



**EAGLE BAY**  
RESOURCES N.L.



**Northright-1**

**VIC/P-41**

**Well Completion Report**

Prepared by Labrador Petro-Management Pty Ltd

May, 2001



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## 1 OVERVIEW

### 1.1 WELL DATA SUMMARY

<b>Well Name:</b>	Northright-1
<b>Operator:</b>	Eagle Bay Resources
<b>Permit:</b>	VIC/P 41
<b>Basin:</b>	Gippsland Basin
<b>Type:</b>	Exploration
<b>Status:</b>	Plugged and Abandoned
<b>Elevations:</b>	Water Depth: 105.5m Rotary Table: 25m
<b>Surface Well Location:</b>	Easting: 688,922.4m E Northing: 5,799,457.1m N Latitude: 37°55'57.754" S Longitude: 149°08'58.942" E
<b>Drilling Unit:</b>	Ocean Bounty
<b>Commence Contract:</b>	12:30 hrs, 24 <sup>th</sup> April, 2001
<b>Spud Date:</b>	01:30 hrs, 26 <sup>th</sup> April, 2001
<b>Date Reached TD:</b>	02:30 hrs, 29 <sup>th</sup> April, 2001
<b>Rig Release Date:</b>	10:15 hrs, 1 <sup>st</sup> May, 2001
<b>Total Depth:</b>	391mRT 366mSS 391mTVD
<b>Estimated Well Cost:</b>	AUD 3,150,000

AGD 84  
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APPENDIX D.  
E.F.

## 1.2 HOLE AND CASING DATA SUMMARY

A summary of hole sizes and depths is provided in Table 1 and a summary of casing sizes and setting depths is presented in Table 2.

Hole Size		Depth To		Length
(in)	(mm)	MRT	MSS	(m)
36	914	154	129	23.5
12.25	311	250	225	96
8.5	216	391	366	141

**Table 1. Hole Size Summary.**

Casing Size		Grade	Weight (ppf)	LOT (sg)	Cement	Depth	
(in)	(mm)					mRT	mSS
30 *	762/340	X-52	310	N/A	673 sxs "G"	153.4	128.4
9 <sup>5</sup> / <sub>8</sub> **	244	L-80	47	1.24	340 sxs "G"	246.8	221.8

\* Swedged to a 13<sup>3</sup>/<sub>8</sub>" Casing Shoe

\*\* Swedged to 13<sup>3</sup>/<sub>8</sub>" then to 18<sup>3</sup>/<sub>4</sub>" Wellhead

**Table 2. Casing Summary.**

## 1.3 WELL LOCATION

Northright-1 is located in the Gippsland Basin off the South Eastern Coast of Australia (Victoria) in permit VIC/P 41 (Figure 1). The final surface well location was:

Easting 688,922.4m E  
 Northing 5,799,457.1m N  
 Latitude 37°55'57.754" S  
 Longitude 149°08'58.942" E

The final position was 8.0m at a bearing of 137.5° from the proposed location.

The seafloor at the Northright-1 location was relatively flat and firm.

A combination of Totco and MWD surveys are summarised in Table 3 and confirm the bottom hole location to be within 5m of surface location.

Data Pt	Survey Type	MD (mRT)	Inc (°)	Azi (°)
0	Datum	0	0	0
1	Tie in point	130.53	0	0
2	MWD	237.27	0.06	161.38
3	MWD	319.46	0.35	263.49

**Table 3. Survey Summary.**

## 1.4 WELL OVERVIEW

### 1.4.1 Drilling

The Ocean Bounty commenced work for Eagle Bay Resources NL at 12:30 hrs on 24<sup>th</sup> April, 2001 with the first anchor on bottom at the Northright-1 location. This concluded the tow from the Timor Sea via Australia's eastern seaboard.

Prior to dropping the first anchor, an anchor handling supply vessel (AHSV), the Pacific Sentinel, was disconnected from the tow line and was preparing to run anchors when a steering problem was noticed. During the time the fault was being investigated the first anchor was dropped and anchoring operations were suspended until the fault was temporarily corrected. At this point the Sentinel hooked up to the tow line and the Pacific Conqueror was released to run anchors. Whilst running anchors a pennant wire parted on Anchor # 3. The chain was recovered with a J hook and as the anchor was being pulled onto the vessel the shackle on the anchor gave way and the anchor was lost. Weather had deteriorated during this time and anchoring operations were suspended for eight hours. Once the weather improved the remaining anchors were run and the rig ballasted down to drilling draft.

Northright-1 was spudded at 01:30 hours on 26<sup>th</sup> April, 2001. A 914mm (36") hole was drilled riserless with seawater and gel sweeps from the sea floor to 154m. The 762mm (30") Wellhead Housing and extension swedged to 340mm (13<sup>3</sup>/<sub>8</sub>") casing was run and then cemented at 153.4m.

Drilling with seawater and gel sweeps continued with a 311mm (12<sup>1</sup>/<sub>4</sub>") hole to 250m where the 244mm (9<sup>5</sup>/<sub>8</sub>") casing was run and cemented to 246.8m.

The marine riser and BOP equipment were then run and tested.

A 216mm (8<sup>1</sup>/<sub>2</sub>") BHA, complete with MWD (GR-RES-Dir) was run in the hole and 3m of new formation drilled prior to performing a leak-off test to 1.24 sg EMW. Drilling continued with KCl/PHPA mud to 391m. On completion of the 216mm (8<sup>1</sup>/<sub>2</sub>") hole the MWD, jars and stabiliser were laid out.

MWD logging and analysis of drill cuttings showed an absence of hydrocarbon indications and Northright-1 was declared a dry hole.

No wireline logging or production testing was conducted on Northright-1.

Abandonment of Northright-1 commenced with picking-up of 89mm (3<sup>1</sup>/<sub>2</sub>") drillpipe and run in the hole to 337m and pumping 6.17m<sup>3</sup> (38 bbls) of cement slurry for abandonment plug #1 from 337m to 212m. Whilst waiting on cement, the wear bushing was retrieved.

The top of plug#1 was tagged at 226m. Plug #2 was then pumped with 2.38m<sup>3</sup> (15 bbls) of cement slurry with the estimated top of the plug at 160m. The drillstring was then pulled out of the hole, the diverter rigged down, the BOP unlatched and the riser pulled.

The 508/762mm (20"/30") casing cutter was made-up and run in hole. The casings were cut at 133m and the wellhead, casing extensions and PGB were recovered. An ROV survey of the seabed was undertaken. An abandonment schematic forms figure 2 of this report.

Anchors were pulled and the new #3 anchor installed. The MODU was released when the last anchor was racked at 10:15hrs, 1<sup>st</sup> May 2001.

## 1.5 DETAILED DRILLING PERFORMANCE REVIEW

### 1.5.1 Mobilise Rig to Northright-1 Location

The MODU was mobilised from the Timor Sea via the eastern seaboard of Australia. The tow vessels were the Pacific Sentinel and Pacific Conqueror.

On approach to the Northright-1 location at 11:53 hrs the Pacific Sentinel reported experiencing steerage problems. At 12:30 hrs (EST), 24<sup>th</sup> April 2001 the first anchor (#6) was run on the Ocean Bounty and on bottom.

### 1.5.2 Run Anchors

Both Pacific Sentinel and Pacific Conqueror ran anchors as detailed in the anchoring diagram (see Appendix A Rig Positioning).

Chain length on all anchors after pretensioning was between 892m and 1,285m except for No.3, which was lost approximately 300m from the MODU.

The Pacific Sentinel took the static towline because of rudder problems and releaser the Pacific Conqueror to run the other primary anchors (#'s 2, 7 and 6). With #2 on bottom #7 turned upside down and had to be turned around. In passing the pennant of the last primary anchor, #3, the pennant line was tangled around the anchor. The Conqueror, was attempting to land the anchor on its deck when the pennant wire parted, no injuries resulted. While using a 'J' hook in an attempt to recover the #3 anchor the 'J' hook came off in heavy weather. This caused operations to be suspended for almost 8 hrs while 3m swells and 40 knot winds abated. When the chain was recovered #3 anchor was missing due to swivel failure.

Anchors #1, 8 and 5 were run, with #5 being re-run due to striking a rocky bottom at approximately 2,640'. Anchors were cross-tensioned and the MODU ballasted down to drilling draft.

The time breakdown to run and cross tension the anchors:

➤ Actual time:	35 hours,	Trouble time:	19.25 hours,
➤ Productive Time:	45%,	Technical Limit:	15.75 hours,
➤ Budgeted time:	14.4 hours,	Over (Under) Budget:	143%.

The final rig position was 8m at 137.5° from the programmed location with a rig heading of 256°.

### 1.5.3 Pre-spud Activities / Drill 914mm (36") Hole Section

No TGB was run. The 914mm (36") hole was drilled without problems from 130.5m to 154m with a 660mm (26") bit / 914mm (36") hole opener at 15.7m/hr with seawater and 200+ sec/qt viscosity gel sweeps as follows:

- ⇒ Swept hole with 8m<sup>3</sup> (50 bbls) hi-vis mud every single
- ⇒ Swept hole with 16m<sup>3</sup> (100 bbls) hi-vis mud at section TD
- ⇒ Displaced hole to 24m<sup>3</sup> (150 bbls) hi-vis mud before POOH to run 762mm (30") conductor.

The survey recovered after the trip out at TD was a misrun.





Bit #1 – a 660mm (26") Smith DSJC (3 x 24, 1 x 12) was run with a 914mm (36") hole opener assembly, the BHA was:

Bit (26"), hole opener(36"), x/o, 3 x 203mm (8") DC, 311mm (12¼") stabiliser, 3 x 203mm (8") DC, x/o, 127mm (5") HWDP.

The time breakdown for drilling the 914mm (36") hole was as follows:

➤ Actual time:	5.5 hours,	Trouble time:	0.5 hours,
➤ Productive Time:	82%,	Technical Limit:	5.0 hours,
➤ Budgeted time:	7.2 hours,	Over (Under) Budget:	(38%).

#### 1.5.4 Run and Cement 762mm (30") Conductor

The conductor was run without problems with a 1.5m stickup on the 30" wellhead above the seabed and shoe at 153.46m. Tension was held while cementing as per programme with 21.3m<sup>3</sup> (134 bbls) of 1.91sg Class G cement slurry with returns to the seabed. Volume based on 200% excess. The float held and the running tool was released after displacement.

PGB bullseye after landing was ¾° and after cementing and releasing the running tool was 1¼°.

The time breakdown for running and cementing casing was as follows:

➤ Actual time:	8 hours,	Trouble time:	0 hours,
➤ Productive Time:	100%,	Technical Limit:	8 hours,
➤ Budgeted time:	9.6 hours,	Over (Under) Budget:	(17%).

#### 1.5.5 Drill 311mm (12 ¼") Hole Section

There were no problems in the 311mm (12¼") hole, which was drilled, riserless at 38.8m/hr with seawater and 200+ sec/qt viscosity gel sweeps as follows:

- ⇒ Pumped 4.8m<sup>3</sup> (30 bbls) hi-vis gel/ sweeps as required,
- ⇒ Swept hole with 32m<sup>3</sup> (200 bbls) guar gum hi-vis mud at section TD,
- ⇒ Displaced hole to 32m<sup>3</sup> (200 bbls) hi-vis gel mud.

A wiper trip was made to the 762mm (30") shoe and the hole condition was good. The BHA was pulled out of hole to run casing and the hole displaced to Drispac pill.

Bit #2 – a 311mm (12¼") Varel ETD 115 (3x18) was run with a 90' pendulum assembly, the BHA was:

Bit (12 ¼"), bit sub, x/o, 3 x 203mm (8") DC, 311mm (12¼") stabiliser, 2 x 203mm (8") DC, 203mm (8") Jars, 1 x 203mm (8") DC, x/o, 12 x 127mm (5") HWDP.

The time breakdown for drilling the 311mm (12¼") hole was as follows:

➤ Actual time:	9 hours,	Trouble time:	0 hours,
➤ Productive Time:	100%,	Technical Limit:	9 hours,
➤ Budgeted time:	12 hours,	Over (Under) Budget:	(25%).

#### 1.5.6 Run and Cement 244mm (9<sup>5</sup>/<sub>8</sub>") Casing

The 244mm (9<sup>5</sup>/<sub>8</sub>") casing swedged to 476mm (18 ¾") wellhead was run to 246.8m without problems. Landing of the wellhead was tested with a 22.7tonne (50kip) overpull. The casing was circulated prior to cementing with 11.1m<sup>3</sup> (70 bbls) of 1.9 sg Class G tail slurry (340 sxs Class G cement)

There were good returns to the seabed throughout. The float held and the running tool was released after displacement.

Time breakdown for running and cementing casing was as follows:

- Actual time: 10.5 hours, Trouble time: 0 hours,
- Productive Time: 100%, Technical Limit: 10.5 hours,
- Budgeted time: 14.4 hours, Over (Under) Budget: (27%).

### 1.5.7 Run BOP and Riser

The BOP stack was tested on the test stump prior to running. The MODU was moved off location by 15m and the drillfloor rigged to run the BOP's on marine riser. Two singles were made up to the LMRP and BOP's on the beams and both pods function tested. The BOP's were run testing the choke and kill lines to 1,400/34,500 kPa (200/5,000 psi) after the double and before slip joint.

With the slip joint, goosenecks and riser tensioners made up, the MODU was again moved over the well, the BOP's landed and latched onto the wellhead with a 50 kip overpull taken. The diverter was installed and BOP's tested according to Diamond Offshore Generals procedures; 1,400/17,200 kPa (200/2,500 psi) for annulars and 1,400/68,900 kPa (200/10,000 psi) for rams and choke and kill line valves on Yellow pod for 5/10 mins.

Time breakdown for running and testing BOPs and running the seal bore protector are as follows:

- Actual time: 24.5 hours, Trouble time: 0 hours,
- Productive Time: 100%, Technical Limit: 24.5 hours,
- Budgeted time: 21.6 hours, Over (Under) Budget: 13%.

### 1.5.8 Drill 216mm (8½") Hole Section

The BHA was made up, the MWD tested OK on surface and run in hole. The cement was tagged at 225m and the shoe track drilled out without problems. After cleaning to bottom and drilling 3m of new hole, the hole was displaced to a 1.1 sg mud and a leak off test conducted. Fracture gradient at the 340mm (9<sup>5</sup>/<sub>8</sub>" ) casing shoe was equivalent to 1.24 sg (10.34 ppg) mud density.

Bit #3 – Varel L127 (3x16) was run on a 90' pendulum assembly with a stabiliser above the MWD, the BHA was:

Bit (8 ½"), bit sub, x/o, MWD, 1 x 165mm (6½") DC, stabiliser, 3 x 165mm (6½") DC, 165mm (6½") jar, 2 x 165mm (6½") DC, 12 x 127mm (5") HWDP.

The bit drilled 216mm (8½") vertical hole from 250m – 391m with an average on bottom ROP of 14.8m/hr and was pulled when it reached hole section TD.

Mud losses in this interval were minimal at a total of 33bbls over the interval at 1 – 1.5 bbls/ hr. The hole was static during flow checks.

The decision to TD the well above the prognosis was based on MWD logs and samples.

The time breakdown of the drilling of the 216mm (8½") hole is as follows:

- Actual time: 20.5 hours, Trouble time: 0 hours,
- Productive Time: 100%, Technical Limit: 20.5 hours,
- Budgeted time: 19.2 hours, Over (Under) Budget: 4%.

**1.5.9 TD Wireline Logging of 216mm (8½”) Hole Section**

No logs were run due to adequate information being gained from successful MWD run.

The time breakdown of the logging of the 216mm (8½”) hole is as follows:

- Actual time: 0 hours, Trouble time: 0 hours,
- Productive Time: 0%, Technical Limit: 24 hours,
- Budgeted time: 24 hours, Over (Under) Budget: N/A%.

**1.5.10 Well Abandonment**

The plug and abandonment plugs were set using 89mm (3½’) DP stinger and summarised in Table 4.

Plug No.	Amount Pumped	From (m)	To (m)	Tagged
1	187 sx	337	212	Yes
2	72 sx	223	160	No

**Table 4. Plug and Abandonment Cement Plug Summary.**

The 89 mm (3½”) drillpipe cementing stinger was picked-up with a mule shoe and ran in the hole to set cement plug #1 (337 – 212 m). The string was then pulled to 156 m and circulated clean. BOP’s were then flushed, excess drill pipe laid down and the wear bushing retrieved. The string was ran in hole and cement plug #1 was tagged at 226m and plug #2 was then set (223m - 160m). Excess drillpipe was then laid down and the diverter rigged down, BOP’s unlatched, riser pulled and BOP’s secured. The 508/762 mm (20”/30”) casing cutter assembly was ran in the hole and casing cut at 133.5m. The cut casing and PGB were recovered.

A time breakdown for the abandonment operations is as follows:

- Actual time: 31 hours, Trouble time: 0 hours,
- Productive Time: 100%, Technical Limit: 31 hours,
- Budgeted time: 28.8 hours, Over (Under) Budget: 7%.

**1.5.11 Pull Anchors.**

All of the anchors were pulled by both the Pacific Conqueror and Pacific Sentinel and the rig de-ballasted and under tow after reinstalling the lost #3 anchor.

- Actual time: 22.25 hours, Trouble time: 2 hours,
- Productive Time: 91%, Technical Limit: 20.25 hours,
- Budgeted time: 21.6 hours, Over (Under) Budget: 3%.

The rig was released at 10:15 hours on 1<sup>st</sup> May, 2001.

## 2 WELL PERFORMANCE DATA - TIME VS DEPTH CURVE

The Time versus Depth curve for Northright-1 forms Figure 3 of this report.

## 3 DRILLING RECORDS

### 3.1 OPERATIONAL REPORTS.

Daily operational reports are summarised in Appendix B.

### 3.2 BIT AND BHA RECORDS

Bit and BHA reports for Northright-1 are summarised in Appendix C.

### 3.3 CASING AND CEMENTING SUMMARY

A casing and cementing summaries are included with casing tallies in Appendix D.

### 3.4 DRILLING FLUID SUMMARY

A drilling fluids summary prepared by Baker Hughes Inteq is presented in Appendix E.

### 3.5 WELL TRAJECTORY SUMMARY

Northright-1 was planned as a vertical well with regular surveys conducted in accordance with PSLA regulations. The well was surveyed using a Totco survey tool prior to spud and at completion of the 36" hole. Directional surveys were then recorded by Anadrill Schlumberger and these are shown in the Table 5. The well had a maximum angle of 0.35° at 319m. Due to a combination of Totco and MWD surveys an area of uncertainty was used to describe the bottom hole location, +/-5m based on a centre at 5.28mN, 6.12mW of the proposed location.

Data Pt	Survey Type	MD (m)	Inc (°)	Azi (°)	Crs Lnght (m)	TVD (m)	VS (m)	Displ +N/-S (m)	Displ +E/-W (m)	Total Displ +N/-S (m)	At Azi (°)	DLS (°/10m)
0	Datum	0	0	0	0	0	0	0	0	0	0	0
1	Totco	130.53	0	0	0	130.53	5.4	5.4	-5.9	8.00	312.47	0
2	MWD	237.27	.06	161.38	106.74	237.27	5.35	5.35	-5.88	7.95	312.27	.01
3	MWD	319.46	.35	263.49	82.19	319.46	5.28	5.28	-6.12	8.08	310.78	.04

**Table 5. Well Trajectory Summary.**

### 3.6 LOT/FIT REPORTS

Leak off test details for the well (244mm (9<sup>5</sup>/<sub>8</sub>"") casing only) are summarised in Table 6.

Casing		Depth	Leak Off Pressure		EMW		LOT EMW
in	mm	mRT	psi	Kpa	ppg	sg	sg
9 <sup>5</sup> / <sub>8</sub>	244	246.8	50	344.73	9.13	1.10	1.24

**Table 6. Leak-off Test Summary.**

### 3.7 PORE PRESSURE REPORTS

Pore pressure analysis prior to drilling Northright-1 indicated that a normal pressure gradient existed in the area. During drilling operations no indications of pore pressure higher than normal were found.

### 3.8 FORMATION TEMPERATURE REPORTS

No wireline logs were run in Northright-1 and therefore no static bottom hole temperature was recorded. Annulus temperature was recorded continuously by MWD and at TD the temperature was approximately 28°C.

### 3.9 PROJECT LOGISTICS

Logistics and support infrastructure are summarised in Figure 4.

#### 3.9.1 Mobilisation

Spud equipment was loaded out from Darwin on March 15<sup>th</sup> prior to rig mobilisation to Northright-1. Therefore, most equipment was onboard when the Ocean Bounty arrived at the Northright-1 location.

Eagle Bay personnel (Drilling Supervisor, Drilling Engineer, Fugro Surveyor) were mobilised to the Ocean Bounty from Sydney on Sunday, 22<sup>nd</sup> April. The Dril-Quip engineer travelled offshore on Monday, 23<sup>rd</sup> April.

#### 3.9.2 Shorebase

Eden was chosen as the shorebase for Northright-1 and is approximately 500 kms from Sydney and 550kms from Melbourne. It is located on the South East coast of New South Wales.

Eden is primarily a fishing port (population 4,000) but has an excellent wharf and is accessible 24 hours a day. Sailing time from Eden to Northright-1 location was 7 hours at economical speed and 6 hours at full speed.

Toll Energy were contracted to supply labour, trucking and crane services in Eden. Toll does not have a base in Eden and were mobilised from Melbourne. Labour was supplied locally (with the exception of an experienced dogman from Melbourne). A 70 tonne mobile crane was also mobilised from Melbourne because the largest crane available in the Eden area was rated to 20 tonnes.

All the equipment for Eagle Bay's first load out was consolidated at Toll Energy's yard in Melbourne and shipped to arrive in Eden on Wednesday, 25<sup>th</sup> April. The first vessel (Pacific Conqueror) arrived in Eden at 1100 hours on 26<sup>th</sup> April and backload cargo was

discharged on arrival. Cargo was then loaded and Pacific Conqueror sailed at 1600 hours the same day.

The Pacific Sentinel arrived in Eden at 1840 hours on 27<sup>th</sup> April and arrived with clear decks. Repairs were carried out on the rudder and completed by 1030 hours on 29<sup>th</sup> April after which cargo was loaded and the vessel sailed at 1600 hours.

The Pacific Conqueror arrived in Eden at 0700 hours on 30<sup>th</sup> April and backload cargo was discharged and the vessel sailed at 1100 hours on the same day.

The Eden shorebase was closed on Tuesday, 1<sup>st</sup> May.

All operations at Eden ran very smoothly and is recommended that any future programmes within the vicinity utilise Eden as the shorebase.

### **3.9.3 Helicopters / Crew Changes**

CHC Helicopters were contracted to supply an exclusive use Bell 412 helicopter, which was based at West Sale Airport, Victoria. The helicopter was mobilised from Essendon on 22<sup>nd</sup> April.

Chubb Security were contracted by CHC Helicopters to provide security and check-in facilities at West Sale Airport.

For all flights, passengers were collected from their hotel at Melbourne airport at 0600 hours for transport to West Sale. The designated hotel was the Airport Hilton. The journey from Melbourne airport to West Sale is approximately 2-3/4 hours. A bus or car was used depending on numbers and this service was provided through Toll Energy.

There were a total of 14 flights between West Sale and the Ocean Bounty. This includes one special flight to the Ocean Bounty with MWD parts on 28<sup>th</sup> April but does not include the mobilisation and demobilisation flight between Essendon and Sale.

The one-way flight time between Sale and the Northright-1 location was originally estimated to be 52 minutes by CHC Helicopters. This proved to be inaccurate and one way flight time was closer to 1 hour because of RAAF base at East Sale having flying exercises and a no fly zone in place.

All helicopter operations ran smoothly and no problems were encountered during the programme.

### **3.10 COMMUNICATIONS**

Communications services were provided by Telstra's Iterra Satellite system. Both voice and data services were provided. All aircraft and vessels involved in the drilling of Northright-1 utilised their appropriate communications infrastructure.

### **3.11 WEATHER FORECASTING**

Regular daily site specific and long range forecasts were provided by Weather News International (WNI).

## 4 GEOLOGICAL REPORT

### 4.1 WELL SUMMARY

Northright-1 exploration well was located in the north-eastern part of permit VIC/P41, approximately 17km south of the Victorian coastline. The retention license VIC/RL3 which included the suspended gas discovery well Sole-1 and dry hole Dart-1 was encompassed by the exploration license (VIC/P41). Geologically, the most important offset well was the producing oil discovery Leatherjacket-1 36km to the west south west of Northright-1.

The objective of Northright-1 was to test a integrity and hydrocarbon potential of a reverse fault structural trap set up at the top of the Latrobe Group reservoir. The fault trap was against a major east-west trending basin margin fault and updip from the known oil and gas accumulations of Sole and Leatherjacket. The Latrobe Group sandstone was prognosed to be sealed by marls of Tertiary Lakes Entrance Formation and underlain by secondary objective sandstones of Late Cretaceous Golden Beach Group. Early Cretaceous sandstone, litharenite and volcanics of the Strzelecki Group form the basement and underlie the Golden Beach Group fluvial channel/flood and coastal plan sequence.

Northright-1 did not encounter any hydrocarbon shows or significant gas concentration in either the primary or secondary reservoir objectives. Pore pressures were normal and there was little evidence of significant washout in mud logging lag times and FEWD tool response. Northright-1 was plugged and abandoned upon reaching the Strzelecki Group.

### 4.2 FORMATION TOP SUMMARY

RT above LAT: 25.0m								
WD: 105.5m								
RT – ML: 130.5 m								
FORMATION	PROGNOSED DEPTHS (m)			ACTUAL DEPTHS (m)				
	MDRT	MDSS	THICK	MDRT	TVD SS	HI/LO	THICK	DIFF
Sea Floor/ Sea Spray	130.0	105.0	132.0	130.5	105.5	0.5 low	119.5	12.5
Latrobe Group	262.0	237.0	56.0	250.0	225.0	12 high	37.0	19.0
Golden Beach Sands	318.0	293.0	60.0	287.0	262.0	31 high	25.0	35.0
Strzelecki Formation	378.0	353.0	+42.0	312.0	287.0	66 high	+79.0	-
<b>TD</b>	<b>420.0</b>	<b>395.0</b>		<b>391.0</b>	<b>366.0</b>			

Table 7. Formation Top Summary.

**4.3 FORMATION DESCRIPTION SUMMARY**

**Latrobe Group**

**Tertiary**

**250-287mRT (37m)**

INTERVAL (mRT)	ROP (Ave) (m/hr)	ROP (Range) (m/hr)	LITHOLOGY
250-287	36	20-70	<p><b>SANDSTONE</b>  <b>SANDSTONE (100%)</b> opaque to smoky grey, medium to granular, predominantly very coarse grained, subangular to well rounded, poorly to moderately sorted, moderate sphericity, loose, commonly frosted grains, 10% pyrite cement, 5%-10% pyrite crystals, 5% off white clay matrix in part, , rare to minor quartz overgrowths in part, minor pyrite cement, fair to very good inferred porosity, mineral? Fluorescence.</p>

**Golden Beach Group**

**Late Cretaceous**

**287-312mRT (25m)**

INTERVAL (mRT)	ROP (Ave) (m/hr)	ROP (Range) (m/hr)	LITHOLOGY
287-303	37	14-93	<p><b>SANDSTONE</b>  <b>SANDSTONE (100%)</b> opaque to smoky grey, translucent, medium to granular, angular to rounded, rare light grey to light olive grey angular quartz? Shards, poorly to moderately sorted, moderate sphericity, loose, grains, 10% pyrite cement, 5%-10% pyrite crystals, good to very good inferred porosity, mineral fluorescence.</p>
303-312	19	11-35	<p><b>CLAYSTONE and minor SANDSTONE</b>  <b>CLAYSTONE (75%):</b> off white to very light grey, dispersive to amorphous, slightly calcareous, 1-3% light green glauconitic matrix.  <b>SANDSTONE (25%):</b> translucent to opaque, minor light grey smoky quartz, fine to very coarse grained, subangular to subrounded, poorly sorted, moderate to high sphericity, generally loose, 40% off white clay matrix, slightly calcareous, poor to fair inferred porosity, no fluorescence.</p>

**Strezlecki Group**

**Early Cretaceous**

**312-391mRT (79m)**

INTERVAL (mRT)	ROP (Ave) (m/hr)	ROP (Range) (m/hr)	LITHOLOGY
312-331	22	14-32	<p><b>CLAYSTONE with lenses of SANDSTONE and SILTSTONE with trace COAL</b>  <b>CLAYSTONE (20-60%, Ave 45%)</b> off white to light greenish grey, predominantly dispersive to firm in part, non to slightly calcareous, 2-5% light green glauconitic matrix.  <b>SILTSTONE (30-40%, Ave 35%)</b> very pale green to pale yellowish green, very hard, blocky, chloritised and silicified, rare angular quartzite, rare orange, grey and black lithic fragments.  <b>SANDSTONE (10-40%, Ave 20%) :</b> translucent to opaque, minor light grey smoky quartz, fine to coarse grained, subangular to subrounded, poorly sorted, moderate to high sphericity, generally</p>



			<p>loose, 40% off white clay matrix, slightly calcareous, poor to fair inferred porosity, no fluorescence.</p> <p><b>COAL (Tr)</b> black, dull, soft to firm, brittle, platy, showing very fine laminations and fissility.</p>
331-391	23	13-61	<p><b>CLAYSTONE with lenses of SANDSTONE and SILTSTONE with trace COAL</b></p> <p><b>CLAYSTONE (20-60%, Ave 45%)</b> off white to light greenish grey, predominantly dispersive to firm in part, non to slightly calcareous, 2-5% light green glauconitic matrix.</p> <p><b>SILTSTONE (30-40%, Ave 35%)</b> very pale green to pale yellowish green, very hard, blocky, chloritised and silicified, rare angular quartzite, rare orange, grey and black lithic fragments.</p> <p><b>SANDSTONE (10-40%, Ave 20%)</b> : translucent to opaque, minor light grey smoky quartz, fine to coarse grained, subangular to subrounded, poorly sorted, moderate to high sphericity, generally loose, 40% off white clay matrix, slightly calcareous, poor to fair inferred porosity, no fluorescence.</p> <p><b>COAL (Tr)</b> black, dull, soft to firm, platy to fissile.</p>

**4.4 FORMATION EVALUATION WHILE DRILLING**

Schlumberger's Anadrill FEWD tools were run throughout the 8 1/2" hole section. The tool string was configured to acquire resistivity and gamma ray data near the bit for geological evaluation. FEWD data were interpreted to indicate a water wet reservoir section. A summary of the details of the FEWD portion of the project is summarised in Appendix F.

**4.5 WIRELINE LOGGING**

No wireline logging services were used whilst drilling this well.

**4.6 FORMATION SAMPLING**

A summary of mudlogging activities is presented in Appendix G.

Cuttings samples were acquired at 3m intervals as per programme and despatched as detailed in Baker Hughes Mudlogging Report in Appendix G.



## 5 UNSCHEDULED EVENTS

### 5.1 PRE-SPUD

#### 5.1.1 Pacific Sentinel Loss of Steerage

During the approach to the Northright-1 location the Pacific Sentinel was released from the starboard tow wire to prepare for anchor handling operations. After handing the tow line back to the rig the boat reported a steering problem and was going to investigate. When the rig was 600' from the drop zone the Pacific Sentinel reported major problems with the steering. The OIM decided it would be safer to drop the first anchor as it would take up to 3 hours to turn the rig around for another run. After 1.75 hours the Pacific Sentinel was able to take the rig on static tow only but unable to run anchors.

#### 5.1.2 Anchor #7 turned

Anchor #7 had turned and had to be re-run.

#### 5.1.3 Loss of #3 Anchor

Pennant wire tangled around anchor #3, repaired same.

Anchor # 3 pennant wire was passed to the Pacific Conqueror and the conqueror was to change out the pennant wire. Whilst attempting to deck the anchor the pennant wire parted. A "J" hook was passed to the boat and the anchor chain was chased. Whilst attempting to deck the anchor the "J" hook came off the anchor and flew across the deck of the boat (No injuries) and the anchor was lost again. Due to deteriorating weather conditions the boat stood down till day light (see section 6.1.4). At first light the Pacific Conqueror reported finding a large nut on deck that they suspected was from the anchor. A "J" hook was used to chase the chain and confirm that the nut was from the anchor swivel and the anchor had been lost. During this incident 3 hours were lost firstly due to the pennant wire parting and secondly chasing the chain and thirdly reinstalling the new anchor. This time does not include waiting on weather time, as it is possible that had this incident not occurred that anchor handling operations *may* have continued.

#### 5.1.4 Wait On Weather

During anchor recovery operations described in section 6.2, the weather may have partially contributed to the "J" hook incident. The boat captain then announced that he could not allow anchor handling operations to continue. A total of ?? hours was spent waiting on weather. A root cause of having to wait on weather was the initial delay in anchor handling operations caused by the steering failure on the Pacific Sentinel.

#### 5.1.5 Running Anchor #5

Due to encountering a rocky bottom at 2,640', #5 anchor was recovered and re-run.

#### 5.1.6 ROV Sonar Failure

Primary sonar on the ROV failed and replacement equipment was dispatched. Upon installation, the replacement equipment failed as well. This delayed the final seabed survey and also meant that recovery of the lost anchor was impossible.

**5.2 DRILLING**

During the drilling of the well there was no downtime.

**5.3 POST DRILLING**

There was no downtime during formation evaluation, abandonment and pulling anchors.

**5.4 DOWNTIME ANALYSIS**

Downtime experienced on Northright-1 and time associated with each downtime event is summarised in Table 8.

Task	Time Lost (H:MM)	% of Total Time
Pacific Sentinel - Loss of Steerage	3:25	2.37
Anchor #7 turned	1:45	1.20
#3 Anchor – Pennant Wire Tangled and Parted. Anchor lost	6:20	4.35
Wait On Weather	7:40	5.26
Running Anchor #5	2:05	1.43
ROV Sonar Failure	1:00	0.69
<b>Total</b>	<b>22:15</b>	<b>15.27</b>

**Table 8. Downtime Analysis Summary.**

**6 DETAILED TIME ANALYSIS**

Figures in Appendix B summarise the time break down for Northright-1 and illustrate that 15.27% of the time on the spent on location was because of unscheduled events.

**7 PROJECT ORGANIZATION**

The Operations team working on Northright -1 consisted of:

**Perth Office**

- |                          |  |
|--------------------------|--|
| Managing Director        | Tony Rechner (Eagle Bay Resources)         |
| Exploration Manager      | Milton Schmedge (Eagle Bay Resources)      |
| Drilling Superintendent  | Stev Crocker (Labrador Petro-Management)   |
| Senior Drilling Engineer | Steve Hodgetts (Labrador Petro-Management) |
| Materials and Logistics  | John Smith (Labrador Petro-Management)     |
| Operations Geologist     | Dave Thorpe (Labrador Petro-Management)    |
| Technical Advisor        | Tom Brand (Labrador Petro-Management)      |
| HSE Coordinator          | Richard Keys (Quest)                       |

**Ocean Bounty**

- |                            |  |
|----------------------------|--|
| Senior Drilling Supervisor | Murry Jackson (Labrador Petro-Management)    |
| Drilling Engineer          | Chris Wilson (Labrador Petro-Management)     |
| Wellsite Geologists        | Tim Bray (International Geological Services) |

**Eden**

- |  |  |
|--|--|
| Shorebase Materials<br>and Logistics Coordinator | John Smith (Labrador Petro-Management) |
|--|--|

## 8 CONTRACTOR PERFORMANCE

- **Diamond Offshore General Company (MODU Ocean Bounty)**  
DOGC and the Ocean Bounty MODU performed well. Personnel onboard were excellent and the rig had very little downtime. The attitude and commitment to HSE is excellent and support infrastructure in Perth was good.
- **Swire Pacific (AHSVs Pacific Conqueror and Pacific Sentinel)**  
Pacific Conqueror did an excellent job to support the drilling operation. The Pacific Sentinel had steerage problems; the starboard rudder lock nut almost backed off. Prompt and appropriate action by Swire Pacific minimised operational delays.
- **CHC (Rotary Wing)**  
CHC (Lloyds) provided a Bell 214 for crew change personnel movement, which performed very well.
- **BHI (Drilling Fluids and Mud Logging)**  
BHI provided good support and onboard personnel were very good. The fluid systems were well designed and run efficiently. Support was adequate except in the area of reporting where some mud reports were not received until the drilling activities were finished.
- **Varel (Bits)**  
No problems.
- **Anadrill (MWD)**  
Initial poor organisation in mobilisation of equipment raised initial concerns that data collection could be compromised. Tools wrongly configured and surface malfunctions almost resulted in cancellation of running the tools below the rotary table. Prompt and appropriate action by the contractor resulted in the tools being run and they operated flawlessly.
- **Stolt Offshore (ROV)**  
ROV service was good and their work performed successfully. Loss of sonar was a problem and a replacement was sent to the rig on short notice however, it also did not work. Sonar failure precluded the use of the ROV to recover the lost #3 anchor.
- **Halliburton (Cementing)**  
Cementing operations were very good. Halliburton had upgraded their Recirculating Mixer during the tow from Kuda Tasi to Northright-1. The unit onboard performed well. Engineering service support and offshore personnel were very good.
- **DrilQuip (Wellhead System)**  
The Drilquip SS-10 subsea wellhead system worked well and was fit for purpose. Engineering and supply support from DrilQuip was very good as were offshore service representatives. No system problems occurred during operations.
- **Schlumberger (Wireline)**  
Schlumberger did an adequate job during the planning phase. All equipment arrived on time however no wireline logging was performed.

- **Weatherford (Casing Running)**  
All operations went smoothly and Weatherford performed well.
- **Tasman Oil Tools (Drilling Tools)**  
No problems.
- **Baker Oil Tools (Fishing)**  
No problems.
- **Smith (Jars and Wellhead Severence)**  
Support and equipment were very good. Abandonment services performed were excellent.
- **Fugro (MODU Positioning)**  
The service was very good with no problems experienced.
- **EDR Hydrosearch (QA-QC for MODU positioning)**  
EDR did a very good job, supplied good advice and prepared good reports as well as documented advice.
- **Arrowsmith and Muir (Site Survey)**  
Site survey work was accomplished satisfactorily and adverse weather conditions were managed correctly.
- **IDS (Drilling Reporting System)**  
No problems, worked well.
- **Telstra (Communications)**  
No problems.
- **OGT (Transport)**  
No problems.
- **WNI (weather forecasting)**  
Summary forecasts from WNI were brief and the time lapse in the data supplied (sometimes up to 6 hours) often missed significant changes in the weather in Bass Strait. It is recommended that a shorter time lapse in forecasting data be requested in any future operations in Bass Strait.

## 9 RECOMMENDATIONS

Overall the operation went well. Below are some comments for improvement:

- MODU (rig): The Ocean Bounty was a rig of opportunity and operated well, but this may not always be the best choice for future wells.
- Casing Setting Depths: setting of the 9-5/8" casing this was difficult to pick on ROP alone although it is difficult to do anything else in such a shallow well.
- Logistics supply vessel support: The two AHSVs did a good job but often availability was limited due to turn around time to send AHSVs to and from Eden. Consider having a dedicated standby vessel in order to make better use of the AHSVs.
- Drilling Fluids: The systems used were reasonable and fit for purpose.



908025 023

Northright-1 Well Completion Report

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## FIGURES

Figure 1. Location Map.

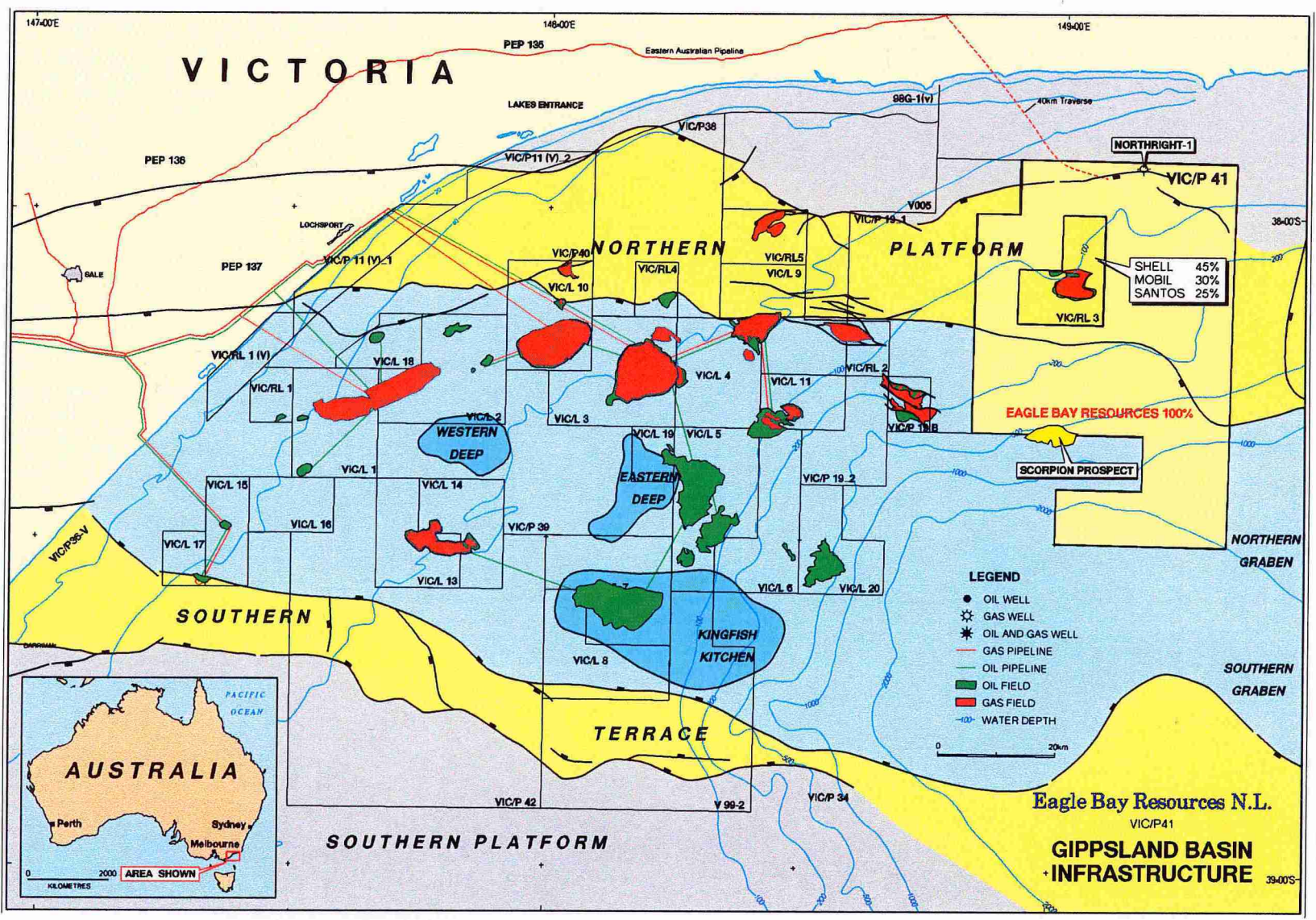
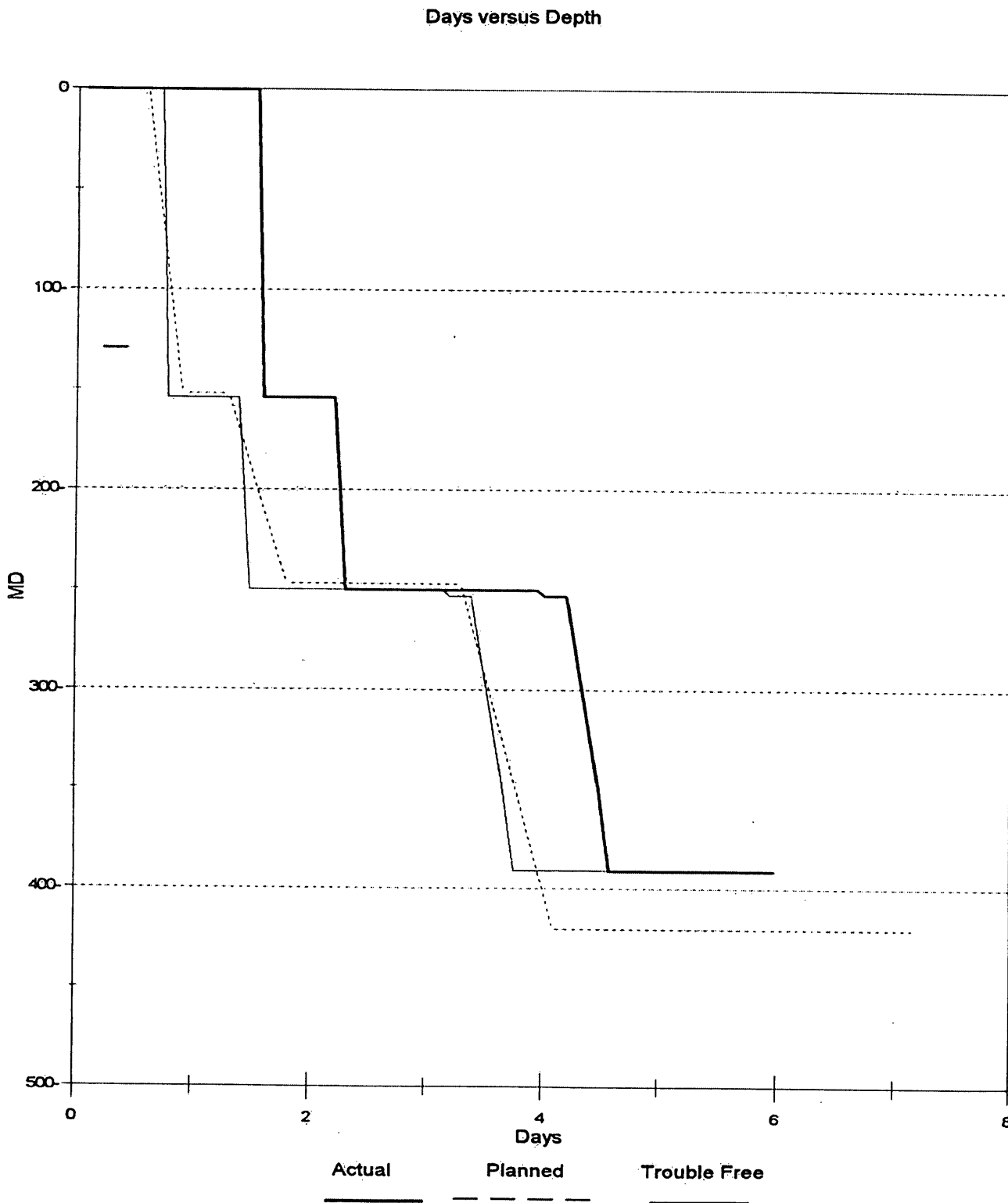






Figure 2. Time versus Depth Curve.



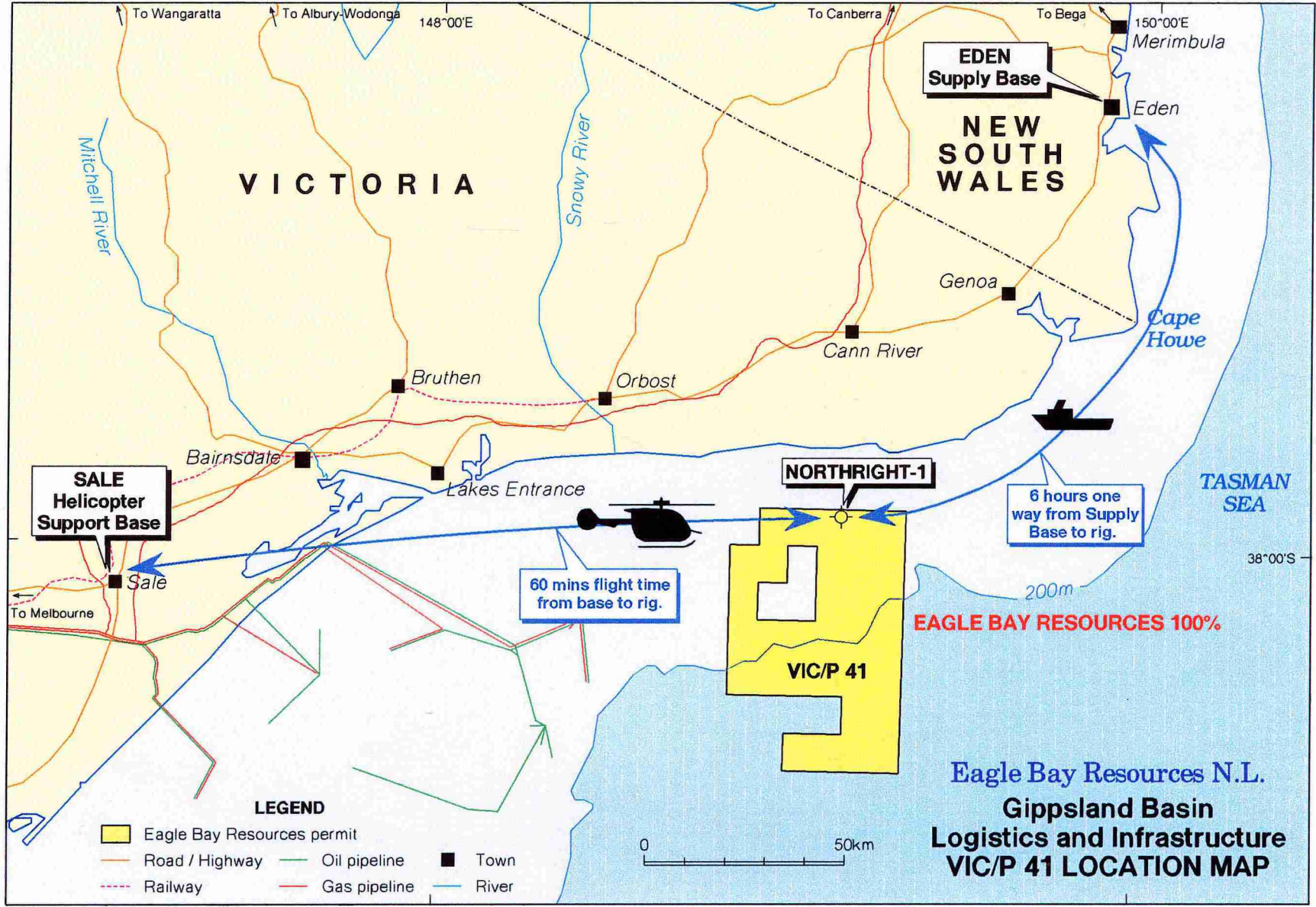


Figure 3. Logistics and Support Infrastructure Diagram.



**APPENDIX A**

**SITE SURVEY REPORT**

908025 028

**EAGLE BAY RESOURCES N.L**

**HYDROGRAPHIC SURVEYORS REPORT**

**ON**

**SITE HAZARD INSPECTION SURVEY  
NORTHRIGHT .1. WELL SITE  
VIC/P41 TASMAN SEA**

**BY**

**ARROWSMITH, MUIR & ASSOCIATES PTY .LTD  
CONSULTANT HYDROGRAPHIC SURVEYORS  
11 CLONMILT AV HIGHETT VIC.3190**

**TEL 03 95550197**

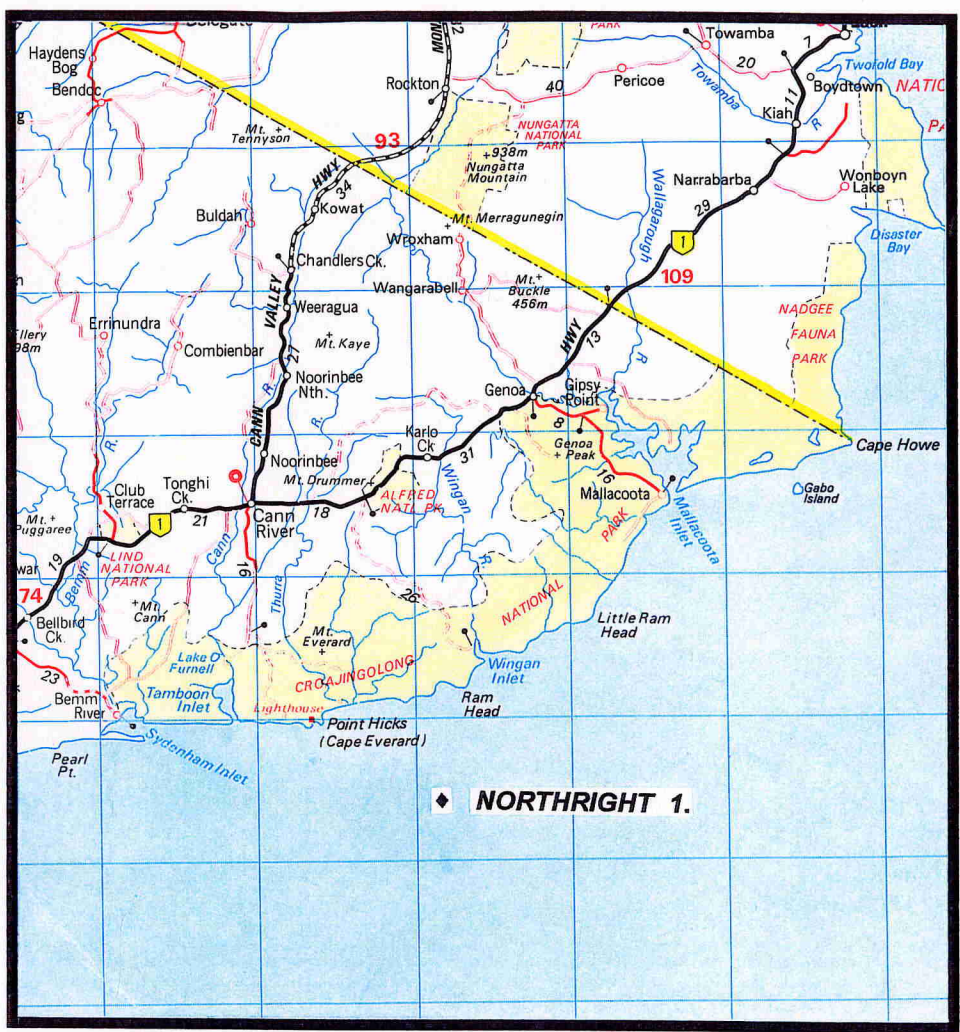
**FAX 03 95559883**

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	1. SEISMIC SECTION	(FIGURE 1.)
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## INTRODUCTION

ON THE 5TH OF APRIL 2001 ARROWSMITH MUIR & ASSOCIATES PTY.LTD. CONSULTANT LAND ENGINEERING AND HYDROGRAPHIC SURVEYORS OF 11 CLONMILT AV. HIGHETT VIC. 3190 EXECUTED A CONTRACT WITH EAGLE BAY RESOURCES .N.L OF LEVEL 14 OUTRAM ST WEST PERTH WA 6872 TO UNDERTAKE A SITE HAZARD INSPECTION SURVEY AT THE SITE OF THE NORTHRIGHT-1 WELL SITE LOCATED IN THE TASMAN SEA APPROXIMATELY 80 KILOMETERS SOUTH EAST OF ORBOST VICTORIA AUSTRALIA.  
THIS REPORT DESCRIBES THE METHODS USED ,PERSONNEL AND EQUIPMENT AND THE FINDINGS BY THE CONSULTANT.



TASMAN SEA LOCALITY DIAGRAM

SCALE 1: 800000

## 1.0 BACKGROUND,

On the 23 rd March 2001 Arrowsmith Muir & Associates Consultant Land Engineering & Hydrographic Surveyors were requested by Eagle Bay Resources N.L to provide a proposal to Inspect and Survey a 2.5 Km square kilometer area around the Northright-1 well site adjacent to the Victorian Coast in the Tasman Sea. Arrowsmith Muir's proposal was found to be acceptable resulting in the execution of an agreement on the 4 th of April 2001.

The Inspection survey was to be undertaken as quickly as possible owing to the impending arrival of the drilling rig " Ocean Bounty" projected to arrive onsite on April 23 .

## 2.0 SURVEY SCOPE OF WORK

The following studies of the seabed were to carried out over the 2500 metre by 2500 metre square located symmetrically around the proposed well site at.

Lat. 37 55' 57.7"S Long. 149 08' 58.72"E

- (a) SIDE SCAN SONAR COVERAGE
- (b) BATHYMETRY
- (c) SUB-BOTTOM PROFILING
- (d) GRAB SAMPLING

## 3.0 EQUIPMENT

The survey Company proposed and used the following equipment

### 1. Side Scan Sonar

Geoacoustics Dual Frequency Side Scan System consisting of dual frequency tow fish and tow cable ,Geoacoustics Transmitter/Reciever and Ultra 120 Thermal Recorder A second Side Scan being "Edgetech" Digital Colour Side Scan was also on the vessel as a standby unit.

### 11. Positioning Equipment

Trimble 4000 DL GPS Receiver utilising "Omni Star" realtime Differential Corrections via Optus Satellite was used to provide navigational data .The corrected Satellite Data was input into "Hydro " helmsman guidance and Bathymetric Acquisition Software run on an IPC Notebook 486 DSTN Computer.

The computer also output simultaneously regular fix signals to all other recorders used during the course of the work.

Helmsman guidance screens were provided for all recorder operators with a screen also located in the wheel house for the vessels master.

### 111. Bathymetry

The bathymetry was recorded both as digital and analogue records using an "Echotrac" Model DF 3200 digital dual frequency (200Khz & 50 Khz) Fathometer. The digital Bathymetric data acquired was recorded by the Hydro software in HSB file format while the analogue record was printed on 100mm thermal paper.



#### iv. Sub bottom Profiling Equipment

O.R.E model 5420 Geopulse Power Supply and O.R.E Model 5810 High Resolution Sound Source were supplied as the basic components for the sub bottom profiler. A conventional Hydrophone Array coupled to a EPC Model 4600 Graphic Recorder through a "Khronhite" threshold sound filter captured the sub bottom record. Additionally the signals were also recorded on 6" roll to Roll tape using a Racal Tape recorder. This enables post processing and enhancing of the record should the need arise. The Model 5810 electro mechanical plate transducer was mounted in the traditional Catamaran mount and towed aft of the vessel.

#### v. Grab Sampler.

A Smith McIntyre positive grab Sampler was provided to obtain samples of the seabed material. The Smith McIntyre Grab system is a preloaded Spring activated grab which when tripped by contact with the seabed closes providing a positive bucket seal thus recovering the bed material. The totally enclosed bucket enables winching to the surface and recovery of the sample with out any wash out.

#### 4.0 SURVEY VESSEL

The vessel chartered for the survey was the support/Work Vessel "Starfire". The vessel was provided by Undersea Marine Pty.Ltd on a subcontract arrangement with the survey Company.

It is 300 HP twin Diesel powered 25 metre x 9 metre vessel.

It is of Catamaran type hull construction providing good stability for the type of work undertaken.

Accommodation is available for 12 persons including a crew of two.

Full electronics including digital chart system , auto pilot,radios, GPS ,Weather Fax and telephone are all available.

Home Port for the Vessel was Lakes Entrance.

#### 5.0 PERSONNEL.

The Survey Company provided the following personnel

- (a) Navigator & Party Manager H.T.Arrowsmith LS. MIS (Aust.)
- (b) Geologist/Geophysicist. Dr. C.V.G. Phipps Phd. M.Sc.
- (c) Systems Engineer R Fuller Dip Tech (UK)
- (d) 2 Hydrographic Assistants J.Marshall & E. Bedomme.

The Vessel crew consisted of Master,Mate and Deckhand/Cook.

To accomodate all survey equipment and survey personnel a portable site office was fixed to the vessels deck immediately aft of the wheelhouse.

#### 6.0 MOBILISATION

Mobilisation of all personnel and equipment took place in Lakes Entrance on Saturday April 7th & 8th April with all equipment tested and accepted as operational at 1200 hours 8th April.

Unfavourable weather conditions prevented departure until 1000 hours on 9th April.

## **7.0 SURVEY METHOD,**

It had been agreed prior to the survey that the survey would consist of a series of prime lines run over the survey area at 100 metre spacings. All sensors would be run with the side scan sonar set on 100 metre range so that 100% overlap of the bottom topography would be provided between adjacent lines.

On arrival at the site the prevailing sea condition was predominately from the West South West consequently it was decided that the vessel would remain more stable if the prime lines were run in a East/West direction.

Twenty Eight run lines covering the area in an East/West direction were preprogrammed and progressively run.

Adjacent lines could not be sequentially run owing to the need to keep the side Scan fish above the bottom on turns, accordingly every 4th runline was surveyed with infilling taking place during the course of the work.

On conclusion of the East/West prime lines three tie lines in a North South direction were carried out to tie the east /west transits together.

It was intended to undertake 6 such tie lines however an adverse weather forecast meant the reduction of same to three in favour of completing the work program prior to the deterioration in the weather.

The geologist on the basis of a working knowledge obtained during the course of the work selected 6 locations from which samples were to be obtained.

Four of these were completed before adverse weather prevented further work.

## **8.0 REPORTS**

### **8.1 BATHYMETRY,**

Soundings were digitally acquired at the rate of 8 per-second from the Fathometer with fixes being recorded every 10 seconds along line.

This equated to fixes being approximately 22 metres apart at the average speed of the vessel which was 2 to 3 kts. The Analogue records of all other recorders were set to automatically mark every third bathymetric fix. This provided sufficient space for fix annotations and any remarks.

During the course of the survey some 8000 Bathymetric fixes were recorded with some 2500 fixes annotated on the other recorders.

During mobilisation the dual frequency transducer was mounted over the side of the vessel 1.65 metres below the waterline, All soundings were automatically compensated for draft on this basis. Sounding Frequency (Speed of Sound in Water) by agreement with the survey supervisor was set at 1500 m/s as traditional "Bar Check" was not possible in 100 metre water depths. Time, being Eastern Standard Time was also set in the fathometer and is automatically printed on the analogue record with each marked fix.

At the beginning of each paper roll all parameters as outlined above appear on the analogue record.

The bathymetry has also not been corrected for tidal effect owing to no reliable tide station being close to the survey area. Previous work undertaken in the nearby Bass Strait oilfield area by the Company has established that the maximum tidal effect that could be expected would not exceed 1 metre at the Northright 1 well site.

The bathymetry fix locations have been corrected offset and layback relative to the GPS antenna and a Chart presented contoured at 1 metre intervals. UTM (Universal Transverse Mercator) grid matrix, Zone 55 is also shown on the chart.

This chart is in the Appendix of the report and indicates a relatively flat site falling gradually from the North West corner to the South East corner (Average Gradient 0.1%) The water depth on the Northern boundary of the site is 106 metres while that on the Southern boundary is 110 metres. The Bathymetry Chart also indicates the location of the recovered samples. The Chart Drawing 10661/1 is presented as a reduced copy in the appendix of this report.

Full scale copies of all charts have also been presented separately and if required all are available as digital drawings.

## 8.2 SIDE SCAN SONAR IMAGERY

The Side scan Transducer (Fish) was towed 194 metres aft of the fixing antenna (Layback). A depressor was attached to the tow cable to in an effort to depress the transducer to the optimum depth of 80 metres however a depth of 60 metres could only be achieved at the average vessel speed of 2 to 3 kts.

The scale setting of 100 metres either side of the tow fish was observed to be providing detail to the full extent of the record so the reduced water depth was considered to be satisfactory for the purpose of the survey. (location of seabed hazards,)

The "Ultra" triple channel recorder while testing satisfactory in port when recording commenced on site failed on two channels. The tow cable also had to be rewound on the net winch owing to rope being present and causing the cable to double wind.

The systems engineer transferred the second channel from the side scan to a standby EPC recorder and synchronised both recorders while the rope on the winch was removed and the cable rewound.

This accounted for a delay in commencing side scanning however subbottom profiling and bathymetry had commenced. Lines where the scanning was missed were rerun at the conclusion of the work in order that the coverage was complete.

The use of ships of opportunity for survey work do present problems from time to time for a number of reasons. In most cases the problems are of an electronic nature however in this case it was more of a matter of practical and operational procedures rather than noise affecting the equipment.

The side scan records did indicate the presence of exposed reef up to 3 to 4 metres above the adjacent seabed from time to time otherwise the seabed was found to be quite featureless.

No artificial features were found to exist within the survey area

The location of the reef is shown on the chart 10661/3, and is discussed further in the "Sub bottom Survey report". The Chart is presented as a reduced scale drawing in the appendix of the report.

### 8.3.1 SUB-BOTTOM PROFILING

The O.R.E power supply unit was run at an energy level of 450 joules with triggering by the controlling EPC set at once per second. This was observed to provide the necessary penetration of 10 metres in the harder materials of the seabed. On occasions however penetration of the seabed at this energy level did extend to over 50 metres.

The chief characteristics of the survey area can be classified into three distinct types of sub bottom these being as follows:

#### 8.3.2 TYPE 1.

The southern half of the area to line 15 (N5799400).

This consists of a sequence of buried and partly buried old sand dunes. The samples indicate that these are composed of fine carbonate sands which have become cemented in many areas often at or near the crests. Where the cemented crests are above the seabed they appear on the side scan records as patches of reef standing up to 3 metres above the surrounding flat sea bed.

The symmetry of the dunes indicate that the prevailing winds were from the South East when the dunes were above sealevel.

Some of the swales between the dunes have been filled with later sediment being muds, silts and sands similar to 8.3.4 below

The location of the crests of the dunes have been plotted on the sub-bottom interpretation chart. 10661/3

#### 8.3.3 TYPE 2.

Lines 16 to 21 (N.5799500) to (N.5800020) and predominately on the east side of the area exhibit similar characteristics to the above however the outcropping is not as apparent and a fine layer of sand exists over the eroded dune crests at seabed.

The overlaying sediment averages 4 to 5 metres thick and occasionally up to 7 metres.

The sediment should be regarded as soft sediment as it appears silty in nature. Toward the eastern edge of the area it becomes cemented forming low profile outcrops which are clearly visible on the sidescan records.

On the western side small sand waves running in a south westerly direction had formed in the seabed surface sediment

#### 8.3.4 TYPE 3.

The northern part of the area Lines 22 to 28 (N.5800100 to N.5800700) is a flat sandy bottom, the records indicate a well defined depression which has been interpreted as an infilled former lagoon.

To the west the equivalent lagoonal area is filled with soft holocene mud while to the east the situation is similar however there does appear to be more sand in the infill material.

The bottom of the former lagoon is around 30 metres below the existing seabed.

This whole area should be considered as soft sediment which should be regarded as having limited holding capacity.

8.

A typical seismic section (Figure 1.) Line 24 fixes 2315 to 2335 is presented in the appendix illustrating the above.

Plan 10661/2 provides a composite interpretation of the above with the depth of soft sediment below the seabed in the former lagoon and is contoured at 2 metre intervals.

#### 8.4 GRAB SAMPLING

The Geologist/Geophysicist selected 6 sites from which samples were to be recovered.

At 0550 hours on 11/04/01 a weather forecast issued for eastern Bass Strait for the next 12 hours indicated a serious deterioration in conditions for the forthcoming 24 hour period.

Wind speeds up to 45 Kts with up to 6 metre seas were forecast for the area of the survey;

At 0930 hours after agreement with the supervisor on limiting the number of tie lines the survey was considered to be complete.

Seabed sampling commenced as quickly as possible after recovery of the survey equipment:

The Side Scan Cable was unwound from the net winch and a 150 metre long rope wound thereon.

Using the mast boom the grab was deployed over the net pulley on the starboard side of the vessel.

Four samplings were undertaken before the weather deteriorated to the point where further work was not possible.

Three samples were recovered from 4 attempts and classified by the geologist as follows:

Sample #1 Fine to medium brown sand

Sample #2 Fine to medium brown shelly sand (no signs of cementing)

Sample #3 Medium brown sand with lumps of green to black silt

The location of each sample is shown on the Bathymetric chart 10661/1 in the appendix

#### 9.0 DEMOBILISATION

At 1230 hours on 11/04/01 sea conditions were of the order of 6 to 8 metres and winds gusting to 50 kts from the south west. The Master was consulted as to ability of the vessel to negotiate the Lakes Entrance Bar and we were advised that this would be not possible at least the next 24 hours. Accordingly and in interests of safety the decision was made to take the vessel to Eden in Twofold Bay and to demobilise the survey personnel and equipment and return the vessel back to Lakes Entrance at the first suitable opportunity.

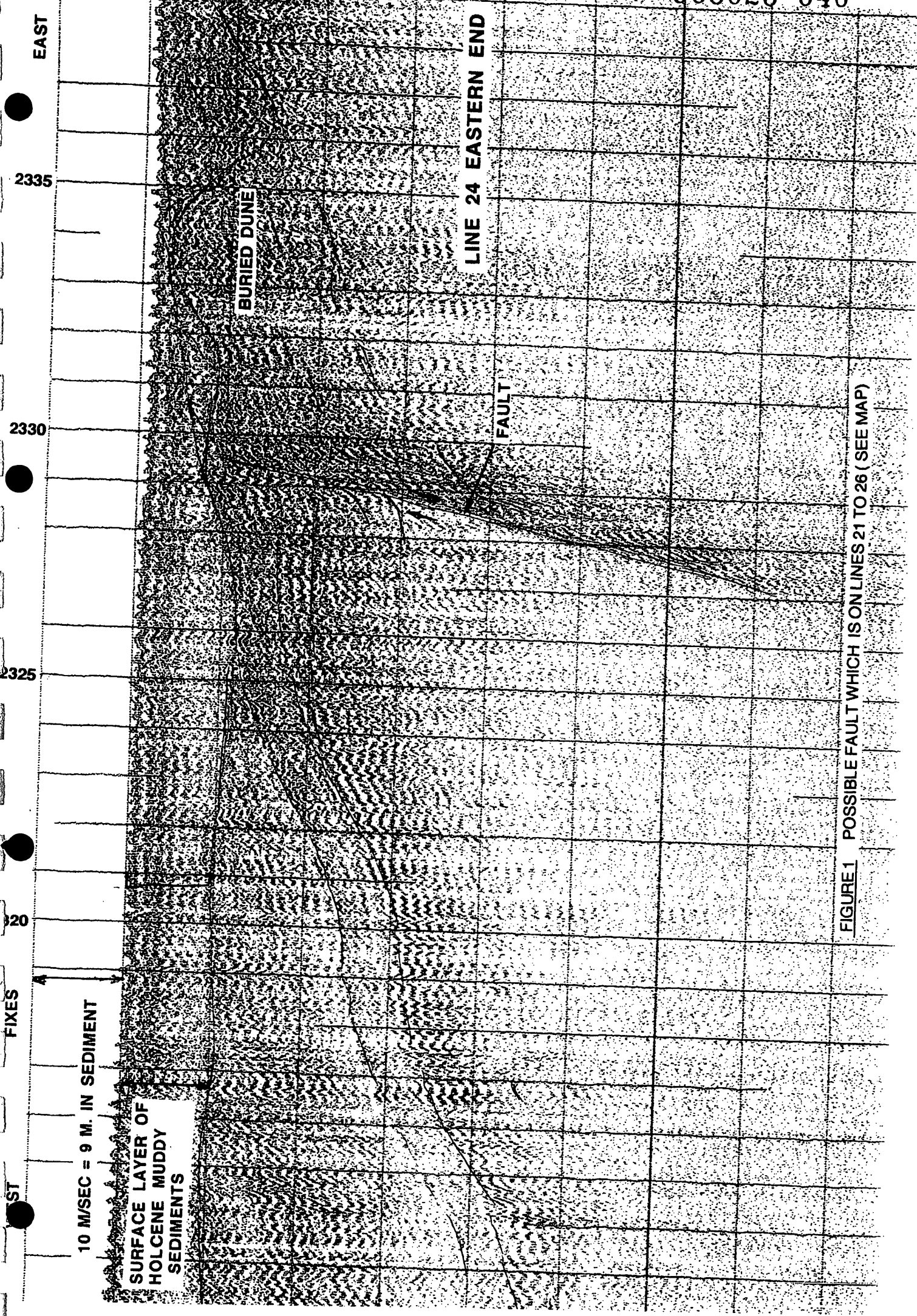
All equipment was secured and the vessel left the survey area at 1300 hours arriving at Eden at 2100 hours on 11th April. Personnel were dispatched to Lakes Entrance on a midnight bus to collect vehicles so that the demobilisation could take place the next day.

The vessel subsequently returned to Lakes Entrance at 1000 hours Friday 13th April.

**10. DAILY LOG.**

- April 6th Hydrographic assistants to Lakes Entrance with  
equipment & vehicles  
Geologist & Systems Engineer travel from interstate
- April 7th 0800 Vessel on Charter, Crane loads Office and secured to deck  
Transducer bracket fabricated and fitted.  
1000 Geologist & Systems Engineer arrive and fitout commences.  
1030 Safety meeting on mobilisation procedures  
1700 Manager arrives with equipment from overseas.  
2400 Fitout of office complete
- April 8th 1200 All equipment commissioned and accepted  
Spread put on Standby owing to bad weather forecast.
- April 9th 1030 Vessel sails Lakes Entrance.  
1100 Safety lecture by Master on procedures at sea.  
1700 Vessel arrives survey Area.  
2300 Survey commences at line 28
- April 10th 0000 to 2400 survey continues all day
- April 11th 0930 Survey work completed.  
1000 Grab Sampler deployed Weather commences to deteriorate  
1230 Sampling abandoned due to bad weather  
1300 Vessel proceeds to Eden  
2100 Vessel arrives Eden, vessel & Equipment on Standby  
2355 Three Personnel to Lakes Entrance to get Vehicles
- April 12th 0730 Personnel & Vehicles return to Eden demob commences  
1330 Demob Complete except for survey Office.  
1500 Personnel and equipment depart Eden  
2000 Vessel departs Eden for Lakes Entrance
- April 13th 1000 Vessel Arrives Lakes Entrance  
1200 Crane removes Office and vessel off charter.

**APPENDICES**



EAST

2335

2330

2325

2320

FIXES

10 M/SEC = 9 M. IN SEDIMENT

SURFACE LAYER OF  
HOLCENE MUDDY  
SEDIMENTS

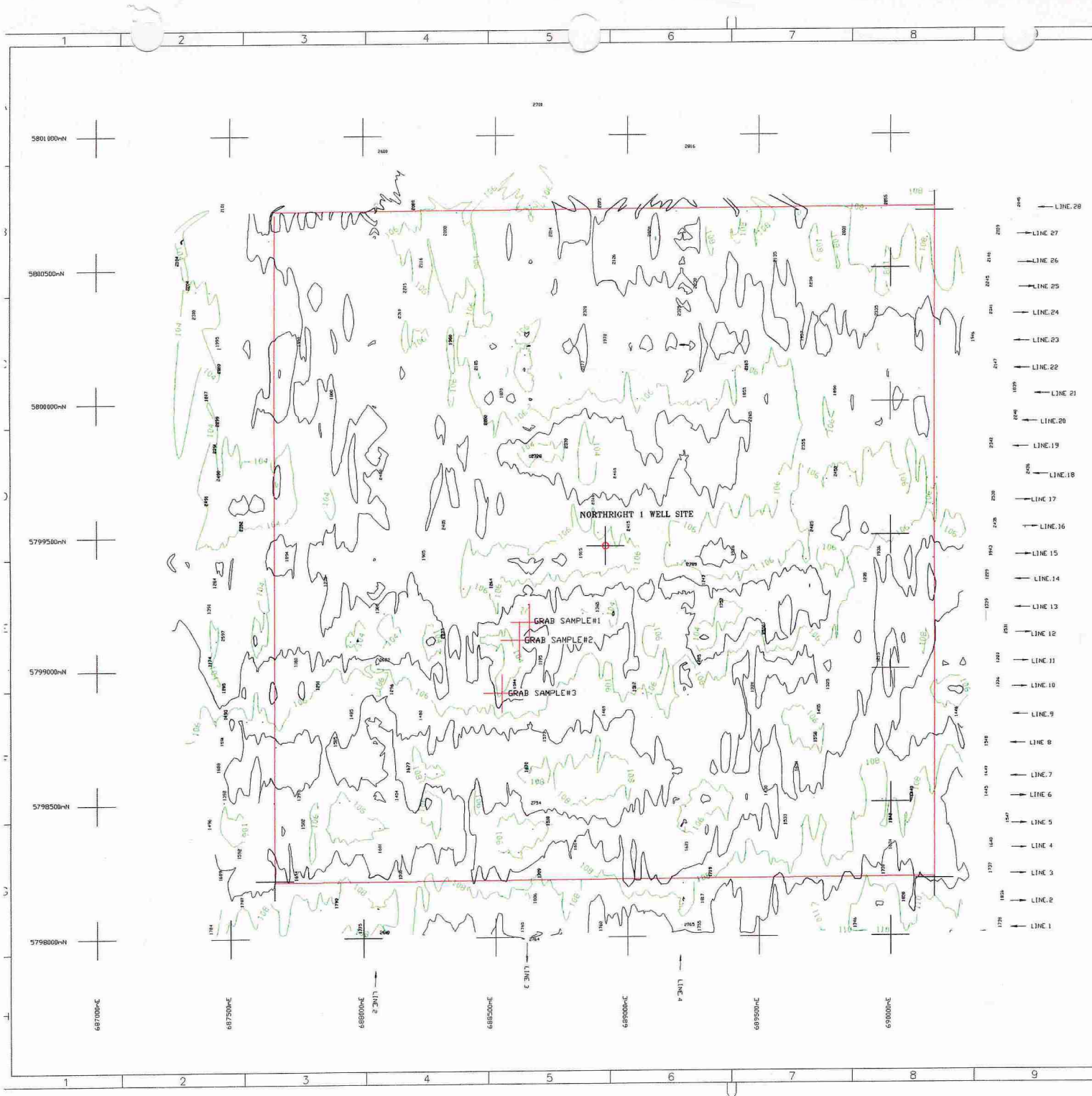
BURIED DUNE

LINE 24 EASTERN END

FAULT

FIGURE 1 POSSIBLE FAULT WHICH IS ON LINES 21 TO 26 (SEE MAP)





EAGLE BAY RESOURCES N.L.  
 LEVEL 1, 14 OUTRAM ST.  
 WEST PERTH W.A. 6872  
 089 3456789 FAX 089 234567

TASMAN SEA  
 NORTHRIGHT 1  
 BATHYMETRIC SURVEY

SCALE 1-6000

LEGEND & NOTATIONS

- RUNLINE NUMBER & DIRECTION
- CONTOUR INTERVAL
- MAJOR CONTOUR
- MINOR CONTOUR
- FIX AND FIX NUMBER
- SITE BOUNDARY

NOTES

1. SOUNDINGS ARE NOT REDUCED FOR TIDAL EFFECT
2. GRID CO ORDINATES ARE U.T.M. (UNIVERSAL TRANSVERSE MERCATOR) ZONE 55

SURV.	A.M.A	DRAWN	H.T.A.
CHKD.	G.T.	PLOT DATE.	6/5/01
JOB No.	10661	CAD FILE No.	EAGLE1

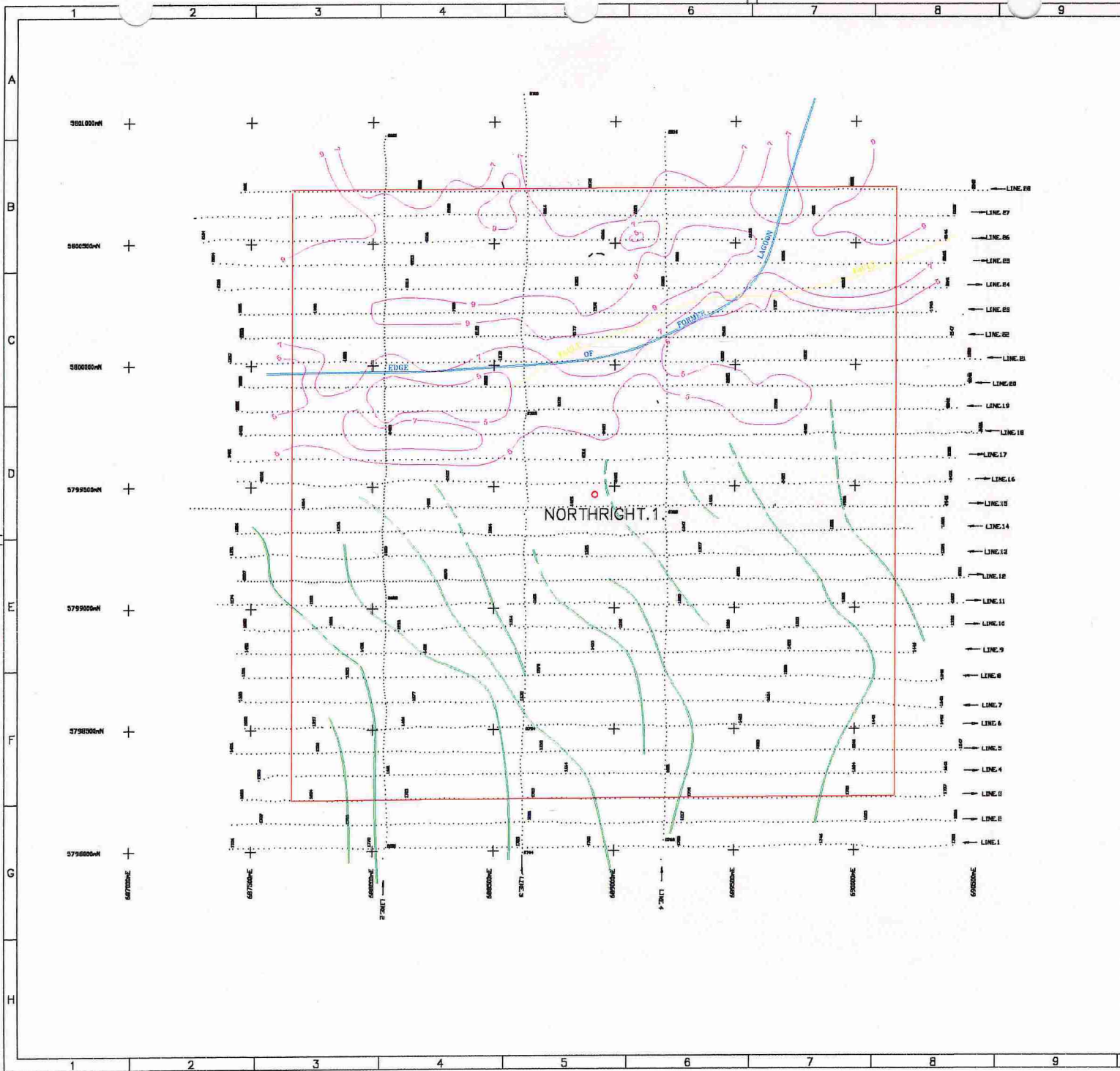
REVISIONS

PLAN No	DATE

SURVEYED BY:  
 ARROWSMITH MUIR & ASSOCIATES PTY.LTD  
 A.C.N 008 000 668  
 LAND, ENGINEERING & HYDROGRAPHIC SURVEY CONSULTANTS  
 11 CLONMILT AVE. HIGHTT VIC. 3190  
 EMAIL: hydro@arrowsmith.com.au  
 TEL (03) 9055 0197 FAX (03) 9055 0883

SHEET No.	1	SHEET SIZE	A1	SCALE	1:6000	DWG No.	10661/1	REV	0
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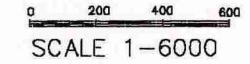
908025 041









EAGLE BAY RESOURCES N.L  
 LEVEL 1. 14 OUTRAM ST.  
 WEST PERTH W.A. 6872

089 3456789 FAX 089 234567

TASMAN SEA  
 NORTHRIGHT.1.  
 SUB-BOTTOM SURVEY INTERPRETATION



LEGEND & NOTATIONS

- RUNLINE NUMBER & DIRECTION  LINE.00
- HOLOCENE MUDS THICKNESS CONTOUR  5
- BURIED ERODED DUNE CRESTS 
- BURIED DUNE CRESTS AT SEABED SWALES FILLED WITH SAND AND SEDIMENT TO SEABED LEVEL 
- FOR CEMENTED SEDIMENT MATERIAL(ROCK) ABOVE SAND SEABED SEE SIDE SCAN SONAR PLAN 10661/3
- FIX AND FIX NUMBER 
- SITE BOUNDARY 

NOTES

1. GRID CO ORDINATES ARE U.T.M.  
(UNIVERSAL TRANSVERSE MERCATOR) ZONE 55
2. MUD THICKNESS CONTOUR INTERVAL 2 METRES

SURV.	A.M.A	DRAWN	H.T.A.
CHKD.	G.V.G.P.	PLOT DATE	5/05/01
JOB No.	10661	CAD FILE No.	EAGLE2

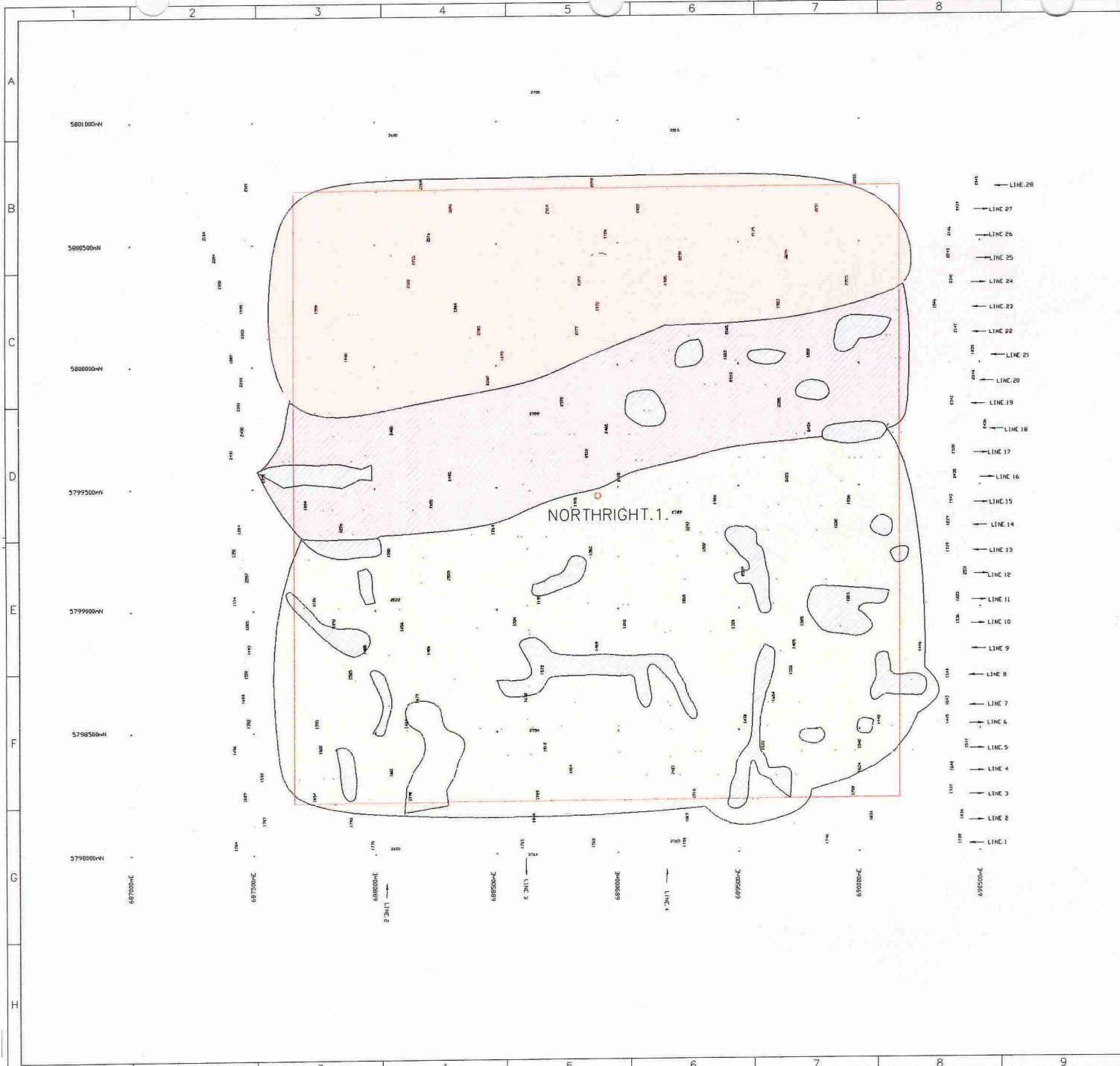
REVISIONS

PLAN No	DATE

SURVEYED BY:  
 ARROWSMITH MUIR & ASSOCIATES PTY.LTD  
 A.C.N.008 000 868  
 LAND,ENGINEERING & HYDROGRAPHIC SURVEY CONSULTANTS  
 11 GLENMILT AVE. HIGHETT VIC. 3100  
 EMAIL: hydro@enternet.com.au  
 TEL (03) 8888 0197 FAX (03) 8888 8888

SHEET No.	1	SHEET SIZE	A1	SCALE	1:6000	DWG No.	10661/2	REV.	0
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908025 042

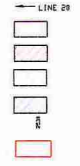


EAGLE BAY RESOURCES N.L  
 LEVEL 1.14 OUTRAM ST.  
 WEST PERTH W.A. 6872  
 089 3456789 FAX 089 234567

TASMAN SEA  
 NORTRIGHT.1.  
 SIDE SCAN SONAR SURVEY  
 0 200 400 600  
 SCALE 1-6000

LEGEND & NOTATIONS

- RUNLINE NUMBER & DIRECTION
- FLAT SANDY BOTTOM OVER SOFT SEDIMENT
- SAND WAVES OVERLAYING ERODED DUNES
- SANDY BOTTOM OVERLAYING BURIED DUNES
- CEMENTED SEDIMENT MATERIAL(ROCK) ABOVE SAND SEABED
- FIX AND FIX NUMBER
- SITE BOUNDARY



NOTES

1.GRID CO ORDINATES ARE U.T.M.  
 (UNIVERSAL TRANSVERSE MERCATOR) ZONE 55

SURV.	A.M.A	DRAWN	5/5/01
CHKD.	G.T.	PLOT DATE.	6/5/01
JOB No.	10661	CAD FILE No.	EAGLE3

REVISIONS

PLAN No	DATE

SURVEYED BY:  
 ARROWSMITH MUIR & ASSOCIATES PTY.LTD  
 A.C.N.008 000 888  
 LAND,ENGINEERING & HYDROGRAPHIC SURVEY CONSULTANTS  
 11 CLONMILT AVE HIGHETT VIC. 3190  
 EMAIL: hydro@enternet.com.au  
 TEL (03) 9555 0197 FAX (03) 9555 9883

SHEET No.	1	SHEET SIZE	A1	SCALE	1:6000	DWG No.	10661/3	REV.	0
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908025 043



## **APPENDIX B**

# **RIG POSITIONING REPORT**



**SURVEY REPORT  
FOR THE  
OCEAN BOUNTY RIG MOVE TO  
THE NORTHRIGHT-1 LOCATION**

**HY16414**

Client : Eagle Bay Resources NL  
First Floor  
14 Outram Street  
WEST PERTH WA 6005

Date of Survey : 21<sup>st</sup> to 26<sup>th</sup> April 2001

Date of Report : 3<sup>rd</sup> May 2001

Checked : *J. Mollis*

Authorised : *[Signature]*

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<b>APPENDIX A</b>	<b>DAILY OPERATIONS REPORTS</b>
<b>APPENDIX B</b>	<b>PROJECT COORDINATE LISTINGS AND ANCHORING PROCEDURES</b>
<b>APPENDIX C</b>	<b>DGPS AND GYRO CHECKS</b>
<b>APPENDIX D</b>	<b>FINAL POSITIONING DATA</b>

**ABSTRACT**

*Between 21<sup>st</sup> and 26<sup>th</sup> April 2001, Fugro Survey provided equipment and personnel for the MODU OCEAN BOUNTY rig move to the NORTHRIGHT-1 location in exploration permit VIC/P41, Bass Strait.*

*Surface positioning was achieved utilising Fugro Survey's Multi-Reference Differential GPS and Starfix.Seis navigation software.*

*The final position for the drillstem derived from one hour of DGPS observations at the NORTHRIGHT-1 location was:*

<b>Location Name:</b>	<b>NORTHRIGHT-1</b>
<b>Easting:</b>	<b>688 922.4 m</b>
<b>Northing:</b>	<b>5 799 457.1 m</b>
<b>Latitude:</b>	<b>37° 55' 57.754" S</b>
<b>Longitude:</b>	<b>149° 08' 58.942" E</b>
<b>Rig Heading:</b>	<b>255.8° True</b>

*This position is 8.0m on a bearing of 137.5° (G) from the proposed NORTHRIGHT-1 location.*

*All co-ordinates in this report are quoted in AGD84 datum and UTM CM 147°E (Zone 55) projection unless otherwise stated.*





## 1.0 INTRODUCTION

Fugro Survey Pty Ltd (Fugro) was contracted by Eagle Bay Resources NL (Eagle Bay) to provide positioning services for the mobile offshore drilling unit (MODU) Ocean Bounty move to the NORTHRIGHT-1 location in exploration permit VIC/P41, Bass Strait. A general location diagram is shown overleaf as Figure 1.

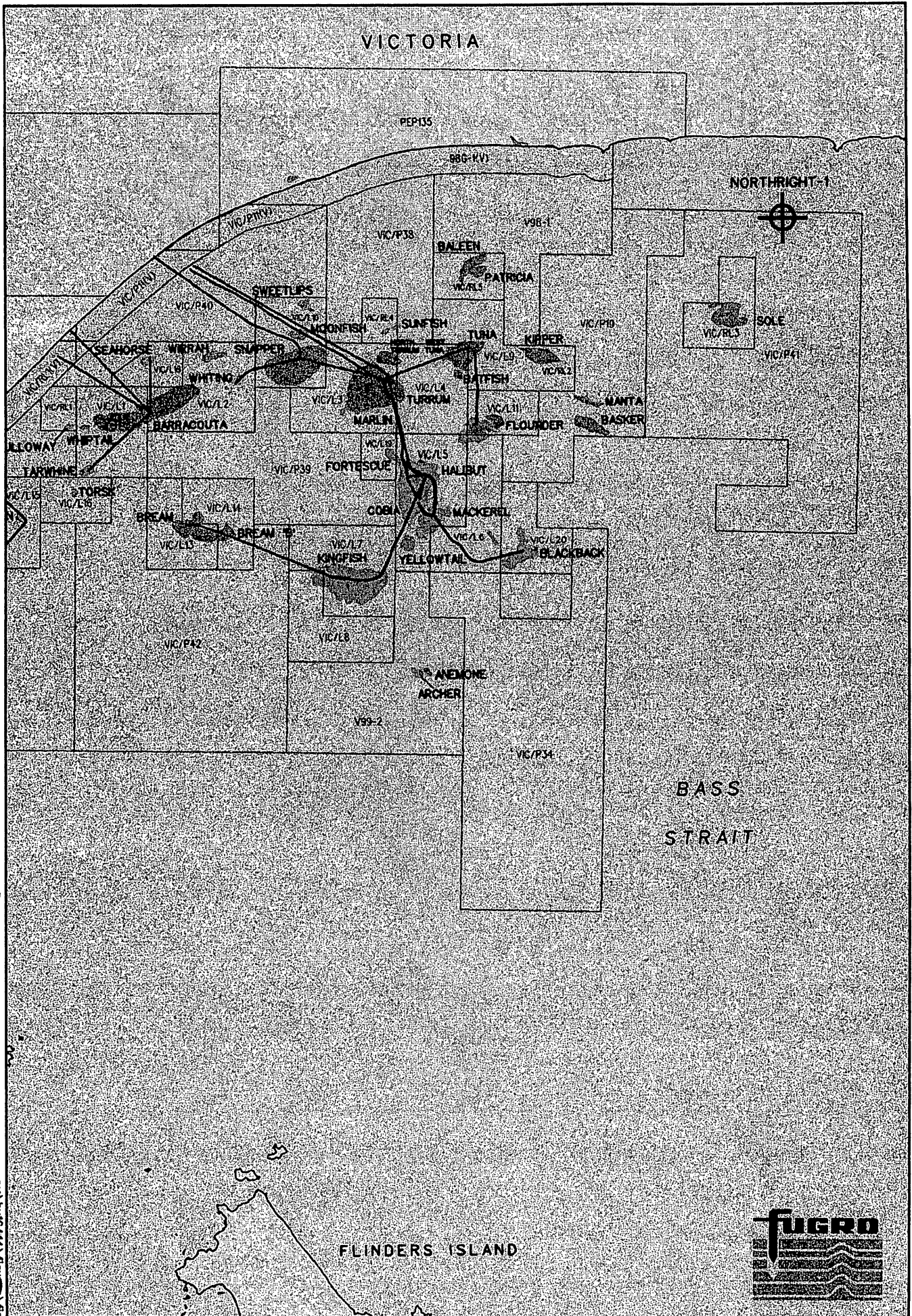
This report details equipment used, survey parameters adopted, procedures employed and the results achieved. A section on safety is also included in Section 7.0 of this report.

### 1.1 Scope of Work

Personnel and equipment were to be provided on a 24-hour per day basis for:

- Surface navigation for the Ocean Bounty using Fugro's Starfix-Spot Differential GPS (Optus and APSat satellites) and Multi Reference Differential Solution.
- Surface navigation for two AHV's and barge management system to send tow route and anchor locations from the survey computer to the AHV's.
- Final rig position calculation for the NORTHRIGHT-1 location using DGPS observations.

Eagle Bay provided co-ordinates for the proposed NORTHRIGHT-1 location and Diamond Offshore supplied the proposed anchor pattern. These co-ordinates are located in Appendix B.



m:\hy15414\Fig1\Fig1.dgn

GENERAL LOCATION DIAGRAM



FIGURE 1



## 1.2 Sequence of Events

- 21<sup>st</sup> April 2001 L. Clark travels to Sydney.
- 22<sup>nd</sup> April 2001 L. Clark transfers to Ocean Bounty. Ocean Bounty under tow to Northright-1 location. Run up all navigation equipment on rig and both AHVs and confirm as operational. G. Moore travels to Melbourne.
- 23<sup>rd</sup> April 2001 Muster and safety drill on Ocean Bounty. G. Moore transfers to Ocean Bounty. Check setup for proposed location.
- 24<sup>th</sup> April 2001 Pre-anchor meeting and final run-in. First anchor (#6) deployed from fairlead at 12:26 hours. Continue tow to proposed well location. Pacific Conqueror deploys anchors #2 and #7. Pacific Conqueror commences deployment of anchor #3.
- 25<sup>th</sup> April 2001 Pacific Conqueror attempts to run anchor #3. Waiting on weather. Pacific Conqueror deploys anchors #4 and #1. Pacific Sentinel released from tow bridle. Carry out gyro compass calibration. Pacific Conqueror deploys anchors #8 and #5. Storm tensioning completed. Ballasting operations commence.
- 26<sup>th</sup> April 2001 Ballasting operations completed. Record one hour of data for final position and heading. Personnel depart rig.

Full details of Fugro involvement in the rig move are presented in the Daily Operations Reports included in Appendix A.



## 2.0 SURVEY PARAMETERS

All co-ordinates supplied in this report are referenced to the Australian Geodetic Datum 1984 (AGD84). The GPS is in reference to the World Geodetic System 1984 (WGS84).

### 2.1 Geodetic Parameters

**Datum** : **WGS84**  
**Reference Spheroid** : **World Geodetic Spheroid 1984**  
**Semi-major Axis** : **6 378 137 m**  
**Inverse flattening (1/f)** : **298.257223563**

The proposed drilling location and all project co-ordinates are in terms of:

**Datum** : **AGD 1984**  
**Reference Spheroid** : **Australian National Spheroid (ANS)**  
**Semi-major Axis** : **6 378 160 m**  
**Inverse flattening (1/f)** : **298.25**

**Projection** : **UTM**  
**False Easting** : **500 000 m**  
**False Northing** : **10 000 000 m**  
**Latitude of Origin** : **0.0°**  
**Central Meridian (CM)** : **147° East**  
**UTM Zone** : **55**  
**Scale Factor on CM** : **0.9996**  
**Units** : **International Metres**

#### Datum Transformation

The transformation parameters used for conversion from WGS 84 co-ordinates, generated by the Differential GPS system, to AGD 84 are listed below. Fugro follow the DMA convention for datum transformations:

X Shift (metres)	=	+116.0000	Rotation X (secs)	=	+0.2300
Y Shift (metres)	=	+50.4700	Rotation Y (secs)	=	+0.3900
Z Shift (metres)	=	-141.6900	Rotation Z (secs)	=	+0.3440
Scale (ppm)	=	-0.0983			



## 2.2 Differential GPS Reference Stations

The reference stations listed in the table below were used in the computation of the Multi Reference DGPS position.

Description	Site ID	Latitude (S)	Longitude (E)	Height (m)	Datum
Melbourne	385	38° 27' 53.375"	144° 54' 46.909"	144.90	WGS 84
Port Augusta	326	32° 29' 55.166"	137° 46' 31.459"	19.00	WGS84
Bathurst	336	33° 25' 46.902"	149° 34' 01.960"	756.80	WGS 84

## 2.3 Project Co-ordinates and Tolerances

Eagle Bay supplied the proposed target co-ordinates for the NORTHRIGHT-1 location.

NORTHRIGHT-1	Easting	Northing
Proposed Wellhead	688 917 m	5 799 463 m

The tolerance for the final drill rig position, as specified by Eagle Bay was to be within a 20-metre radius of the design location.

Diamond Offshore supplied the anchor pattern design which was based on the standard 30°/60° pattern.

Details of the client supplied data are enclosed in Appendix B.



### 3.0 EQUIPMENT AND PERSONNEL

#### 3.1 Equipment Listing

##### OCEAN BOUNTY

- 2 x Starfix Seis navigation computers and monitors
- 1 x Starfix-Spot (Optus) DGPS System c/w antennae, cabling and interfaces
- 1 x Starfix-Spot (APSat) DGPS Systems c/w antennae, cabling and interfaces
- 2 x Trimble 4000 series GPS Receiver's c/w antennae, cabling and interfaces
- 2 x MRDGPS computers and monitors with interfaces
- 2 x Tokimec GM20/21 Gyro Compass
- 1 x PCTug computers and monitor (Spare)
- 2 x Remote Tug Tracking Telemetry Systems (radio/modem & antenna)
- 1 x Theodolite and tripod

##### Pacific Conqueror and Pacific Sentinel (Anchor Handling Vessels)

- 1 x PCTug navigation computer
- 1 x Monitor
- 1 x OmniSTAR<sup>plus</sup> Enhanced Differential System (EDS) unit c/w associated antenna, cabling and interfaces
- 1 x Remote Tug Tracking Telemetry System (radio/modem & antenna)
- 1 x Fluxgate Compass

Please refer overleaf for equipment flow diagrams shown as Figures 2 and 3.

#### 3.2 Vessels

The vessels used for anchor handling and towing of the Ocean Bounty were the Pacific Conqueror and Pacific Sentinel.

Refer to Figures 4, 5 and 6 overleaf for vessel offset diagrams.

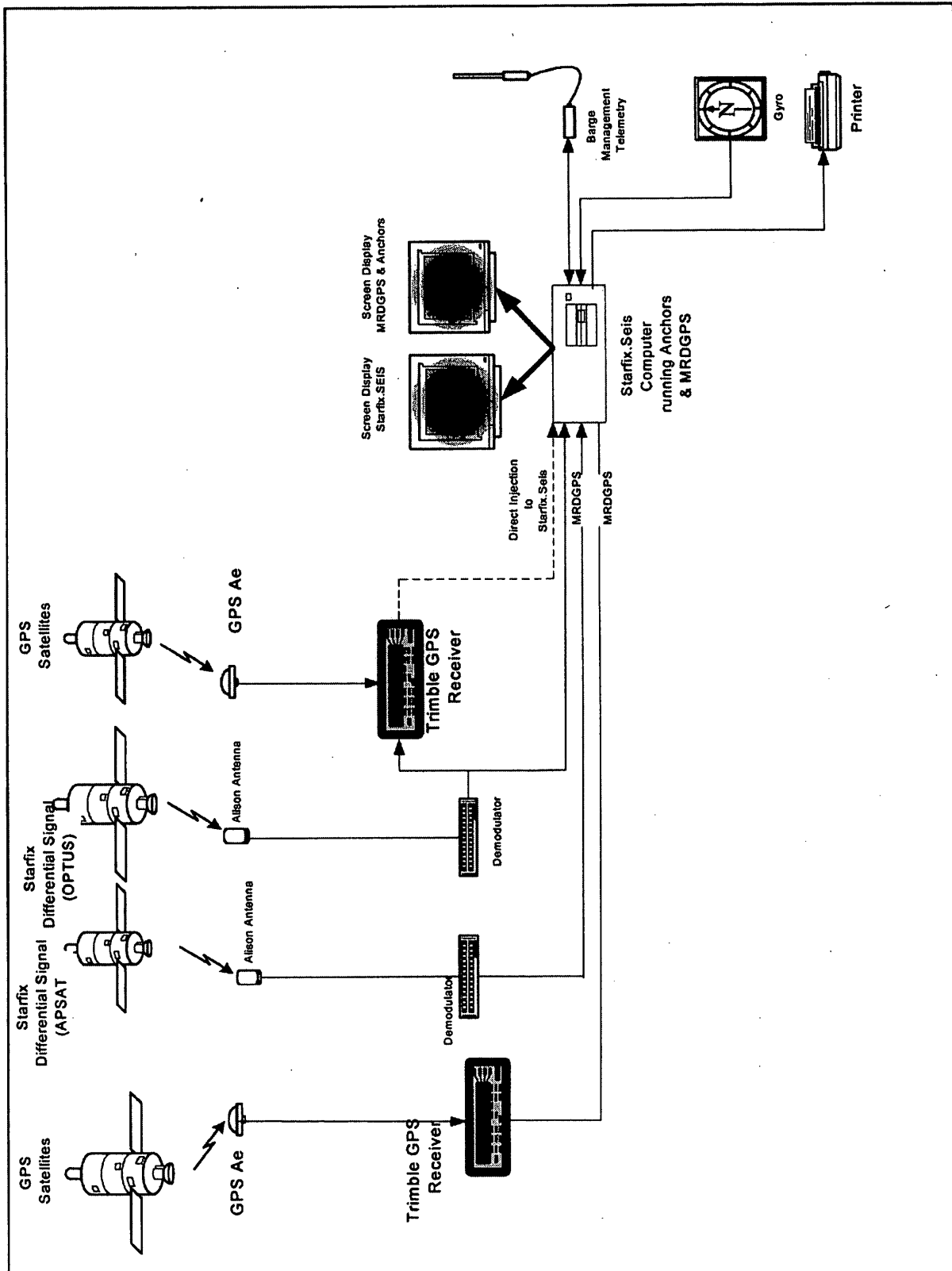


FIGURE 2 EQUIPMENT FLOW DIAGRAM - OCEAN BOUNTY

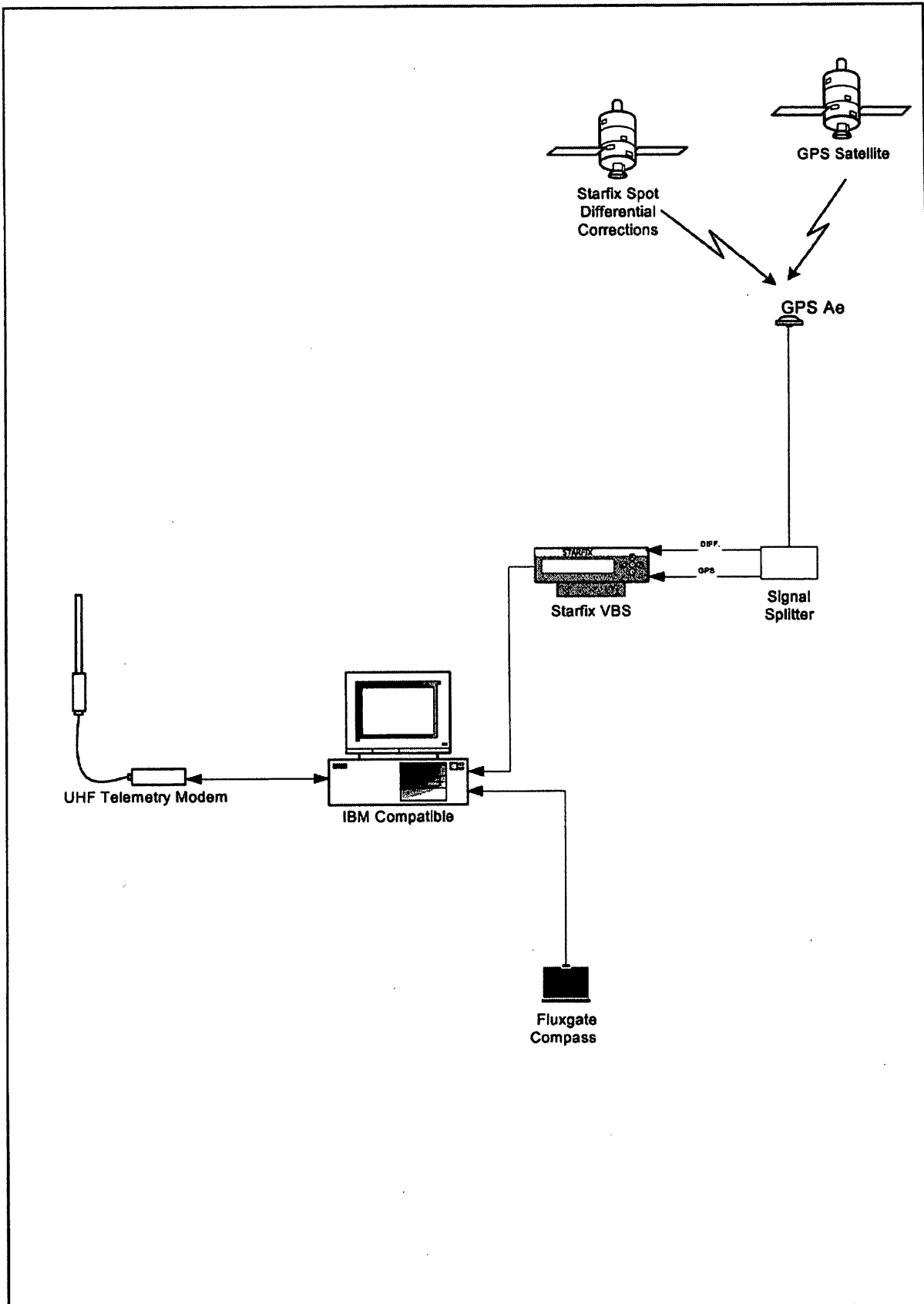


FIGURE 3 EQUIPMENT FLOW DIAGRAM – AHV'S



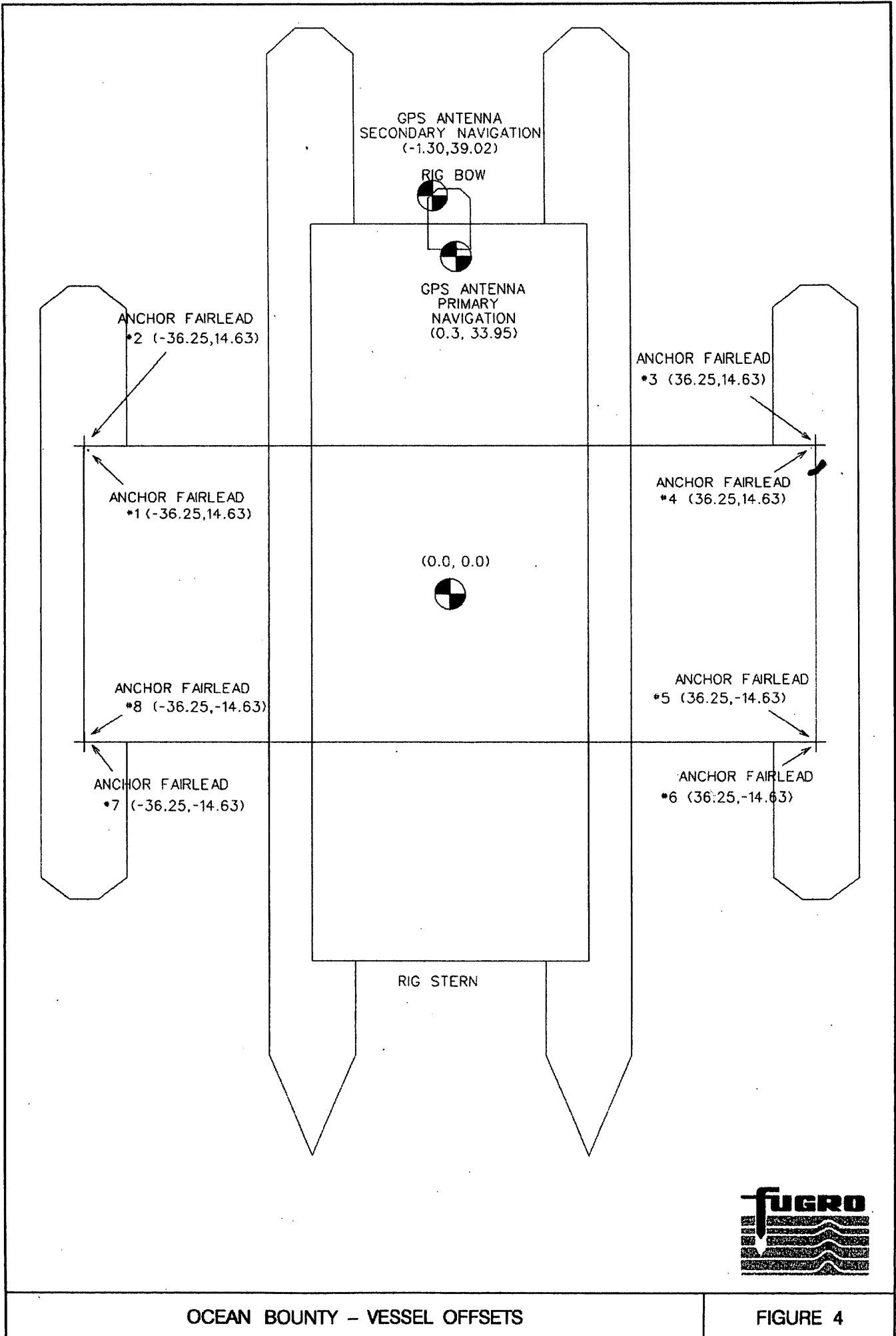
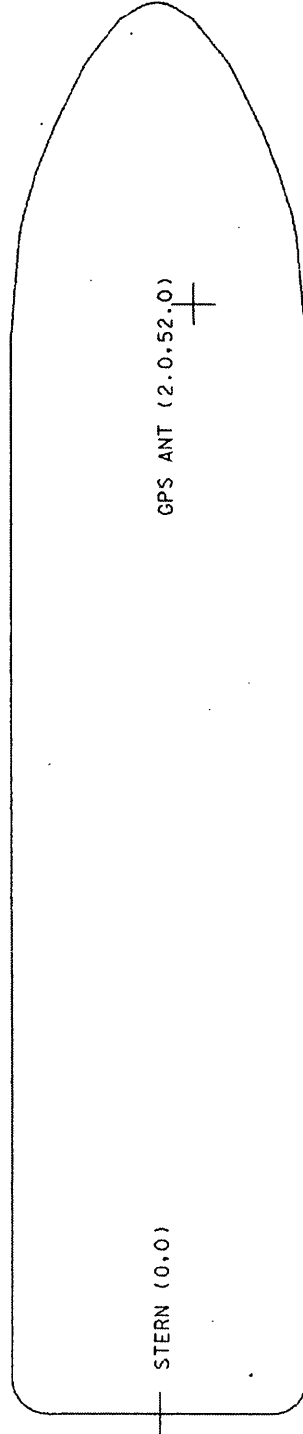
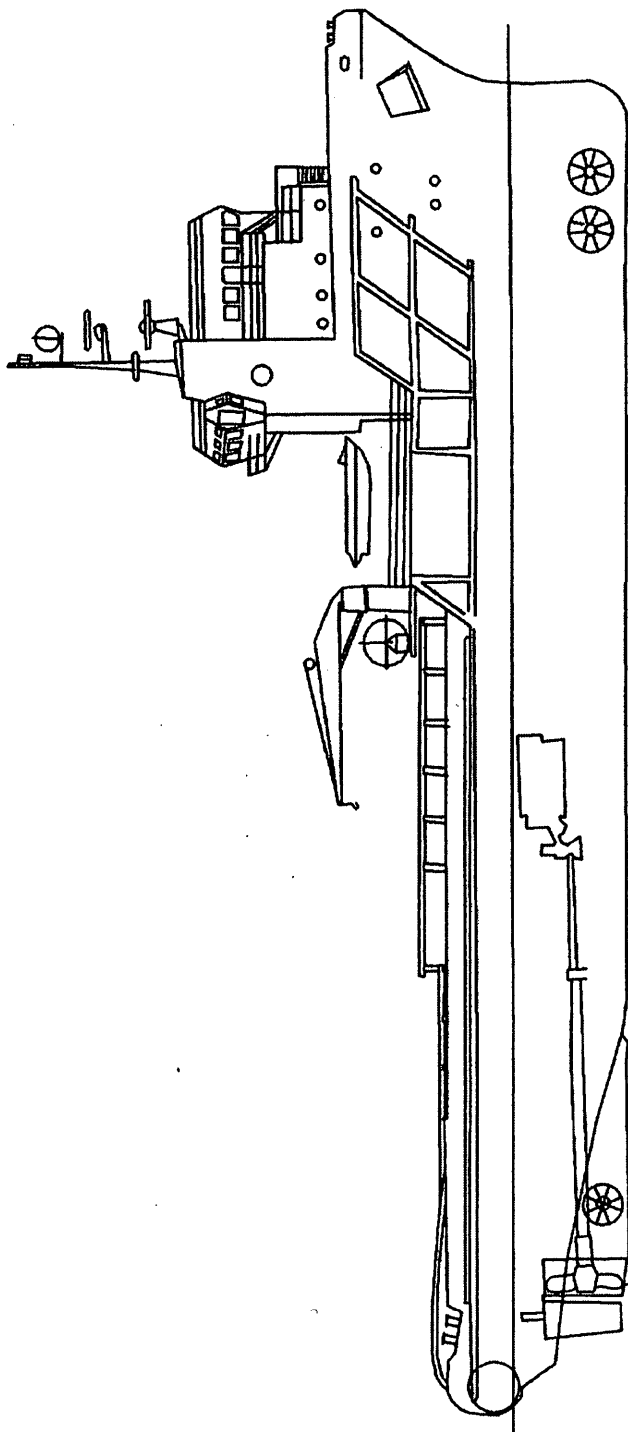




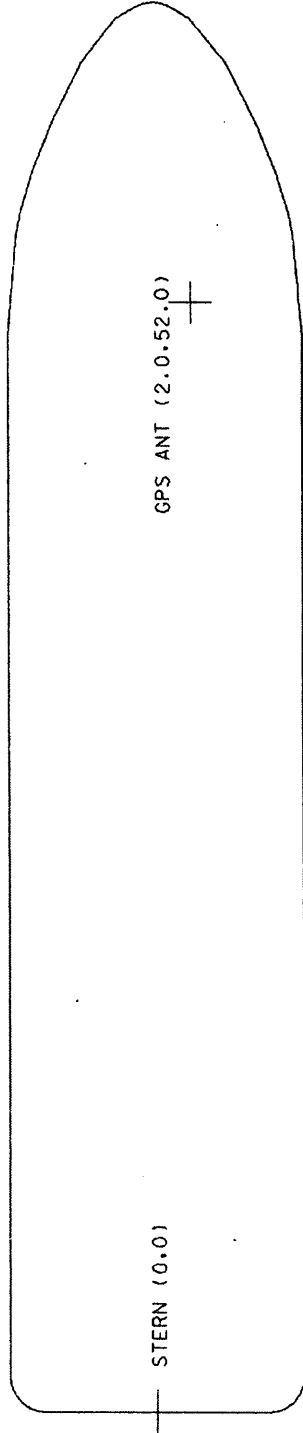
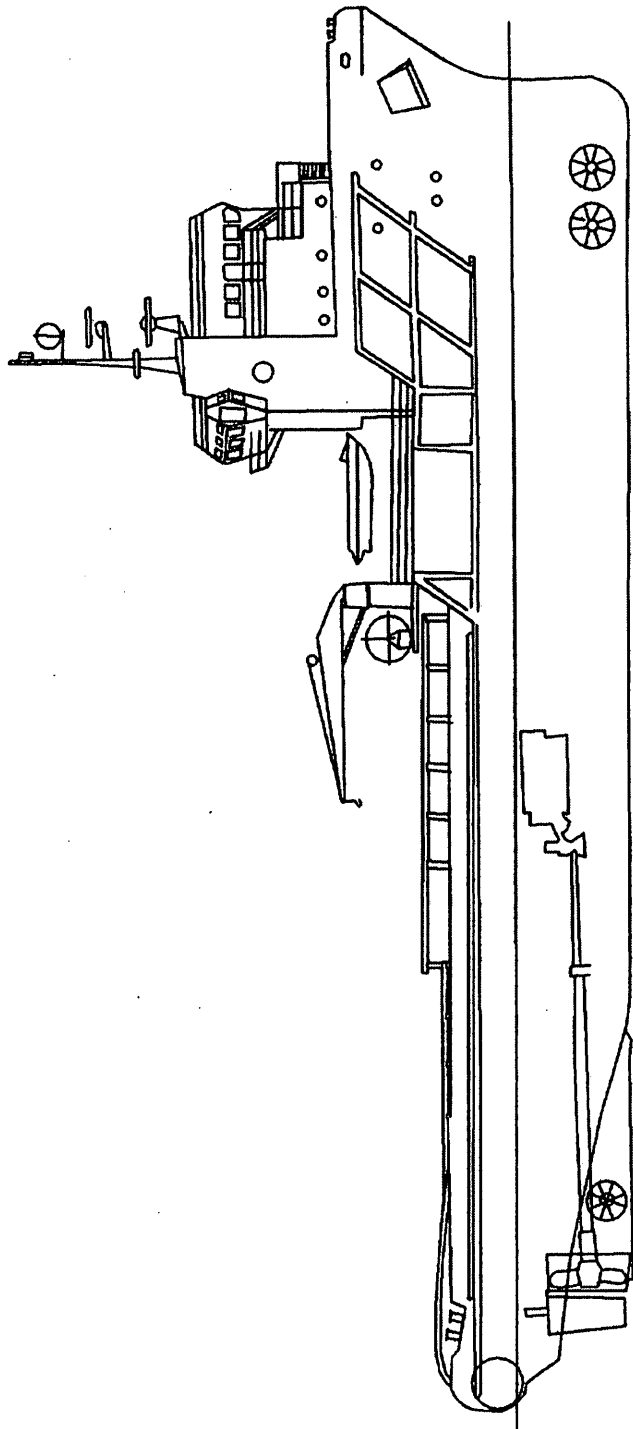
FIGURE 5



PACIFIC SENTINEL - VESSEL OFFSET DIAGRAM



FIGURE 6



PACIFIC CONQUEROR - VESSEL OFFSET DIAGRAM

**Personnel**

Fugro personnel involved in this project were as follows:

G. Moore	Party Chief / Surveyor	21 <sup>st</sup> to 26 <sup>th</sup> April 2001
L. Clark	Survey Technician	22 <sup>nd</sup> to 26 <sup>th</sup> April 2001

Eagle Bay were represented during the rig move by:

G. Halls	QC Surveyor	23 <sup>rd</sup> to 26 <sup>th</sup> April 2001
----------	-------------	---



## 4.0 EQUIPMENT CALIBRATIONS

### 4.1 DGPS Navigation Integrity Check

The primary navigation system comprised a Trimble GPS receiver and the Fugro Survey Multi Reference Differential GPS (MRDGPS) utilising reference stations at Melbourne, Bathurst and Port Augusta. The secondary navigation system comprised of a Trimble GPS receiver with single base station direct-injection RTCM corrections, from the reference station at Melbourne.

As the rig was under tow when personnel joined, a position comparison with the previous well location could not be carried out. A navigation system comparison was undertaken on the 25<sup>th</sup> April. The calculated datum position from the primary and secondary positioning systems were logged for approximately 15 minutes then compared with each other. The two systems were found to be in good agreement. A summary of the comparison is listed below.

#### Primary/Secondary Comparison

Primary navigation	688 929.2	5 799 433.0
Secondary navigation	688 928.1	5 799 434.0
Differences	+1.1	-1.0

A positioning checklist was completed to ensure that correct antenna offsets, transformation parameters and UTM central meridian were being used in all calculations. The geodetic calculations with both the online Starfix Seis navigation program and the off line GEO geodetic calculations program were also carried out. Details for the DGPS checks are enclosed in Appendix C.

### 4.2 Gyro Compass Check

The heading information for the positioning was from a Tokimec GM20/21 gyro compass, installed in the pilot house and interfaced to the navigation computer. The calibration of the survey gyro compass was completed on 25<sup>th</sup> April 2001, while the rig was at the Northright – 1 location. Angles were observed from the sun and the Point Hicks lighthouse to the rig centreline using a theodolite setup on the



helideck. The calculated heading values were then compared to the observed gyro compass values logged in Starfix Seis and a mean C-O value of  $+4.6^\circ$  was determined. The correction applied within Starfix Seis was changed from  $+195.26^\circ$  to  $+199.86^\circ$ .

Details of the observations and gyro calibration reduction results are enclosed in Appendix C.



## 5.0 SURVEY PROCEDURES

### 5.1 Mobilisation

Fugro Survey personnel mobilised to the rig via Sydney on the 22<sup>nd</sup> April and via Melbourne on the 23<sup>rd</sup> April. The rig was under tow from the Timor Sea via the east coast at the time of personnel arriving.

Positioning equipment on the Ocean Bounty and both AHVs was already mobilised from a previous project. All equipment had been switched off for the tow except for the gyro compass which was left running at all times. All equipment was switched on and confirmed as operational on the 22<sup>nd</sup> April.

Antenna offset measurement checks, positioning checks and the gyro calibration were completed prior to final position fixes at the Northright-1 location.

### 5.2 General Survey Procedures

The rig approached the site on the morning of 24<sup>th</sup> April 2001 and the Pacific Sentinel was released from the tow bridle before reaching the start of the 3 mile run-in at 1110 hours. The Pacific Conqueror continued the tow along the 3 mile run-in until the #6 anchor was deployed from the Ocean Bounty's fairlead at 1226 hours. Due to problems with the vessel, the Sentinel was put back on the tow bridle and the Conqueror was used to run the remaining anchors.

Anchors #2 and #7 were deployed during the evening of the 24<sup>th</sup> April. The Conqueror then attempted to run anchor #3, however difficulties were encountered due to the weather and sea state and operations ceased between 0100 and 0700 hours on the 25<sup>th</sup>. Upon recommencing operations it was discovered that anchor #3 was lost. The design position of anchor #4 was altered to allow for the missing anchor and #4 was deployed before releasing the Sentinel from the tow bridle. The Conqueror then continued running anchors #8 and #5 which was completed at 1845 hours on the 25<sup>th</sup> April. Storm tensioning was carried out and was completed at 1920 hours on the 25<sup>th</sup>.



For each anchor, the AHV's was given a waypoint with corresponding runline through the PCTug system and would then run out the anchor chain along this line until the desired amount of chain, as determined by the winch's cable counter, had been paid out from the rig. The anchor chain was then stretched out and the anchor lowered to the seabed with the vessel then stripping the chain chaser back to the rig.

After deployment of the anchor spread, anchors were storm tensioned and the rig's moon pool location was positioned over the proposed Northright-1 location. To facilitate positioning operations, the rig's drill stem position relative to the required location was displayed on the navigation monitor, which displayed the bearing and distance from the intended location both graphically and numerically.

The Ocean Bounty was positioned over the Northright-1 location and all anchoring and pre-tensioning completed by 1920 hours on 25<sup>th</sup> April 2001. Following de-ballasting operations the final position data was logged between 0620 and 0720 hours on the 26<sup>th</sup> April. A field report was issued to the Eagle Bay company man and the Diamond Offshore OIM on the 26<sup>th</sup> April 2001.

### **5.3 Demobilisation**

Navigation systems onboard the Ocean Bounty, Pacific Sentinel and Pacific Conqueror were switched off and left mobilised ready for the next rig move. The gyro compass was left running.

Personnel departed the rig on 26 April 2001, returning to Perth later the same day.





## 6.0 RESULTS

### 6.1 Final Position

The final position of the Ocean Bounty drill-stem was established by calculating the mean position from one hour of differential GPS data between 0620 and 0720 hours on the 26<sup>th</sup> April 2001. During this period, calculated drill-stem co-ordinates from both the primary and secondary positioning systems were logged at ten second intervals in "Starfix Seis". Data from the primary positioning system was used for the final position calculation.

Differential corrections for the GPS positioning system were derived using a multi reference solution with base station data from Melbourne, Port Augusta and Bathurst.

AGD84 geographical positions for the Northright-1 location are as follows:

Position	Method	Latitude	Longitude
Drill Stem @ Surface	DGPS	37° 55' 57.754" S	149° 08' 58.942" E
Proposed Location		37° 55' 57.57" S	149° 08' 58.72" E

AGD84 grid co-ordinates (CM 147° E) for the Northright-1 location are as follows:

Position	Method	Easting	Northing	No. Of Obs	S.Dev
Drill Stem @ Surface	DGPS	688 922.4	5 799 457.1	363	0.3
Proposed Location		688 917	5 799 463		

This position is 8.0m at a bearing of 137.5° (Grid) from the proposed Northright-1 location.

The rig position field report and final position data are enclosed in Appendix D.

### 6.2 Rig Heading

The heading of the Ocean Bounty was established by calculating the average heading from one hour of gyro compass data between 0620 and 0720 hours on 26<sup>th</sup> April 2001. During this period gyro readings were logged at ten second intervals in Starfix Seis.



The Ocean Bounty rig heading is as follows:

Description	Method	True	Grid	No. Of Obs	S.Dev
Rig Heading	Gyro	255.8°	257.1°	363	0.0°
Proposed Heading		250.0°			

### 6.3 Anchor Positions

The approximate locations of the Ocean Bounty anchors are shown below. These positions are derived from a position fix on the stern of the AHV at the time of anchor deployment on the seabed. The bearing from the fairlead along each anchor leg to the AHV's stern position, was correlated with final chain lengths from each anchor winch to calculate catenary and corrected horizontal distances to each anchor buried in the seabed.

Anchor	Easting	Northing	Bearing(T)	Deployed by
1	688 688	5 798 207	190	Pacific Conqueror
2	688 087	5 798 527	222	Pacific Conqueror
3				
4	687 838	5 800 052	296	Pacific Conqueror
5	689 041	5 800 670	4	Pacific Conqueror
6	689 020	5 800 465	41	Pacific Conqueror
7	689 570	5 800 205	102	Ocean Bounty
8	689 880	5 799 205	128	Pacific Conqueror



## 7.0 SAFETY

All work undertaken by Fugro personnel during the project was conducted within the guidelines of Fugro Survey's Safety Policy as defined in Fugro Survey's Safety Manual (FSSM01) and Offshore Survey Safety Practices (FSSM06).

Fugro personnel worked within project safety guidelines and plans adopted by Diamond Offshore and Eagle Bay. Participation in the Diamond Offshore STOP programs was encouraged.

Personal safety equipment was worn throughout the project as required. No injuries involving Fugro personnel were reported during the project.

L. Clark participated in an emergency and abandon rig drill on 23<sup>rd</sup> April 2001.



## 8.0 CONCLUSIONS AND RECOMMENDATIONS

On reviewing the Rig Move operations undertaken by Fugro Survey for the Ocean Bounty, the following conclusions have been reached:

- The Ocean Bounty was successfully positioned on location within required tolerances.

908025 069

**APPENDIX A**

**DAILY OPERATIONS REPORTS**



# DAILY OPERATIONS REPORT

CLIENT: *EAGLE BAY RESOURCES* LOCATION: DATE: *21/4/01*

PROJECT: *NORTHRIGHT-1* VESSEL: *OCEAN BOUNTY* JOB NO: *HY 16414*

FROM	TO	SUMMARY OF OPERATIONS
		<i>2F</i>
		<i>L. CLARK travels Perth - Sydney</i>
		<i>Overnight Sydney</i>

EQUIPMENT	No.	EQUIPMENT	No.	PERSONNEL	TITLE
				<i>L. CLARK</i>	<i>SWP. TECH.</i>

VEHICLES:  
 CONSUMABLES:  
 ACCOMMODATION:  
 AUTHORISED CONTRACT CHANGES/COMMENTS:

Party Chief Signature: <i>Greg J Moore</i>	Client Representative Signature: <i>[Signature]</i>	D O R Number <b>10551</b>
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# DAILY OPERATIONS REPORT



CLIENT: EAGLE BAY RESOURCES		LOCATION: BASS STRAIT		DATE: 22/4/01	
PROJECT: NORTHRIGHT-1		VESSEL: OCEAN BOUNTY		JOB NO: HY 1644	
FROM	TO	SUMMARY OF OPERATIONS			
0830	1030	L. CLARK TRANSFER TO OCEAN BOUNTY CONFIRM NAV EQUIPMENT OPERATIONAL ON RIG AND TWO AHU'S			
1315		G. MOORE TRAVELS TO MELBOURNE OVERNIGHT MELBOURNE			
EQUIPMENT	No.	EQUIPMENT	No.	PERSONNEL	TITLE
2x Starfix Seis Computer	(1 spare)			L. CLARK	SURV. TECH
2x Trimble GPS				G. MOORE	SURV
3x Demodulator	(1 spare)				
2x Gyro Compass	(1 spare)				
2x TELEMETRY SYSTEM	(1 SPARE)				
3x AHU Positioning & TELEMETRY SYSTEMS	(1 SPARE)				
1x THEODOLITE					
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: 1 x HILTON AIRPORT					
AUTHORISED CONTRACT CHANGES/COMMENTS:					
Party Chief Signature:		Client Representative Signature:		D O R Number	
Geg T Moore		[Signature]		10552	







# DAILY OPERATIONS REPORT



CLIENT: <i>EGLE BAY RESOURCES</i>		LOCATION: <i>BASS STRAIT</i>		DATE: <i>25/04/01</i>	
PROJECT: <i>NORTHEAST-1</i>		VESSEL: <i>OCEAN BOUNTY</i>		JOB NO: <i>HY 16414</i>	
FROM	TO	SUMMARY OF OPERATIONS			
<i>0000</i>	<i>0100</i>	<i>CONQUEROR CONTINUE ATTEMPT TO RUN ANCHOR #3</i>			
<i>0100</i>	<i>0700</i>	<i>WAITING ON WEATHER</i>			
	<i>1115</i>	<i>CONQUEROR DEPLOY ANCHOR #4</i>			
<i>1235</i>	<i>1420</i>	<i>CONQUEROR RUNNING ANCHOR #1</i>			
	<i>1320</i>	<i>SENTINEL RELEASED FROM TOW BRIDGE</i>			
<i>1520</i>	<i>1555</i>	<i>CONQUEROR RUNNING ANCHOR #8</i>			
	<i>1845</i>	<i>CONQUEROR DEPLOY ANCHOR #5</i>			
	<i>1920</i>	<i>STORM TENSIONING ACCEPTED - COMMENCE BALLASTING</i>			
<i>1545</i>	<i>1605</i>	<i>OBSERVATIONS FOR GYRO COMPASS CALIBRATION</i>			
		<i>CARRIED OUT</i>			
EQUIPMENT	No.	EQUIPMENT	No.	PERSONNEL	TITLE
<i>AS PER</i>	<i>22/04/01</i>			<i>G. MOORE</i>	<i>SURV</i>
<i>DOR #</i>	<i>10552</i>			<i>L. CLARK</i>	<i>SURV TECH</i>
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					
AUTHORISED CONTRACT CHANGES/COMMENTS:					
Party Chief Signature:		Client Representative Signature:		D O R Number	
<i>Greg J Moore</i>		<i>[Signature]</i>		<i>10555</i>	



**APPENDIX B**

**PROJECT COORDINATE LISTINGS AND ANCHORING PROCEDURES**

**Stoker, John**

**From:** John Smith [jsmith@lpm.com.au]  
**Sent:** Thursday, April 05, 2001 10:47 AM  
**To:** Stoker, John  
**Subject:** RE: Rig Positioning Services - Hy16414

John,

Thanks for the response.

Well details as follows:

Well Name: NORTHRIGHT-1  
Permit: VIC/P41  
Lat/Long: 149° 08' 58.72" E  
37° 55' 57.57" S  
UTM Zone 55 688 917 E 911.112  
5 799 463 S 462.886  
Water depth: 105 metres  
QA/QC Hydrographic Surveys

WGS 84  
37 55 52.0035  
149 09 03.2761  
-5.608  
689 031.622  
5799 646.506  
δ = -1° 19' 21.31"

Current ETA for the Ocean Bounty at Northright-1 is April 23rd.  
Our plans are to fly your crew out at least one day prior to rig arrival.  
At this point in time most likely the first helicopter will depart from  
Essendon, although I will keep in touch with you on that.

Please also advise the following:

- Names of crew ( when known)
- Confirm all equipment is onboard the Bounty and that your crew will not be carrying any freight.
- Minimum rig up time required

Please do not hesitate to call if you have any questions.

Thanks and regards,

John Smith  
Eagle Bay Resources N.L  
C/o Labrador Petro-Management Pty Ltd  
1st Floor, Hampden House  
174 Hampden Road  
NEDLANDS WA 6009  
Tel No: 08-9423 5609 (Direct)  
Fax No: 08-9386 6580  
Email: jsmith@lpm.com.au

-----Original Message-----

**From:** Stoker, John [SMTP:j.stoker@fugro.com.au]  
**Sent:** Thursday, 5 April 2001 8:47 AM  
**To:** John Smith  
**Subject:** Rig Positioning Services - Hy16414

John,

Please find attached the reviewed Draft Agreement. I have made some suggestions and requests for certain clauses (These are highlighted in blue).

The changes reflect the Terms and Conditions held with Woodside.

Could you please forward well location information, etc etc so as I can begin preparing the Survey Procedures etc etc for submission to LPM for their review and acceptance.

<<Eagle Bay TPC General Agreement.doc>>

Regards

John Stoker  
18 Prowse Street, West Perth WA 6005, Australia  
Tel: +61 8 9322 4955  
Fax: +61 8 9322 1775  
Email: j.stoker@fugro.com.au

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<< File: Eagle Bay TPC General Agreement.doc >>



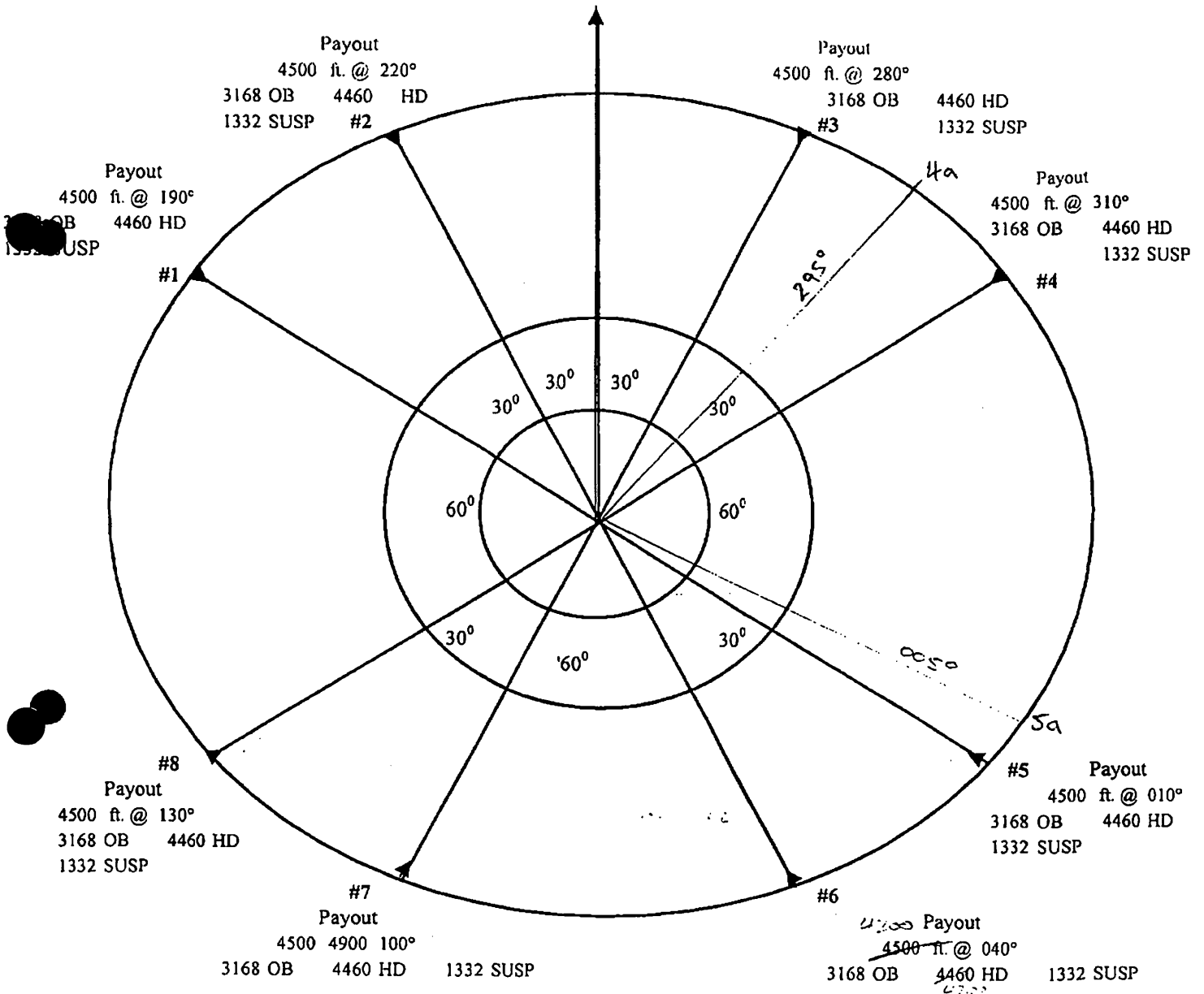
DIAMOND  
OFFSHORE

Drilling Unit: Ocean Bounty  
 Drilling Location: Northright 1  
 Operator: Eagle Bay  
 Bow Heading: 250°

Date: 23-Apr-01

Completed By: David Deron  
 Engineered By: None  
 Water Depth: 295 Feet  
 Anchor Tension: 300000 lbs

Bow Heading  
250°



Latitude: 37° 55' 57.57" S  
 Longitude: 149° 08' 58.72" E  
 X: 0  
 Y: 0

Notes  
 OB=On Bottom chain  
 HD=Horizontal Distance  
 SUSP=Suspended Chain

Block Calls: FNL 0000'  
 FWL 0000'  
 Distance From Proposed Location: 0  
 Bearing From Proposed Location: 0

**RIG MOVE PROCEDURES – Timor Sea To Northright 1.****Friday, 6 April 2001****1.0 Introduction**

- 1.1 The following procedures are the minimum DOGC requirements. Variations to the procedures due to weather and current will only be allowed if the variation is safe and does not present an increased hazard to the personnel or equipment.
- 1.2 The Company Representative and OIM shall discuss any variation prior to operations commencing.
- 1.3 The first anchor to be deployed from the rig will be the No.6 anchor, if weather and currents conditions are not favourable for this line of approach the No.7 anchor may be deployed from the rig as the first anchor.
- 1.4 All tidal and current data shall be considered prior to and during any rig move operation.
- 1.5 During rig move operations the rig will be towed from the tow bridle at transit draft, the tow vessel will not be released from the tow bridle until the four primary anchors have been deployed at Northright 1.
- 1.6 JSA's will be held prior to commencing anchor handling and pennant handling operations.
- 1.7 During anchor deployment operations the amount of chain payed out shall be called out by the winch operator at 500 feet intervals and checked with the indicated chain deployed from the navigation system in the pilot-house. The navigation screen shall always display the distance from the anchor fairlead to the stern of the vessel during anchor running.

**2.0 Preparations**

- 2.1 All winches to be checked and secondary pump running on rig anchor winch cooling system prior to any anchor operation.
- 2.2 Thoroughly inspect the towing bridle before connection to tow vessel.
- 2.3 Pre-anchoring meeting to be held by radio conference prior to the arrival at the Northright 1 location.
- 2.4 The meeting shall be attended by:
- 2.5 Company Representatives Rig OIM      Rig Supt      Barge Master / CIR Vessel Masters  
Company Survey Rep      Fugro Surveyor      Crane Operators
- 2.6 During the meeting the rig move procedures, charts, tow route, site survey reports, tidal height predictions, near surface current predictions, navigational hazards, radio channels and weather predictions shall be discussed.
- 2.7 Ensure that sufficient spare mooring equipment is provided to cope with any potential problem.
- 2.8 Inspect all pennants and handling slings at rig end.
- 2.9 Boats to be supplied with spare equipment, pennants and shackles as required by vessel masters.
- 2.10 The new winch monitoring equipment on the Ocean Bounty should be familiar to all winch drivers.
- 2.11 *This might not be necessary as offloading could have taken place in Gladstone. Prior to arrival at location at a position to be decided the tow will be stopped. #6 anchor deployed and the first tow boat offloaded (drill pipe on deck). This boat will be then moved onto the main bridle, to allow for good approach control during run in to location. With the rig held steady by the main bridle the second boat will be offloaded (drill pipe on deck) and made ready for the anchor handling.*
- 2.12 **Caution:** In shallow water the #6 permanent chaser tends to ride on the anchor chain. The rig will have to be pulled into the prevailing weather to allow for slack in the chain during anchor retrieval thus allowing the PCC to slip down the chain. It is not advisable to use the crane to assist during this activity.



**3.0 Anchor deployment at Northright 1**

- 3.1 The following mooring plan shall apply for the Northright 1 location.  
 Rig Heading = 250° True. The heading will allow Telstra communication Dome reception from the aft Dome site on the rig.  
 Water depth at location = 90m (295ft.)  
 Anchor chain length 4500 ft.

Anchor #	Bearing	Anchor #	Bearing	Anchor #	Bearing
1	190°	2	220°	3	280°
4	310° <del>240°</del>	5	010°	6	040°
7	100°			8	130°

Mooring pattern is the standard 30/60 pattern.

- 3.2 The tow vessel shall slow down and shorten the tow prior to turning onto the final run in line.
- 3.3 During the deployment of the primary anchors the OIM or his deputy shall be present in the pilot-house to coordinate operations.
- 3.4 Prior to the reaching location the OIM shall conduct a radio conference between the rig and vessel masters. Rig personnel to attend shall be the Rig Superintendent, the Rig Barge Master, Company Representative, Survey Representative and the Furgro surveyor. Any variation required to the rig move procedure shall be discussed at this time.
- 3.5 The rig is to be towed to a position 3nm at 040° from the No.6 intended anchor drop location where it will be lined up on a bearing of 220° for the run in to the No6 drop location.
- 3.6 Pay out No.6 anchor until the anchor is hanging 50ft off the bottom. Minimum water depth during run in is expected to be 90m. (295 ft)
- 3.7 Deploy the No.6 as the rig passes over the drop location. Continue to tow the rig towards the location, as chain is payed out. Maximum approach speed 2 knots once No.6 has been deployed.  
 The pilot house and winch operator shall check the chain payed out and tensions of the
- 3.8 No.6 anchor as the rig is towed towards the well location.  
 The rig is stopped when reaching the proposed well location.
- 3.9 Whilst the rig is held near the location by the Tow AHV pass the No.2 pennant to the second AHV and run the No.2 anchor. Preferred maximum speed to be 4 kts.
- 3.10 Run the No.7 or No.3 anchor depending on the rig position over the location.
- 3.11 Run the remaining primary anchor. (3 or 7)
- 3.12 Release the Tow vessel from the tow bridle.
- 3.13 Run anchors secondary anchors as conditions / rig position dictates.
- 3.14 Position rig and pretension all rig anchors to 410 kips for 10 minutes.
- 3.15 Ballast rig to drilling draft. (Tension to be held at 300 kips until stack has been landed.)

**Addendum to Procedures.**

- The following allows the drilling activities (mixing mud / Picking up drill pipe ) to commence whilst anchor handling.
- If agreed by all parties, taking into account the rig would be at deep draft.
- Rig to run 4 primary anchors. Anchor running operation to cease.
- Rig to be ballasted to 56.5' draft. Drilling operations to commence within rig safety stability envelope.
- Secondary anchors to be run at deep draft.
- Pretension to 350 Kips drop back to 300 Kips until stack landed.

**APPENDIX C**

**DGPS AND GYRO CHECKS**

NAV 1/NAV 2 Comparison

Vessel :- Ocean Bounty      Date :- 25/04/01  
 Location :- Northright-1, VIC/P41, Bass Strait

Fix	UTC	Nav 1 Datum		Nav 2 Datum		Diff	Diff
	Time	Easting	Northing	Easting	Northing	East	North
2364	21:29:09	688933.83	5799430.02	688932.52	5799430.21	1.31	-0.19
2365	21:29:19	688933.93	5799429.75	688932.64	5799430.01	1.29	-0.26
2366	21:29:29	688933.72	5799429.18	688932.42	5799429.51	1.30	-0.33
2367	21:29:39	688933.29	5799428.94	688931.94	5799429.26	1.35	-0.32
2368	21:29:49	688932.91	5799428.61	688931.54	5799429.08	1.37	-0.47
2369	21:29:59	688932.70	5799428.36	688930.86	5799429.10	1.84	-0.74
2370	21:30:09	688932.91	5799428.89	688931.13	5799429.54	1.78	-0.65
2371	21:30:19	688932.87	5799429.25	688931.16	5799429.87	1.71	-0.62
2372	21:30:29	688932.55	5799429.68	688930.34	5799430.71	2.21	-1.03
2373	21:30:39	688931.82	5799430.47	688927.59	5799433.18	4.23	-2.71
2374	21:30:49	688930.96	5799431.35	688926.39	5799434.38	4.57	-3.03
2375	21:30:59	688930.28	5799431.68	688926.11	5799434.38	4.17	-2.70
2376	21:31:09	688929.43	5799432.25	688925.54	5799434.77	3.89	-2.52
2377	21:31:19	688928.67	5799432.72	688925.02	5799435.15	3.65	-2.43
2378	21:31:29	688928.28	5799433.32	688924.42	5799435.90	3.86	-2.58
2379	21:31:39	688928.00	5799433.85	688923.93	5799436.62	4.07	-2.77
2380	21:31:49	688927.77	5799434.32	688923.89	5799436.96	3.88	-2.64
2381	21:31:59	688927.55	5799434.72	688923.80	5799437.30	3.75	-2.58
2382	21:32:09	688927.32	5799434.82	688923.77	5799437.27	3.55	-2.45
2383	21:32:19	688927.38	5799434.79	688923.80	5799437.18	3.58	-2.39
2384	21:32:29	688927.68	5799434.59	688924.10	5799437.04	3.58	-2.45
2385	21:32:39	688928.36	5799434.75	688924.84	5799437.14	3.52	-2.39
2386	21:32:49	688928.62	5799434.80	688925.09	5799437.27	3.53	-2.47
2387	21:32:59	688928.87	5799434.83	688925.49	5799437.25	3.38	-2.42
2388	21:33:09	688928.77	5799434.93	688925.34	5799437.38	3.43	-2.45
2389	21:33:19	688928.23	5799434.45	688924.69	5799437.01	3.54	-2.56
2390	21:33:29	688927.69	5799434.31	688924.18	5799436.74	3.51	-2.43
2391	21:33:39	688927.22	5799434.22	688923.75	5799436.57	3.47	-2.35
2392	21:33:49	688927.40	5799433.75	688923.83	5799436.15	3.57	-2.40
2393	21:33:59	688927.50	5799433.51	688924.03	5799435.81	3.47	-2.30
2394	21:34:09	688927.58	5799433.55	688923.91	5799435.85	3.67	-2.30
2395	21:34:19	688927.70	5799433.33	688923.83	5799435.82	3.87	-2.49
2396	21:34:29	688927.47	5799433.47	688923.58	5799436.12	3.89	-2.65
2397	21:34:39	688927.34	5799433.53	688924.75	5799435.24	2.59	-1.71
2398	21:34:49	688927.58	5799433.53	688926.53	5799434.11	1.05	-0.58
2399	21:34:59	688927.95	5799433.62	688936.00	5799427.72	-8.05	5.90
2400	21:35:09	688928.27	5799433.55	688946.24	5799419.66	-17.97	13.89
2401	21:35:19	688928.96	5799433.40	688945.83	5799420.16	-16.87	13.24
2402	21:35:29	688929.46	5799433.04	688929.10	5799433.37	0.36	-0.33
2403	21:35:39	688929.85	5799432.93	688924.75	5799437.44	5.10	-4.51
2404	21:35:49	688930.22	5799432.53	688924.42	5799437.29	5.80	-4.76
2405	21:35:59	688930.40	5799432.00	688925.93	5799435.40	4.47	-3.40
2406	21:36:09	688930.49	5799431.82	688927.45	5799434.18	3.04	-2.36
2407	21:36:19	688930.07	5799431.70	688929.39	5799433.31	0.68	-1.61
2408	21:36:29	688929.80	5799431.49	688928.23	5799433.31	1.57	-1.82
2409	21:36:39	688929.73	5799431.46	688927.59	5799433.17	2.14	-1.71
2410	21:36:49	688929.55	5799431.49	688927.93	5799432.67	1.62	-1.18
2411	21:36:59	688929.57	5799431.78	688928.42	5799432.57	1.15	-0.79
2412	21:37:09	688929.65	5799432.15	688928.80	5799432.87	0.85	-0.72
2413	21:37:19	688930.07	5799432.36	688929.34	5799433.09	0.73	-0.73
2414	21:37:29	688930.38	5799432.74	688929.62	5799433.45	0.76	-0.71
2415	21:37:39	688930.44	5799433.04	688929.52	5799433.90	0.92	-0.86
2416	21:37:49	688930.45	5799432.99	688929.53	5799433.85	0.92	-0.86
2417	21:37:59	688929.60	5799433.21	688929.14	5799433.75	0.46	-0.54

**NAV 1/NAV 2 Comparison**

Vessel :- Ocean Bounty      Date :- 25/04/01  
 Location :- Northright-1, VIC/P41, Bass Strait

Fix	UTC Time	Nav 1 Datum		Nav 2 Datum		Diff East	Diff North
		Easting	Northing	Easting	Northing		
2418	21:38:09	688929.78	5799432.96	688929.30	5799433.36	0.48	-0.40
2419	21:38:19	688930.10	5799433.36	688929.56	5799433.68	0.54	-0.32
2420	21:38:29	688930.31	5799433.30	688929.97	5799433.90	0.34	-0.60
2421	21:38:39	688930.27	5799433.16	688931.88	5799431.05	-1.61	2.11
2422	21:38:49	688929.90	5799433.06	688931.22	5799432.16	-1.32	0.90
2423	21:38:59	688930.20	5799432.53	688930.76	5799432.26	-0.56	0.27
2424	21:39:09	688930.25	5799432.28	688929.69	5799432.77	0.56	-0.49
2425	21:39:19	688930.25	5799432.19	688928.18	5799433.65	2.07	-1.46
2426	21:39:29	688930.07	5799432.03	688927.87	5799433.52	2.20	-1.49
2427	21:39:39	688929.55	5799432.30	688927.73	5799433.52	1.82	-1.22
2428	21:39:49	688929.14	5799431.99	688928.76	5799432.73	0.38	-0.74
2429	21:39:59	688928.85	5799432.14	688928.48	5799432.79	0.37	-0.65
2430	21:40:09	688928.60	5799432.29	688927.89	5799433.14	0.71	-0.85
2431	21:40:19	688928.80	5799432.63	688927.90	5799433.50	0.90	-0.87
2432	21:40:29	688929.47	5799433.05	688928.02	5799433.96	1.45	-0.91
2433	21:40:39	688929.66	5799433.58	688928.61	5799434.40	1.05	-0.82
2434	21:40:49	688929.41	5799434.08	688928.66	5799435.01	0.75	-0.93
2435	21:40:59	688928.65	5799434.26	688927.89	5799435.21	0.76	-0.95
2436	21:41:09	688928.11	5799434.73	688928.58	5799433.15	-0.47	1.58
2437	21:41:19	688927.20	5799434.76	688927.40	5799434.75	-0.20	0.01
2438	21:41:29	688926.62	5799434.90	688926.59	5799435.33	0.03	-0.43
2439	21:41:39	688926.55	5799435.17	688927.22	5799443.48	-0.67	-8.31
2440	21:41:49	688926.58	5799435.23	688927.40	5799444.79	-0.82	-9.56
2441	21:41:59	688927.01	5799435.41	688927.07	5799437.76	-0.06	-2.35
2442	21:42:09	688927.10	5799435.60	688927.07	5799435.23	0.03	0.37
2443	21:42:19	688927.02	5799435.37	688926.70	5799434.71	0.32	0.66
2444	21:42:29	688927.22	5799435.44	688926.70	5799435.23	0.52	0.21
2445	21:42:39	688927.57	5799435.16	688927.36	5799435.08	0.21	0.08
2446	21:42:49	688928.18	5799434.33	688928.17	5799434.60	0.01	-0.27
2447	21:42:59	688928.91	5799434.19	688928.94	5799434.62	-0.03	-0.43
2448	21:43:09	688928.79	5799433.90	688929.08	5799434.53	-0.29	-0.63
2449	21:43:19	688928.79	5799434.05	688929.10	5799434.57	-0.31	-0.52
2450	21:43:29	688928.40	5799434.02	688928.79	5799434.54	-0.39	-0.52
2451	21:43:39	688928.34	5799433.92	688928.55	5799434.32	-0.21	-0.40
2452	21:43:49	688928.51	5799433.80	688928.58	5799434.19	-0.07	-0.39
2453	21:43:59	688928.68	5799433.53	688928.72	5799434.00	-0.04	-0.47
2454	21:44:09	688929.22	5799433.95	688929.24	5799434.35	-0.02	-0.40
<b>Mean</b>		<b>688929.24</b>	<b>5799433.02</b>	<b>688928.11</b>	<b>5799434.03</b>	<b>1.14</b>	<b>-1.02</b>
<b>St. Dev</b>		<b>1.75</b>	<b>1.70</b>	<b>3.73</b>	<b>3.40</b>	<b>3.42</b>	<b>2.85</b>

# RIG POSITIONING

## GEODESY AND COORDINATE CHECK LIST



CLIENT: EAGLE BAY RESOURCES / JOB NOS.: HY 16414  
 RIG: OCEAN BOUNTY / DATE: 24/4/01 ✓  
 PROJECT: NORTHRIGHT-1 /

### 1. CONFIRMATION OF PROPOSED RIG COORDINATES and HEADING.

Well Name	<u>NORTHRIGHT-1</u>	Ensure agreement with Client onsite prior to any positioning
Well Location - Latitude	<u>37° 55' 57.57" S</u>	Operations. OK (?) <u>Y</u> N.
Well Location - Longitude	<u>149° 08' 58.72" E</u>	<u>AGD 84</u>
Rig Heading (True)	<u>250° T</u>	

### 2. GEODETIC PARAMETERS (WGS84 to LOCAL DATUM)

DATUM:	Dx	<u>116.00 m</u>	Ensure agreement with Client onsite prior to any positioning Operations.
(WGS84 to	Dy	<u>50.47 m</u>	OK (?) <u>Y</u> N.
Local Datum)	Dz	<u>-141.69 m</u>	
	Rx	<u>0.2300"</u>	
Projection:	Ry	<u>0.3700"</u>	
	Rz	<u>0.3440"</u>	
	Ds	<u>-0.0983 ppm</u>	
UTM Zone		<u>55</u>	
Central Meridian		<u>147° E</u>	

### 3. CHECK TRANSFORMATION OF SITE COORDINATES.

Well Location - Easting	<u>688 917</u>	Ensure agreement with PCNav / Starfix.Seis. OK (?) <u>Y</u> / N
Well Location - Northing	<u>5 799 463</u>	If not, CHECK and RECALC.
Convergence at Location	<u>1° 19' 18.665"</u>	
Rig Heading (Grid)	<u>251.3°</u>	

### 4. MEAS. ANT. OFFSETS from ANT. TO D/STEM (Rel. to Datum)

(Measure two (2) separate directions, verifying closure.)	NAV #1 SYSTEM		NAV #2 SYSTEM	
	(1 <sup>st</sup> Way)	(2 <sup>nd</sup> Way)	(1 <sup>st</sup> Way)	(2 <sup>nd</sup> Way)
Delta X	<u>0.30</u>	<u>10.3</u>	<u>-1.30</u>	<u>-1.3</u>
Delta Y	<u>33.95</u>	<u>33.8</u>	<u>39.02</u>	<u>39.04</u>
Angle between Rig Centreline and Antenna(s) (Grid)	<u>0.51°</u>		<u>-1.91°</u>	
Distance between Drill Stem and Antenna(s)	<u>33.95</u>		<u>39.04</u>	

### 5. MANUAL COORDINATE VERIFICATION FOR ANTENNAS

Proposed Drill Stem Position	Nav System #1		Nav System #2	
	Easting	Northing	Easting	Northing
	<u>688 917</u>	<u>5 799 463</u>		
Drill Stem to Antenna	Proposed Hdg (G)		<u>251.3° (G)</u>	
	Brg (G) = Prop. Hdg. + Angle btwn centreline and antenna		<u>251.81°</u> ✓	<u>249.37°</u> ✓
Calculated Antenna Coordinates (Local)	Distance (m)		<u>33.95</u>	<u>39.02</u>
	Easting	<u>688 884.7</u>	<u>688 880.5</u>	
	Northing	<u>5 799 452.4</u>	<u>5 799 449.3</u>	
	Longitude	<u>149° 08' 57.40306"</u>	<u>147° 08' 57.23405"</u>	
Calculated Proposed Antenna Coords (WGS 84)		Latitude	<u>37° 55' 52.36797"</u> ✓	<u>37° 55' 52.47163"</u> ✓
		Longitude	<u>149° 09' 01.95914"</u>	<u>149° 09' 01.79014"</u>

Surveyor: Greg Moore Client Rep: [Signature] Date: 25/04/01

### 6. POST RIG MOVE - OBSERVED ANTENNA / DRILL STEM COORD

WGS84 / LOCAL	ANTENNA / DRILL STEM	NAV.SYS #1	NAV.SYS #2
	Latitude		
	Longitude		

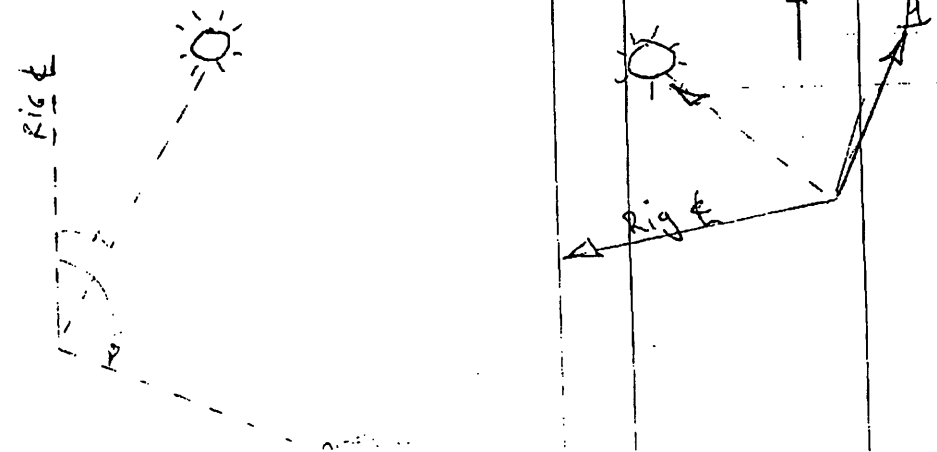
Ensure agreement between calculated and observed coordinates. If NO, check calcs., antenna offsets, Gyro. OK (?) Y / N

Surveyor: \_\_\_\_\_ Client Rep: \_\_\_\_\_ Date: \_\_\_\_\_

HA	28 4 01 C Sun Azimuth	GYRO	C-O
	0° 0' 20"		
15:46:10	44° 40' 40"	257.73°	253.5
15:47:50	44° 02' 00"	258.06°	253.3
15:49:10	43° 59' 00"	257.87°	253.4
15:50:15	43° 43' 40"	257.93°	253.4
15:51:15	43° 14' 00"	258.24°	253.4
15:52:10	43° 11' 50"	258.11°	253.2*
15:54:10	43° 28' 10"	257.47	253.1
15:54:55	43° 27' 20"	257.35	253.1
	0° 0' 0"		
	ANGLES TO Pt Hicks LIGHTHOUSE		
15:58:40	140° 31' 10"	256.9	252.3°
15:59:20	140° 31' 20"	256.9	252.5
15:59:55	140° 33' 40"	256.9	252.2
16:00:30	140° 38' 40"	256.8	252.4
16:01:15	140° 17' 00"	257.2	252.3
16:01:55	140° 35' 40"	256.9	252.1
16:02:20	140° 25' 40"	257.0	252.4
16:03:15	140° 06' 20"	257.3	252.5
16:03:45	139° 49' 20"	257.6	253.1
16:04:15	140° 04' 20"	257.4	252.5
	0° 0' 40"		
			Σ 4.6
			SD 0.2

REDOLITE POSITION 688 932 - E 5799 415m N  
 37° 55' 59.113" S 149° 08' 59.375" E AGD 84  
 37° 55' 53.545" S 149° 09' 03.931" E WGS-84

Pt Hicks Light (Remnant)  
 37° 48.2' S 149° 16' S' E



**APPENDIX D**

**FINAL POSITIONING DATA**

**RIG POSITION - FIELD REPORT****OCEAN BOUNTY RIG MOVE to the NORTHRIGHT-1 LOCATION****CLIENT:** EAGLE BAY RESOURCES NL**JOB NO.:** HY16414**RIG:** MODU 'OCEAN BOUNTY'**DATE:** April 26<sup>th</sup> 2001

**PROJECT:** Position Rig at Northright-1 Location, Permit VIC/P41  
Bass Strait, Australia.

**ATTN.:** M. Jackson (Eagle Bay Resources – COMPANY MAN) ←**CC.:** D. Derron (OIM – OCEAN BOUNTY)

The final location of the drill stem on the Ocean Bounty was derived from one hour's observation of the Primary Differential GPS data, on completion of all pre-tensioning and ballasting. The results of the observations are as follows:

Geographical Coordinates		Grid Coordinates	
Latitude	37° 55' 57.754" S	Easting	688 922.4 m
Longitude	149° 08' 58.942" E	Northing	5 799 457.1 m

The drill stem position is 8.0 m at a bearing of 137.5° (Grid) from the design location.

The Client supplied design location for Northright-1:

Geographical Coordinates		Grid Coordinates	
Latitude	37° 55' 57.57" S	Easting	688 917 m
Longitude	149° 08' 58.72" E	Northing	5 799 463 m

The Ocean Bounty rig heading, derived from the mean of one hour's observation of the gyro heading is:

**255.8° True (257.1° Grid)**

All coordinates in this Field report are quoted in the following coordinate system:

Datum : AGD84                      Projection : UTM  
Spheroid : ANS                      Zone (Central Meridian) : 55 (147° E)

The approximate positions of the rig anchors are recorded as follows:

Anchor	Easting	Northing	Bearing(°)
1	688688	5798207	190
2	688087	5798527	222
3	-	-	-
4	687838	5800052	296
5	689041	5800670	4
6	689020	5800465	41
7	689570	5800205	102
8	689880	5799205	128

Party Chief: Greg Moore  
Fugro Survey Pty Ltd

Client Representative: [Signature]  
CLIENT SURVEY REPRESENTATIVE



FINAL POSITION DATA NORTHRIGHT-1 LOCATION 26<sup>th</sup> APRIL 2001

25/04/2001 00:00:01 UTC

\*\*\* FUGRO SURVEY STARFIX.SEIS \*\*\*

```

Header : Location           : BASS STRAIT
        Project Number      : HY16414
        Client              : EAGLE BAY RESOURCES NL.
        Client Representative :
        Client Reference Number :
        Project Description   : RIG MOVE TO NORTHRIGHT-1
        Geophysical Contractor : Fugro
        Positioning Contractor : Fugro
        Positioning Processing Contractor : Fugro
        Setup By             : GREG MOORE   LEIGH CLARK
        On                   : 24/04/2001 23:11:13 UTC
        Time Source          :
        Time Offset          : 10:00 (Using UTC)
        Vessel               : OCEAN BOUNTY

```

```

Files  Runline       : C:\Fugro_Projects\bounty1.srn
       Centreline    : (None)
       Database      : (None)
       CAD           : (None)
       Waypoint      : C:\Fugro_Projects\Manual.SWY

```

```

Logging: Directory     : C:\Fugro_Projects\Log\
        Fix Only      : No
        Depths        : All Depths
        C/Ts          : 0 1 2 3 4 5 6 7 8
        Nav. 1        : Yes (Raw and position)
        Nav. 2        : Yes (Raw and position)
        Nav. 3        : No
        Nav. 4        : No
        Nav. 5        : No
        Nav. 6        : No
        Nav. 7        : No

```

```

Fixing : Mode          : Time
        Fix Interval   : 10.000s
        Reset at SOL   : No
        Next Fix No.   : 2455
        Fix Increment  : 1
        Start FFID     : 2455
        Start Man. Fix : 10
        Early Start    : 60s
        Logging Start  : 30s

```

```

Datum 1: Datum         : AGD84 (Australia-Higgins)
        Spheroid       : Australian National
        SemiMajor Axis : 6378160.000
        1/Flattening   : 298.250000000
        Eccentricity^2 : 0.0066945419
        Projection     : Universal Transverse Mercator
        Grid Name      :
        Lat. Origin    : 0d00'00.0000"N
        Lon. Origin    : 147d00'00.0000"E
        False East     : 500000.000m
        False North    : 10000000.000m
        Scale Factor    : 0.9996
        Convergence    : Australia/New Zealand

```

```

Datum 2: Datum         : WGS 84
        Spheroid       : WGS 84
        SemiMajor Axis : 6378137.000
        1/Flattening   : 298.257223563
        Eccentricity^2 : 0.0066943800

```

```

Datum2>1: Parameters   : From WGS84 to AGD84 (Australia-Higgins)
        DX             : 116.0000m      RX             : 0.2300"
        DY             : 50.4700m      RY             : 0.3900"
        DZ             : -141.6900m    RZ             : 0.3440"

```

FINAL POSITION DATA NORTHRIGHT-1 LOCATION 26<sup>th</sup> APRIL 2001

D Scale : -0.0983ppm      Rot Convention: +RZ=-RLongitude  
 Sundry : Vertical Datum:  
     Ell. Sep. : 0.0000m  
     Distances : Spheroidal  
     Bearings : True  
     Units : metres  
     Conversion : 1.0000000000  
 Main Vessel : OCEAN BOUNTY  
             : C:\Fugro\_Projects\OCEAN BOUNTY.SVS  
 Nav. 1 : System : MRDGPS (In Use)  
     Type : Lat - Long  
     Priority : 1  
     Time-out : 5.0s  
     X Offset : 0.30m  
     Y Offset : 33.95m  
     Ant. Height : 0.00m  
 Nav. 2 : System : DIRINJN2  
     Type : Lat - Long  
     Priority : 2  
     Time-out : 5.0s  
     X Offset : -1.30m  
     Y Offset : 39.02m  
     Ant. Height : 0.00m  
 Dead Reckoning: No      Timeout: 30.0s  
 Gyro 1 : System : NMEA Gyro.HDT (In Use)  
     Priority : 1  
     Time-out : 3.0s  
     Correction : 199.86 Degrees  
 Gyro 2 : System : CMG from filter  
     Priority : 2  
     Time-out : 3.0s  
     Correction : 0.00 Degrees  
 Offsets: Name                      X                      Y  
     #1                              -42.50                12.50  
     #2                              -42.50                16.50  
     #3                                42.50                16.50  
     #4                                42.50                12.50  
     #5                                42.50               -12.50  
     #6                                42.50               -16.50  
     #7                              -42.50               -16.50  
     #8                              -42.50               -12.50  
     NAV1 ANT                        0.30                33.95  
     Nav2 ant                       -1.30                39.02  
     THEODOLITE                     -46.00                0.00  
     NewOffset1                      0.00                0.00  
 Fairlead:Name                      X                      Y  
     #1                              -42.50                12.50  
     #2                              -42.50                16.50  
     #3                                42.50                16.50  
     #4                                42.50                12.50  
     #5                                42.50               -12.50  
     #6                                42.50               -16.50  
     #7                              -42.50               -16.50  
     #8                              -42.50               -12.50  
 Printing:  
     Fix mark rate : 1  
     Weather Device : (None)  
     Weather Interval: 60 minutes  
     Weather Enabled : No  
     Config Changes : No  
     System Timeouts : No  
 Software:Seis                      Ver 2.05.0001  
     SeisEngine Ver 2.05.0001  
     Display                        Ver 2.07.0001

FINAL POSITION DATA NORTHRIGHT-1 LOCATION 26<sup>th</sup> APRIL 2001

Anchors Ver 2.04.0004  
Print Ver 2.03.0003

25/04/2001 20:17:13 UTC

\*\*\* FUGRO SURVEY STARFIX.SEIS \*\*\*

O/Ts : Steered Point: O/T 0  
Shot : O/T 0

O/T 0	PR LG CRP	Pos Sys: Vessel 01	:Datum In-Use
O/T 1	PR LG Datum2	Pos Sys: Ves. 01 Nav 02	:DIRINJN2 Datum
O/T 2	PR LG PRIM GPSAnt	Pos Sys: Ves. 01 Nav 01	:MRDGPS Antenna
O/T 3	PR LG Antenna2	Pos Sys: Ves. 01 Nav 02	:DIRINJN2 Antenn
O/T 4	Conq	Pos Sys: Vessel 02	:Datum In-Use
O/T 5	C-Stern	Fxd Off: Pacific Conqero	:STERN
O/T 6	SENT	Pos Sys: Vessel 03	:Datum In-Use
O/T 7	S-STERN	Pos Sys: Ves. 03 Nav 01	:Tug02 Datum

O/T Legend: PR=Print LG=Log SN=Snap to line

Time 20:22:55.8 UTC 25/04/2001

Waypoint : NORTHRIGHT-1

Position : 37d55'57.5662"S 149d08'58.7153"E 0.0m  
688917.0mE 5799463.0mN 0.0m

First Fix/FFID: 2674/ 2674 Time 20:22:57.0 UTC 25/04/2001  
Nav. 1 MRDGPS 37°55'57.7536"S 149°08'58.9348"E 5.61m (datum - local)  
688922.22m 5799457.11m  
(In Use) 37°55'52.4485"S 149°09'02.1403"E 0.00m (antenna-WGS84) PDOP: 1.6  
Nav. 2 DIRINJN2 37°55'57.7623"S 149°08'58.9175"E 5.61m (datum - local)  
688921.80m 5799456.86m  
37°55'52.5479"S 149°09'01.9380"E 0.00m (antenna-WGS84) PDOP: 2.1

!Heading 255.8T COG 235.0G SOG 0.0 kt

#Name	Hdg	Easting	Northing	Height	Range	Bearing
!0 CRP	255.8T	688922.29m	5799457.03m	0.00m	7.99m	317.23T
!1 Datum2	255.8T	688922.07m	5799457.19m	0.00m	7.72m	317.63T
!2 PRIM GPSAnt	255.8T	688889.13m	5799449.73m	0.00m	30.87m	63.19T
!3 Antenna2	255.8T	688884.33m	5799447.20m	0.00m	36.30m	62.85T

Fix/FFID: 2675/ 2675 Time 20:23:07.0 UTC 25/04/2001

Nav. 1 MRDGPS 37°55'57.7530"S 149°08'58.9378"E 5.61m (datum - local)  
688922.30m 5799457.13m  
(In Use) 37°55'52.4479"S 149°09'02.1434"E 0.00m (antenna-WGS84) PDOP: 1.6  
Nav. 2 DIRINJN2 37°55'57.7563"S 149°08'58.9235"E 5.61m (datum - local)  
688921.95m 5799457.04m  
37°55'52.5419"S 149°09'01.9440"E 0.00m (antenna-WGS84) PDOP: 1.5

!Heading 255.8T COG 268.8G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
!0 CRP	255.8T	688922.22m	5799457.09m	0.00m	7.89m	317.31T
!1 Datum2	255.8T	688921.90m	5799456.91m	0.00m	7.83m	319.96T
!2 PRIM GPSAnt	255.8T	688889.06m	5799449.79m	0.00m	30.91m	63.36T
!3 Antenna2	255.8T	688884.15m	5799446.92m	0.00m	36.58m	62.57T

Fix/FFID: 2676/ 2676 Time 20:23:17.0 UTC 25/04/2001

Nav. 1 MRDGPS 37°55'57.7589"S 149°08'58.9388"E 5.61m (datum - local)  
688922.32m 5799456.95m  
(In Use) 37°55'52.4538"S 149°09'02.1444"E 0.00m (antenna-WGS84) PDOP: 1.6  
Nav. 2 DIRINJN2 37°55'57.7623"S 149°08'58.9295"E 5.61m (datum - local)  
688922.09m 5799456.85m  
37°55'52.5479"S 149°09'01.9500"E 0.00m (antenna-WGS84) PDOP: 1.5

!Heading 255.8T COG 259.5G SOG 0.0 kt

# Name	Hdg	Easting	Northing	Height	Range	Bearing
!0 CRP	255.8T	688922.21m	5799457.09m	0.00m	7.88m	317.35T
!1 Datum2	255.8T	688921.93m	5799457.02m	0.00m	7.77m	319.23T
!2 PRIM GPSAnt	255.8T	688889.05m	5799449.80m	0.00m	30.92m	63.37T
!3 Antenna2	255.8T	688884.19m	5799447.03m	0.00m	36.49m	62.70T

FINAL POSITION DATA NORTHRIGHT-1 LOCATION 26<sup>th</sup> APRIL 2001

-----  
 Fix/FFID: 3034/ 3034 Time 21:22:57.0 UTC 25/04/2001  
 Nav. 1 MRDGPS 37°55'57.7719"S 149°08'58.9756"E 5.61m (datum - local)  
 688923.21m 5799456.53m  
 (In Use) 37°55'52.4649"S 149°09'02.1806"E 0.00m (antenna-WGS84) PDOP: 3.6  
 Nav. 2 DIRINJN2 37°55'57.7824"S 149°08'58.9603"E 5.61m (datum - local)  
 688922.83m 5799456.21m  
 37°55'52.5659"S 149°09'01.9800"E 0.00m (antenna-WGS84) PDOP: 3.6  
 !Heading 255.9T COG 130.8G SOG 0.0 kt  

# Name	Hdg	Easting	Northing	Height	Range	Bearing
!0 CRP	255.9T	688923.18m	5799456.45m	0.00m	9.02m	315.40T
!1 Datum2	255.9T	688922.69m	5799456.23m	0.00m	8.86m	318.66T
!2 PRIM GPSAnt	255.9T	688890.01m	5799449.21m	0.00m	30.31m	61.59T
!3 Antenna2	255.9T	688884.94m	5799446.31m	0.00m	36.15m	61.16T

 -----

Fix/FFID: 3035/ 3035 Time 21:23:07.0 UTC 25/04/2001  
 Nav. 1 MRDGPS 37°55'57.7673"S 149°08'58.9703"E 5.61m (datum - local)  
 688923.08m 5799456.67m  
 (In Use) 37°55'52.4603"S 149°09'02.1754"E 0.00m (antenna-WGS84) PDOP: 3.6  
 Nav. 2 DIRINJN2 37°55'57.7764"S 149°08'58.9603"E 5.61m (datum - local)  
 688922.83m 5799456.40m  
 37°55'52.5599"S 149°09'01.9800"E 0.00m (antenna-WGS84) PDOP: 3.6  
 !Heading 255.9T COG 37.7G SOG 0.0 kt  

# Name	Hdg	Easting	Northing	Height	Range	Bearing
!0 CRP	255.9T	688923.22m	5799456.61m	0.00m	8.93m	314.54T
!1 Datum2	255.9T	688922.78m	5799456.28m	0.00m	8.88m	318.02T
!2 PRIM GPSAnt	255.9T	688890.05m	5799449.37m	0.00m	30.21m	61.82T
!3 Antenna2	255.9T	688885.02m	5799446.36m	0.00m	36.05m	61.16T

 -----

Last Fix/FFID: 3036/ 3036 Time 21:23:17.0 UTC 25/04/2001  
 Nav.1-MRDGPS 37°55'57.7638"S 149°08'58.9619"E 5.61m (datum-local) 688922.88m  
 5799456.78m  
 (In Use) 37°55'52.4568"S 149°09'02.1670"E 0.00m (antenna - WGS84) PDOP: 3.6  
 Nav.2 DIRINJN2 37d55'57.7764"S 149d08'58.9483"E 5.61m (datum - local)  
 688922.54m 5799456.40m  
 37°55'52.5599"S 149°09'01.9680"E 0.00m (antenna - WGS84) PDOP: 3.6  
 !Heading 255.9T COG 329.8G SOG 0.0 kt  

# Name	Hdg	Easting	Northing	Height	Range	Bearing
!0 CRP	255.9T	688923.04m	5799456.82m	0.00m	8.65m	314.44T
!1 Datum2	255.9T	688922.73m	5799456.40m	0.00m	8.75m	317.80T
!2 PRIM GPSAnt	255.9T	688889.87m	5799449.58m	0.00m	30.28m	62.33T
!3 Antenna2	255.9T	688884.97m	5799446.47m	0.00m	36.05m	61.37T

 -----

Total Fixes 363  
 Steer Point C/T CRP  

Easting	Mean	688922.36
	SD	0.26
Northing	Mean	5799457.13
	SD	0.06
Range to target		7.96
Bearing to target		317.64
Gyro (T)	Mean	255.84
	SD	0.04

 -----

NOTE: Distances are in m.  
 Angles are in degrees.

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## **APPENDIX C**

### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section Summary**

- 1. Well History**
- 2. Activity Report**
- 3. Phase Analysis: Planned versus Actual Times**
- 4. Time Analysis Overview**
- 5. Time Breakdown by Phase**
- 6. Non-Productive Time Breakdown By Phase**
- 7. Non-Productive Time Root Cause Analysis**



## **APPENDIX C**

### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section 1. Well History**

**Northright-1**

Drilling Co.: DIAMOND OFFSHORE Rig: OCEAN BOUNTY

RT above GL: 25 ft Lat : 37 deg 55 min 57.75 sec Spud Date: 24.04.2001 Release Date: 01.05.2001  
 GL above MSL : 105 ft Long : 149 deg 8 min 58.94 sec Spud Time: 12:26:00 PI Release Time: 10:15:00 AM

**Well History**

#	DATE	DEPTH	WELL HISTORY ( 24 Hr Summary )
1	Tuesday, 24 April 2001	0	FIRST ANCHOR (#6) DROPPED AT 1226 HRS. PACIFIC SENTINEL HAD RUDDER PROBLEMS - UNABLE TO CONTINUE ANCHOR RUNNING OPERATIONS - RIG ON STATIC TOW. AFTER 2 HOURS, SENTINEL ABLE TO TAKE TOW LINE WHILST PACIFIC CONQUEROR RAN ANCHORS 2 & 7. WHILE CHANGING # 3 PENNANT WIRE BROKE, J HOOK # 3 CHAIN, J HOOK CAME OFF THE CHAIN IN HEAVY SWELL (+3 m WITH 42 KNT WINDS). CONQUEROR ADVISED IT WAS SUSPENDING OPERATIONS DUE TO WEATHER. WOW
2	Wednesday, 25 April 2001	0	WAIT ON WEATHER. CONTINUE TO RUN ANCHORS. ANCHOR # 3 LOST. BALLAST DOWN TO DRILLING DRAFT, WAIT ON ROV.
3	Thursday, 26 April 2001	250	RIH, TAG SEABED AND SURVEY. DRILL 36" HOLE. RUN AND CEMENT 30" CASING. DRILL 12 1/4" HOLE. RUN 9 5/8" CASING.
4	Friday, 27 April 2001	250	CONTINUE TO RUN 9 5/8" CASING. CEMENT AND TEST CASING. RIG UP AND RUN BOP AND RISER
5	Saturday, 28 April 2001	347	CONTINUE TO RUN BOP AND RISER, TEST BOP'S, P/U BHA & RIH, DRILL FLOAT & SHOE, PERFORM FIT, DRILL 8 1/2" HOLE
6	Sunday, 29 April 2001	391	POOH, L/D MWD, JARS & STAB. P/U 3 1/2" DP & CMT STINGER, RIH ON 5" DP. SET CEMENT PLUG # 1 (335 - 226 M). POOH, RETRIEVE WEAR BUSHING WHILE WOC. RIH, TAG CEMENT PLUG # 1, PUMP CEMENT PLUG # 2, POOH. R/U TO AND PULL RISER & BOP
7	Monday, 30 April 2001	391	LAND LMRP AND BOP ON BEAMS. FLUSH AND N/D. M/U 20" / 30" CUTTING ASSY, RIH AND CUT 20" / 30" CASING AT 133.53 (3 M BELOW MUD LINE), RECOVER SAME. COMMENCE PULLING SECONDARY ANCHORS WHILST BALLASTING-UP AND L/D TUBULARS.
8	Tuesday, 1 May 2001	391	CONTINUE TO PULL ANCHORS. RIG RELEASED TO WOODSIDE ENERGY LAST ANCHOR RACKED AT 10:15 HOURS MAY 01, 2001



## **APPENDIX C**

### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section 2. Activity Report**



## ACTIVITY REPORT

WELL : Northright-1  
 Drilling Co : DIAMOND OFFSHORE  
 Rig : OCEAN BOUNTY

Page Number : 1 of 4

Date : 24.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
0	PS	P	ANCH		5.00	DROP ANCHOR # 6 ON BOTTOM ON RUN IN AND RUN OUT 1600' OF CHAIN
0	PS	TP	ANCH		110.00	PACIFIC SENTINEL ADVISED THAT IT IS UNABLE TO REPAIR STEERING PROBLEM REPORTED PRIOR TO ANCHOR DROP. ANCHOR OPERATIONS SUSPENDED.
0	PS	P	ANCH		85.00	PACIFIC SENTINEL ADVISED IT COULD TAKE TOW BRIDEL WHILST CONQUEROR LAID ANCHORS. ATTEMPT TO GET STB TOW LINE TO SENTINEL UNSUCCESSFUL DUE TO CRANE PROBLEM. CONTINUE TO PULL RIG OVER LOCATION WITH CONQUEROR TO COMPLETE RUNNING ANCHOR # 6.
0	PS	TP	ANCH		95.00	CONNECT SENTINEL TO TOW LINE. SENTINEL ON STATIC TOW. RELEASE CONQUEROR TO RUN ANCHORS
0	PS	P	ANCH		85.00	RUN ANCHOR # 2
0	PS	TP	ANCH		105.00	ATTEMPT TO RUN ANCHOR # 7. ANCHOR UPSIDE DOWN. TURN ANCHOR AROUND
0	PS	P	ANCH		65.00	RUN ANCHOR # 7
0	PS	P	ANCH		40.00	ADJUST RIG POSITION USING ANCHORS WHILST #3 PENNANT WIRE IS PASSED TO THE CONQUEROR TO CHANGE PENNANT
0	PS	TP	ANCH		20.00	#3 PENNANT TANGLED AROUND ANCHOR - FIX SAME
0	PS	P	ANCH		20.00	PASS #3 PENNANT WIRE TO THE CONQUEROR, RUN OUT 1000' CHAIN SO ANCHOR CAN BE PUT ON DECK OF CONQUEROR
0	PS	TP	ANCH		60.00	#3 PENNANT WIRE PARTED ON CONQUEROR - ALL SAFE ON DECK. J HOOK PASSED TO CONQUEROR, ATTEMPT TO RECOVER ANCHOR #3

Date : 25.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
0	PS	TP	ANCH		50.00	ATTEMPT TO RECOVER ANCHOR #3. J HOOK CAME OFF CHAIN IN HEAVY WEATHER, LANDING NEAR BOAT WINCH. BOAT ADVISED SUSPENDING OPERATIONS DUE TO HEAVY WEATHER (+3 M SWELLS AND +40 KT WINDS)
0	PS	TP	ANCH		460.00	WAIT ON WEATHER
0	PS	TP	ANCH		130.00	PACIFIC CONQUEROR J HOOK # 3 CHAIN. CHAIN RECOVERED WITH NO ANCHOR. J HOOK AND PENNANT PASSED BACK TO THE RIG
0	PS	P	ANCH		80.00	RUN ANCHOR # 4
0	PS	P	ANCH		95.00	PASS # 1 PENNANT WIRE TO PACIFIC CONQUEROR, REPLACE PENNANT ON # 1 ANCHOR
0	PS	P	ANCH		75.00	RUN ANCHOR # 1
0	PS	P	ANCH		90.00	RUN ANCHOR # 8
0	PS	TP	ANCH		125.00	ATTEMPT TO RUN ANCHOR # 5 . STOPPED PAYING OUT CHAIN AT 2640' DUE TO ROCKY BOTTOM. HAUL IN FOR RE-RUN.
0	PS	P	ANCH		50.00	RE-RUN ANCHOR # 5
0	PS	P	ANCH		255.00	CROSS-TENSION ANCHORS AND BALLAST DOWN TO DRILLING DRAFT
0	CH	TP	TRIP-I		30.00	WAIT ON ROV TO PERFORM SEABED SURVEY AND MONITOR TAGGING MUDLINE - SONAR FAILURE

WELL :Northright-1

Page Number : 2 of 4

Date : 26.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
0	CH	P	TRIP-I		90.00	RIH & TAG BOTTOM (130.5 M - TIDE CORRECTED, WATER DEPTH 105.5 M) WITH ROV PERFORMING VISUAL BOTTOM SURVEY. DROP TOTCO SURVEY (2 DEGREES). SPACE-OUT AND CHECK ORIGINAL POSITION ON THE SEA-FLOOR WITH THE ROV - OK.
154	CH	P	DRILL		90.00	SPUD NORTHRIGHT-1. DRILL 36" HOLE FROM 130.5 M TO 154 M WITH GEL SWEEPS
154	CH	P	WIPEF		60.00	PUMP 100 BBL SWEEP, TAKE SURVEY, DISPLACE 150 BBL HI-VIS, WIPE HOLE, DISPLACE 150 BBLS HI VIS
154	CH	P	TRIP-C		60.00	POOH AND RACK BACK BHA
154	CON	P	CASIN		90.00	HOLD JSA. RIG TO RUN 30" CASING. TEST SHOE JOINT AND M/U 30" CASING
154	CON	P	CASIN		60.00	M/U CEMENT STINGER AND 30" RT TO CASING. ENGAGE 30" CASING TO PGB
154	CON	P	CASIN		60.00	RUN 30" CASING WITH PGB ON DRILLPIPE. R/U CEMENT LINE, CONT TO RIH TO 153.46 M WITH 1.5 M STICK-UP ON 30" WELLHEAD - 3/4 DEGREE BULLSEYE
154	CON	P	CASIN		90.00	DISPLACE TO 75 BBLS SW. HOLD JSA FOR CEMENT JOB. PRESSURE TEST CEMENT LINES. CEMENT CASING AS PER PROGRAM
154	CON	P	CASIN		180.00	WAIT ON CEMENT HOLDING CASING WITH 180K. PGB BULLSEYE AT 1.3 DEG. RELEASE RUNNING TOOL, POOH, L/O RT, SES AND TIW
154	IH1	P	HAND		180.00	HOLD JSA - P/U 30" BHA AND L/O HO, BIT AND X/O. M/U 12 1/4" BHA & RIH. STAB IN WITH ASSISTANCE FROM THE ROV - TAG CMT @ 146 M
154	IH1	P	DRILL		90.00	DRILL CMT AND SHOE - TAGGED 153 M - USING GEL & GUAR SWEEPS
250	IH1	P	DRILL		150.00	DRILL 12 1/4" HOLE FROM 153 M TO 250 M AT CONTROLLED RATE USING 30 BBL GEL/GUAR SWEEPS AS REQUIRED
250	IH1	P	CIRCL		30.00	SWEEP HOLE WITH 200 BBL GUAR AND DISPLACE TO 200 BBL PHG
250	IH1	P	WIPEF		30.00	POOH FROM 250 M TO 150 M. RIH TO 250 M. SPOT 150 BBL DRISPAC PILL
250	IH1	P	TRIP-C		60.00	POOH AND L/O BIT, SUB AND DC
250	IC1	P	CASIN		90.00	HOLD JSA - R/U TO RUN CASING. P/U SHOE TRACK. TEST FLOAT AND SHOE.
250	IC1	P	CASIN		30.00	RUN 9 5/8" CASING - FILL W/ SW

Date : 27.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
250	IC1	P	CASIN		60.00	CONTINUE TO RUN 9 5/8" CASING - FILL W/ SW
250	IC1	P	WELL		30.00	P/U 18 3/4" WELLHEAD ASSY, RELEASE RUNNING TOOL, M/U CMT PLUGS & STINGER, M/U RUNNING TOOL TO 20" CASING CROSS-OVER
250	IC1	P	CASIN		90.00	CONTINUE RUNNING CASING ON DP
250	IC1	P	CASIN		60.00	P/U CMT HEAD, CONNECT CONTROL LINES AND CEMENT HOSE
250	IC1	P	CASIN		30.00	LAND 9 5/8" CSG, 30K DOWN, TEST WITH 50K OVERPULL. CIRC 90 BBL SW
250	IC1	P	CASIN		30.00	HOLD JSA - PRESSURE TEST CMT LINES, RELEASE BOTTOM DART AND SHEAR PLUG WITH 1100 PSI, MIX & PUMP 340 SXS (70 BBLS) CEMENT
250	IC1	P	CASIN		60.00	RELEASE TOP DART, SHEAR PLUG WITH 2200 PSI, HALLIBURTON DISPLACE WITH 22 BBLS SW, BUMP PLUG AND TEST CSG TO 2200 PSI, RIG DOWN CEMENT LINE, FLUSH CMT HEAD W/ SW
250	IC1	P	TRIP-C		120.00	POOH & LAY OUT CMT HEAD

WELL :Northright-1

Page Number : 3 of 4

Date : 27.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
250	IC2	P	RISEF		90.00	HOLD JSA - MOVE RIG OFF LOCATION 15 M, R/U RISER EQUIPMENT
250	IC2	P	RISEF		90.00	M/U RISER DOUBLE
250	IC2	P	RISEF		180.00	MOVE BOP & LMRP TO BEAMS. FUNCTION TEST BOTH PODS
250	IC2	P	RISEF		330.00	M/U DOUBLE, HOLD JSA, RUN BOP, PRESSURE TEST CHOKE & KILL LINES 200 PSI / 5 MIN 5000 PSI / 10 MIN AT DOUBLE AND BEFORE SLIP JOINT
250	IC2	P	RISEF		150.00	HOLD JSA - M/U SLIP JOINT, FIT GOOSENECKS, PRESSURE TEST
250	IC2	P	RISEF		60.00	CONNECT RISER TENSION LINES
250	IC2	P	BOP :		30.00	MOVE RIG BACK OVER LOCATION. LAND BOP WITH 50K DOWN, TEST CONNECTION WITH 50 K OVERPULL
250	IC2	P	RISEF		30.00	HOLD JSA - UNLOCK SLIP JOINT

Date : 28.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
250	IC2	P	RISEF		30.00	CONTINUE TO M/U SLIP JOINT & STROKE OUT - L/O LANDING JOINT
250	IC2	P	RISEF		90.00	HOLD JSA - P/U DIVERTER & INSTALL - 40K OVERPULL TEST - GOOD. R/D RISER RUNNING EQUIPMENT
250	IC2	P	BOP :		60.00	M/U HWDP X 2 STDS TO BOP TEST TOOL, RIH & LAND OUT
250	IC2	P	BOP :		330.00	PRESSURE TEST BOP'S. ANN 200 / 2500, RAMS 200 / 5000, 5 / 10 MIN TEST ON YELLOW POD, FUNCTION ON BLUE POD. POOH, L/O TEST TOOL - FUNCTION DIVERTER SYSTEM
250	PH1	P	MWD		90.00	P/U MWD & FUNCTION TEST SAME - PROGRAM TOOL
250	PH1	P	TRIP-I		90.00	CONTINUE TO P/U BHA AND RIH. TAG CEMENT AT 225 M
253	PH1	P	DRILL		90.00	CLEAN OUT CEMENT TO 233 M - TAG PLUGS
253	PH1	P	DRILL		150.00	DRILL CEMENT FROM 225 - 250 M. FLUSH CHOKE & KILL LINES TO MUD
253	PH1	P	CIRCL		30.00	REAM SHOE AND RAT HOLE & DRILL 3 M OF NEW FORMATION, DISPLACE TO MUD
253	PH1	P	LEAK-		60.00	PERFORM FIT TO 1.24 SG (EMW) AT 253 M WITH 1.10 SG MUD (VERBAL APPROVAL FROM KOUROSH MEHIN - VIC NRE) TO DRILL AHEAD
253	PH1	P	HAND		30.00	TDS SERVICE
347	PH1	P	DRILL		390.00	DRILL 8 1/2" HOLE FROM 253 M TO 347 M, FLOW CHECK LOSSES AT 275 M - STATIC. FLOW CHECK DRILL BREAK AT 329 M - STATIC. DEVIATION SURVEY AT 319.5 M - 0.35 DEGREES

Date : 29.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
391	PH1	P	DRILL		150.00	CONTINUE TO DRILL 8 1/2" HOLE FROM 347 M TO 391 M (TD) BOOSTING RISER AS REQUIRED. DECISION TO TD EARLY BASED ON LWD LOGS AND SAMPLES. VERBAL APPROVAL FROM KOUROSH MEHIN (VIC NRE)
391	PH1	P	CIRCL		30.00	CIRCULATE BOTTOMS-UP
391	PH1	P	TRIP-(		120.00	POOH, LAY DOWN ANADRILL, JARS AND STABILIZER
391	ABN	P	PIPE -		150.00	HOLD JSA - RIG-UP THEN PICK-UP 18 JTS 3 1/2" D/P AND CUT-OFF STINGER. RIH AND CIRCULATE BOTTOMS UP
391	ABN	P	CEME		30.00	TEST HOWCO LINES TO 1200 PSI. PUMP CEMENT PLUG # 1 FROM 337 M TO 212 M WITH 187 SXS. DISPLACE WITH 1.2 BBLS SEAWATER AND 8.9 BBLS MUD.
391	ABN	P	CEME		60.00	POOH FROM 337M TO 156 M, CIRCULATE BOTTOMS UP
391	ABN	P	WAIT		120.00	POOH FROM 156 TO 128 M, FLUSH BOPS AND CHOKE AND KILL LINES WHILST WOC.

WELL :Northright-1

Page Number : 4 of 4

Date : 29.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
391	ABN	P	WELL		60.00	P/U WEAR BUSHING RUNNING TOOL AND RIH. LATCH AND RELEASE 65K OVERPULL, POOH
391	ABN	P	TRIP-I		60.00	P/U 3 1/2" DP CEMENT STINGER, RIH - TAG TOC AT 226 M WITH 5 K DOWN
391	ABN	P	CIRCL		60.00	DISPLACE WELL TO SEAWATER AND R/U CEMENT HOSE
391	ABN	P	CEME		30.00	PRESSURE TEST HOWCO LINES TO 1000 PSI, MIX AND PUMP CEMENT PLUG # 2 FROM 223 M TO 160 M WITH 72 SXS CMT. DISPLACE W/ 9 BBLS S/W
391	ABN	P	CIRCL		30.00	PULL BACK TO 150 M. REVERSE CIRCULATE - PUMP 50 BBLS S/W. SMALL AMOUNT OF CMT CIRCULATED
391	ABN	P	TRIP-C		60.00	POOH CMT STINGER, L/O 12 1/4" STAB FROM DERRICK
391	ABN	P	RISEF		60.00	HOLD JSA - R/U TO PULL BOP & RISER
391	ABN	P	RISEF		60.00	HOLD JSA - PULL DIVERTER AND L/O
391	ABN	P	RISEF		90.00	P/U LANDING JOINT, CLOSE SLIP JOINT
391	ABN	P	RISEF		90.00	UNLATCH BOP, HOLD JSA, NIPPLE DOWN SLIP JOINT
391	ABN	P	RISEF		180.00	L/O LANDING JOINT, SLIP JOINT AND PULL BOP

Date : 30.04.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
391	ABN	P	RISEF		60.00	LAND LMRP AND BOP ON BEAMS, N/D BOP. R/D RISER EQUIPMENT
391	ABN	P	BOP :		30.00	M/U JET TOOL AND JET BOPS
391	ABN	P	BOP :		60.00	MOVE BOP AND LMRP. INSTALL MOUSEHOLE
391	ABN	P	CASIN		120.00	P/U AND M/U CASING CUTTING ASSY. TEST KNIVES AND RIH. STAB-IN AND LATCH
391	ABN	P	CASIN		240.00	CUT 20" AND 30" CASING AT 133.5 M (3 M BELOW MUD LINE)
391	ABN	P	CASIN		180.00	ATTEMPT TO PULL CASING - 160K OVERPULL - NO GO. CONTINUE TO CUT CASING
391	ABN	P	CASIN		30.00	PULL CASING FREE OF SEABED AND COMMENCE PULLING TGB TO SURFACE. (1155 HRS #8 PENNANT PASSED TO PACIFIC SENTINEL)
391	RMC	P	ANCH		620.00	COMMENCE PULLING ANCHORS WHILST DEBALLASTING THE RIG. PACIFIC SENTINEL CHASING AND RECOVERING ANCHOR # 8, ANCHOR # 1 AND ANCHOR # 7. PACIFIC CONQUEROR CHASE AND RECOVER ANCHOR # 5
391	RMC	P	ANCH		100.00	DEBALLAST RIG FROM 56.6 FT TO 32 FT

Date : 01.05.2001

Depth	Phase	Cls	Op	Root C	Hrs	Activity
391	RMC	P	ANCH		180.00	CONTINUE DEBALLASTING RIG FROM 56.6 FT TO 32 FT TRANSIT DRAFT
391	RMC	TP	ANCH		120.00	REPOSITION ANCHOR #3 (NEW ANCHOR) TO ALLOW ACCESS TO ANCHOR #4 PENNANT WIRE
391	RMC	P	ANCH		315.00	RECOVER ANCHORS #4 AND #2 WITH THE PACIFIC SENTINEL. RECOVER ANCHOR #6 WITH THE RIG. RIG RELEASED LAST ANCHOR RACKED AT 10:15 HOURS MAY 1, 2001.



## **APPENDIX C**

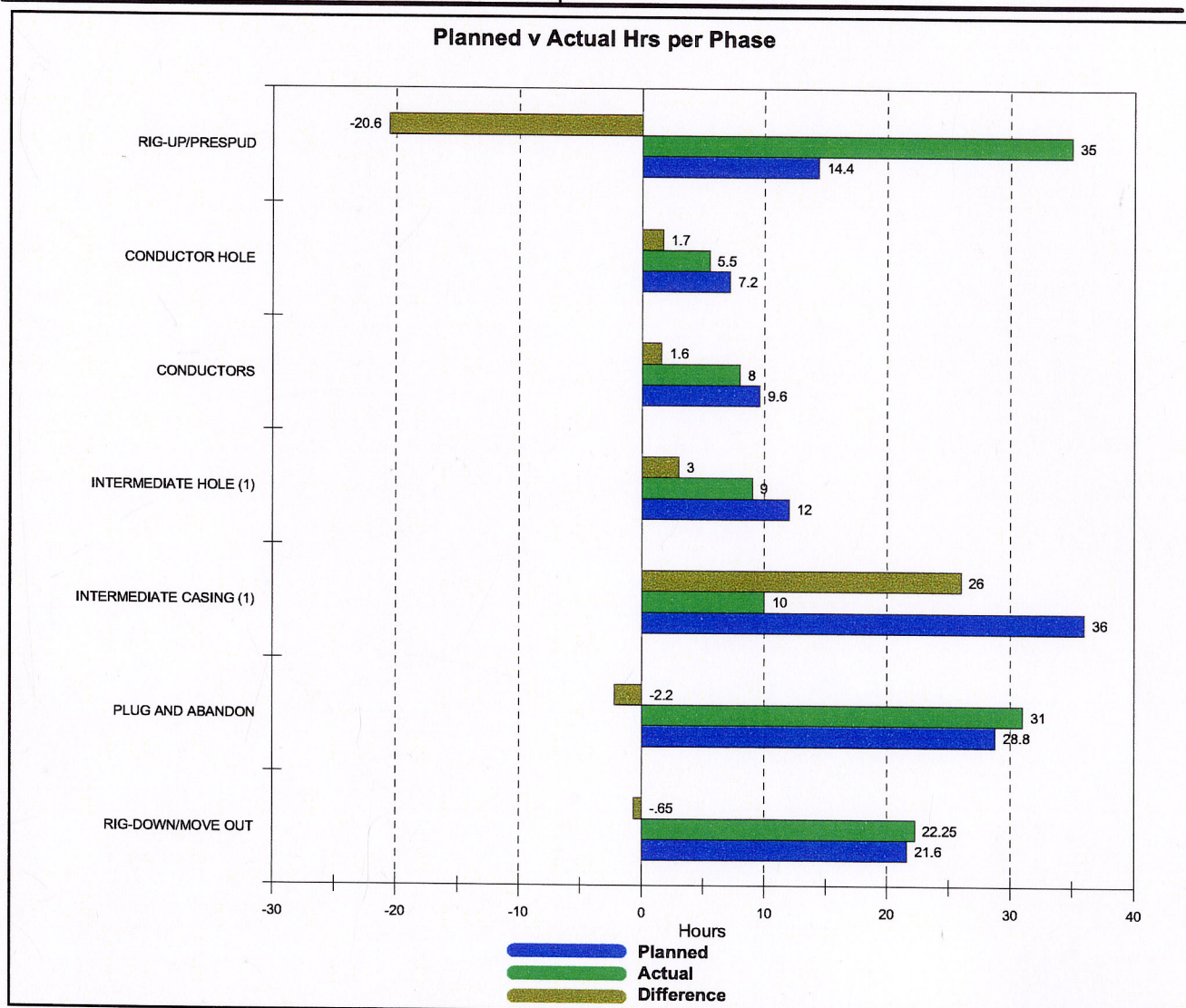
### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section 3. Phase Analysis: Planned versus Actual Times**

# Phase Analysis : Planned versus Actual times

## Northright-1

Move Time :	Included in Totals
Total plan hrs in planned phases :	129.60
Total actual hrs in planned phases :	120.75
Total hrs in plan but not on well	43.20
Total hrs on well but not in plan:	45.00



Phase	depth	Plan hrs	Actual hrs	Diff
RIG-UP/PRESPUD		14.40	35.00	-20.60
CONDUCTOR HOLE	152.00	7.20	5.50	1.70
CONDUCTORS	152.00	9.60	8.00	1.60
INTERMEDIATE HOLE (1)	247.00	12.00	9.00	3.00
INTERMEDIATE CASING	247.00	36.00	10.00	26.00
PLUG AND ABANDON	420.00	28.80	31.00	-2.20
RIG-DOWN/MOVE OUT	420.00	21.60	22.25	-0.65

Phase	Hrs in plan but not on well
E2	24.00
IH2	19.20

Phase	Hrs on well but not in plan
IC2	24.50
PH1	20.50



## **APPENDIX C**

### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section 4. Time Analysis Overview**

**Time Analysis Overview**

**Well :** Northright-1  
**Drilling Co :** DIAMOND OFFSHORE  
**Rig :** OCEAN BOUNTY  
**Spud date :** 24.04.2001  
**TD Depth :** 391.0  
**Final Depth :** 391.0  
**Total Time (hrs) - Spud/Release :** 143.50  
**Total Time (hrs) - Rig Move :** 22.25  
**Total NPT (hrs) :** 21.75  
**Total Time (hrs) - Pre Spud :** 35.00

**Time-Breakdown : Times by Class and Operation**

Operations of &lt; than 2 hrs

Class	Hrs
PROGRAMMED EVENT	144.0
TROUBLE - DURING PROGRAM	21.8

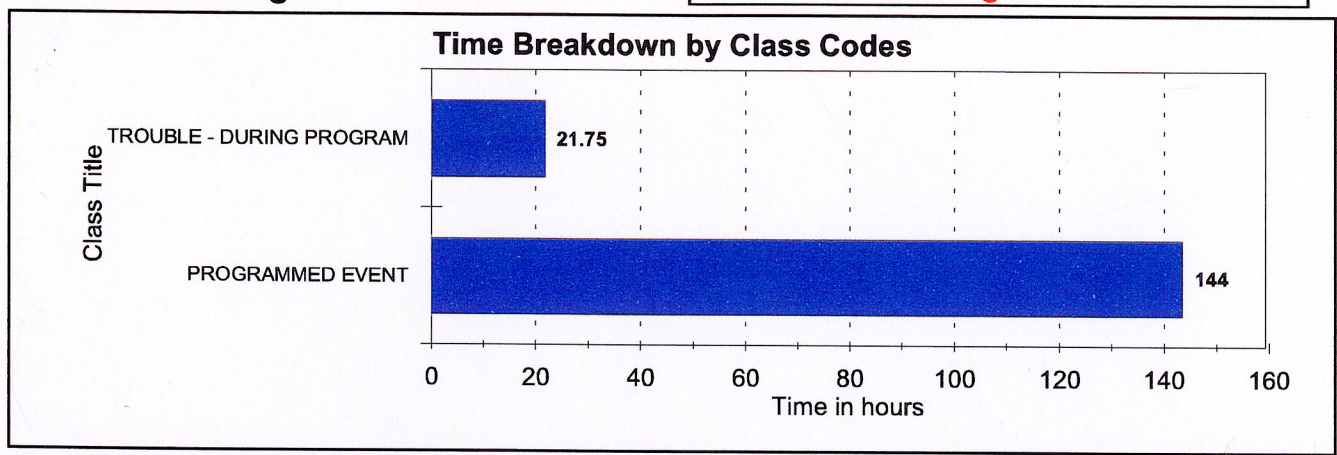
Operation	Hrs
ANCHOR HANDLING	57.3
RISER - RUN	17.5
TOT. CSG/CMT	14.5
DRILLING AHEAD	13.0
TOT. TRIPPING	11.5
CASING - CUT	9.0
RISER - RECOVER	9.0
BOP : NIPPLE U/D AND TEST	8.5
CASING - RUN	8.5
HANDLE BHA	3.5
CIRCULATE & CONDITION MUD	3.0
PIPE - PICKUP	2.5
CEMENT ABANDONMENT/KICK	2.0
MWD SVC/D'LOAD DATA	1.5
WELL-HEAD	1.5
WIPER TRIP	1.5
LEAK-OFF TEST	1.0
CASING - PULL	.5



# TIME BREAKDOWN DATABASE - single well overview

WELL : Northright-1

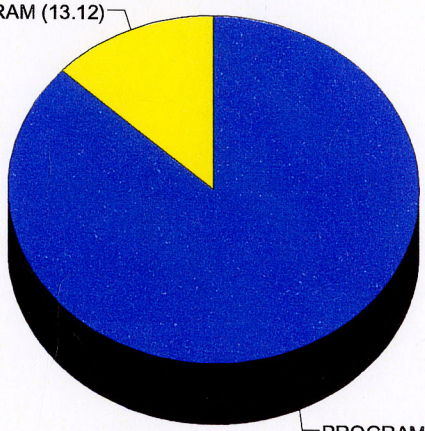
Pacesetter : Northright-1



### Time Analysis by Class Codes

Class	Hrs
PROGRAMMED EVENT	144.0
TROUBLE - DURING PROGRAM	21.8

TROUBLE - DURING PROGRAM (13.12)



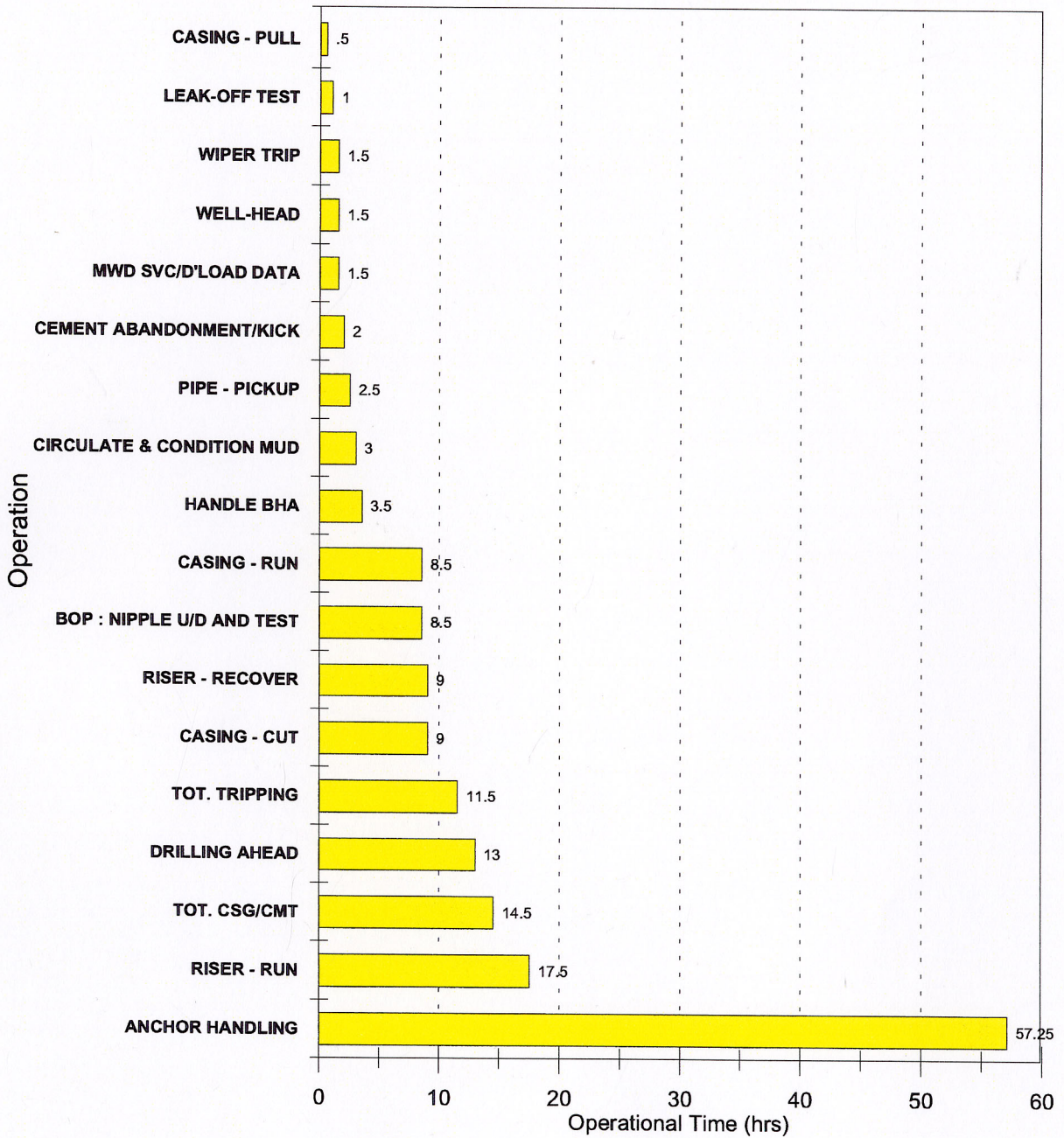
PROGRAMMED EVENT (86.88)

TIME BREAKDOWN DATABASE - single well overview

WELL : Northright-1

Pacesetter : Northright-1

Time Breakdown by Operational Code

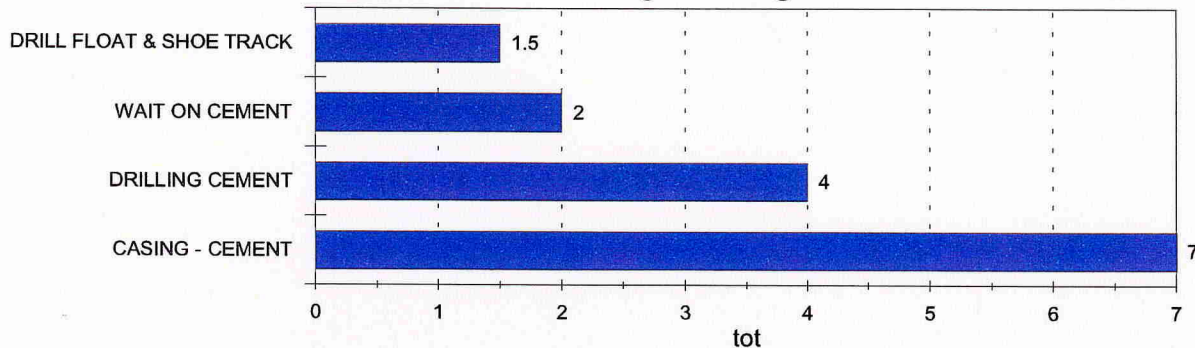


**TIME BREAKDOWN DATABASE - single well overview**

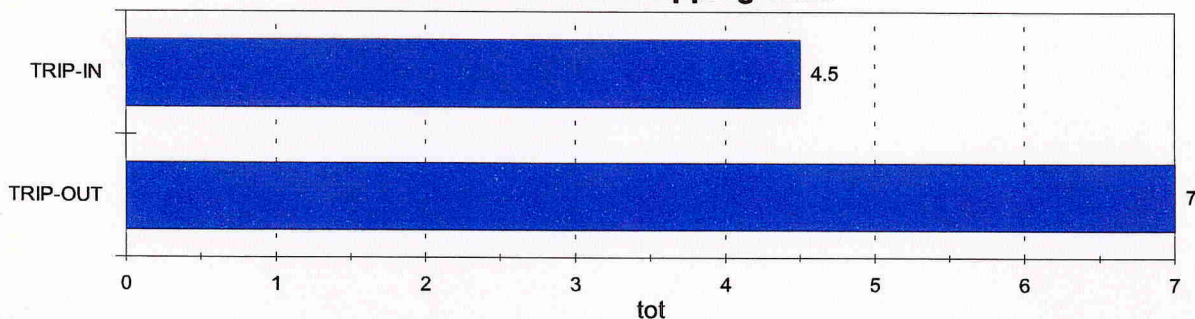
**WELL : Northright-1**

**Pacesetter : Northright-1**

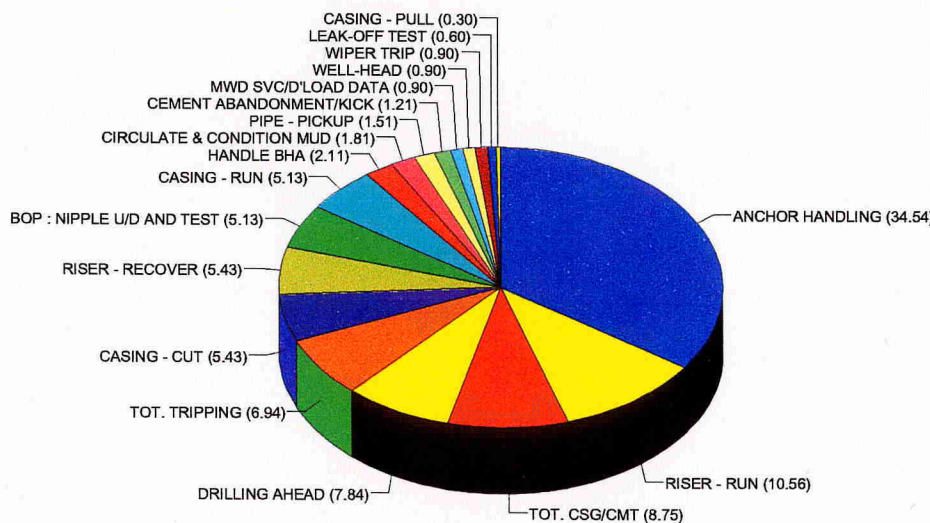
**Breakdown of Total Csg & Cmtng Time**



**Breakdown of Total Tripping Time**



**Time Analysis by Operational Codes**



Operation	hrs
ANCHOR HANDLING	57.3
RISER - RUN	17.5
TOT. CSG/CMT	14.5
DRILLING AHEAD	13.0
TOT. TRIPPING	11.5
CASING - CUT	9.0
RISER - RECOVER	9.0
BOP : NIPPLE U/D AND TEST	8.5
CASING - RUN	8.5
HANDLE BHA	3.5
CIRCULATE & CONDITION MUD	3.0
PIPE - PICKUP	2.5
CEMENT ABANDONMENT/KICK	2.0
MWD SVC/D'LOAD DATA	1.5
WELL-HEAD	1.5
WIPER TRIP	1.5
LEAK-OFF TEST	1.0
CASING - PULL	0.5



## **APPENDIX C**

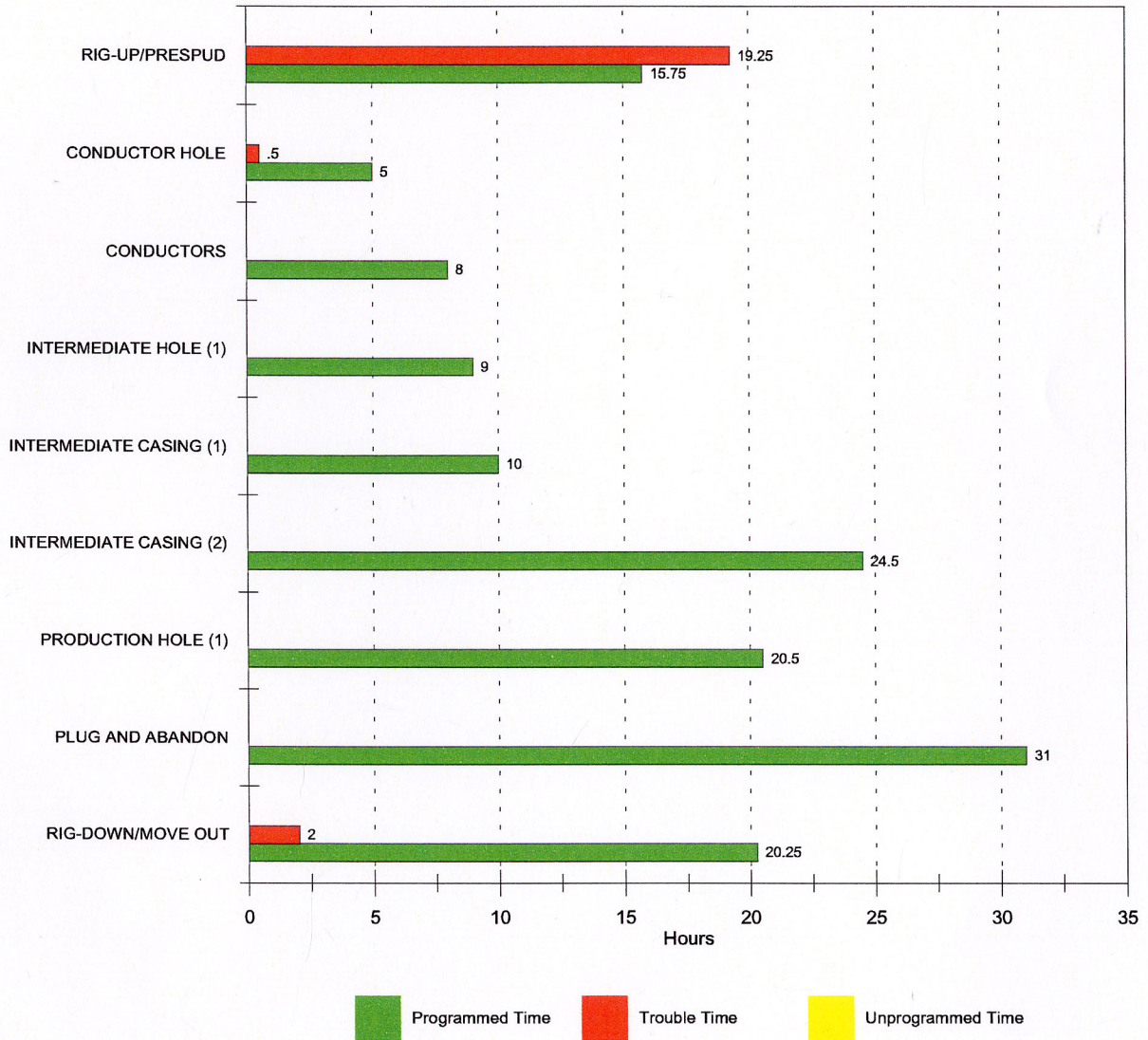
### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section 5. Time Breakdown by Phase**

**Time Breakdown by Phase**  
**Northright-1**

<b>TOTAL HRS ON WELL :</b>	<b>165.75</b>
<b>TOTAL PROGRAMMED HRS :</b>	<b>144.00</b>
<b>TOTAL TROUBLE HRS :</b>	<b>21.75</b>
<b>TOTAL UNPROGRAMMED HRS :</b>	<b>0.00</b>

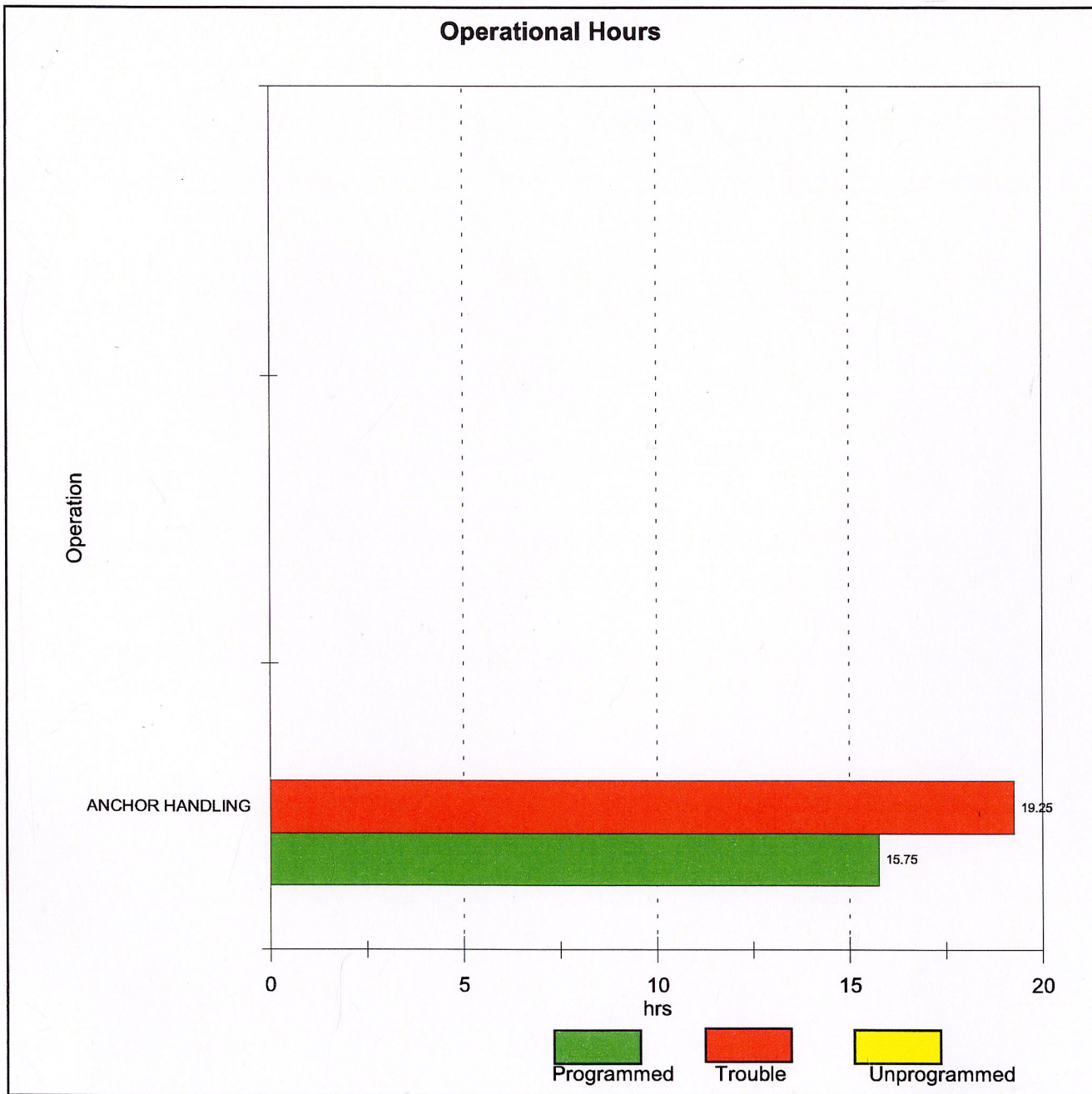
**Programmed, Trouble and Unprogrammed hours per Phase**



CODE	PHASE	PROG	TROUB	UNPROG
PS	RIG-UP/PRESPUD	15.75	19.25	
CH	CONDUCTOR HOLE	5.00	0.50	
CON	CONDUCTORS	8.00		
IH1	INTERMEDIATE HOLE (1)	9.00		
IC1	INTERMEDIATE CASING (1)	10.00		
IC2	INTERMEDIATE CASING (2)	24.50		
PH1	PRODUCTION HOLE (1)	20.50		
ABN	PLUG AND ABANDON	31.00		
RMO	RIG-DOWN/MOVE OUT	20.25	2.00	

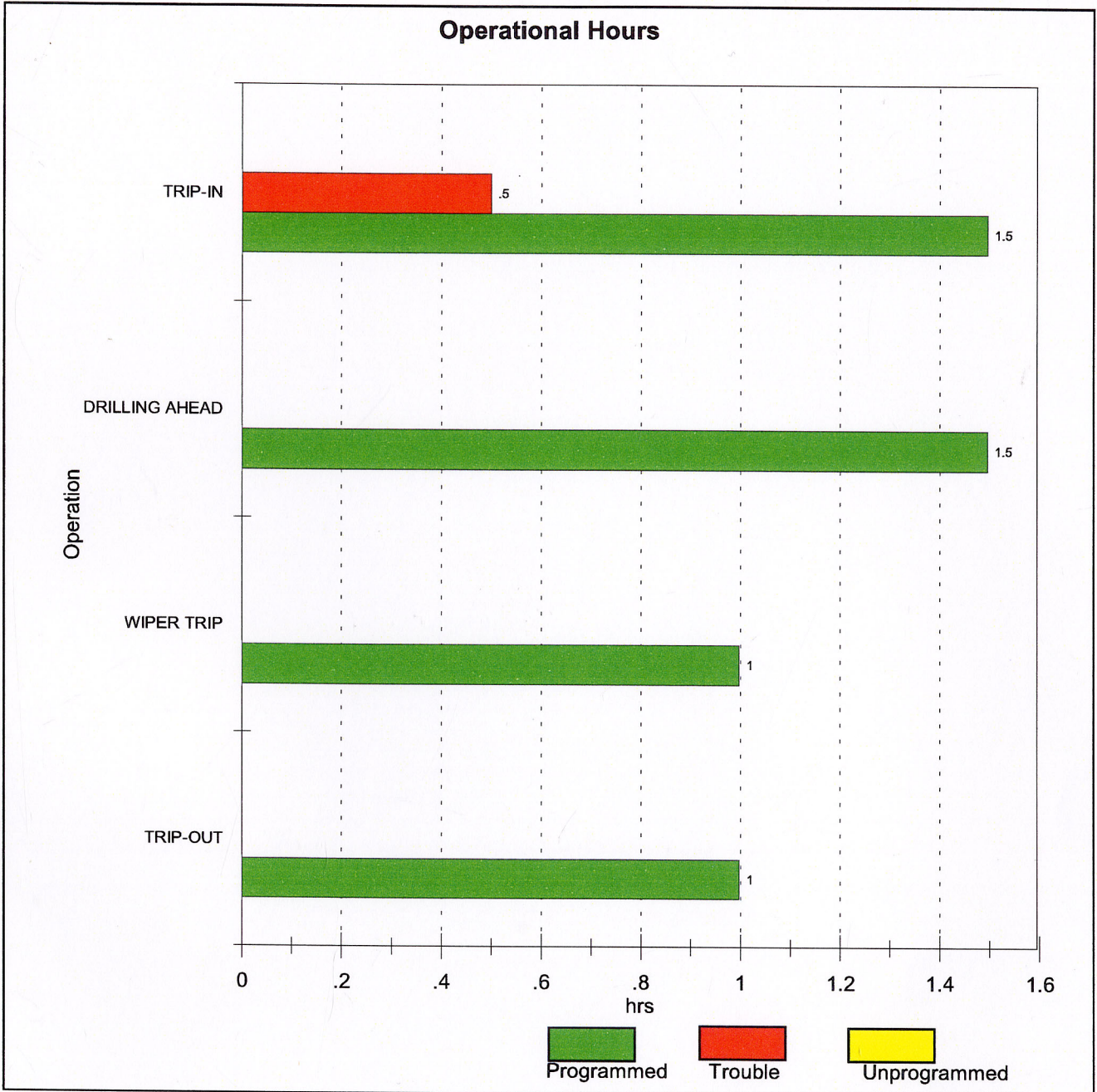
**PHASE : RIG-UP/PRESPUD**

**PROG. TIME (hrs): 15.75    TROUBLE TIME (hrs): 19.25    UNPROG. TIME (hrs): 0.00**



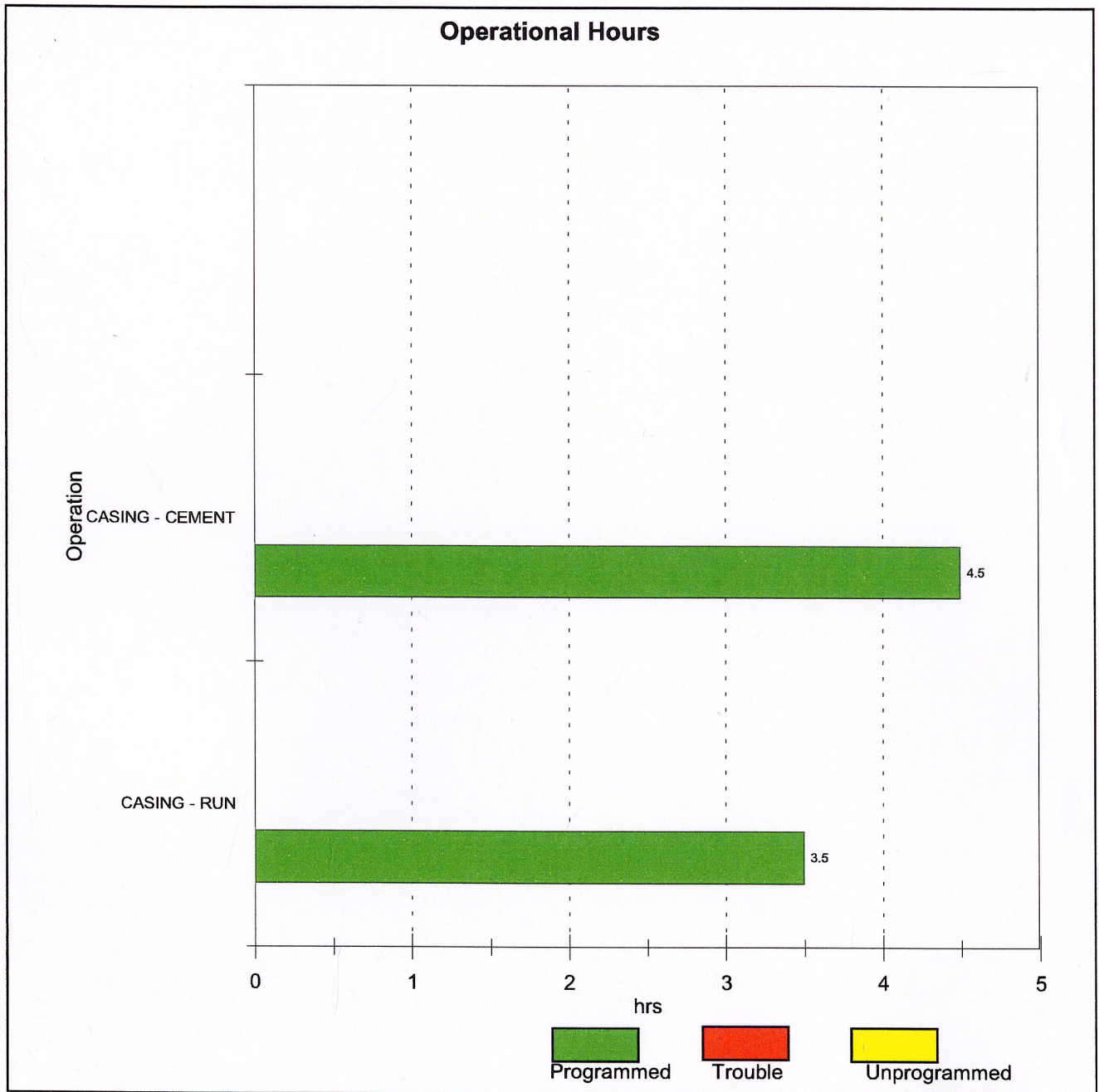
### PHASE : CONDUCTOR HOLE

PROG. TIME (hrs): 5.00    TROUBLE TIME (hrs): 0.50    UNPROG. TIME (hrs): 0.00



**PHASE : CONDUCTORS**

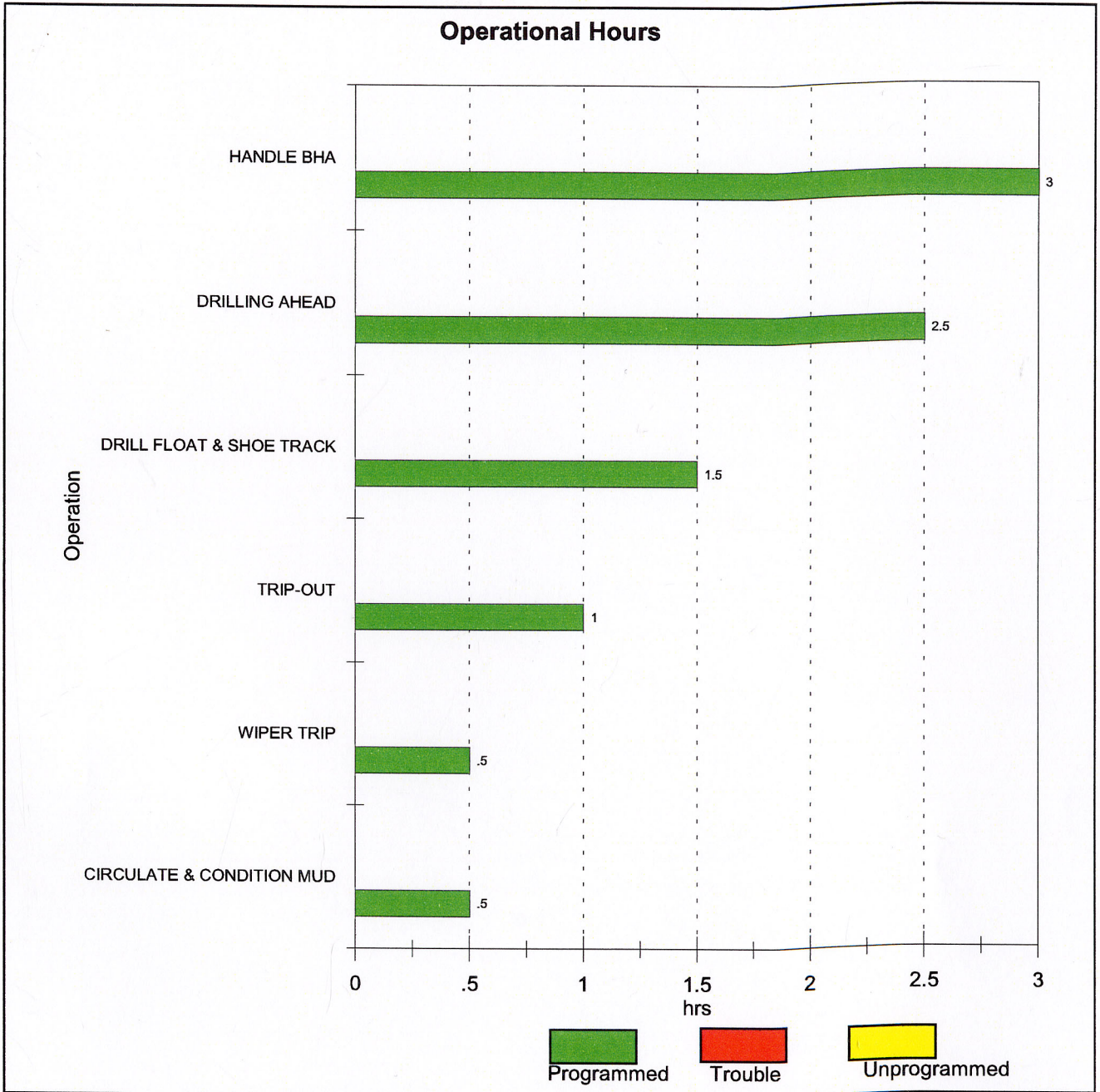
PROG. TIME (hrs): 8.00    TROUBLE TIME (hrs): 0.00    UNPROG. TIME (hrs): 0.00





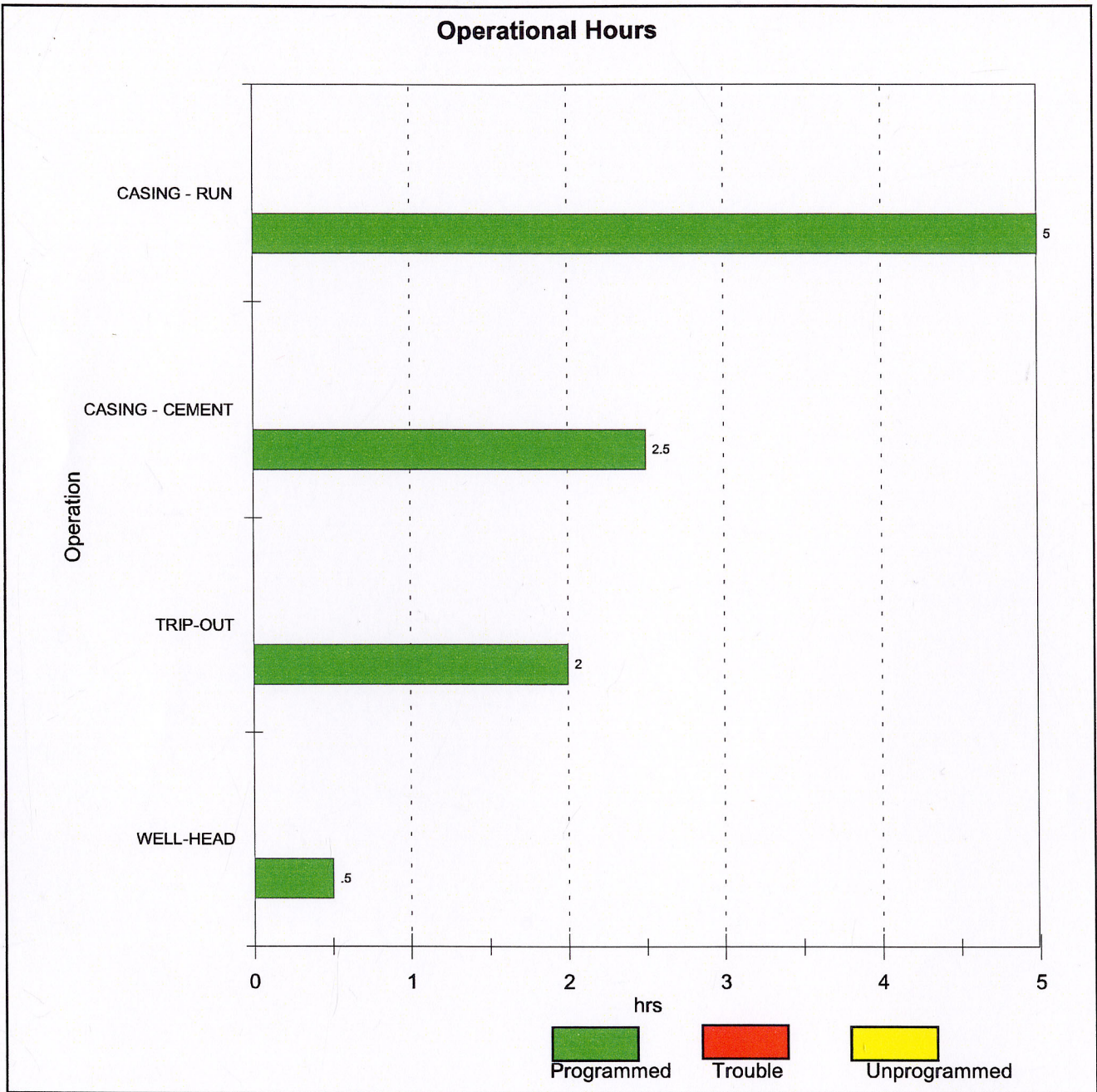
PHASE : INTERMEDIATE HOLE (1)

PROG. TIME (hrs): 9.00 TROUBLE TIME (hrs): 0.00 UNPROG. TIME (hrs): 0.00



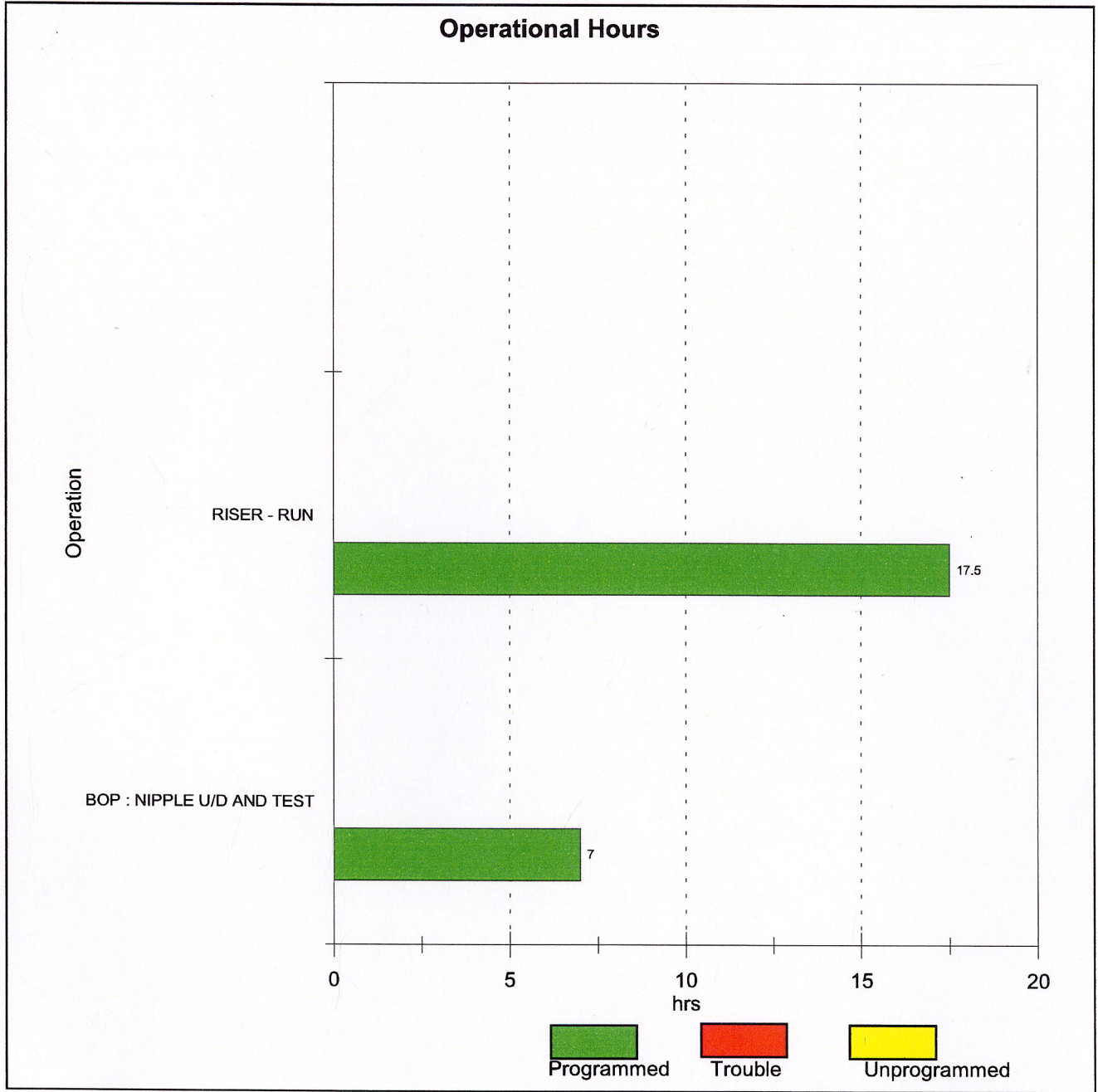
**PHASE : INTERMEDIATE CASING (1)**

**PROG. TIME (hrs): 10.00    TROUBLE TIME (hrs): 0.00    UNPROG. TIME (hrs): 0.00**



**PHASE : INTERMEDIATE CASING (2)**

PROG. TIME (hrs): 24.50    TROUBLE TIME (hrs): 0.00    UNPROG. TIME (hrs): 0.00



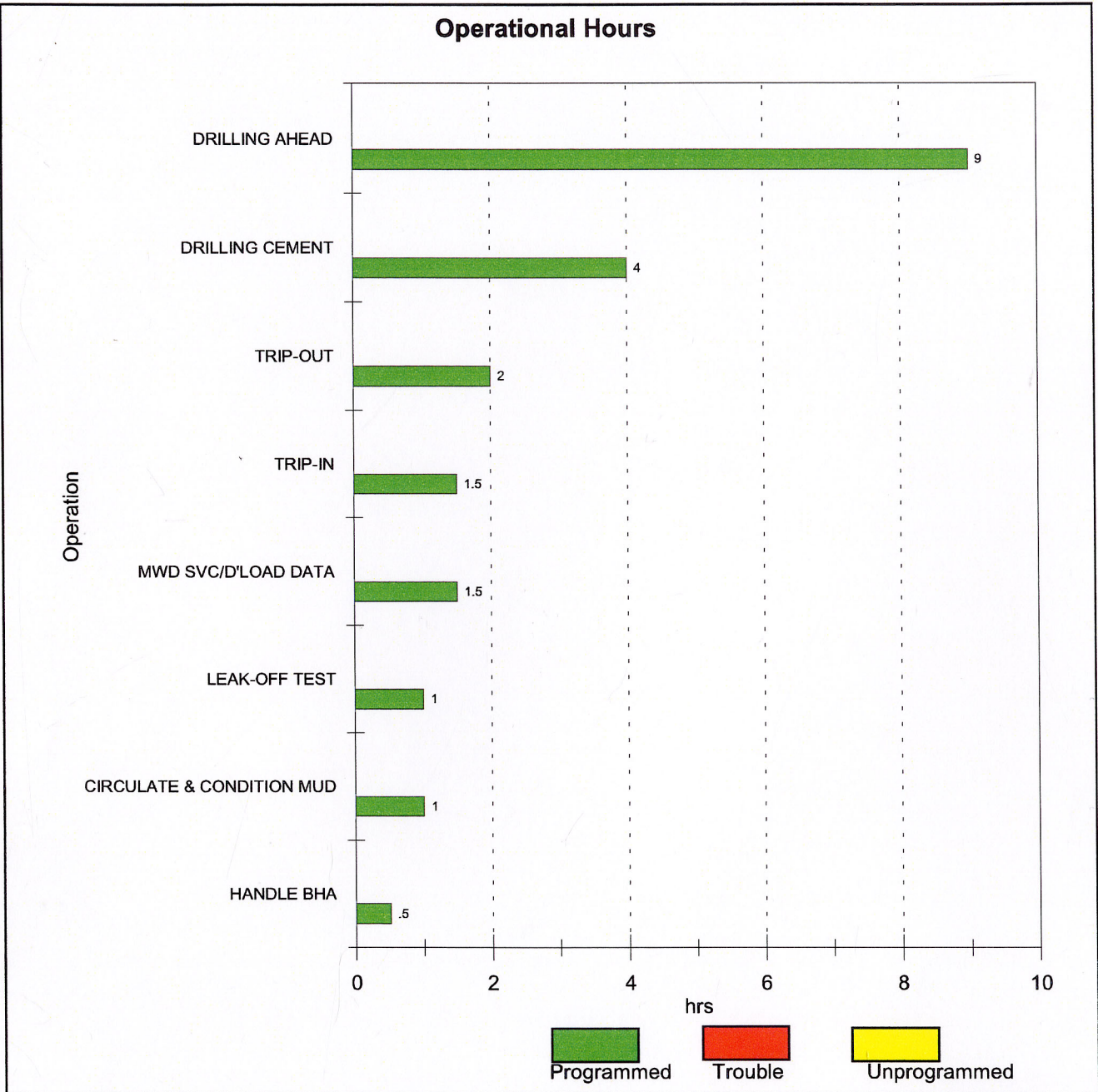
PHASE : PRODUCTION HOLE (1)

908025 116

PROG. TIME (hrs): 20.50

TROUBLE TIME (hrs): 0.00

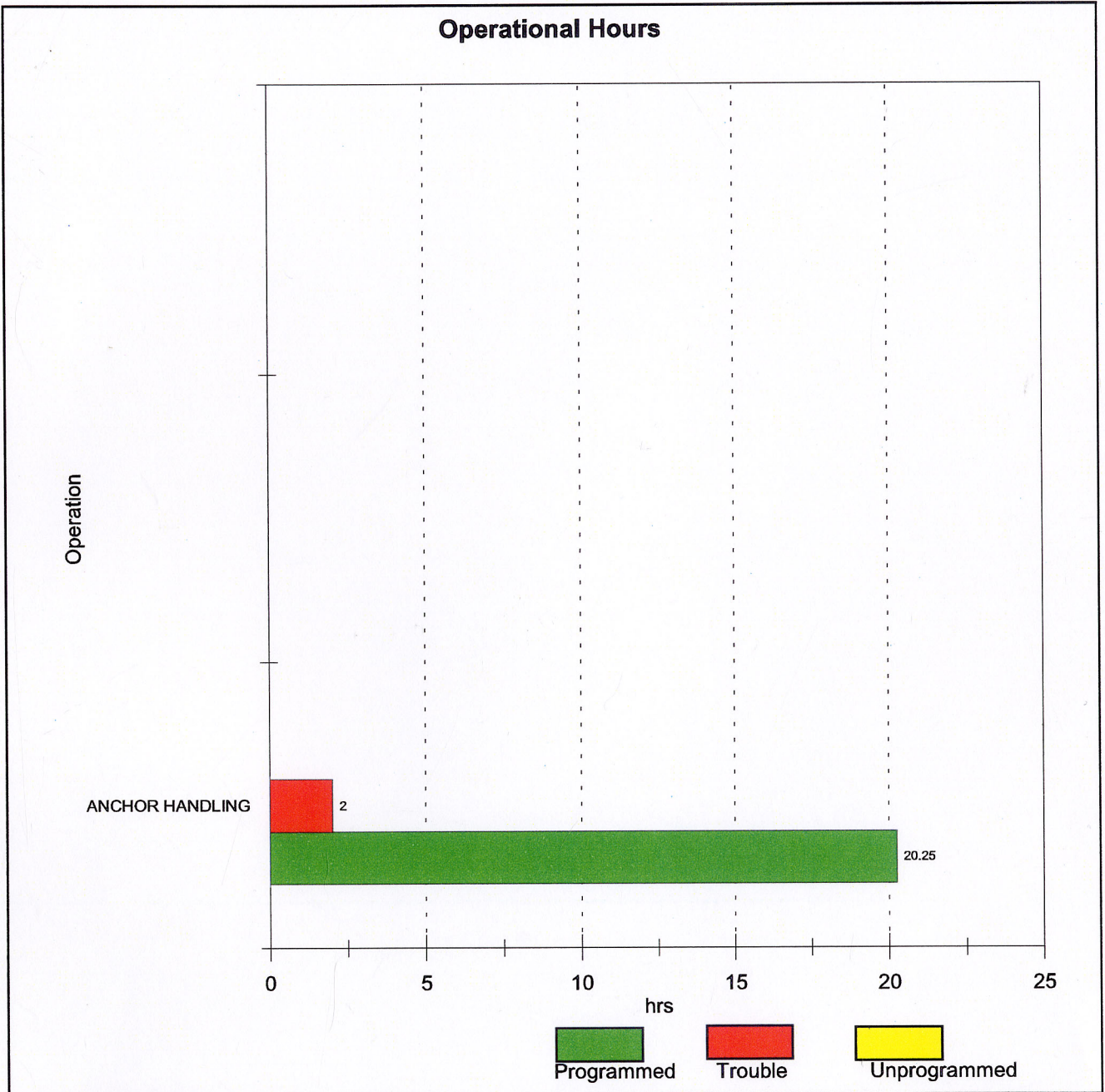
UNPROG. TIME (hrs): 0.00



908025 117

**PHASE : RIG-DOWN/MOVE OUT**

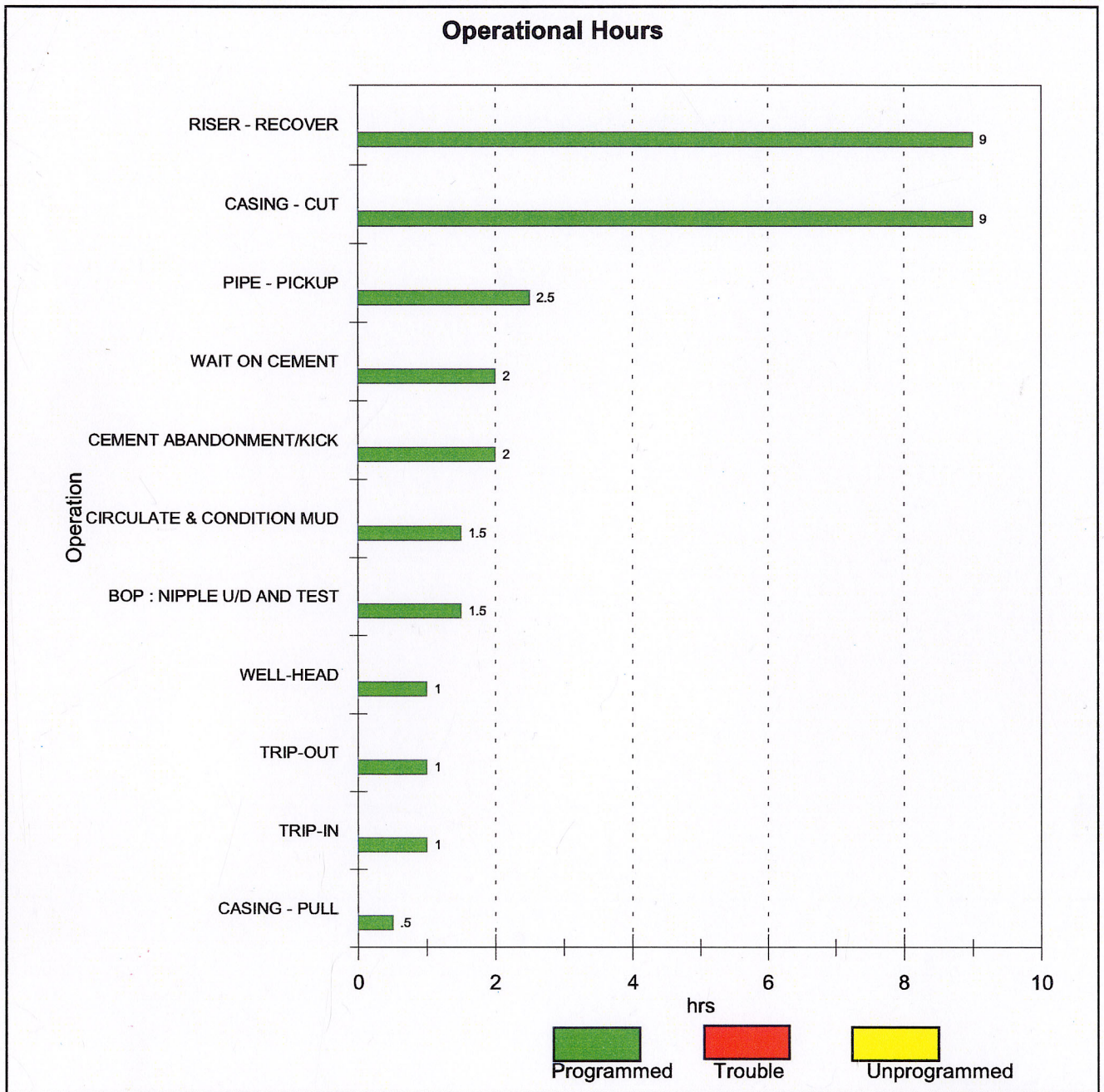
**PROG. TIME (hrs): 20.25    TROUBLE TIME (hrs): 2.00    UNPROG. TIME (hrs): 0.00**



**PHASE : PLUG AND ABANDON**

908025 118

**PROG. TIME (hrs): 31.00    TROUBLE TIME (hrs): 0.00    UNPROG. TIME (hrs): 0.00**





## **APPENDIX C**

### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section 6. Non-Productive Time Breakdown By Phase**

**TIME BREAKDOWN DATABASE Non-Productive Time Analysis (NPT)**

**WELL** Northright-1  
**Drilling Co :** DIAMOND OFFSHORE  
**Rig :** OCEAN BOUNTY  
**Spud Date :** 24.04.2001  
**Total Depth :** 391  
**Final Depth :** 391

**Total Time on Well (hrs)** 165.8 (days) 6.91  
**Total Trouble Time (hrs)** 21.8 (days) 0.91  
**Trouble Time (%)** 13.12

**Total NPT Hours per Phase**

PHASE	HOURS
RIG-UP/PRESPUD	19.3
RIG-DOWN/MOVE OUT	2.0
CONDUCTOR HOLE	0.5

**NPT during programmed time**

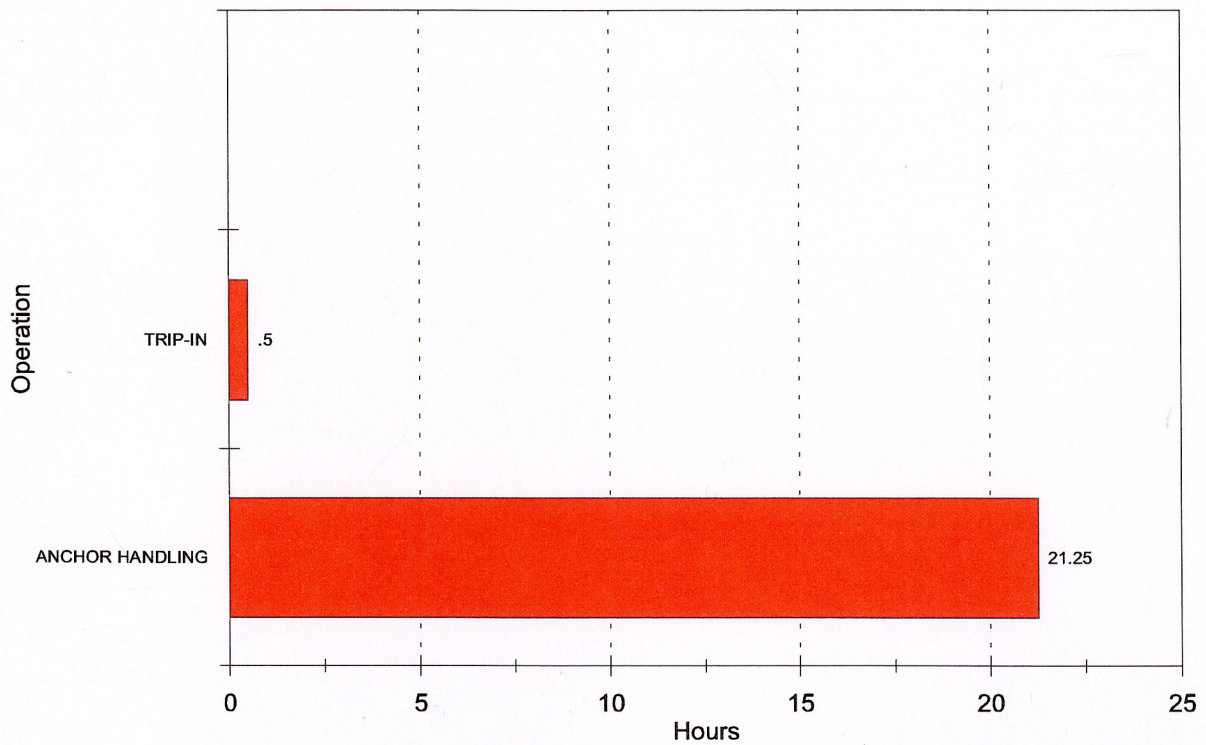
DATE	PHS	OPERATION	NPT	DEPTH	DESCRIPTION OF PROGRAMMED TROUBLE TIME
24.04.20	PS	ANCHOR HANDLING	1.8	0	PACIFIC SENTINEL ADVISED THAT IT IS UNABLE TO REPAIR STEERING PROBLEM REPORTED PRIOR TO ANCHOR DROP. ANCHOR OPERATIONS SUSPENDED.
24.04.20	PS	ANCHOR HANDLING	1.6	0	CONNECT SENTINEL TO TOW LINE. SENTINEL ON STATIC TOW. RELEASE CONQUEROR TO RUN ANCHORS
24.04.20	PS	ANCHOR HANDLING	1.8	0	ATTEMPT TO RUN ANCHOR # 7. ANCHOR UPSIDE DOWN. TURN ANCHOR AROUND
24.04.20	PS	ANCHOR HANDLING	0.3	0	#3 PENNANT TANGLED AROUND ANCHOR - FIX SAME
24.04.20	PS	ANCHOR HANDLING	1.0	0	#3 PENNANT WIRE PARTED ON CONQUEROR - ALL SAFE ON DECK. J HOOK PASSED TO CONQUEROR, ATTEMPT TO RECOVER ANCHOR #3
25.04.20	PS	ANCHOR HANDLING	0.8	0	ATTEMPT TO RECOVER ANCHOR #3. J HOOK CAME OFF CHAIN IN HEAVY WEATHER, LANDING NEAR BOAT WINCH. BOAT ADVISED SUSPENDING OPERATIONS DUE TO HEAVY WEATHER (+3 M SWELLS AND +40 KT WINDS)
25.04.20	PS	ANCHOR HANDLING	7.7	0	WAIT ON WEATHER
25.04.20	PS	ANCHOR HANDLING	2.2	0	PACIFIC CONQUEROR J HOOK # 3 CHAIN. CHAIN RECOVERED WITH NO ANCHOR. J HOOK AND PENNANT PASSED BACK TO THE RIG
25.04.20	PS	ANCHOR HANDLING	2.1	0	ATTEMPT TO RUN ANCHOR # 5 . STOPPED PAYING OUT CHAIN AT 2640' DUE TO ROCKY BOTTOM. HAUL IN FOR RE-RUN.
25.04.20	CH	TRIP-IN	0.5	0	WAIT ON ROV TO PERFORM SEABED SURVEY AND MONITOR TAGGING MUDLINE - SONAR FAILURE
01.05.20	RMO	ANCHOR HANDLING	2.0	391	REPOSITION ANCHOR #3 (NEW ANCHOR) TO ALLOW ACCESS TO ANCHOR #4 PENNANT WIRE

**NPT during unprogrammed time**



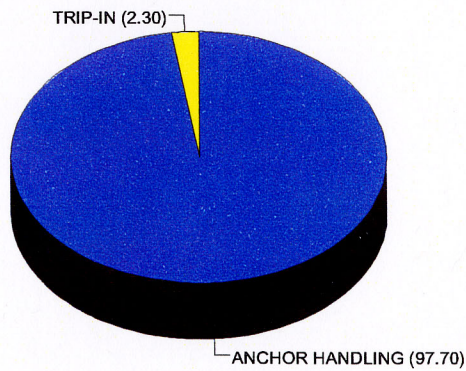
WELL : Northright-1

Trouble Drilling by Operational Code



Trouble Drilling by Operational Code

OPERATION	HRS
ANCHOR HANDLING	21.3
TRIP-IN	0.5





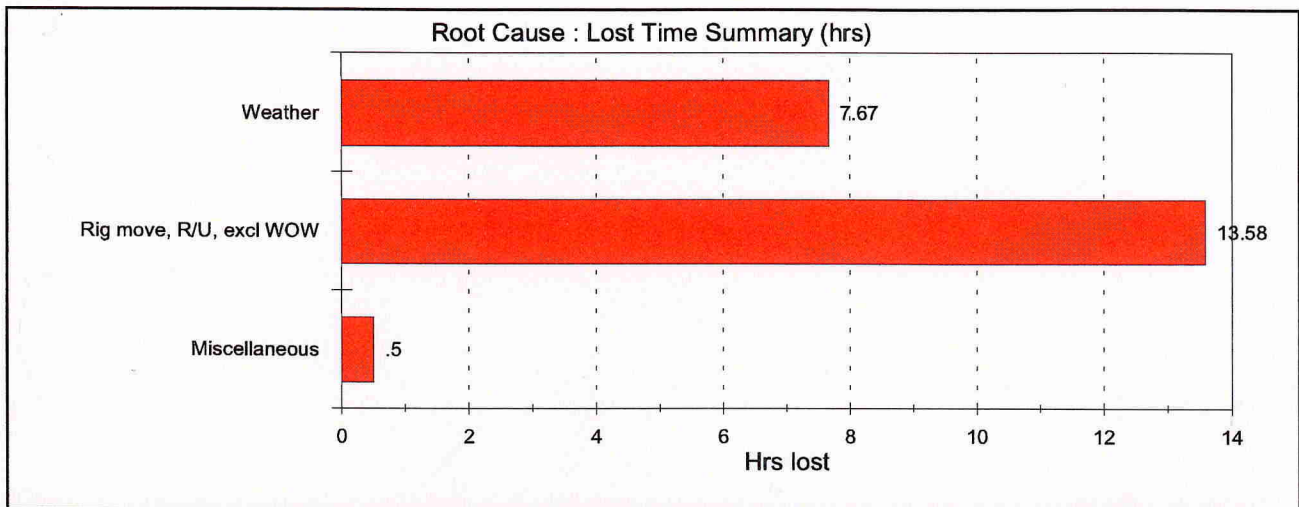
## **APPENDIX C**

### **WELL OPERATIONS SUMMARY REPORTS**

#### **Section 7. Non-Productive Time Root Cause Analysis**

# NPT : Root-Cause Analysis

WELL : Northright-1



Date	Phase	Root Cause	Operation	Depth	Description	Hrs
24.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	PACIFIC SENTINEL ADVISED THAT IT IS UNABLE TO REPAIR STEERING PROBLEM REPORTED PRIOR TO ANCHOR DROP. ANCHOR OPERATIONS SUSPENDED.	1.83
24.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	CONNECT SENTINEL TO TOW LINE. SENTINEL ON STATIC TOW. RELEASE CONQUEROR TO RUN ANCHORS	1.58
24.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	ATTEMPT TO RUN ANCHOR # 7. ANCHOR UPSIDE DOWN. TURN ANCHOR AROUND	1.75
24.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	#3 PENNANT TANGLED AROUND ANCHOR - FIX SAME	0.33
24.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	#3 PENNANT WIRE PARTED ON CONQUEROR - ALL SAFE ON DECK. J HOOK PASSED TO CONQUEROR, ATTEMPT TO RECOVER ANCHOR #3	1.00
25.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	ATTEMPT TO RECOVER ANCHOR #3. J HOOK CAME OFF CHAIN IN HEAVY WEATHER, LANDING NEAR BOAT WINCH. BOAT ADVISED SUSPENDING OPERATIONS DUE TO HEAVY WEATHER (+3 M SWELLS AND +40 KT WINDS)	0.83
25.04.2	PS	Weather	ANCHOR HANDLING	0.0	WAIT ON WEATHER	7.67
25.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	PACIFIC CONQUEROR J HOOK # 3 CHAIN. CHAIN RECOVERED WITH NO ANCHOR. J HOOK AND PENNANT PASSED BACK TO THE RIG	2.17
25.04.2	PS	Rig move, R/U, excl WOW	ANCHOR HANDLING	0.0	ATTEMPT TO RUN ANCHOR # 5 . STOPPED PAYING OUT CHAIN AT 2640' DUE TO ROCKY BOTTOM. HAUL IN FOR RE-RUN.	2.08
25.04.2	CH	Miscellaneous	TRIP-IN	0.0	WAIT ON ROV TO PERFORM SEABED SURVEY AND MONITOR TAGGING MUDLINE - SONAR FAILURE	0.50
01.05.2	RMO	Rig move, R/U, excl WOW	ANCHOR HANDLING	391.0	REPOSITION ANCHOR #3 (NEW ANCHOR) TO ALLOW ACCESS TO ANCHOR #4 PENNANT WIRE	2.00



## **APPENDIX D**

### **BIT AND BHA REPORTS**

**Northright-1**

Drilling Co.: DIAMOND OFFSHORE

Rig : OCEAN BOUNTY

RT above GL : 25 mtrs Lat : 37 deg 55 min 57.75 sec  
 GL above MSL : 105 mtrs Long : 149 deg 8 min 58.94 sec

Spud Date: 24.04.2001 Spud Time: 12:26:00 PM

Release Date: 01.05.2001 Release Time: 10:15:00 AM

**BIT RECORD**

DATE	IADC	BIT#	SIZE	SER	MFR	TYPE	JETS	D.IN	D.OUT	MTRG	HRS	SPP	FLW	WOB	RPM	MW	TFA	VEL	HHP	ROP	I	O1	D	L	B	G	O2	R
			"					mtrs	mtrs		o/b	psi	gpm	M.in		ppg	sq.in	mps	/sq"	m/hr								
26.04.2001		1	26.00	KW0659	SMITH	DSJC	3x24.1x12	131	154	24	1.2	0	380	14.9	63	8.7	1.436	26	0.00	19.6	1	1	NO	C	E	I	NO	TD
26.04.2001		2	12.25	4535108	VAREL	ETD 115	3x18	153	250	97	1.8	1100	726	3.0	80	8.7	0.746	95	2.71	53.9	1	1	NO	C	E	I	NO	TD
29.04.2001		3	8.50	4105048	VAREL	L127	3x16	250	391	141	6.1	1150	514	9.1	87	9.2	0.589	85	0.00	23.1	1	1	BU	C	E	I	JD	TD

**Northright-1**

Drill. Co : DIAMOND OFFSHORE

Rig: OCEAN BOUNTY

RT ABOVE MSL (m) 25 m  
 WATER DEPTH (m) 105 m  
 Lat : 37 deg 55 min 57.75 sec  
 Long : 149 deg 8 min 58.94 sec

Spud Date: 24.04.2001  
 Spud Time: 12:26

Release Date: 01.05.2001  
 Release Time: 10:15

**BHA SUMMARY**

#	Length (k-lbs)	Weight blw/Jars (k-lbs)	String Weight (k-lbs)	Pick-Up Weight (k-lbs)	Slack-Off Weight (k-lbs)	Torque Max (ft-lbs)	Torque on bottom (ft-lbs)	Torque off bottom (ft-lbs)	BHA DESCRIPTION
1	62			185		4	4		BIT (26"), HOLE OPENER (36"), NEAR BIT X-O, 3 X 8" DRILL COLLARS" 12 1/4" STABILIZER, 3 X 8" DRILL
2	178		190			5	5		12 1/4" BIT, BIT SUB, 3 X 8" DC, 1 STAB, 2 X 8" DC, 8" JAR, 8" DC, X/O, 12 X HWDP
3	192	33	195			2			BIT, BIT SUB, X/O, MWD, 6 1/2" DC, STAB, 3 X 6 1/2" DC, JARS, 2 X 6 1/2" DC, 12 X HWDP
4	144								BULL NOSE SUB, X/O, C16 MARINE CUTTER, X/O, SPEAR, ADAPTER SUB, GRAPPLE, SWIVEL, 3 X 8" DC,



## **APPENDIX E**

# **CASING AND CEMENTING REPORTS**

**CASING SUMMARY****WELL : Northright-1**

<b>DIAMETER</b>	: 30 "	<b>L.O.T. (Plan / Act.)</b> : 0.00 / 0.00
<b>CSG SHOE MD (Plan / Act.)</b>	: 152.00 / 152.87	<b>F.I.T. (Plan / Act.)</b> : 0.00 / 0.00
<b>CSG SHOE TVD (Plan / Act.)</b>	: 152.00 / 152.80	

DESCRIPTION	DEPTH	LENGTH	CSG ID	WEIGHT	GRADE	THREAD
13 3/8" SHOE JOINT	152.9	5.35	12.42	68.00	L-80	NEW VAM
13 3/8" TO 14" SWEDGE	147.5	0.17				WELDED
14"	147.4	0.50	13.34	106.50		WELDED
14" TO 30" SWEDGE	146.9	0.97				WELDED
30" PUP	145.9	5.05	27.00	310.00	X-52	SF60
30" WELLHEAD HOUSING JOINT	140.8	12.33	27.00	310.00	X-52	SF60

<b>DIAMETER</b>	: 9.5/8 "	<b>L.O.T. (Plan / Act.)</b> : 0.00 / 0.00
<b>CSG SHOE MD (Plan / Act.)</b>	: 242.00 / 246.80	<b>F.I.T. (Plan / Act.)</b> : 12.50 / 10.30
<b>CSG SHOE TVD (Plan / Act.)</b>	: 242.00 / 246.80	

DESCRIPTION	DEPTH	LENGTH	CSG ID	WEIGHT	GRADE	THREAD
13 3/8"	137.8	2.10	12.42	68.00	L-80	WELDED
13 3/8" TO 20" SWEDGE	135.7	0.15				WELDED
18 3/4" WELLHEAD HOUSING	129.0	0.92				
20"	135.6	6.59	18.73	133.00	X-52	WELDED
9 5/8"	222.1	12.04	8.68	47.00	L-80	NEW VAM
9 5/8"	210.1	12.04	8.68	47.00	L-80	NEW VAM
9 5/8"	198.0	12.04	8.68	47.00	L-80	NEW VAM
9 5/8"	186.0	12.04	8.68	47.00	L-80	NEW VAM
9 5/8"	173.9	12.04	8.68	47.00	L-80	NEW VAM
9 5/8"	161.9	12.04	8.68	47.00	L-80	NEW VAM
9 5/8" PUP	140.7	2.35	8.68	47.00	L-80	NEW VAM
9 5/8" PUP	143.7	3.05	8.68	47.00	L-80	NEW VAM
9 5/8" PUP	149.9	6.15	8.68	47.00	L-80	NEW VAM
9 5/8" TO 13 3/8" SWEDGE	138.3	0.47				WELDED
FLOAT JOINT	234.4	12.31	8.68	47.00	L-80	NEW VAM
SHOE JOINT	246.9	12.44	8.68	47.00	L-80	NEW VAM



## EAGLE BAY RESOURCES NL

### Casing, Running and Cementing Report

25.04.2001

**Well Name & Casing Section**

Eagle Bay Resources  
Drilling Contractor & Rig  
Cement Company & Service Rep.

**NORTHRIGHT - 1**

Jackson/Wilson  
Ocean Bounty  
Halliburton - Rod Stares

<b>Basic Data</b>		<b>Mud Data</b>		<b>Hole &amp; Prev Casing Data</b>	
Casing Size	30"x13.3/8"	Type	PHG	Casing Size	n/a
Hole Size	36"	s.g.	1.03sg	Hole OD	
Hole Calipered	no	Preflush		M. Depth	
Caliper Tool used	n/a	seawater	300 bbl	Casing ID	
Est BHT degree.C				Shoe Depth	

<b>Cement. Volumes</b>		<b>Displacement</b>		<b>Pumping Pressures</b>	
Annular Vol.	46.4 bbl	Calc. Disp	16.7 bbl	Max. Pumping Press.	530psi
% Excess	L:% T: 200%	Cmt Unit Disp	16.7 bbl	Sheared Plug with	n/a
Shoe Track	2.5 bbl	Rig Displacement	0	Bumped Plug with	n/a
Rat Hole	0 bbl	Actual Strokes	0 str	Tested Casing with	n/a
Total Volume	134 bbl	Liner size / bbl/stroke	6.5" / 0.1193		

**Cement Data**

<b>Lead Slurry</b>		<b>Tail Slurry</b>		<b>Spacer(s) Data</b>		<b>Displacement Data</b>	
Cement Type	G.	Cement	G.	<b>Ahead</b>		Mix Rate	Lead /Tail 5.0 bpm
Slurry Volume	bbls	Slurry Vol.	134 bbls	Type	seawater	Displacement Rate	8.5
Mix Water	0 bbls	Mix Water	S/W 80 bbls	Volume	75 bbl	Plug Bumped (Y/N)	n/a
<b>Liq. Additive</b>		<b>Liq. Additive</b>		<b>Behind</b>		Disp. Over Calc.	30bbl
Econ	0 gal/bbl	NF-1	0 gal/sk	Type	seawater	Bump Press, psi	0 psi
HR6L	0 gal/bbl	HR6L	0 gal/bbl	<b>Centralizers</b>		Disp. by Rig/C.U	C.U
Dry Additive	CaCl 1%BWOC	Dry Additive	CaCl 1 %BWOC	Type	seawater	Make -	
Plan Wt.	(15.9ppg)	Plan Wt.	1.91 sg (15.8ppg)	Type, Number & Spacing/n/a			
Actual Wt.	(15.9ppg)	Actual Wt.	1.91 sg (15.8ppg)	<b>Scratchers</b>		Make -	
Yield	cuft/sk	Yield	1.16 cuft/sk	Type, Number & Spacing		n/a	
Total sacks	sacks	Total	673 sacks				

**Casing Data**

Total Depth - Rt-metres	154.0			
Off Bottom (Rat Hole)	1.0			
Casing Shoe depth (mRT)	153.0			
W/Depth (m) = 105.5	RT-SL = 25	stick-up (top WH above ML) = 1.5	RT to WH Datum	129.0
<b>Landing Collar (make &amp; type)</b>				
1x 13.3/8" x 68ppf L-80 shoe jnt welded to item 2	5.35			
1x 13.3/8" x 20" swedge welded	0.17			
1x 20"x 30" swedge welded to 30" joint.	0.97			
1x 30" upper joint 310ppf X-52 with SF60 pin up.	5.05			
1x 30" D/Quip well head housing x SF60 box down. 310ppf X-52	12.33			
<b>Total string length:</b>	<b>23.9</b>			
Landing String: Drill Quip 30" running tool with 5" S135 DP + SES cement head	140.0			

**Casing Notes**

Conductor string. 30" D/Q well head housing crossed over to 13-3/8" casing shoe.

**Detailed Casing and Cementing Report**

Ran casing string and PGB with no problems. Hole conditions were good - no significant drag. PGB slope indicator = 0.75deg when first landed. Top of 30" set 1.5m above mud line.

Circulated 75 bbl SW with rig pumps @95spm. Howco pressure tested lines to 1000psi .

**Pump/mix LEAD SLURRY Start Time: 22:30hrs 19/11/99.**

Mixed & pumped LEAD slurry - pump time = 30 min

Details: 673 sacks 'G' cement mixed with 80 bbls SW (additives = 1% CaCl)

Slurry volume = 134 bbls, density= 1.91 sg, includes 200% open hole excess.

Average Pumping rate = 5.5 bbl/min, maximum pumping pressure = 600 psi

**Total Cement pumping time = < 0.5 hour;**

**Finish Cement Displacement 10:00hrs 26/4/01**

Displaced 17bbls w/ Halliburton. Total displacement time = ~3 min.

Good returns through job.

Other : refer to Casing Tally Sheet and Halliburton cementers report.

**EAGLE BAY RESOURCES NL**  
Casing, Running and Cementing Report

27.04.2001

**Well Name & Casing Section**

Eagle Bay Resources  
Drilling Contractor & Rig  
Cement Company & Service Rep.

**NORTHRIGHT-1**

Jackson/Wilson  
Ocean Bounty  
Halliburton - Rod Stares

<b>Basic Data</b>		<b>Mud Data</b>		<b>Hole &amp; Prev Casing Data</b>	
Casing Size	9-5/8"	Type	ph gel	Casing Size	13.3/8"
Hole Size	12.25	s.g.	1.30	Hole OD	16"
Hole Calipered	no	Preflush	see spacer	M. Depth	1450m
Caliper Tool used	n/a	seawater	10 bbl	Casing ID	12.5"
Est BHST deg.C				Shoe Depth	m

<b>Cement Volumes</b>		<b>Displacement</b>		<b>Pumping Pressures</b>	
Annular Vol.	54 bbl	Calc. Disp	31 bbl	Max. Pumping Press.	650 psi 5 bpm
% Excess L: % T: 100%		Cmt Unit Disp	22 bbl	Sheared Bottom Plug with	1100 psi
Shoe Track	2.9 bbl	Rig Displacement	0 bbl	Bumped Top Plug with	2200 psi 5 bpm
Rat Hole	0 bbl	Actual Strokes	0 str	Tested Casing with	2200 psi
Total Volume	71 bbl	Liner size / bbl/stroke	6" / 0.1018		

**Cement Data**

<b>Lead Slurry</b>		<b>Tail Slurry</b>		<b>Spacer(s) Data</b>		<b>Displacement Data</b>	
Cement Type	G.	Cement	G.	Ahead		Mix Rate Lead /Tail	5.0 bpm
Slurry Volume	bbl	Slurry Vol.	70 bbl	Type	Seawater	Displacement Rate	5 bpm
Mix Water	bbl	Mix Water	S/W 72 bbl	Volume	80 bbls	Plug Bumped (Y/N)	Yes
Liq. Additive		Liq. Additive		Behind		Disp. Over Calc.	
CFR3L	gal/bbl	NF-1	gal/bbl	Type	Seawater	Bump Press, psi	2200 psi
SCR-100L	gal/bbl	CFR3L	gal/bbl	Disp. by Rig/C.U		CU	
Dry Additive		SCR-100L	gal/bbl	<b>Centralizers</b>		Make -	Bow Spring
Bentonite 19x 110#sx -		Halad-414L	gal/bbl	Type, No. & Spacing -		Weatherford bow springs (3)	
Plan Wt.	(12.5ppg)	Plan Wt.	1.90 sg (15.8ppg)	STR-4:		Joints #1 (shoe), #2, #3, (only 3 stop rings)	
Actual Wt.	(12.5ppg)	Actual Wt.	1.90 sg (15.8ppg)	<b>Scratchers</b>		Make -	
Yield	cuft/sk	Yield	1.16 cuft/sk	Type, Number & Spacing		n/a	
Total sacks	sacks	Total	340 sacks				

**Casing Data**

<b>Total Depth - Rt-metres</b>	<b>250.0</b>
Off Bottom (Rat Hole)	3.2
<b>Casing Shoe depth (mRT)</b>	<b>246.9</b>
W/Depth (m) = 105.5 RT-SL = 25 stick-up (top WH above ML) = 2 <b>RT to WH Datum</b>	<b>128.5</b>
<b>Landing Collar (make &amp; type)</b>	
1x 9.5/8" x 47ppf L80 shoe jnt; b/locked w/ bow spring centraliser & pip tag	Halliburton float collar. 12.4
1x 9.5/8" x 47ppf L80 intermediate jnt; b/locked w/ bow spring centraliser.	Halliburton float collar. 12.3
6x 9.5/8" x 47ppf L80 Vam Intermediate Joints	72.2
1x 9.5/8" x 47ppf L80 Vam pup joint	6.2
1x 9.5/8" x 47ppf L80 Vam pup joint	3.1
1x 9.5/8" x 47ppf L80 Vam pup joint (Welded to Swedge)	2.4
1x 9.5/8" to 13 3/8" Swedge (Welded)	0.5
1x 13 3/8" pup	2.1
1x 13 3/8" to 20" Swedge (Welded)	0.2
1x 20" Pup	6.6
1x Drilquip 18 3/4" Wellhead Housing	0.9
<b>Total string length:</b>	<b>118.8</b>
Landing String:	Drilquip 18 3/4" Wellhead running tool + 3x joints 5" DP + 12x joints 5" HWDP + Deepsea Express cement head 140.0

**Casing Notes**

Intermediate casing consisted of 9 5/8" casing crossed over to 20" with an 18 3/4" wellhead housing

**Detailed Casing and Cementing Report**

Ran 9.5/8" casing string. Hole conditions very good. No problems whilst running casing. Latched with 30K down and tested with 50K up.

Circulated 2x hole volume with rig pumps @80spm. Pumped 5bbl seawater with fluoro dye.

Howco pressure tested lines to 3000psi. Pumped 5bbl seawater with fluoro dye. Dropped dart - sheared btm plug @1100psi.

**Pump/mix LEAD SLURRY** Start Time: ~04:39 27/04/01.

Mixed & pumped TAIL slurry - pump time = 15 min

Details: ~340 sacks neat 'G' cement mixed with 72 bbls SW (additives = 1 Gal DAIR 3000L)

Slurry volume = 70 bbls, density= 1.90 sg, includes 100% OH excess.

Average Pumping rate = 5 bbl/min, maximum pumping pressure = 650 psi.

**Total Cement pumping time = ~ 43 Minutes.**

**Cement Displacement:** ~04:59hrs 27/04/01 Drop dart with Dowell Deepsea Express - saw top plug shear at 2200psi.

Displaced 22bbls w/ Howco **Total displacement time = ~6 minutes.**

Returns observed with the ROV.

Tested casing to 2200psi - ok.

Other : refer to Casing Tally Sheet and Halliburton cementers report.

**EAGLE BAY RESOURCES NL**  
Casing, Running and Cementing Report

29.04.2001

**Well Name & Casing Section**

Eagle Bay Resources  
Drilling Contractor & Rig  
Cement Company & Service Rep.

**NORTHRIGHT-1**

Jackson/Wilson  
Ocean Bounty  
Halliburton - Rod Stares

<b>Basic Data</b>		<b>Mud Data</b>		<b>Hole &amp; Prev Casing Data</b>	
Casing Size	P&A	Type	KCI PHPA	Casing Size	9 5/8"
Hole Size	8.5"	s.g.	1.10	Hole OD	8.5"
Hole Calipered	no	Preflush		M. Depth	391 m
Caliper Tool used	n/a	seawater	8 bbls	Casing ID	8.68"
Est BHST deg.C				Shoe Depth	246.8 m

<b>Cement Volumes - Plug # 1</b>		<b>Displacement - Plug # 1</b>		<b>Pumping Pressures - Plug # 1</b>	
O/H Volume	20.9 bbl	Calc. Disp	9.5 bbl	Max. Pumping Press.	375 psi      4.7 bpm
% Excess	L: %    T: 50%	Cmt Unit Disp	9.5 bbl	Sheared Bottom Plug with	- psi
C/H Volume	8.4 bbl	Rig Displacement	0 bbl	Bumped Top Plug with	- psi      bpm
Rat Hole	0 bbl	Actual Strokes	0 str	Tested Casing with	- psi
Total Volume	40 bbl	Liner size / bbl/stroke	6" / 0.1018		

<b>Cement Volumes - Plug # 2</b>		<b>Displacement - Plug # 2</b>		<b>Pumping Pressures - Plug # 2</b>	
O/H Volume	0 bbl	Calc. Disp	9 bbl	Max. Pumping Press.	375 psi      5 bpm
% Excess	L: %    T: 50%	Cmt Unit Disp	9 bbl	Sheared Bottom Plug with	- psi
C/H Volume	15 bbl	Rig Displacement	0 bbl	Bumped Top Plug with	- psi      5 bpm
Rat Hole	0 bbl	Actual Strokes	0 str	Tested Casing with	- psi
Total Volume	15 bbl	Liner size / bbl/stroke	6" / 0.1018		

**Cement Data**

<b>Plug # 1</b>		<b>Plug # 2</b>		<b>Spacer(s) Data</b>		<b>Displacement Data</b>	
Cement Type	G.	Cement	G.	<b>Ahead</b>		Mix Rate Lead /Tai	5.0 bpm
Slurry Volume	38.8 bbl	Slurry Vol.	15 bbl	Type	Seawater	Displacement Rate	5 bpm
Mix Water	23 bbl	Mix Water	9 bbl	Volume	80 bbls	Plug Bumped (Y/N)	-
<b>Liq. Additive</b>		<b>Liq. Additive</b>		<b>Behind</b>		Disp. Over Calc.	
CFR3L	gal/bbl	NF-1	gal/bbl	Type	Seawater	Bump Press, psi	-
SCR-100L	gal/bbl	CFR3L	gal/bbl	<b>Centralizers</b>		Disp. by Rig/C.U	CU
<b>Dry Additive</b>		SCR-100L	gal/bbl	Type, No. & Spacing	-	Make -	N/A
Bentonite 19x 110#sx -		Halad-414L	gal/bbl	STR-4:	N/A	Make -	n/a
Plan Wt.	1.90sg (15.8ppg)	Plan Wt.	1.90 sg (15.8ppg)	<b>Scratchers</b>			
Actual Wt.	1.90sg (15.8ppg)	Actual Wt.	1.90 sg (15.8ppg)	Type, Number & Spacing			
Yield	1.16 cuft/sk	Yield	1.16 cuft/sk				
Total sacks	187 sacks	Total	72 sacks				

**Casing Data**

<b>Total Depth - Rt-metres</b>	<b>250.0</b>
Off Bottom (Rat Hole)	3.2
<b>Casing Shoe depth (mRT)</b>	<b>246.9</b>
W/Depth (m) = 105.5      RT-SL = 25      stick-up (top WH above ML) = 2 <b>RT to WH Datum</b>	<b>128.5</b>

**Casing Notes****Detailed Casing and Cementing Report**

<p>RIH w/ cut-off cement stinger on 18 jts of 3 1/2" DP, on 5" D/P Circulated bottoms-up with rig pumps Howco pressure tested lines to 1000psi . Pumped 5bbl seawater. <b>Pump/mix PLUG # 1 SLURRY Start Time: ~07:46 29/04/01.</b> Mixed &amp; pumped Plug #1 Tail slurry - pump time = 14 min Details: 187 sacks neat 'G' cement mixed with 23 bbls SW (additives = 1 Gal DAIR 3000L) Slurry volume = 38.8 bbls, density= 1.90 sg, includes 50% OH excess. Average Pumping rate = 5 bbl/min, maximum pumping pressure = 375 psi. <b>Total Cement pumping time = ~ 30 Minutes.</b> <b>Cement Displacement: ~08:00hrs 29/04/01</b> Displaced 1.2 bbls of seawater and 8.9 bbls of mud w/ Howco <b>Total displacement time = ~2 minutes.</b> Other : refer to Halliburton cementers report.</p> <p><b>WOC</b> RIH w/ cut-off cement stinger on 3 1/2" DP, on 5" D/P Tag Plug # 1 at 226 m with 5K Circulated bottoms-up with rig pumps Howco pressure tested lines to 1000psi . Pumped 5bbl seawater. <b>Pump/mix PLUG # 2 SLURRY Start Time: ~13:52 29/04/01.</b> Mixed &amp; pumped Plug #2 Tail slurry - pump time = 5 min Details: 72 sacks neat 'G' cement mixed with 9 bbls SW (additives = 1 Gal DAIR 3000L) Slurry volume = 15 bbls, density= 1.90 sg. Average Pumping rate = 5 bbl/min, maximum pumping pressure = 375 psi. <b>Total Cement pumping time = ~ 23 Minutes.</b> <b>Cement Displacement: ~08:00hrs 29/04/01</b> Displaced 9 bbls of seawater w/ Howco <b>Total displacement time = ~2 minutes.</b> Other : refer to Halliburton cementers report.</p>
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**APPENDIX F**

**DRILLING FLUID REPORT**



- Drilling Fluids End of Well Report -

Operator : Eagle Bay  
 Well Name : Northright-1  
 Block No : VIC/P41

Country:	Australia	Mud Engineers:	S. Webster G. Clarke
Well Description:	Exploration		
Contractor:	DOGC		
Rig:	Ocean Bounty		
Well Start Date:	24 <sup>th</sup> April 2001		
Well Final Date:	1 <sup>st</sup> May 2001	Mud Co-ordinator:	P. Tomkins
Well Spud Date:	26 <sup>th</sup> April 2001	RKB to Seabed:	130.5 m
Well TD Date:	29 <sup>th</sup> April 2001	Well TD:	391 mRT
Well Days:	8	Total Meters Drilled:	260.5 m

Hole Size	Total depth	Casing size	Casing depth	Mud Type	Mud weight	Interval Problems	Meters drilled	Days	Cost US \$
36"	154	30"	153	SW/Sweeps	1.03	None	490	0.5	4,112.32
12 1/4"	250	9 5/8"	146.8	SW/Sweeps	1.03	None	55.7	0.5	5,389.62
8 1/2"	391	-	-	KCI/PHPA	1.10	None	661.3	2	25,858.63
P&A	-	-	-					1	

	Days	Day Rate	Total Cost		=	
Engineer 1	8	670.74	5,365.92	Well Engineering Cost	=	\$10,731.84
Engineer 2	8	670.74	5,365.92	Well Material Cost	=	\$35,360.57
				Total Well Cost	=	\$46,092.41



**DRILLING FLUIDS RECAP  
NORTHRIGHT-1**



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**DRILLING FLUIDS RECAP  
NORTHRIGHT-1**



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**1 WELL SUMMARY**

Interval	Hole Depth (m)	Casing Size (m)	Depth (m)	Mud Wt. (sg)	Mud Type
36" Hole	154	30	153	1.04	Seawater+Gel Sweeps
12 1/4" Hole	250	9 5/8"	146.78	1.04	Seawater+Gel/Guar Sweeps
8 1/2" Hole	391		391	1.10	KCL/PHPA

Interval	Days	Metres Drilled	Fluid Volume Req.	Fluid Cost	Fluid Volume Used	bbf/m	Cost/m	Cost/bbl
36" Hole	.5	23.5	1200	4,112.32	750	31.91	175.00	3.43
12 1/4" Hole	.5	96	1493 *	5,389.62	1343	14.00	56.14	5.17
8 1/2" Hole	2	141	1115**	25,858.63	1115	7.91	183.39	26.80
P & A	1							
<b>Totals / Averages</b>		260.5	3208	35,360.57	3208	12.31	135.74	11.03

\*includes 450 bbl from 36"; \*\* Includes 150 bbl from 12 1/4"



## DRILLING FLUIDS RECAP NORTHRIGHT-1



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### 2 INTERVAL DISCUSSION

#### 2.1 36" Interval 130.5 - 154m

##### 2.1.1 Drilling Summary

This section was drilled riserless to 154m. The open hole was displaced with high viscosity PHG and the 30" casing was run without any problems.

##### 2.1.2 Fluid Selection

Seawater with Prehydrated Bentonite sweeps was used in this section. The PHB was pumped continuously while drilling the first 10m. The formation was firmer than anticipated and 200 bbl of PHB was consumed. After the first 10 m were drilled the regime changed to seawater with PHB sweeps per stand.

At section TD the hole was filled with PHB to support the borehole while running the 30" casing.

##### 2.1.3 Fluid Parameters

Property	Programmed	Actual
Mud Weight	<1.08	1.04
6 RPM	>40	>40
PH	8.5 - 9.5	9.0

##### 2.1.4 Solids Control

Returns were to the seabed

##### 2.1.5 Lost Circulation

No losses were observed

##### 2.1.6 Hole Gauge

No logs were run

##### 2.1.7 Fluid Cost

Interval cost was \$4,112.32 for 1200 bbl built. This compares favorably to the programmed cost of U\$4,424.32. Of this 450 bbl was salvaged for use in the 12 ¼" section. The cost per meter was \$175.00, cost per bbl was \$3.43 and the bbl/m consumed was 31.91.

##### 2.1.8 Recommendations

The PHB mud was successfully used in this section and is recommended for other wells in this location.





## DRILLING FLUIDS RECAP NORTHRIGHT-1



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### 2.2 12 1/4" Interval 154 - 250m

#### 2.2.1 Drilling Summary

This section was drilled riserless with the returns to the sea bed.

#### 2.2.2 Fluid Selection

This section was drilled using seawater and alternating 50 bbl Guar Gum and 50 bbl PHB sweeps . At section TD a 200 bbl Guar pill was swept around the hole followed by a 1.5X open hole PHG displacement followed by a 100 bbl KCl/Pac/PHB pill at 1.15 SG spotted on bottom to provide inhibition in the Lakes Entrance Fm.

#### 2.2.3 Fluid Parameters

Property	Programmed	Actual
Mud wt sg	<1.08	1.04
6 rpm	>40	>40
Fluid Loss	No control	No control

#### 2.2.4 Solids Control

Returns were to the seabed

#### 2.2.5 Lost Circulation

Some minor losses were observed via the ROV. No attempt was made to cure these losses. It was felt that use of LCM material in the TD displacement pill was not warranted.

#### 2.2.6 Hole Gauge

No logs were run.

#### 2.2.7 Fluid Cost

Interval cost was \$5,389.62 for 1493 bbls. This compares to the programmed cost of \$6,973.67 for 1239 bbl. Of this volume, 150 bbl was salvaged for use in the 8 1/2" section. The cost per meter was \$56.14, cost per bbl was \$5.17 and the bbl/m was 14.0.

#### 2.2.8 Recommendations

This mud type is recommended for other wells in this vicinity.

The use of a weighted Inhibited KCl/ PAC pill for TD displacement after a wiper trip was very worthwhile. The 9 5/8" casing was run easily with no problems indicating the hole was at least gauge, including the Lakes Entrance claystone.



## DRILLING FLUIDS RECAP NORTHRIGHT-1



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### 2.3 8 1/2" Interval 250 - 391m

#### 2.3.1 Drilling Summary

This section was drilled in one 8 hour bit run. At TD of 391m, bottoms up was circulated before pulling out of the hole for P & A. No logs were run.

#### 2.3.2 Fluid Selection

An inhibited mud consisting of 5% KCl, 1.5 ppb PHPA and 1.5 ppb Drispac was utilised. This was weighted up to 1.10 sg to counter prognosed formation pressure. The drilling regime and the mud type proved to be successful giving good hole cleaning and inhibition. No cavings were noted at the shakers indicating the mud weight was adequate for the formation pressure. The cuttings were well encapsulated and dry when broken indicating adequate inhibition by the potassium and the PHPA.

#### Fluid Parameters

Property	Programmed	Actual
Mud Weight	1.10 – 1.15 SG	1.10 SG
6 rpm	8 – 12	7 – 8
API Fluid Loss	<5.0mls	5.1 – 6.3 mls
KCl Concentration	5%	4.5 – 5.0%

#### 2.3.3 Solids Control

	Shaker #1	Shaker #2	Shaker #3	Shaker #4
Scalping screen	10 mesh	10 mesh	10 mesh	10 mesh
At start of section	84 mesh	84 mesh	52 mesh	52 mesh
At end of section	105 mesh	84 mesh	105 mesh	52 mesh
Typically	105 mesh	84 mesh	105 mesh	52 mesh

#### 2.3.4 Lost Circulation

Minor seepage losses occurred during this section. A regime of adding Circal and Checkloss on an hourly basis was sufficient to cure losses in hole already drilled. A 120 bbl LCM pill was mixed up as a standby pill but was not pumped. The total of all seepage losses was 31 bbl.

#### 2.3.5 Hole Gauge

No logs were run.

#### 2.3.6 Fluid Cost

Interval cost was \$25,858.63 for 1115 bbls. This compares to the programmed cost of \$18,885.28 for 890 bbl which did not include contingency volume for the standby LCM pill. The cost per meter was \$183.39, cost per bbl was \$26.80 and the bbl/m was 7.90

#### 2.3.7 Recommendations

This mud type and LCM addition regime are recommended for other wells drilling the Lakes Entrance and Latrobe formations. However, if a longer section of Lakes Entrance was to be drilled the hole would benefit from the extra inhibition that addition of Aquacol glycol would give. I.e. use of an Aquadrill mud. The timed addition of Circal and Checkloss LCM material while drilling the Latrobe is an effective method of keeping downhole seepage losses at a minimum while maintaining ROP.



**DRILLING FLUIDS RECAP  
NORTHRIGHT-1**



INTEQ

**3 INTERVAL MATERIAL CONSUMPTION****3.1 36" HOLE**

ITEM	QUANTITY	UNIT SIZE	UNIT COST	COST
CALC. CHLORIDE	14	25 kg bag	17.12	239.68
CAUSTIC SODA	3	25 kg pail	26.01	78.03
MIL-GEL	14.54	1 MT bulk	258.26	3755.10
SODA ASH	3	25 kg bag	13.17	39.51
			<b>Total Cost :</b>	<b>US \$4,112.32</b>

**3.2 12 1/4" HOLE**

ITEM	QUANTITY	UNIT SIZE	UNIT COST	COST
CAUSTIC SODA	1	25 kg pail	26.01	26.01
DRISPAC SL	1	50 lb sack	122.01	122.01
DRISPAC R	2	50 lb sack	122.01	244.02
GLUTARALDEHYDE	2	5 gal pail	74.36	148.72
KCL	1	1 MT bulk	353.82	353.82
MILBAR	3.18	1 MT bulk	161.78	514.46
MIL-GEL	7.5	1 MT bulk	258.26	1936.95
MIL-GUAR	29	25 kg sack	70.47	2043.63
			<b>Total Cost :</b>	<b>US \$5,389.62</b>

**3.3 8 1/2" HOLE**

ITEM	QUANTITY	UNIT SIZE	UNIT COST	COST
Alcomer 120	19	25 kg sack	105.59	2,006.21
CHEK-LOSS	60	25 lb sack	42.27	2,536.20
CIRCAL 60/16	48	25 kg sack	18.62	893.76
CIRCAL Y	59	25 kg sack	21.09	1,244.31
CITRIC ACID	3	25kg sack	54.01	162.03
DRISPAC R	12	50 lb sack	122.01	1,464.12
DRISPAC SL	17	50 lb sack	122.01	2,074.17
FLOWZAN	17	25 kg sack	308.58	5,245.86
GLUTERALDEHYDE	2	5 gal pail	74.36	148.72
KWIKSEAL F	30	40 lb sack	37.52	1,125.60
KWIKSEAL M	45	40 lb sack	37.52	1,688.4
MIL-BAR	25.23	1 MT bulk	161.78	4,081.71
NEW-DRILL LIQUID	7	20 liter pail	48.77	243.85
POTASSIUM CHLORIDE	8	1 MT bulk bag	353.82	2,830.56
POTASSIUM HYDROXIDE	2	25 kg bucket	36.81	73.62
SODA ASH	3	25 kg sack	13.17	39.51
			<b>Total Cost :</b>	<b>US \$25,858.63</b>



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## DRILLING FLUIDS RECAP NORTHRIGHT-1



### 4 INTERVAL VOLUME SUMMARY

#### 4.1 36" HOLE

All volumes in bbl

Mud Made		Mud Lost	
Water added:	1165	Mud dumped:	
Brine added:		Mud lost on surface:	750
Oil added:		Mud lost down hole:	
Whole mud added:		Mud lost to solids control:	
Chemicals added:	35	Other losses:	
Barite added:		Left in hole:	
Mud received:		Mud returned:	450*
Other gains:		Behind casing:	
Total volume additions:	1200	Total volume lost:	750 *
Volume made per m of hole:		52.17	
Volume lost per m of hole:		32.6	

\* 450 bbls transferred to 12.25" hole.

#### 4.2 12 1/4" HOLE

All volumes in bbl

Mud Made		Mud Lost	
Water added:	1020	Mud dumped:	440
Brine added:		Mud lost on surface:	903
Oil added:		Mud lost down hole:	
Whole mud added:	450*	Mud lost to solids control:	
Chemicals added:	18	Other losses:	
Barite added:	5	Left in hole:	
Mud received:		Mud returned:	150**
Other gains:		Behind casing:	
Total volume additions:	1493	Total volume lost:	1343
Volume made per m of hole:		15.55	
Volume lost per m of hole:		13.99	

\*450 bbls transferred from 36" hole

\*\*150 bbl transferred to 8 1/2" hole.

#### 4.3 8 1/2" HOLE

All volumes in bbl

Mud Made		Mud Lost	
Water added:	890	Mud dumped:	1076
Brine added:		Mud lost on surface:	
Oil added:		Mud lost down hole:	31
Whole mud added:	150	Mud lost to solids control:	8
Chemicals added:	38	Other losses:	
Barite added:	37	Left in hole:	
Mud received:		Mud returned:	
Other gains:		Behind casing:	
Total volume additions:	1115	Total volume lost:	1115
Volume made per m of hole:		7.91	
Volume lost per m of hole:		7.91	



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## DRILLING FLUIDS RECAP NORTHRIGHT-1



### 5 DAILY FLUID PROPERTIES SUMMARY

#### 5.1 36" and 12 1/4" Riserless Intervals

Report Date	Depth MD m	FL Temp. C	Test Temp. C	Mud Wt. sg	Funnel Visc. sec/qt	PV cP	YP lbs/100ft <sup>2</sup>	Gels 10 sec lbs/100ft <sup>2</sup>	Gels 10 min lbs/100ft <sup>2</sup>	Gels 30 min lbs/100ft <sup>2</sup>	pH	Chloride Mg/l
26/04/01			49	1.04	200	12	58				9.5	500

#### 5.2 8 1/2" Interval

Report Date	Depth MD m	Mud Wt. sg	PV cp	YP lbs/100ft <sup>2</sup>	Gels 10 sec lbs/100ft <sup>2</sup>	Gels 10 min lbs/100ft <sup>2</sup>	Gels 30 min lbs/100ft <sup>2</sup>	API Filtr. cc	Cake API	Solids crtd Pct.	Water Pct.	Sand Pct.	MBT ppb	pH	Alk Pm ml	Alk Pf ml	Alk Mf ml	Chloride Mg/l	Ca++ mg/l	ASG	LGS ppb
27 April	250	1.10	15	26	9	10		6.0	1				5.00	7.5	0	0	0.2	27000			
28 April	250	1.10	17	26	7	8		6.3	1	2.63	96		5.00	9		0.08	0.18	23500	60	3.85	5.25
28 April	320	1.10	17	25	8	9		5.6	1	1.95	95	.5	5	9.5	.15	.05	.05	31000	280	3.1	20.1
29 April	391	1.10	18	24	5	6		5.1	1	3.89	94.5	.6	5.00	9.5	0.4	0.12	0.38	28000	320	2.92	28.38



**DRILLING FLUIDS RECAP  
NORTHRIGHT-1**



INTEQ

**6 MUD DISCHARGE SUMMARY**

INTERVAL		30"	12 1/4"	8 1/2"	TOTAL
<b>CUTTINGS DISCHARGED - MT</b>		<b>27.7</b>	<b>19.0</b>	<b>13.2</b>	<b>59.9</b>
VOLUME MIXED bbl		1200	1043	965	3208
VOLUME LOST DOWNHOLE bbl				31	31
VOLUME DISCHARGED bbl		750	1343	1084	3177
DEPTH - FROM (m)		130.5	154	250	
TO (m)		154	250	391	
INTERVAL LENGTH (m)		23.5	96	141	
MUD TYPE		PHB sweeps	PHB/Guar sweeps	KCL/PHPA	
<b>Product</b>					
	<b>Unit</b>	<b>30" &amp; 12 1/4"</b>	<b>8 1/2"</b>	<b>Total</b>	<b>MT</b>
Alcomer 120	25 kg		19	19	0.48
Chekloss	11.3 kg		60	60	0.68
Circal 60/16	25 kg		48	48	1.20
Calcium Chloride	25 kg	14		14	0.35
Caustic Soda	25 kg	4		4	0.10
Circal Y	25 kg		59	59	1.48
Citric Acid	25 kg		3	3	0.08
Drispac R	22.7 kg	2	12	14	3.18
Drispac SL	22.7 kg	1	17	18	5.15
Flowzan	25 kg			17	0.43
Gluteraldehyde	19.0 kg	2	2	4	0.08
Kwikseal F	18.0 kg		30	30	0.54
Kwikseal M	18.0 kg		45	45	0.81
Mil-Bar	1000 kg	3.2	25.2	28.4	28.4
Mil-Gel	1000 kg	19.6	2.4	22.0	22.0
Milguar	25 kg	29		29	0.73
Newdrill Liquid	22 kg		5	5	0.11
Potassium Chloride	1000 kg	1	8	9	9.0
Potassium Hydroxide	25 kg		2	2	0.05
Soda Ash	25 kg	3	3	6	0.15

Total Cuttings Discharge – 59.9 MT

Total Material Discharge – 75.8 MT



INTEQ

DRILLING FLUIDS RECAP  
NORTHRIGHT-1



7 MATERIAL RECONCILIATION

Product Code	Product	Unit	Unit	Start	End	Received	Backlog	Material Used per Section			P.A.	Quantity	Final Inventory		Actual	Cost	Variance	Total	Total		
								100337	027	027			10-Mar	10-Mar						Final	Initial
	Aluminum 1201 P	25 lb	109.50	82								63		63	63					2,008.21	
	Asphalt	200 lb	853.75																		
	Asphalt B	200 lb	837.96	11																	
	Benton	25 lb	17.52	20																	
	Caustic (100%)	25 lb	38.91	22																	
	Caustic (200%)	25 lb	25.01	48																	
	Caustic Soda	25 lb	43.27	60																	
	Cellulose	25 lb	18.15																		
	Clay 1000	25 lb	58.02	78																	
	Clay 60/16	25 lb	21.09	124																	
	Clay Y	25 lb	24.01	40																	
	Clay Acid	25 lb	54.01	40																	
	Drilling Fluid	50 lb	172.00	25																	
	Drilling Oil	50 lb	122.01	58																	
	Fluorine	25 lb	308.56	35																	
	Guar Hydrolysis 2%	18.5 lb	74.30	22																	
	Guar Hydrolysis 25%	200 lb	788.88																		
	HCl Brine	1 m	953.82	12																	
	HCl Brine	1 m	16.02																		
	Hydrogel C	40 lb	37.57	30																	
	Hydrogel F	40 lb	37.52	30																	
	Hydrogel H	40 lb	37.53	50																	
	LiBr	18.5 lb	80.85	28																	
	Urea	18.5 lb	5.84																		
	MS-200 Bulk	1 m	161.78	67.88																	
	MS-200 2x	25 lb	7.70																		
	MS-200	200 lb	272.01																		
	Miscel	25 lb	52.03	30																	
	MS-Gel Bulk	1 m	256.28	25.88																	
	MS-Gel	25 lb	78.47	58																	
	MS-Gel L	25 lb	48.77	7																	
	MS-Gel Plus	25 lb	80.58																		
	MS-Gel L	18.5 lb	31.00																		
	MS-Gel	200 lb	230.52																		
	SAP	25 lb	84.40	40																	
	Soda Ash	25 lb	13.17	20																	
	Sodium Bicarbonate	25 lb	13.81	40																	
<p>The "Total Quantity" for the product and used for the "Total Inventory" for the current well. Accuracy of "Variance" by adding or subtracting the appropriate adjustment. Do not forget to add or subtract the Miscel Report as well.</p>																					
<p>TOTAL WELL COST \$ 51,881.7</p>																					



**APPENDIX G**

**FEWD/MWD REPORT**



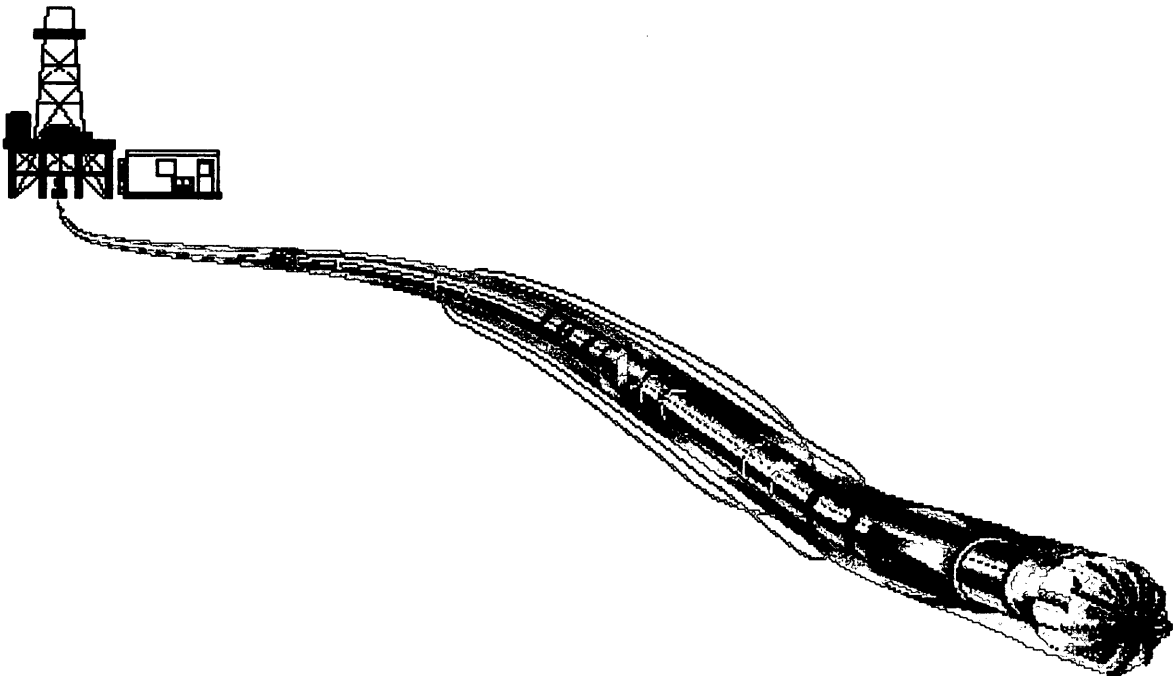
Schlumberger



# **Eagle Bay Resources N.L.**

## **Northright1**

### **MWD – LWD End of Well Report**

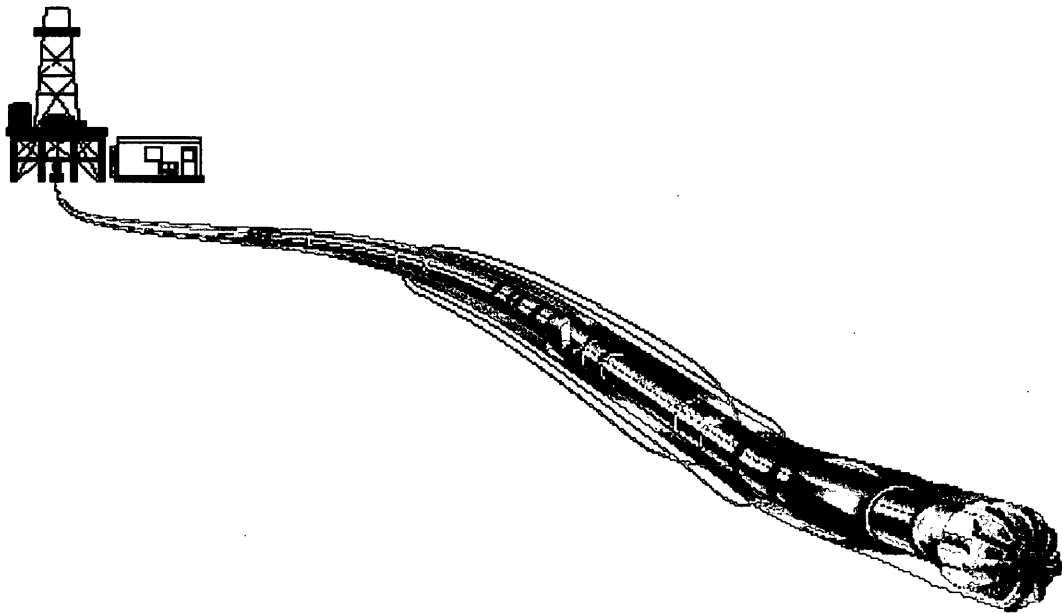




## End of Well Report for Northright1

### Contents

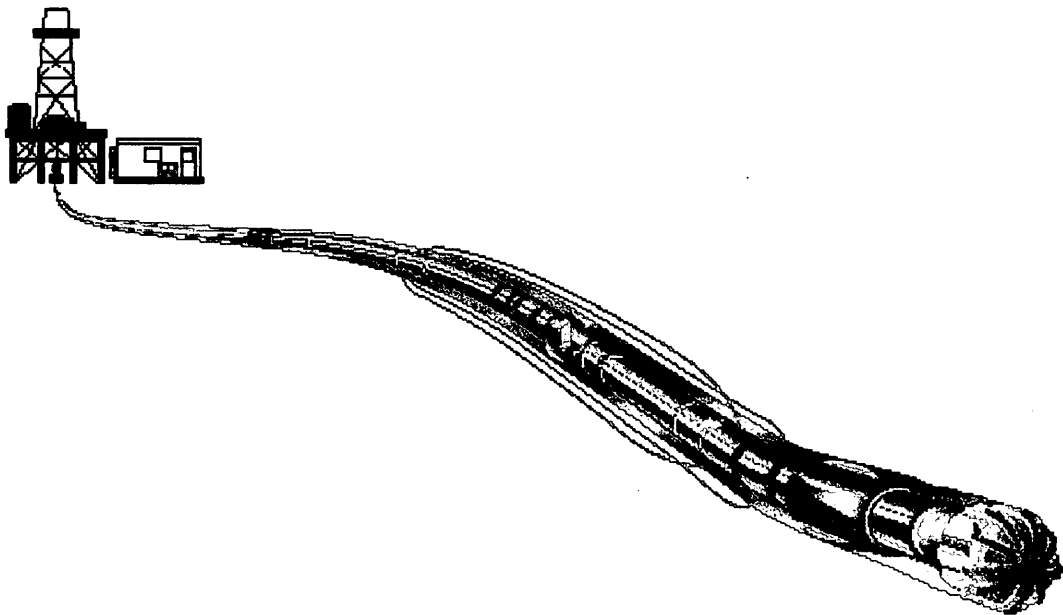
- Logging Overview
- General Information
- Geomagnetic and Survey Reference Criteria
- Survey Report
- Bit Run Summary



Schlumberger



## Logging Overview





## Logging Overview

### 8 1/2" Section:

Schlumberger Drilling and Measurements provided MWD and LWD services using the PowerPulse and ARC6 tools in the 8 1/2" section of Northright1. The PowerPulse was installed with a MVC 4-axis shock/vibration unit that allowed the real-time monitoring of downhole drilling conditions with the purpose of providing a better understanding of the mechanics of the shocks occurring during drilling and reaming operations. The MVC data showed some low level shocks were recorded while drilling out of the float, shoe track and shoe but they were not deemed to be excessive to be of concern to damaging the PowerPulse or ARC6. No other shocks were recorded for the remainder of the hole section. The ARC was installed with an APWD (Annular Pressure While Drilling) sensor to monitor annular pressure and temperature during drilling and reaming operations.

The 8 1/2" section was drilled and logged in one bit run and the following formation evaluation data was provided in real-time:

- ARC6 2MHz Phase Shift Induction Resistivity at 3 depths of investigation
- ARC6 Gamma Ray
- ARC6 Annular Pressure and Temperature

The following recorded mode formation evaluation measurements were provided once the LWD tools were on surface and the memory data retrieved:

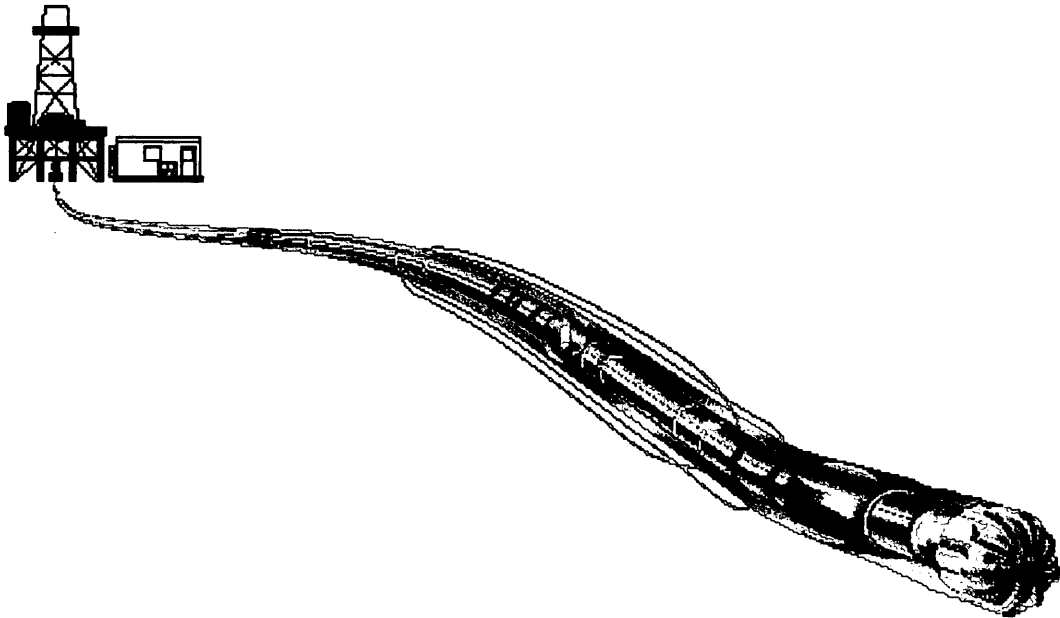
- ARC6 2MHz Phase Shift Induction Resistivity at 5 depths of investigation
- ARC6 2MHz Attenuation Induction Resistivity at 3 depths of investigation
- ARC6 Gamma Ray
- ARC6 Annular Pressure and Temperature

No MWD or LWD operational problems were encountered during drilling of the 8 1/2" section with minimal shocks recorded, a very good signal for surface demodulation for real-time logging data and good quality recorded mode logging data provided for the client.

**Schlumberger**



## **General Information**



**Schlumberger**

## General Information

Client: Eagle Bay Resources N.L.

Well Name: Northright-1

Rig: Diamond Offshore Ocean Bounty

Field: Exploration / Permit Zone VIC/P-41

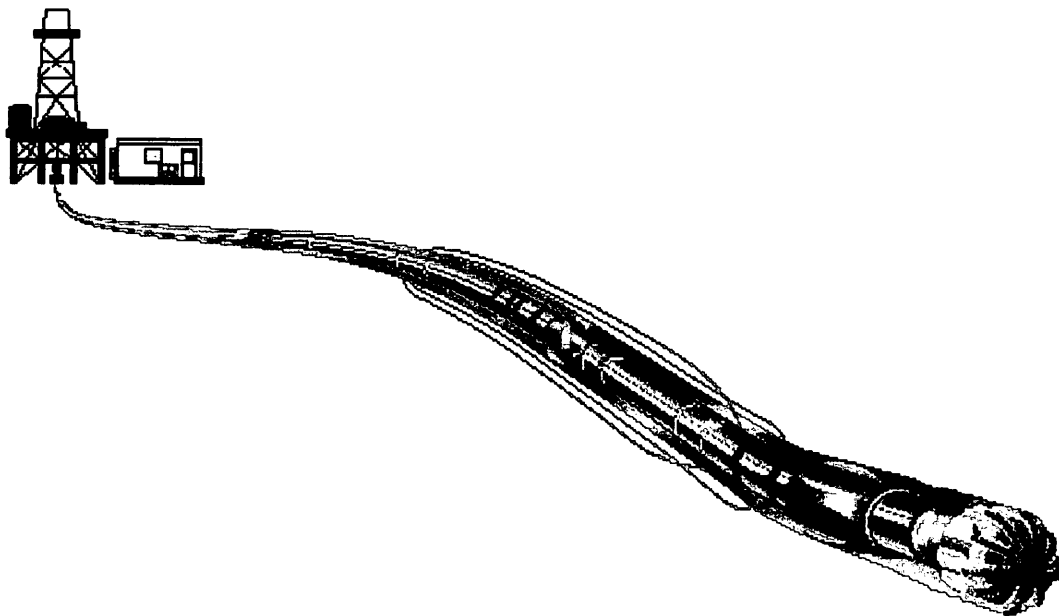
Location: Gippsland Basin, Offshore Victoria

Country: Australia

Cell Members: Anthony Strahan MWD/LWD Engineer  
Milan Saicic MWD/LWD Engineer

Town Contacts: Ike Nitis Location Manager - Australia  
Patrick Dassens Engineer In Charge - VIC

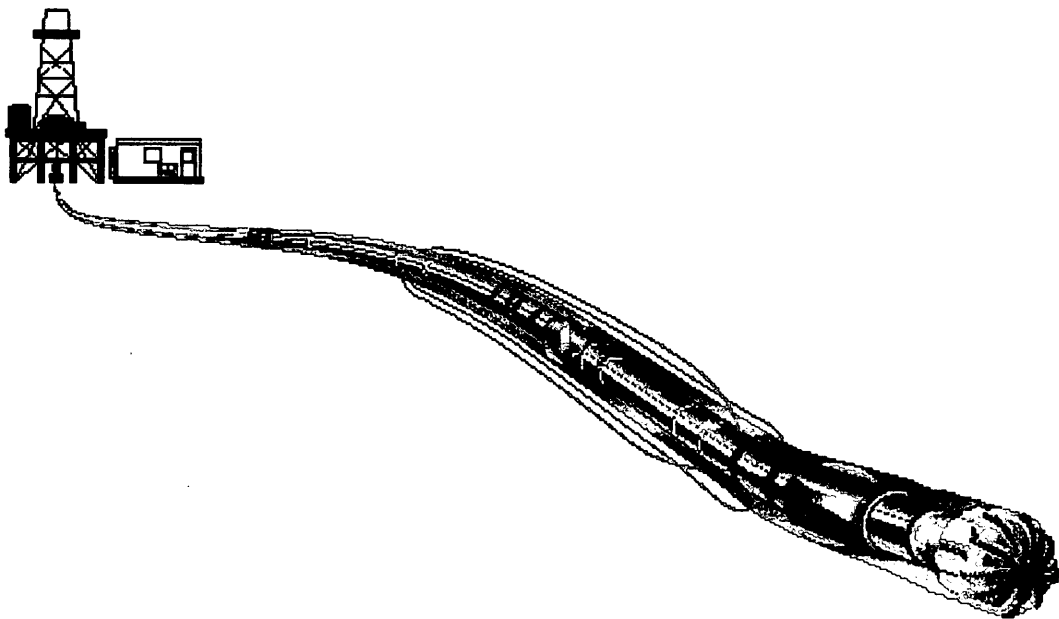
Company Representatives: M.Jackson  
C.Wilson



**Schlumberger**



## **Geomagnetic and Survey Reference Criteria**



**Schlumberger**

## **Geomagnetic and Survey Reference Criteria**

### **Geomagnetic Data**

---

Magnetic Model:	BGGM version 2000
Magnetic Date:	26-April-2001
Magnetic Field Strength:	1196.48 HCNT (1 HCNT = 50 nT)
Magnetic Declination:	13.35 degrees
Magnetic Dip:	-68.39 degrees

### **Survey Reference Criteria**

---

Reference G:	1000.00 mG
Reference H:	1196.48 HCNT
Reference Dip:	-68.39 degrees
G value Tolerance:	2.50 mG
H value Tolerance:	6.00 HCNT
Dip Tolerance:	0.45 degrees

### **Survey Corrections Applied**

---

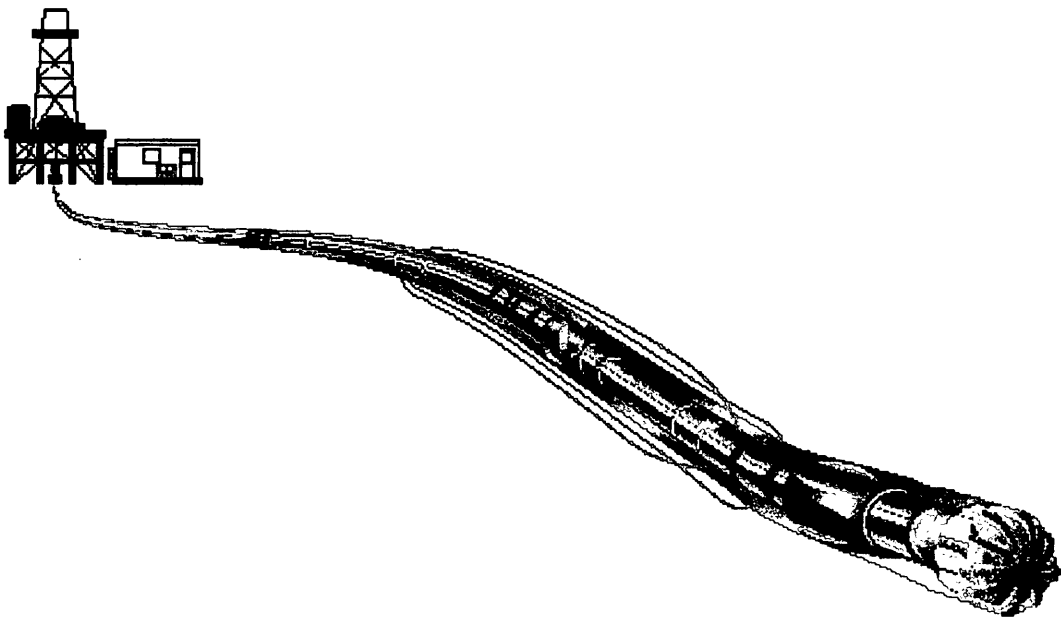
Magnetic Declination:	13.35 degrees
Grid Convergence:	0 degrees
Total Azimuth Correction:	13.35 degrees



**Schlumberger**



## Survey Report



Schlumberger



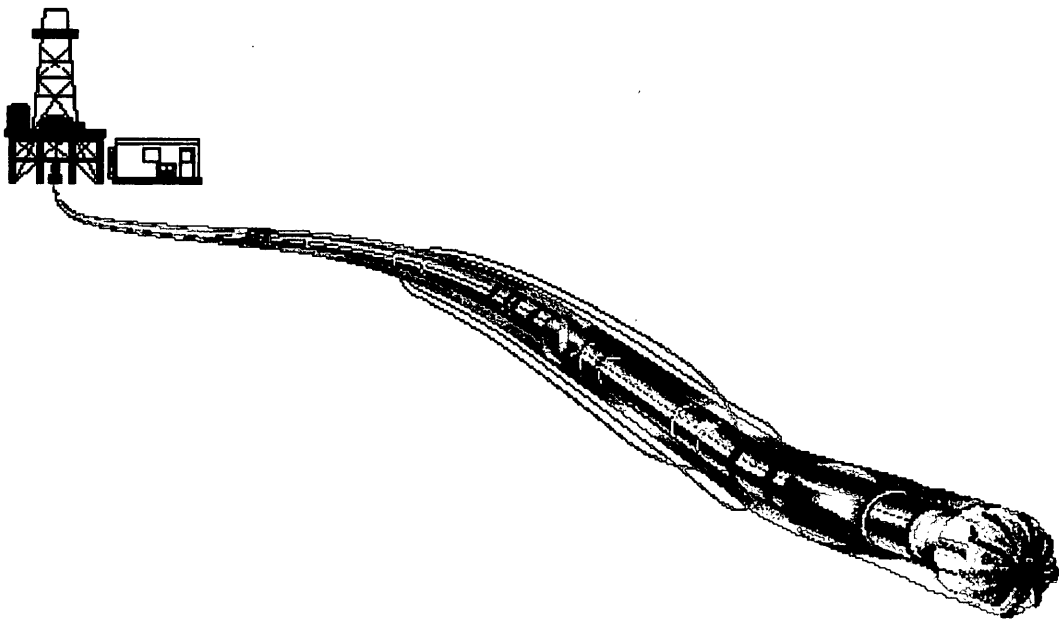
## Survey Report

Seq #	Measured depth (m)	Incl angle (deg)	Asimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type
1	130.53	0.00	0.00	0.00	130.53	5.40	5.40	-5.90	8.00	312.47	0.00	TIP
2	237.27	0.06	161.38	106.74	237.27	5.35	5.35	-5.88	7.95	312.27	0.01	MWD
3	319.46	0.35	263.49	82.19	319.46	5.28	5.28	-6.12	8.08	310.78	0.04	MWD

Schlumbergen



## Bit Run Summary









## **APPENDIX H**

# **MUD LOGGING REPORT**



## APPENDIX H

# MUD LOGGING REPORT



EAGLE BAY  
RESOURCES N. L.

INTEQ

**END OF WELL REPORT**

**EAGLE BAY RESOURCES N.L.**

**NORTHRIGHT - 1**

**APRIL 2001**

**by**

**BAKER HUGHES INTEQ**

The information, interpretations, recommendations, or opinions contained herein are advisory only and may be rejected. Consultant does not warrant their accuracy or correctness. Nothing contained herein shall be deemed to be inconsistent with, nor expand, modify or alter Consultant's obligation of performance as provided for in a written agreement between the parties, or, if none, in Consultant's most recent price list.



**Eagle Bay Resources N.L.: Northright-1****Final Well Report**

<b>Section 1</b>	<b>Operations Summary</b>		
	1-1	Introduction	
	1-2	Well and rig information	
<b>Section 2</b>	<b>Drilling and Engineering</b>		
	2-1	Bit Run Summaries	
	2-2	Casing and Cement Summaries	
<b>Section 3</b>	<b>Geology and Shows</b>		
	3-1	Geology Summary and Shows	
	3-2	Sample Distribution	
<b>Section 4</b>	<b>Pressure Evaluation</b>		
	4-1	Pore Pressure Evaluation	
	4-2	Fracture Pressure Evaluation	
<b>Tables</b>	1	Bit Run Summary	
	2	Bit Hydraulics Summary	
	3	Time vs. Depth Curve	
<b>Appendices</b>	1	Formation Evaluation Log	1: 500
	2	Drilling Data Plot	1:2500
	3	Pressure Evaluation Plot	1:2500
	4	Pressure Summary Plot	1:2500

## 1. Operations Summary

### 1.1 Introduction

Baker Hughes INTEQ Mudlogging provided formation evaluation, drill monitoring and pressure evaluation services for Northright-1 from spud until abandonment. Data was processed and stored using Drillbyte V.2.3.1 software.

Northright-1 was planned as a 420-metre vertical exploration well to evaluate the hydrocarbon-bearing potential of an upthrown block of a reverse-faulted structural anticline located 17 km south of the Victorian coastline and 180km east of Sale.

After several hours' delay due to anchor handling problems, Northright -1 was spudded at 01:30 hours on 26 April 2001, drilling with a 660mm diameter bit and 914mm diameter hole opener from the seabed at 130.5m to 154mRT using seawater and high viscosity prehydrated gel (PHG) sweeps. The 762mm-size conductor casing was run with the swedged 340mm shoe set at 153m. The 311mm diameter hole was then drilled riserless with rates of penetration averaging 53 m/hr to the section TD of 250mRT. The hole section was drilled using seawater with alternating guar and hi-vis gel sweeps pumped as required. The 244mm surface casing was made up, landed and cemented with the shoe set at 247mRT. The BOPs and marine riser were then run, landed and tested as per programme.

While drilling out the surface casing shoe track, the 216mm diameter hole was displaced to a KCI/PHPA mud system with a weight of 1.10sg. After drilling 3 metres of new formation, a Formation Integrity Test (FIT) was performed at 247mRT yielding an EMW of 1.24 sg. Drilling then continued with the penetration rates controlled to about 30m/hr to ensure complete cuttings sample collection for full formation evaluation and to maximise FEWD data acquisition. Northright-1 was drilled to its Total Depth of 391mRT, reached at 02:30hrs on 29 April 2001.

The decision was made not to run wireline logs and the well was plugged and abandoned. The Ocean Bounty was towed off location on 01 May 2001.

## 1.2 Well and Rig Information

Well Name: Northright -1

Well Type: Vertical Exploration Well

Operator: Eagle Bay Resources N.L.

Location: Gippsland Basin, Offshore Victoria, Australia

Block: VIC/P-41

Final Coordinates: Latitude 37° 55' 57.754" S  
Longitude 149° 08' 58.942" E

Rig: Ocean Bounty

Type: Semi-submersible MODU

Rig Floor - Seabed: 130.5mRT

Rig Floor - MSL 25 m

Spud Date: 26 April 2001

Total Depth: 391mRT

Status: Plugged and Abandoned

Baker Hughes INTEQ: Data Engineers: Rommel Tadiar  
Romeo Tena

Logging Geologists: Ajitiro  
Matt Ronan

Sample Technicians Richard Hatcher  
Elaine Spence

**Section 2**

**Drilling and Engineering**

**2.1 Bit Run Summaries**

**660mm/ 914mm (26"/36")Phase:**  
**26 April 2001**

**Bit Run 1 Summary**

Bit Number	NB 1
Bit Size	660mm w/ 914mm
	Hole Opener
Bit Type	Smith DSJC
S/N	KW 0659
Jets (mm)	3 x 19, 1 x 9.5
Depth In, mRT	130.5
Depth Out, mRT	154
Metres Drilled	23.5
Drilling Hours	1.2
TBR, krevs	4.7
Circulating Hours	1.6
Average ROP, m/hr	19.6
API Condition	1-1-NO-C-E-I-NO-TD

**Drilling Parameters**

WOB, tonnes	1.4	-	2.5
RPM	57	-	73
Torque kN-m	5.8	-	13.3
Pump Pressure, Mpa	0.7	-	8.8
Flow In, lpm	1187	-	2786

**Mud System**

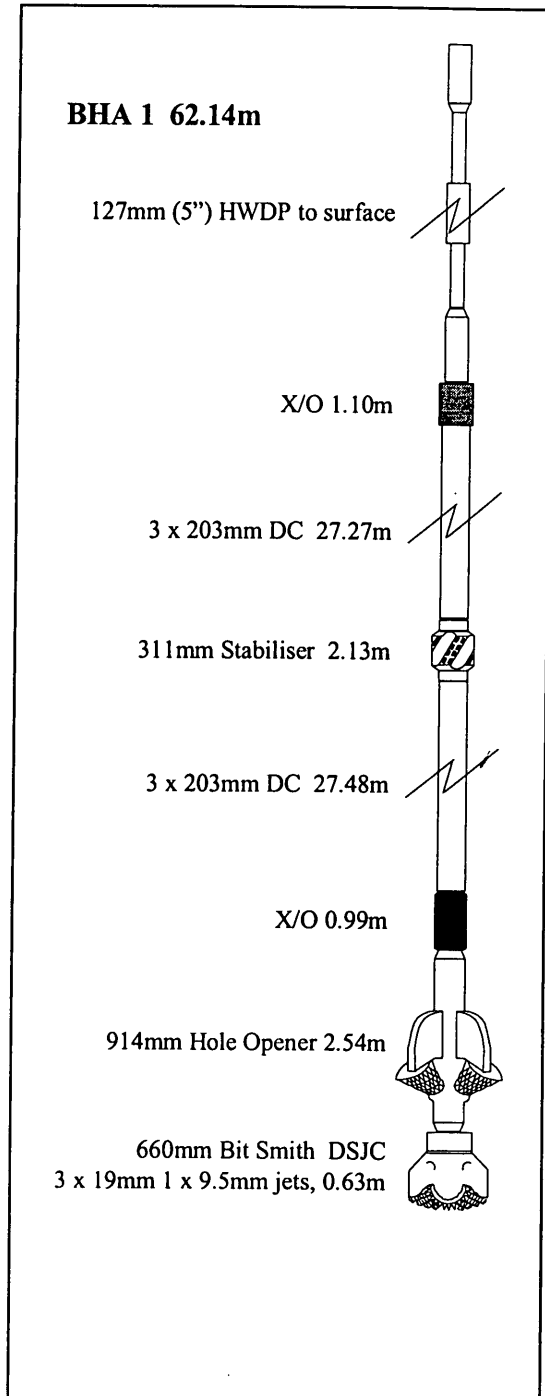
Seawater & hi-viscosity Gel Sweeps	1.03 sg
------------------------------------	---------

**Lithology**

Returns to seabed.

**Drilling Summary**

After running anchors, the spudding assembly consisting of a 660mm bit and 914mm hole opener was made up and run below the drillfloor. The seabed was tagged at 130.5mRT. Northright-1 was spudded at 01:30hrs on 26 April 2001. The section was drilled using seawater and gel sweeps. At the section TD of 154mRT, a 15.8k-litre (100bbls) hi-vis pill was swept around the hole and circulated out. A TOTCO survey was taken, indicating a bottom hole inclination of 3/4° at 154m. After wiping back to the seabed, the bit was run to bottom and the hole displaced to 23.8k-litres (150bbls) hi-vis mud. The bit was then pulled out of hole to run the 762mm / 340mm conductor casing.



**311mm (12¼") Phase : 26 April 2001**

**Bit Run 2 Summary**

Bit Number	NB 2
Bit Size	311mm
Bit Type	Varel ETD115
S/N	4535108
Jets (mm)	3 x 14.3
Depth In, mRT	154m
Depth Out, mRT	250m
Metres Drilled	96
Drilling Hours	1.8
TBR, krevs	8.7
Circulating Hours	2.9
Average ROP, m/hr	53.3
API Condition	1-1-NO-C-E-I-NO-TD

**Drilling Parameters**

WOB, tonnes	0.3	-	3.0
RPM	60	-	95
Torque kN-m	3.1	-	20.0
Pump Pressure, Mpa	5.3	-	8.2
Flow In, lpm	2268	-	2744

**Mud System**

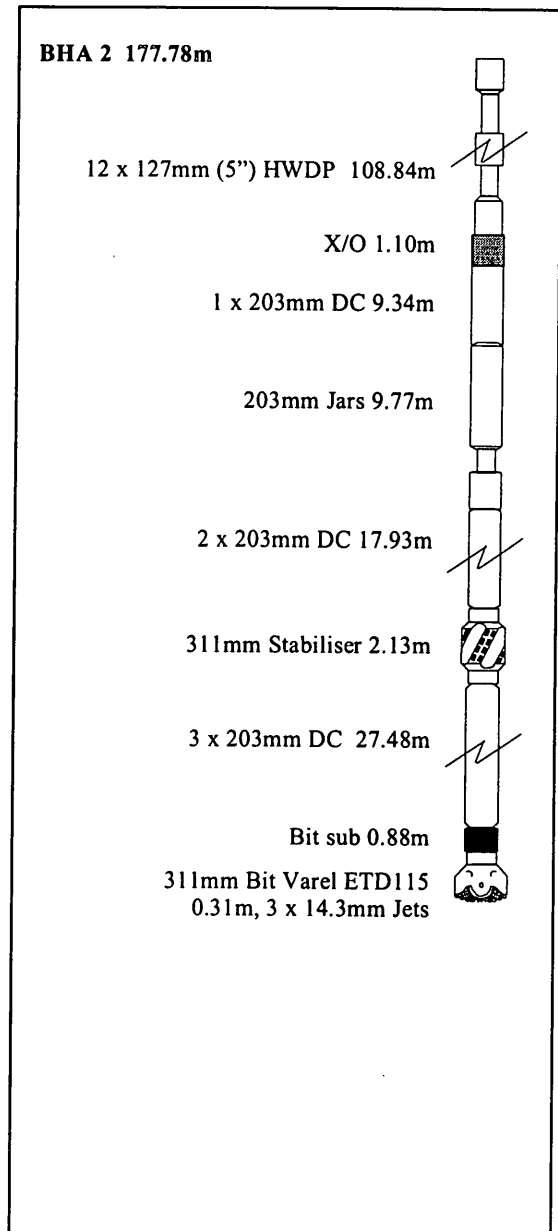
Seawater & hi-viscosity Gel 1.03 sg  
Sweeps

**Lithology**

Returns to seabed.

**Drilling Summary**

NB 2 was picked up and run in hole. The shoe track and 340mm casing shoe at 153mRT were drilled out. New formation was drilled from 154m with alternating guar and havis mud sweeps pumped every 15 metres. At section TD of 250m, the hole was circulated clean and a 100 bbls havis gel (PHB) pill was pumped and chased out of the hole with seawater. After a 100 bbl Drispac/Gel inhibitive pill was spotted on bottom, the bit was pulled out of the hole to run the 244mm casing.



**216mm (8½") Phase: 28-29 April 2001**

**Bit Run 3 Summary**

Bit Number	NB 3
Bit Size	216mm
Bit Type	Varel L127
S/N	4105048
Jets (mm)	3 x 12.7
Depth In, mRT	250
Depth Out, mRT	391m TD
Metres Drilled	141
Drilling Hours	6.1
TBR, krevs	35.5
Circulating Hours	8.4
Average ROP, m/hr	23.1
API Condition	1-1-BU-C-X-1-JD-TD

**Drilling Parameters**

WOB, mt	5.4	-	14.3
RPM	68	-	154
Torque kft-lbs.	4.8	-	10.8
Pump Pressure, psi	2089	-	3475
Flow In, gpm	560	-	662

**Mud System**

KCI / PHPA - 1.10 sg

**Lithology**

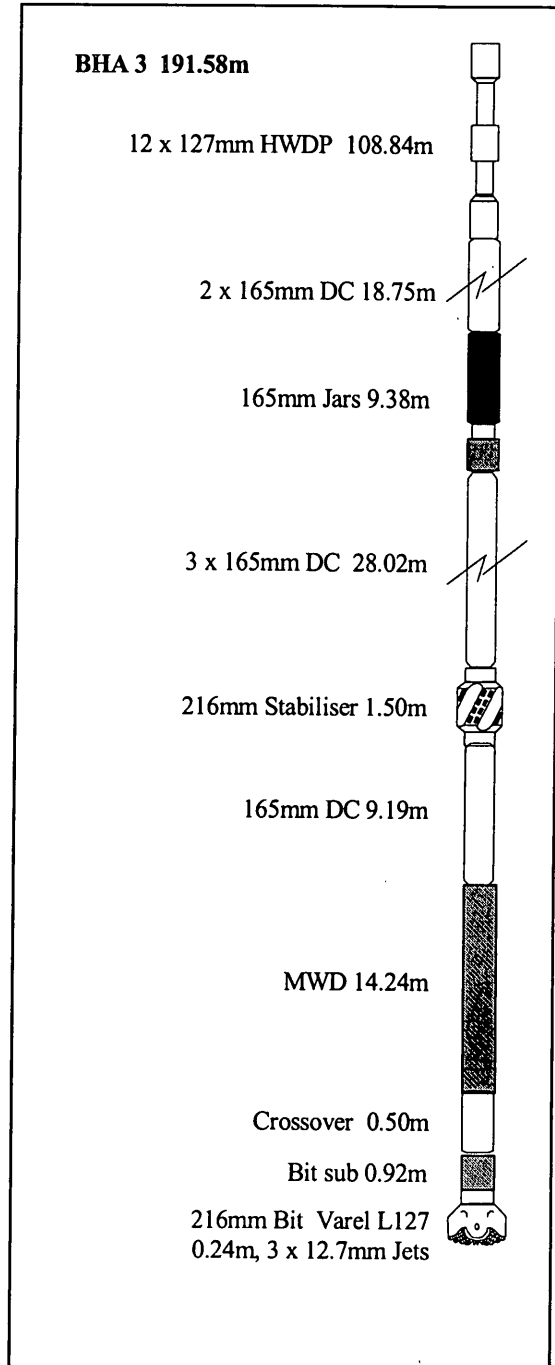
Claystone, Siltstone & Sandstone

**Drilling Summary**

NB 3 was made up with an LWD tool and run in, tagging cement at 225mRT. Cement, shoe track and casing shoe at 247mRT were drilled out. The hole was displaced to a KCI/PHPA water-based mud system while drilling out the casing shoe track. After drilling three metres of new formation, the bit was pulled back into the shoe and a Formation Integrity Test (FIT) performed. With a mud weight of 1.10sg, an Equivalent Mud Weight (EMW) of 1.24sg was recorded. Drilling continued with penetration rates controlled to about 30m/hr to ensure complete cuttings sample collection for full formation evaluation and to maximise FEWD data acquisition. Drilling then continued down to the well TD at 391mRT, reached at 02:30hrs on 29 April 2001. After circulating returns to surface, the well was checked for flow before the bit was pulled out of the hole to begin plug and abandon operations.

Directional Surveys taken while drilling:

Depth (m)	TVD (m)	Inclination (deg)	Azimuth (deg)
237.27	237.27	0.06	161.38
319.46	319.46	0.35	263.49

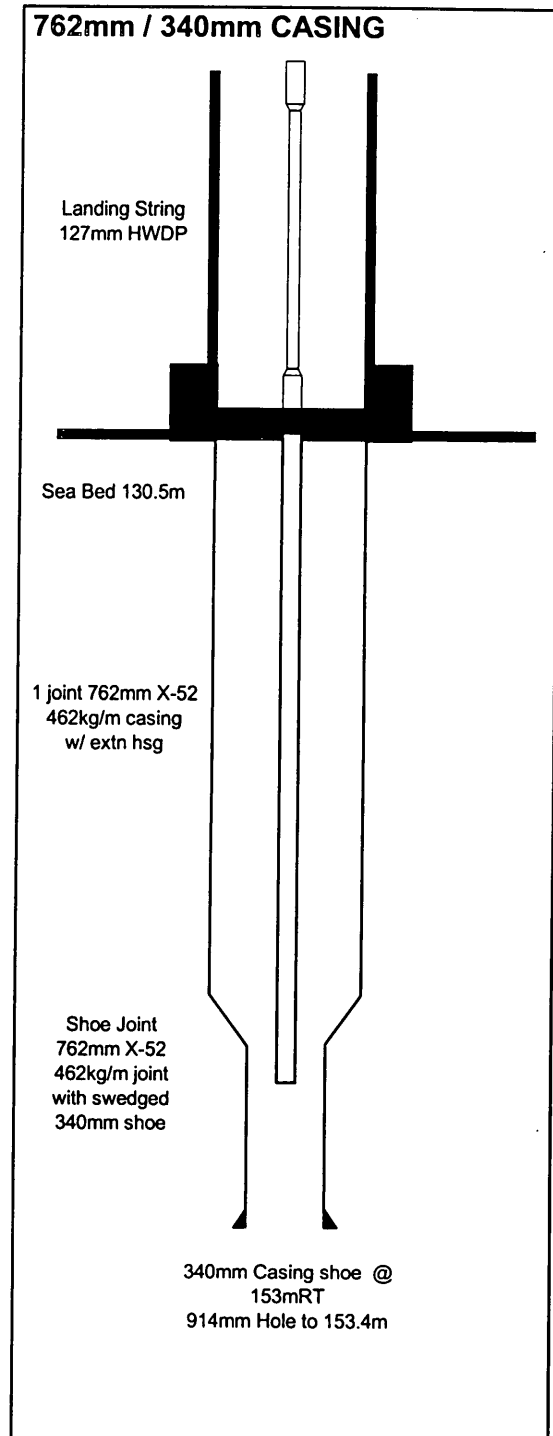


**2.2 Casing and Cementing Summaries****762mm / 340mm Casing**

Hole Size	914mm
Depth	154mRT
<b>Casing</b>	
OD	762mm / 340mm X-52
ID	711mm
Weight	462kg/m (310 ppf)
<b>Shoe Depth</b>	
	153m
<b>Cement</b>	
Type	Single Stage, Tail/Grout Class G
Sacks	659 sx
Slurry Density	1.91 sg
Mix Water	80 bbls (12.7k ltr) seawater
Yield	0.03 m <sup>3</sup> (1.16 ft <sup>3</sup> )/sx
Additives	CaCl <sub>2</sub> 1% BWOC 14 sx D-Air 3000L 2.5 gal (9.5 ltr)

**Summary**

The 762mm diameter conductor casing with 340mm swaged shoe joint assembly and PGB was filled with seawater and run in without incident. The casing was then landed with the shoe set at 153mRT. Cementing operations were then conducted with flouroscecene dye pumped before pressure testing cement lines to 1000 psi (6.9 MPa). The cement slurry was then pumped. The cement was then displaced with 2600 litres of seawater. Pressure was bled off and the floats checked. The casing string was held in place while waiting on cement.





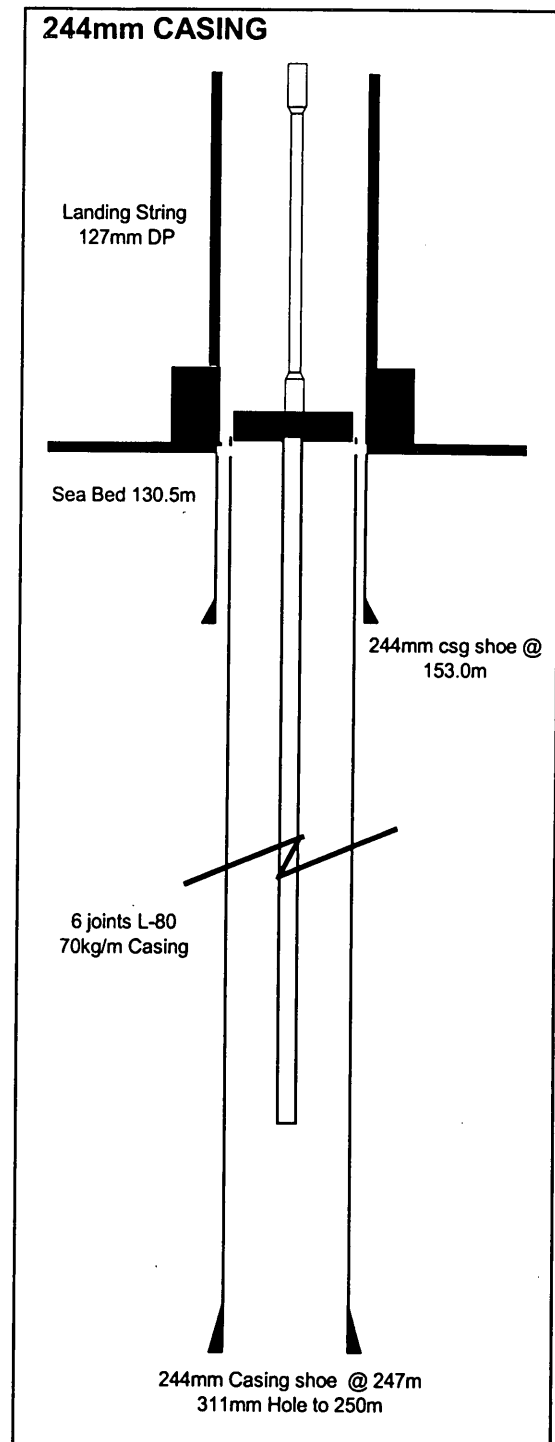
## Drilling and Engineering

**244mm Casing**

Hole Size	311mm
Depth	250mRT
Casing	
OD	244mm
ID	220.5mm
Weight	70kg/m New VAM
Shoe Depth	
	247mRT
Cement	
Type	Single stage Tail Slurry class "G"
Sacks	340 sx
Slurry Density	1.9 sg
Mix Water	19.5 ltr/sx (11.4k ltr seawater)
Yield	0.03 m <sup>3</sup> (1.16 ft <sup>3</sup> )/sx
Additives	D-Air 3000L 3.78 ltr

**Summary**

Six joints of 244mm casing, along with the wellhead housing, float collar and shoe joints were run and landed with the shoe at 247mRT. After pumping 794 litres seawater with fluorescent dye, cement lines were pressure-tested to 20.7MPa (3000psi). Fluorescent dye was pumped again before dropping the dart and pumping the seawater spacer. The cement slurry was then mixed and pumped at the rate of 794 litres per minute (5bpm), followed by the top plug. The plug was bumped at the float collar with a pressure of 15.2MPa (2200psi) observed at the cement unit. Pressure was bled off and the floats checked. After the cement job, the running tool was unlatched and pulled to surface.



**Section 3**

**Geology and Shows**

3.1

### 3.1 GEOLOGY AND SHOWS

Formation Evaluation for Northright-1 commenced from below the 244mm (9.625") casing shoe, set at 247mRT, to the well's Total Depth of 391mRT. Prior to drilling all gas equipment was checked and calibrated. Cuttings samples were collected at the following intervals:

From (m)	To (m)	Sampling Interval (m)
247	340	3
340	390	5
390	391 TD	1

The lithological units observed in the 216mm hole section of Northright-1 are described below. For more detailed descriptions, see Appendix-1, Formation Evaluation Log.

#### 914mm (36") HOLE SECTION

Seabed to 154m: Returns to Seabed

#### 311mm (12¼") HOLE SECTION

154m to 250m: Returns to Seabed

#### 216mm (8½") HOLE SECTION

250m to 303m: SANDSTONE

**SANDSTONE:** Light grey to medium grey, translucent to opaque quartz grains, predominantly loose and clean, occasional friable aggregates, medium to very coarse, occasional fine grains, subspherical to subelongate, subangular to subrounded, moderately to poorly sorted, very weak siliceous cement, occasional weak pyrite cement, rare to common argillaceous matrix, occasional frosted grains, good to very good inferred porosity, trace to rare pyrite.

There were no oil shows in this interval.

303m to 331m: CLAYSTONE

**CLAYSTONE:** Light grey to medium grey, greenish grey, very soft to soft, subblocky, slightly calcareous, trace pyrite, chloritised in part.

331m to 391m TD: SILTSTONE grading to CLAYSTONE

**SILTSTONE:** Medium grey to medium dark grey, occasionally dark grey, soft to firm, subblocky, abundant argillaceous matrix, trace very fine quartz sand grains, trace fine to nodular glauconite and fine pyrite aggregates, siliceous to slightly calcareous, grading to claystone in parts.

**CLAYSTONE:** Medium light grey to medium grey, greenish grey, soft, sticky, dispersive in part, subblocky, trace carbonaceous specks, slightly calcareous.

<b>Drilling Rate Summary for All Lithology Intervals on Northright-1</b>			
<b>Depth Interval (m)</b>	<b>RATE OF PENETRATION (m/hr)</b>		
	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>
130.5 - 250	10.5	115.2	52.3
250 - 303	13.6	92.8	36.7
303 - 331	10.1	34.9	20.6
331 - 391 TD	12.9	60.6	23.4

<b>Summary of Gas Readings Recorded for All Lithology Intervals on Northright-1</b>													
<b>Interval (m)</b>		<b>Total Gas (Gas Units)</b>				<b>Chromatograph Analysis (ppm)</b>							
		<b>Range</b>		<b>Max Gas</b>	<b>Av. Total</b>		C1	C2	C3	iC4	nC4	IC5	NC5
<b>From</b>	<b>To</b>	<b>From</b>	<b>To</b>	<b>At (m)</b>	<b>Gas</b>								
130.5	250	Returns to Seabed				Min	-	-	-	-	-	-	-
						Max	-	-	-	-	-	-	-
250	303	1	2	301	1	Min	41	-	-	-	-	-	-
						Max	162	-	-	-	-	-	-
303	331	1	2	311	2	Min	72	-	-	-	-	-	-
						Max	307	-	-	-	-	-	-
331	391 TD	2	2	356	2	Min	184	-	-	-	-	-	-
						Max	278	-	-	-	-	-	-



SAMPLES DISTRIBUTION LIST  
EAGLE BAY RESOURCES NL  
Northright -1



INTEQ

SAMPLE TYPE	No. of Sets	COMPOSITION			PACKING DETAILS
		Sample Box No.	Depth Interval (m)		
			From	To	
Set 1 (500 g) : Unwashed & Air Dried Samples (Palynology)	1		250	391	1 shipping box
Sets 2, 3 and 4 (200 g) : Washed & Air Dried	3	1 2	250 313	313 391	2 Small Boxes bundled together per set
Set 5: Simplex Trays, Charts & worksheets	1		250	391	Halved shipping box
Set 6: Fluid Samples	1				1 Small Box w/ 3 mud and 1 mud filtrate samples

ALL BOXES TO BE SENT TO EAGLE BAY RESOURCES N.L. WAREHOUSE FOR ONWARD DISTRIBUTION:

DISTRIBUTION	Destination & Address	Attention of:
Set 2: Cuttings Washed & Dried 200g	AGSO Petroleum Data Repository Cnr. Jerrabomberra Ave & Hindmarsh Dr Symonston, ACT 2609	
Set 3: Cuttings Washed & Dried 200g	Victoria Department of Natural Resources & the Environment (Vic DNRE) c/o DNRE Geological Core Library DNRE Agricultural Science Precinct South Road, Werribee, VICTORIA	
a) Set 1: Cuttings Unwashed & Dried 500g (palynology) b) Set 4: Cuttings Washed & Dried 200g c) Set 5: Cuttings in Simplex Trays	Eagle Bay Resources N.L. First Floor, 14 Outram Street West Perth, W.A.	Milton Schmedje
Set 6: Fluid Samples	AMDEL LTD 35 - 37 Stirling St Thebarton, S. A. 5031	Brian Wilson

**Section 4**

**Pressure Evaluation**

## 4.1 PORE PRESSURE EVALUATION

An average sea water density of 1.03 sg was assumed as the normal saline pressure gradient for all calculations for Northright-1. Using real-time data, such as corrected drilling exponent (Dxc) using conventional tricone bits, hydrocarbon gas trend, lithology, flowline temperature, character of drilled cuttings, constant drilling fluid parameters and real-time MWD data including resistivity data, pore pressure estimates were made during the drilling of Northright-1. For more details, please refer to Appendix 3, "Pressure Summary Plot".

### 914mm (36") Hole Section

The 914mm hole was drilled from seabed at 130.5m to 154mRT. The section was short, with returns dumped to the seabed. With an average penetration rate of about 20m/hr, the plotted Dxc data curve showed a steep generally rightward trend. It is unlikely that pore pressure would have increased over this shallow interval consisting of very soft and poorly consolidated sediments. The pore pressure is estimated to have remained normal at 1.03 sg EMW down to 154mRT.

### 311m (12 ¼") Hole Section

The 311mm hole section was drilled riserless from 154mRT to the 244mm casing point at 250mRT. Returns were dumped to the seabed. Seawater was used as drilling fluid, with high viscosity gel and guar gum pills swept around the hole for effective cleaning. With the absence of lithological samples, it was not possible to check the reliability of the corrected Dxc data, which is most useful for pore pressure estimations when homogeneous claystones are drilled. However, from 154m to 220mRT, penetration rates averaged about 50m/hr and a normal, gently rightward-sloping trend could be discerned, indicating normal increasing consolidation of sediments with depth. Between 220m to about 235mRT, there was a marked leftward shift in the Dxc trend, with a very erratic data scatter, possibly the result of a significant lithological change or a weakening in the physical strength of the formation. In any case, penetration rates were significantly faster (70-93m/hr) in this interval. From 235m to 250mRT section TD, a rightward shift in the Dxc data brought the curve back to its original normal trend, with penetration rates averaging 50m/hr, suggesting normal sediment consolidation. It is estimated that the pore pressure gradient remained normal at 1.03sg EMW throughout this interval.

### 216mm (8½") Hole Section

The 216mm hole section was drilled with a KCl/PHPA water-based mud system weighted at 1.10sg. To maximise data acquisition through the prognosed primary target, the drill rate was controlled to about 30m/hr. Sands were drilled immediately below the casing shoe at 247mRT, causing a marked leftward shift and near-vertical trend in the overall Dxc data scatter. Below 310m to section TD of 391mTD, drill rate restrictions were removed and the corrected Dxc trend took a more gentle slope to the right while drilling through interbedded argillaceous siltstones and claystones. Occasional sand stringers were also drilled resulting in leftward "spikes" between 335-340mRT and at 362-364mRT. There was no sign of abnormal pressure in this hole section. No geopressure-related cavings were observed while drilling. Connection gases were absent and the gas level remained minimal at about 2 gas units (0.04%). The flowline temperature data, though subdued by the cooling effect of a 100-metre long marine riser, showed a gradual increase with depth in this hole section, from 23° to 24.8°C. Similarly, the FEWD tool data showed a normal bottom hole temperature gradient, gradually increasing from 24° to 28°C at 391m TD. Based on these factors, the pore pressure gradient in this interval is estimated to be normal at 1.03sg EMW.

## 4.2 FRACTURE PRESSURE EVALUATION

Fracture pressure estimation for Northright-1 was made using the Baker Hughes INTEQ zero tensile strength method. For a full explanation of this method, refer to INTEQ Manual MS-156 "The Theory and Evaluation of Formation Pressures".

With no returns to surface it was not possible to estimate the fracture pressure through the 914mm and 311mm hole sections. A Formation Integrity Test (FIT) was performed at the 244mm casing shoe depth with the results shown below:

Casing Depth	Casing Size		Hole Size		Test Mud Density	LOT EMW	Test type
	in	mm	in	mm	(SG)	(SG)	
MRT 247	9.625	244	8.5	216	1.10	1.24	FIT

A KCL/PHPA water-based mud system weighted at 1.10sg was used to drill the 216mm section to the Total Depth of 391mRT. The lower than expected result from the formation integrity test was attributed to poorly cemented porous coarse sand formations drilled immediately below the casing shoe. When normal drilling resumed there were small mud losses to the formation of about 635 litres per hour (4 bbls/hr) with the effective circulating density (ECD) calculated at 1.19sg. The seepage was cured by the continuous addition of fine-grade lost circulation material (LCM) while drilling. Below 350mRT, only minor intermittent losses of about 317 litres per hour (2 bbls/hr) were observed, even with the mud system's rheology changing while drilling to give an ECD of 1.21sg with the same pump rates. The pump flow rates were maintained at about 1890 lpm (500gpm) during the entire drilling operation. At no time during drilling was the FIT EMW result of 1.24 sg exceeded, with mud losses incurred being the direct result of porous and permeable sand formations.



**Tables**



Table 2: Bit Hydraulics Summary

Tables

OPERATOR		WELL NAME										LOCATION		CONTRACTOR		RIG						
EAGLE BAY RESOURCES N.L.		NORTHRIGHT-1										VIC/P-41		Diamond Offshore General Co.		MODU OCEAN BOUNTY						
Drilling Abbreviations		Positive Displacement Motor										Hydraulics Models										
Bit No.	Depth In (m)	N MWD		T C	Turbine Core	P	Mud Density $\rho_g$	Mud Type	PV / YP	Flow Rate $lpm$	ECD $\rho_g$	Annular Velocities			Jet Vel $m/sec$	HHP $hp$	HSI $hp/mm^2$	Impact Force $kN$	Bit Pressure Loss $mpa$	% Bit Loss	Theoretical Pressure Loss $mpa$	Actual Pressure Loss $mpa$
		Hole Size $mm$	Calc'd Hole Size $mm$									JETS $mm$	Drill String Type	DP Riser $m/min$								
660mm / 914mm HOLE SECTION																						
NB1	130.5	914	914	3x19, 1x9.5	N	1.03	SW / Gtl sweeps	1 / 1	2811	1.03	1.03	3.2	25.2	36.2	33.6	0.64	1.25	0.75	41.5	1.80	8.79	
311mm HOLE SECTION																						
NB2	154	311	311	3 x 14	N	1.03	SW / Gtl sweeps	1 / 1	2744	1.03	1.03	7.2	65.1	95.2	317.0	17.4	4.48	5.17	73.6	7.02	8.20	
216mm HOLE SECTION																						
NB3	250	216	216	3 x 12.7	N,M	1.10	KC/PHPA	17/26	1947	1.21	1.21	10.6	240.5	85.5	194	22.6	3.05	4.45	57.1	9.1	8.3	

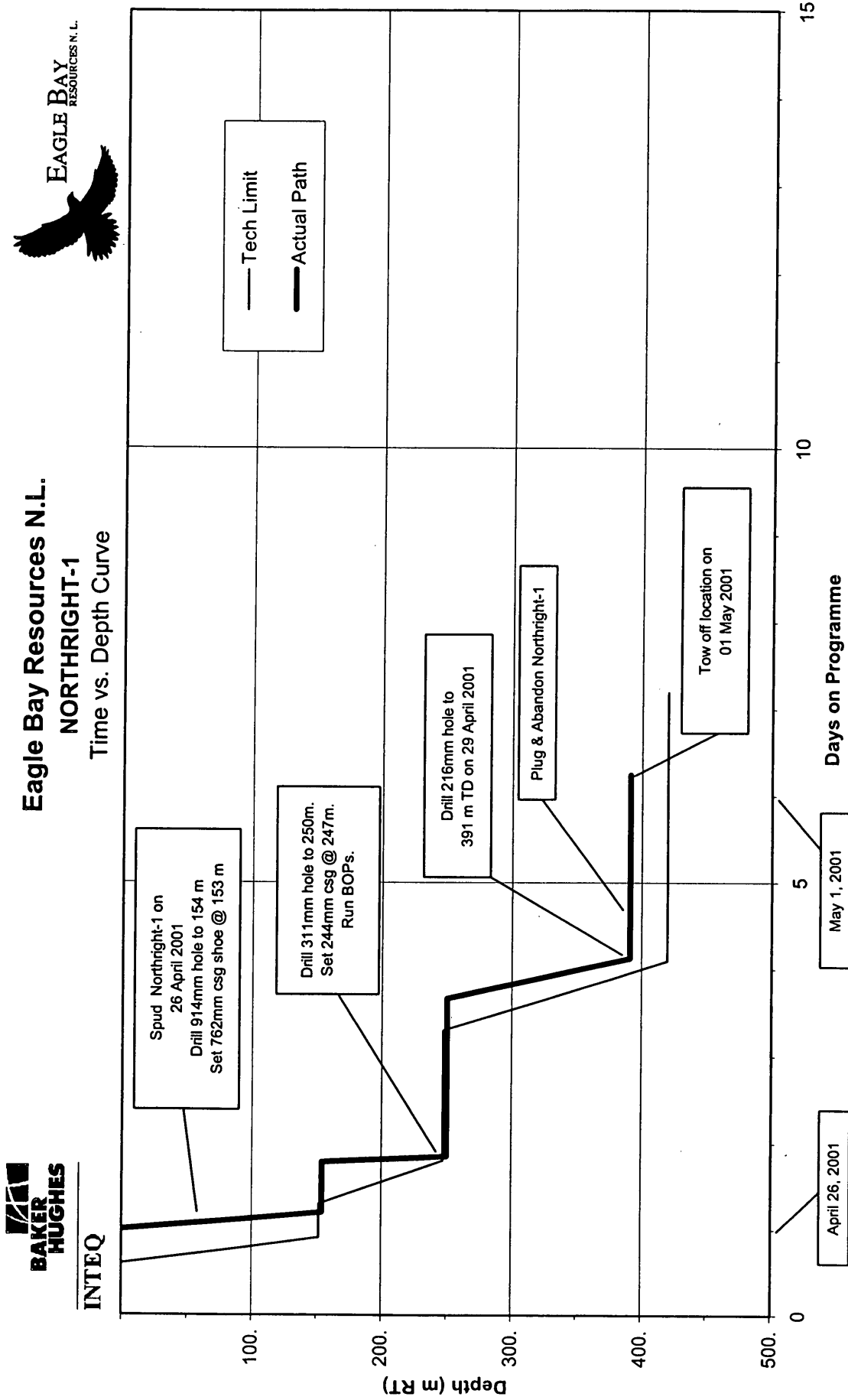


### Table 2: BIT HYDRAULICS SUMMARY



Table 3: Time vs Depth Curve

Tables



**Appendix**

**Formation Evaluation Log**  
1: 500

PE603052

This is an enclosure indicator page.  
The enclosure PE603052 is enclosed within the  
container PE908025 at this location in this  
document.

The enclosure PE603052 has the following characteristics:

ITEM\_BARCODE = PE603052  
CONTAINER\_BARCODE = PE908025  
NAME = Northright-1 Formation Evaluation Log  
BASIN = GIPPSLAND  
ONSHORE? = N  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = MUD\_LOG  
DESCRIPTION = Northright-1 Formation Evaluation Log  
Mud Log Scale 1:500 Well Completion  
Report Enclosure, by Eagle Bay  
Resources N.L, W1319, VIC/P41  
REMARKS =  
DATE\_WRITTEN =  
DATE\_PROCESSED = 29-APR-2001  
DATE\_RECEIVED =  
RECEIVED\_FROM = Eagle Bay Resources N.L.  
WELL\_NAME = Northright-1  
CONTRACTOR = Eagle Bay Resources N.L.  
AUTHOR =  
ORIGINATOR = Eagle Bay Resources N.L.  
TOP\_DEPTH = 130.5  
BOTTOM\_DEPTH = 391  
ROW\_CREATED\_BY = DN07\_SW

(Inserted by DNRE - Vic Govt Mines Dept)

**Drilling Data Plot**  
1: 2500



DRILLING DATA PLOT

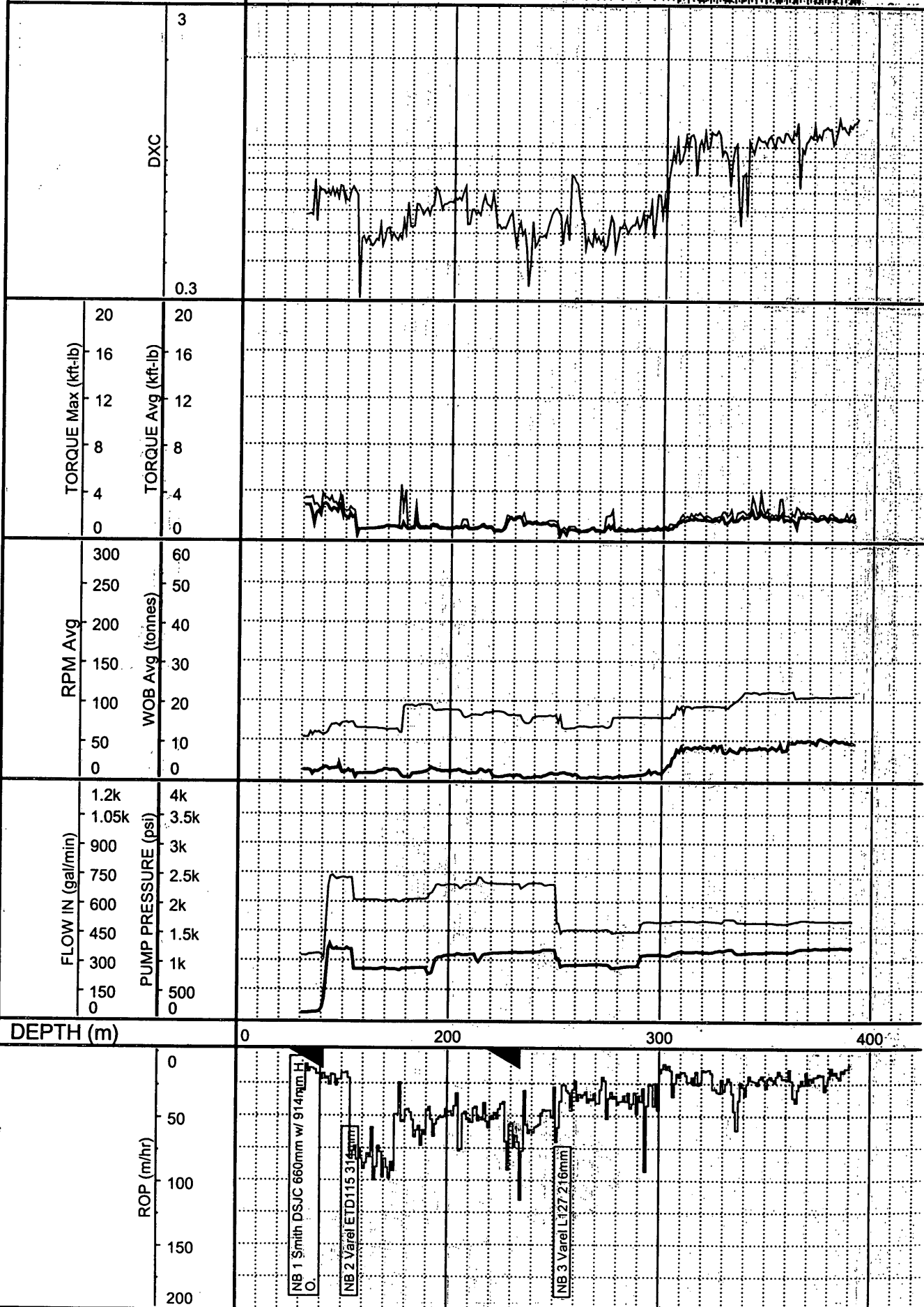
Northright-1

SCALE 1 : 2500.0



INTEQ

INTERPRETED LITHOLOGY

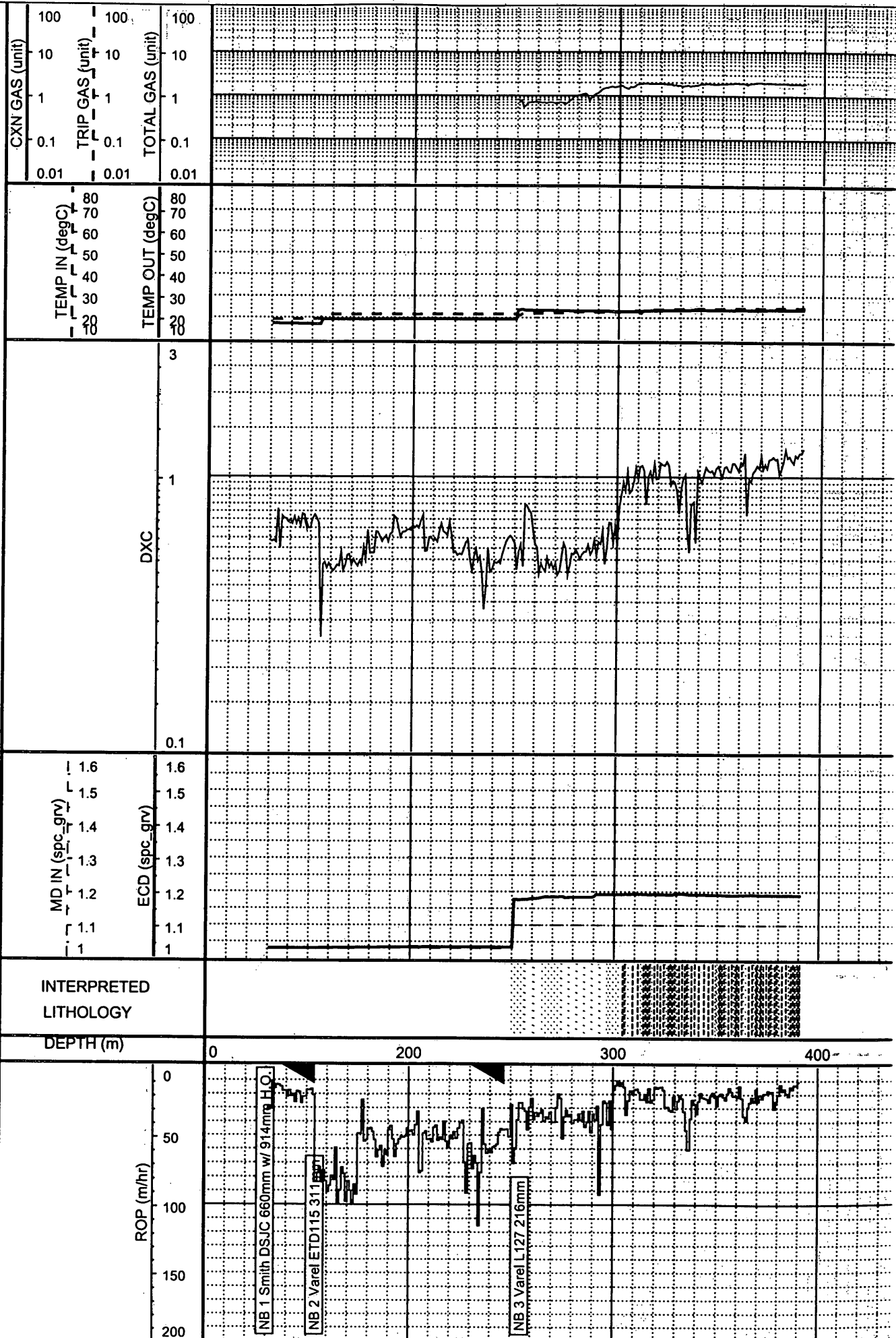


**Pressure Data Plot**

1: 2500



**● PRESSURE DATA PLO**  
**Northright-1**  
 SCALE: 1:2500.0



**Pressure Summary Plot**  
1:7500

This is Page Number **908025\_189X**

This is an enclosure indicator page.

The page that follows this page is an uncatalogued  
fold-out with page number:

**908025\_189Y**

and is enclosed within the document PE908995 at  
this page.



# PRESSURE SUMMARY PLOT



INTEQ

Northright-1

SCALE: 1:2500.0

## PRESSURE GRADIENTS

Overburden Gradient

Fracture Pressure Gradient

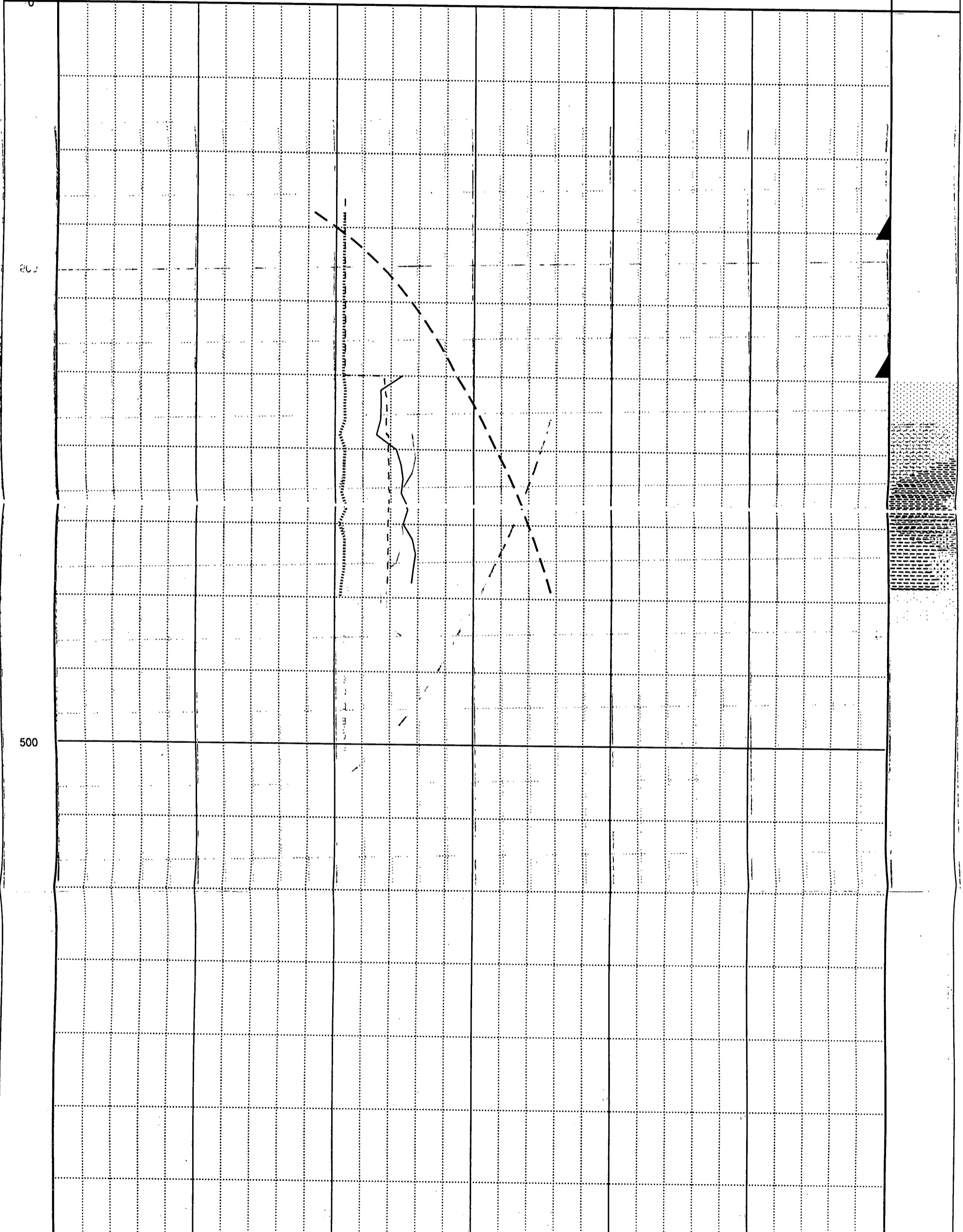
Effective Circulating Density

Estimated Pore Pressure Gradient

LITHOLOGY

VERTICAL DEPTH (m)

0 0.5 1 1.5 2 2.5 3



908025 189Y

908025 190

**Gas Ratio Analysis Plot**  
1: 500

***NOT ENOUGH GAS DATA WERE RECORDED TO  
WARRANT GENERATION OF THIS PLOT***



PE603053

This is an enclosure indicator page.  
The enclosure PE603053 is enclosed within the  
container PE908025 at this location in this  
document.

The enclosure PE603053 has the following characteristics:

ITEM\_BARCODE = PE603053  
CONTAINER\_BARCODE = PE908025  
    NAME = Northright-1 Composite Well Log  
    BASIN = GIPPSLAND  
    ONSHORE? = N  
    DATA\_TYPE = WELL  
    DATA\_SUB\_TYPE = COMPOSITE\_LOG  
    DESCRIPTION = Encl.1 Northright-1 Composite Well Log  
                  Scale 1:200 WCR, by Eagle Bay  
                  Resources, W1319, VIC/P41.  
    REMARKS =  
    DATE\_WRITTEN =  
    DATE\_PROCESSED =  
    DATE\_RECEIVED =  
    RECEIVED\_FROM = Eagle Bay Resources N.L.  
    WELL\_NAME = Northright-1  
    CONTRACTOR =  
    AUTHOR =  
    ORIGINATOR = Eagle Bay Resources N.L.  
    TOP\_DEPTH =  
    BOTTOM\_DEPTH =  
    ROW\_CREATED\_BY = DN07\_SW

(Inserted by DNRE - Vic Govt Mines Dept)