

## **APPENDIX F**

# **DRILLING FLUID REPORT**



**INTEQ**

- 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 ¼"	250	9 5/8"	146.8	SW/Sweeps	1.03	None	55.7	0.5	5,389.62
8 ½"	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

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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	bbl/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"

## 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.

**2.2 12 ¼" 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 ½" 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.

## 2.3 8 ½" 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.

### 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 ¼" 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 ½" 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>



**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 ¼" 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 ½" hole.

**4.3 8 ½" 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	

## 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 Filt. 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

**6 MUD DISCHARGE SUMMARY**

INTERVAL		30"	12 ¼"	8 ½"	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	
Product	Unit	30" & 12 ¼"	8 ½"	Total	MT
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

## DRILLING FLUIDS RECAP NORTHRIGHT-1

### 7 MATERIAL RECONCILIATION

Product Date	Start		Received				Backload		Material Used per Section					Final Inventory				Actual Final	Calc Final	Variance (Actual v Calc)	Total Material Usage	Total Material Cost \$US																								
	Unit	Unit	Ocean Bounb	Eagle Bay Eden	21Mar Conquest	21Mar Sentinel	Total DT's Deliveries Into Eden	Total Received Ocean Bounty	Total Bounty to Eden	Total Eden to BH	36"	12.25"	9.5"	9.5"	P & A	Bounty 20-Mar	Eagle Bay 16-Mar Eden						P. Conquest	P. Sentinel	Stock	Stock	Usage	Cost \$US																		
Alcomer 120 P	25 kg	105.59	82									19			63					63	63		19	\$ 2,006.21																						
Aquacol	200 lt	689.76																						\$ -																						
Aquacol B	200 lt	937.89	11												11					11	11			\$ -																						
Borax	25 kg																							\$ -																						
CaCl2 (99%)	25 kg	17.12	20								14				6					6	6		14	\$ 239.68																						
Cautic Potash	25 kg	36.81	22										2		20					20	20		2	\$ 73.62																						
Cautic Soda	25 kg	28.01	46				32				3	1			74					74	74		4	\$ 104.04																						
Chelkos	25 lb	42.27	60										60										60	\$ 2,536.20																						
Circal 1000	25 kg	18.15																						\$ -																						
Circal 60/16	25 kg	18.62	76										48		28					28	28		48	\$ 663.76																						
Circal Y	25 kg	21.09	124										59		65					65	65		59	\$ 1,244.31																						
Citric Acid	25 kg	54.01	40										3		37					37	37		3	\$ 162.03																						
Drispac Reg	50 lb	122.01	25				40	40					2	12	51					51	51		14	\$ 1,708.14																						
Drispac SL	50 lb	122.01	58				40	40					1	17	80					80	80		18	\$ 2,196.18																						
Flowmax	25 kg	308.58	35												18					18	18		17	\$ 5,245.86																						
Glutaraldehyde 25%	18.9 ltr	74.36	22				32	32					2	2	50					50	50		4	\$ 297.44																						
Glutaraldehyde 25%	200 lt	798.89																						\$ -																						
KCl Bags	1 mt	353.82	12				11	11					1	8	14					14	14		9	\$ 3,184.38																						
KCL Brine	1 bbl	16.02																						\$ -																						
Kalkseal C	40 lb	37.52	30												30					30	30			\$ -																						
Kalkseal F	40 lb	37.52	30											30									30	\$ 1,125.60																						
Kalkseal M	40 lb	37.52	50											45	5					5	5		45	\$ 1,688.40																						
L.D.B	18.9 lt	80.85	28												28					28	28			\$ -																						
Lime	18.5 kg	5.84																						\$ -																						
Mil-Bar Bulk	1 mt	161.78	67.86										3.18	25.23	39.47					39.47	39.47		28.41	\$ 4,506.17																						
Mil-Bar 5x	25 kg	7.70					160								160					160	160			\$ -																						
Mil-Free	208 lt	274.21																						\$ -																						
Milgard	25 kg	52.03	30												30					30	30			\$ -																						
Mil-Gel Bulk	1 mt	258.26	23.86		52.77	42.76	60.79	27.36					14.54	7.50	29.16		86.20	42.76		158.12	158.74	-0.02	22.04	\$ 5,692.06																						
Mil-Gear	25 kg	79.47	59				240	240						29	270					270	270		29	\$ 2,043.63																						
Newdrill L	25 kg	48.77	7				32								34					34	34		5	\$ 243.85																						
Newdrill Plus	25 kg	90.59																						\$ -																						
Noroxen L	18.9 lt	33.63																						\$ -																						
Penetrex	200 lt	736.52																						\$ -																						
SAPP	25 kg	84.40	40												40					40	40			\$ -																						
Soda Ash	25 kg	13.17	20				40	40					3	3	54					54	54		6	\$ 79.02																						
Sodium Bicarbonate	25 kg	13.81	40												40					40	40			\$ -																						
<b>TOTAL WELL COST</b>																																													<b>\$ 35,369.57</b>	

The "Final Inventory" for the previous well MUST be carried over and used for the "Start Inventory" for the current well. Reconcile ALL "Variances" by debiting or crediting the appropriate internal usage. Do not forget to debit or credit the Misc Report as well.