.8
171.0	132.0							1938.3	1942.8
		91.5	46.7			41.3		1938.3	1942.8
262.5	223.5			46.7			109.4	2043.0	2050.0
		54.5	20.9			21.1		2043.0	2050.0
SEACOMBE MARL MBR									
317.0	278.0			67.6			130.5	2130.3	2145.2
		33.0	15.6			15.6		2130.3	2145.2
350.0	311.0			83.2			146.1	2128.7	2142.0
		16.5	10.0			7.9		2128.7	2142.0
GIFFARD SST MBR									
366.5	327.5			93.2			154.0	2126.1	2138.8
		7.5	4.5			3.6		2126.1	2138.8
LATROBE TRARALGON FM									
374.0	335.0			97.7			157.6	2125.6	2138.0
		66.0	37.9			34.3		2125.6	2138.0
440.0	401.0			135.6			191.9	2089.6	2101.4
		46.0	27.7			25.2		2089.6	2101.4
486.0	447.0			163.3			217.1	2059.0	2071.3
		34.0	18.7			18.1		2059.0	2071.3
520.0	481.0			182.0			235.2	2045.1	2057.1
		41.0	22.7			17.5		2045.1	2057.1
561.0	522.0			204.7			252.7	2065.7	2078.1
		162.0	81.6			67.0		2065.7	2078.1
723.0	684.0			286.3			319.7	2139.5	2153.8
		51.0	26.6			24.5		2139.5	2153.8
774.0	735.0			312.9			344.2	2135.4	2148.7
		69.0	31.5			26.1		2135.4	2148.7
843.0	804.0			344.4			370.3	2171.2	2187.3
		47.0	17.9			19.0		2171.2	2187.3
LATROBE OLD VOLCANIC									
890.0	851.0			362.3			389.3	2186.0	2202.1
		40.0	19.0			18.0		2186.0	2202.1
930.0	891.0			381.3			407.3	2187.6	2203.0
		67.0	17.4			15.5		2187.6	2203.0
997.0	958.0			398.7			422.8	2265.8	2315.2
		20.0	4.7			4.5		2265.8	2315.2
STRZELECKI GROUP									
1017.0	978.0			403.4			427.3	2288.8	2347.8
		32.0	8.0			12.5		2288.8	2347.8
1049.0	1010.0			411.4			439.8	2296.5	2354.0
								2296.5	2354.0

Velocity Data



SYNTHETIC SEISMOGRAMS

STINGY BARK #1

PEP 123

VICTORIA

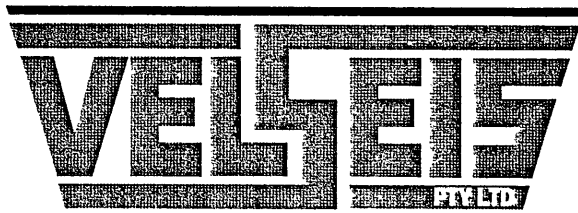
for

CRUSADER RESOURCES N.L.

recorded by

VELOCITY DATA PTY. LTD.

processed by



Integrated Seismic Technologies

Brisbane, Australia

February 18, 1991

CRUSADER OIL N.L.
LIBRARY *W/F*
SHELF NO:
DATE: 18 MAR 1991

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CHECKSHOT DATA	2
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CALIBRATION OF SONIC LOG				
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Tables				
Table 1	Time-depth values			
Enclosures				
1.	Synthetic seismograms			
2.	Calculation Sheet			

SUMMARY

Synthetic seismograms have been produced for the Stringy Bark No1 well, PEP 123, Gippsland Basin, Victoria for Crusader Resources N.L.

These seismograms have been computed using a combination of check shot and sonic data. Velocity Data Pty Ltd acquired the check shot data and BPB Instruments provided the other wireline services.

The sonic data was calibrated using the check shot information. Reflection coefficients were derived from combinations of calibrated sonic data and then convolved with the specified wavelets to produce the synthetic seismograms. A number of trials were run before establishing the most appropriate wavelet.

GENERAL INFORMATION

Name of Well	:	Stringy Bark #1
Location	:	PEP123, Gippsland Basin
Coordinates	:	Latitude 038 31 02.31 Longitude 146 54 01.77
Velocity Survey	:	Velocity Data Pty Ltd
Wireline Logging	:	BPB Instruments V1030
Elevation of KB	:	39.0m above sea level
Elevation of Ground	:	36.0m above sea level
Elevation of Seismic Datum	:	0.0m above sea level
Casing depth	:	170.0m below KB
Total Depth of well	:	1050.0m below KB

CHECK SHOT DATA

Recorded by : Velocity Data Pty Ltd
Date : November 25th 1990
Energy Source : Explosive, AN-60
Shot Location : Mud pit
Charge Size : 0.5/1 (125 grm) sticks
Average Shot Depth : 1.2 metres
Average Shot Offset : 20 metres
Number of shots used : 23
Number of levels recorded : 18

SONIC DATA

Recorded by : BPB Instruments
Date : November 24th 1990
Top logged interval : 12.0m below KB
Bottom logged interval : 1050.0m below KB
Logging units : microseconds/feet

DENSITY DATA

Density data was not recorded during the survey and is therefore not used in the generation of the synthetic seismogram.

CALIBRATION OF SONIC LOG

Method

The sonic log was extended to 1600 metres below KB in order to get full wavelet response at the end of the sonic. The log was edited out above 169 metres in order to eliminate casing effects.

Sonic times were adjusted to checkshot times using a least squares polynomial fit for the sonic transit times. This method being chosen over a linear correction as the latter tends to introduce fictitious interfaces at areas of high drift correction.

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

Results

The discrepancies between shot and sonic interval velocities were abnormally high, however the condition of the hole was very poor with large areas of washout and in as much a poor tie was to be expected. The sonic log was not modified and the check shot results used as reference. The highest drift figure was 126.83 μ sec and the cumulative sonic drift over the logged portion of the well amounted to 39.7 msec. The bulk of this error was found to be between 520 and 720 metres below KB an area of large cycle skipping of the laterlog caliper.

CALIBRATION OF DENSITY DATA

Density data was not recorded and as such not used to generate the synthetic seismogram.

REFLECTION COEFFICIENT GENERATION

Reflection coefficients were generated from sonic data as noted on the display.

MULTIPLES

Only the primary response of the reflection coefficient series has been generated.

WAVELETS

A variety of wavelets were tried before the most suitable was chosen. A total of two are presented:

- 1) Bandpass 25-90Hz Zero Phase Reverse Polarity
- 2) Bandpass 25-90Hz Zero Phase Reverse Polarity

SEISMOGRAM DISPLAYS

The final displays show the contributing logs in schematic form with time scale. The seismogram is displayed for each wavelet against two way time below the check shot datum. Trace amplitudes are normalized against their maxima. The subdatum two way time of 134.0 msec for the start of the sonic was taken from the checkshot results.

No seismic section was received and the initial trials were FAXED for approval.



Troy Peters
Geophysical Analyst.

PE600860

This is an enclosure indicator page.
The enclosure PE600860 is enclosed within the
container PE902058 at this location in this
document.

The enclosure PE600860 has the following characteristics:

ITEM_BARCODE = PE600860
CONTAINER_BARCODE = PE902058
 NAME = Synthetic Seismogram
 BASIN = OTWAY
 PERMIT =
 TYPE = WELL
 SUBTYPE = SYNTH_SEISMOGRAM
 DESCRIPTION = Synthetic Seismogram
 REMARKS =
 DATE_CREATED = 25/11/90
 DATE_RECEIVED = 24/04/91
 W_NO = W1041
 WELL_NAME = Stringy bark-1
 CONTRACTOR = Crusader resources N.L
 CLIENT_OP_CO = Crusader resources N.L

(Inserted by DNRE - Vic Govt Mines Dept)

Well Location Survey

APPENDIX 11

WELL LOCATION SURVEY

PE907040

This is an enclosure indicator page.
The enclosure PE907040 is enclosed within the
container PE902058 at this location in this
document.

The enclosure PE907040 has the following characteristics:

ITEM_BARCODE = PE907040
CONTAINER_BARCODE = PE902058
 NAME = Detailed Plan Map
 BASIN = GIPPSLAND
 PERMIT = PEP/123
 TYPE = WELL
 SUBTYPE = DIAGRAM
 DESCRIPTION = Detailed Plan Map (enclosure from WCR)
 for Stringy Bark-1
 REMARKS =
 DATE_CREATED = 11/10/90
 DATE_RECEIVED =
 W_NO = W1041
 WELL_NAME = STRINGY BARK-1
 CONTRACTOR = KLUG CONSULTANTS AND JACKSON PTY LTD
 CLIENT_OP_CO = CRUSADER OIL NL

(Inserted by DNRE - Vic Govt Mines Dept)