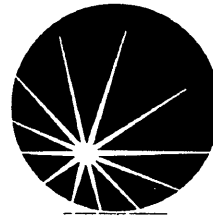




**Western Underground
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TXU

WELL COMPLETION REPORT

Iona-3

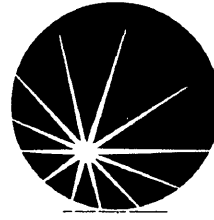
**PPL2
ONSHORE OTWAY BASIN,
VICTORIA**

**VOLUME 1 OF 2
TEXT, TABLES, FIGURES, APPENDICES
& ENCLOSURES 1-3**

October 1999

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Iona-3

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Western Underground Gas Storage Pty Ltd

**PPL 2
ONSHORE OTWAY BASIN, VICTORIA**

WELL COMPLETION REPORT

Iona-3

October 1999

VOLUME 1

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1.0 INTRODUCTION

Iona-3 was designed as an appraisal well of the Iona Gas-field. The location of the Iona field is shown on Figure 1.1. It was planned to complete the well as a Production well for gas withdrawal and injection from the Waarre Sandstone reservoir.

The well was drilled as a directional well to target the top Waarre Sandstone reservoir near the crest of the structure approximately 125 metres to the south west of Iona-1 at the Waarre level. The surface location of the well on the Iona site is shown on Figure 1.2. Iona-3 was designed to be drilled as a build and hold directional well which intersected the reservoir section at an angle of just on 50 degrees dropping to 48.8 degrees at total depth.

The well was cased, completed and suspended with tubing to surface and a permanent well-head installed. The well was perforated in the Waarre C1 sandstone reservoir from 1365.5 to 1377.5 MDKB. The well was completed as a gas producer and an initial flow and clean up test on March 19, 1999 flowed gas for a period of four and a half hours at a measured rate of 43.04 to 45.98 mmscf/day through a 88/64" choke

2.0 WELL HISTORY

2.1 LOCATION DATA

Basin:	Otway, onshore western Victoria
Lease:	PPL-2
Surface Coordinates:	5728373.9 metres North (Termed Slot 5) 677330.3 metres East
Surface Elevation:	Ground Level (GL): 130.0 metres AHD Kelly Bushing (KB): 135.0 metres AHD (Datum) (All depths relative to KB unless otherwise stated)
Bottom Hole Coordinates:	5728102.6 metres North 677124.4 metres East
Coordinate System:	Australian Map Grid 66, Zone 54, Central Meridian: 141 East

OTWAY BASIN - GAS FIELD LOCATION MAP

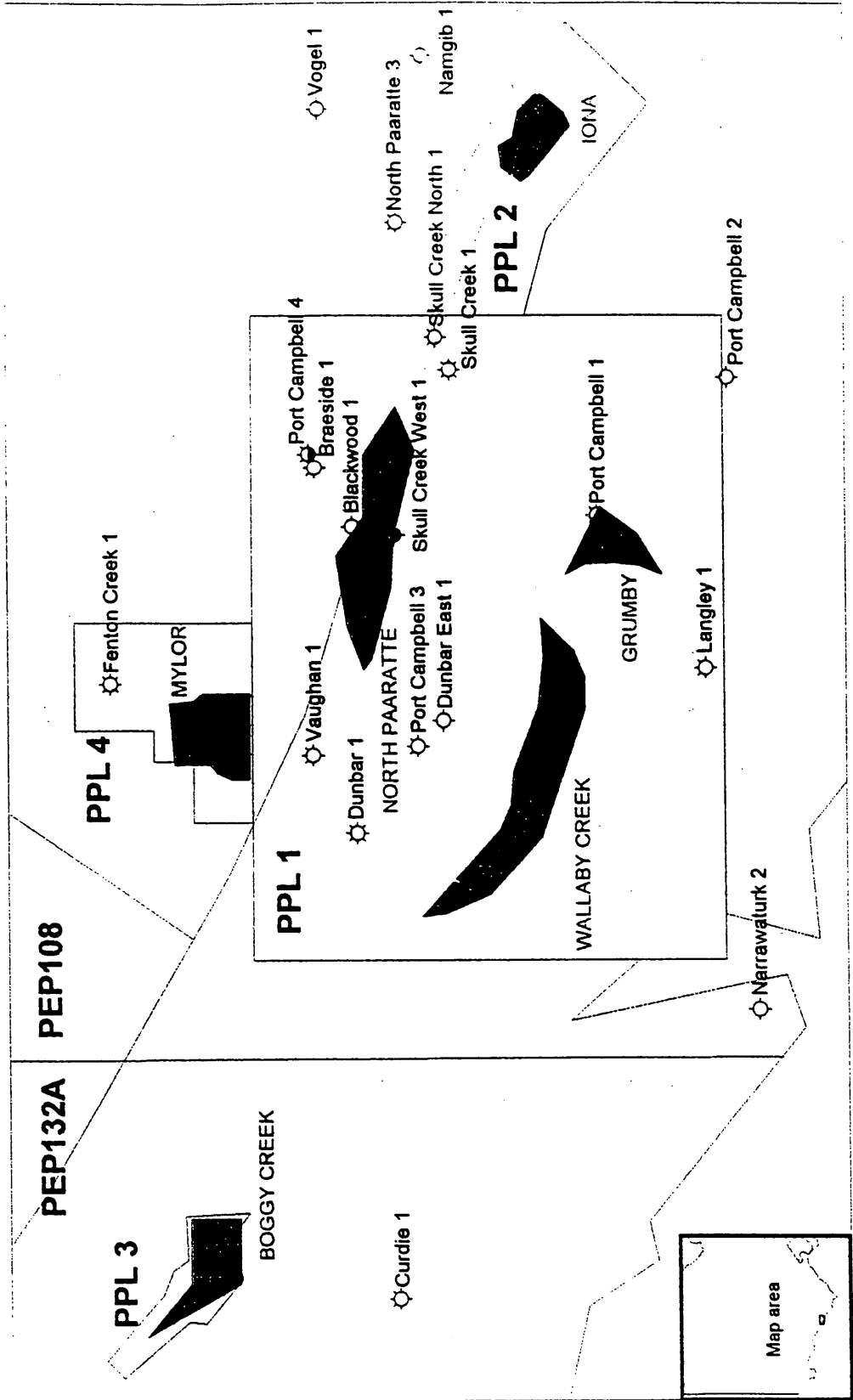


Figure 1.1

2.2 GENERAL DATA

Well Name: Iona-3

Classification: Gas Injection/Withdrawal well for the Underground Gas Storage Project

Operator: Western Underground Gas Storage Pty Ltd ("WUGS")

Property Owner: Western Underground Gas Storage Pty Ltd

Nearest Town: The coastal township of Port Campbell, approximately 7 km south of the Gas Field.

Nearest Well: Iona-1 located approximately 0.4 km from surface location.

Final measured Depth: Driller: 1459.0 m
Logger: 1452.0 m

Final True Vertical Depth: 1371.51 mKB

Spud date: 11:30 hours April 3, 1999.

TD reached: 19:15 hours April 12, 1999.

Days to Drill: 9.32 days

Date well completed: 17:00 hours April 19, 1999

Rig Released: 17:00 hours April 19, 1999

Well Status: Suspended Gas Injection/Withdrawal well

2.3 WELL SUMMARY

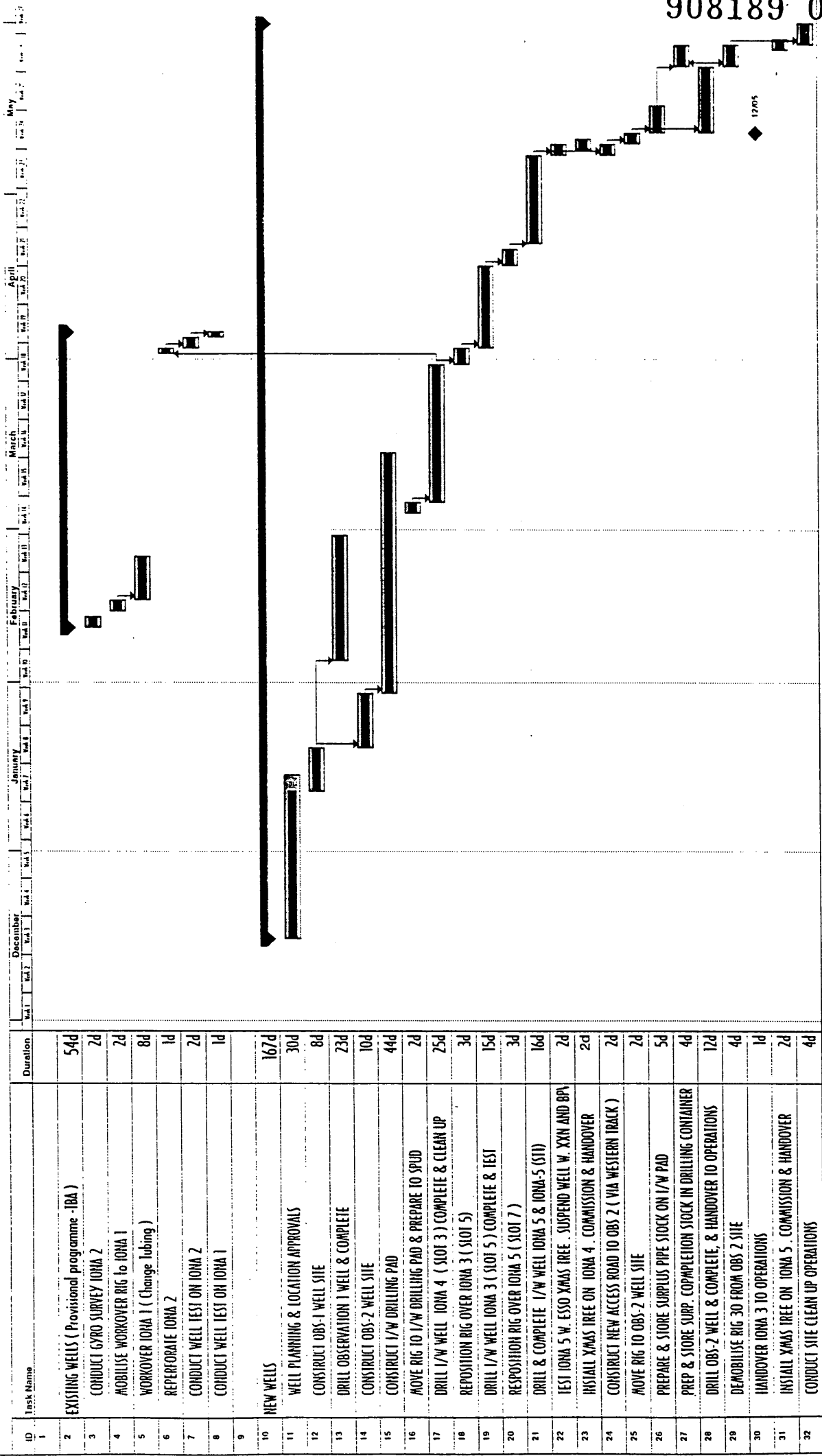
Table 2.1 Well Summary

WELL NAME	Iona-3		
DESIGNATION	Gas Injection/Withdrawal Well		
BASIN	Otway		
OPERATIONS BASE	Kelly Down Consultants, St. Leonard's, Sydney		
FIELD OPERATIONS BASE	On site at Iona , Waarre Rd, Port Campbell, Vic.		
DRILLING CONTRACTOR	OD&E		
RIG	Rig 30		
RT to GL	4.98 m		
GL to MSL	130.0 m		
TOTAL DEPTH (M DKB)	1459.0 m KB (driller)		
RIG MOBILISED	27 Feb 1999		
SPUD DATE	11:30 hours April 3, 1999.		
17.5" HOLE SECTION TD Depth/Time	635 mRT reached at 21:52 hrs 6 April, 1999		
12.25" HOLE SECTION TD Depth/Time	1459 mKB reached at 19:15 hrs 12 April, 1999		
SPUD TO TOTAL DEPTH TIME	9 Days 7.75 hrs		
COMPLETION INSTALLED	18 April 99 @ 01:00 hrs		
SPUD TO WELL SUSPENDED	16 Days 5.5 hrs		
CASING STRINGS	20 "	Conductor	10 m
	13.375"	Surface Casing	635 m
	9.635 "	Production Casing	1459 m
FINAL WELL STATUS	A 5 1/2" x 9 5/8" single packer completion was run simultaneously with 7" TCP guns. The completion was installed without incident and a 5 1/2" Wood group Xmas tree installed and tested. Perforations – 1365.5 m to 1377.5 m		

2.4 OVERALL PROJECT TIMING

The overall project schedule and timing is shown on Figure 2.1 and shows the actual performance times for the major activities over the entire project, from site construction activity, through drilling and workover to completion, clean up and well hand-over.

WESTERN UNDERGROUND STORAGE - DEVELOPMENT DRILLING PROJECT PHASE 1



ID	Task Name	Duration
1		
2	EXISTING WELLS (Provisional programme -IBA)	54d
3	CONDUCT GYRO SURVEY IONA 2	2d
4	MOBILISE WORKOVER RIG TO IONA 1	2d
5	WORKOVER IONA 1 (Change Tubing)	8d
6	REPERFORATE IONA 2	1d
7	CONDUCT WELL TEST ON IONA 2	2d
8	CONDUCT WELL TEST ON IONA 1	1d
9		
10	NEW WELLS	167d
11	WELL PLANNING & LOCATION APPROVALS	30d
12	CONSTRUCT OBS-1 WELL SITE	8d
13	DRILL OBSERVATION 1 WELL & COMPLETE	23d
14	CONSTRUCT OBS-2 WELL SITE	10d
15	CONSTRUCT I/W DRILLING PAD	44d
16	MOVE RIG TO I/W DRILLING PAD & PREPARE TO SPUD	2d
17	DRILL I/W WELL IONA 4 (SLOT 3) COMPLETE & CLEAN UP	25d
18	REPOSITION RIG OVER IONA 3 (SLOT 5)	3d
19	DRILL I/W WELL IONA 3 (SLOT 5) COMPLETE & TEST	15d
20	REPOSITION RIG OVER IONA 5 (SLOT 7)	3d
21	DRILL & COMPLETE I/W WELL IONA 5 & IONA-5 (SIT)	16d
22	TEST IONA 5 W. ESSO XMAS TREE . SUSPEND WELL W. XXN AND BPA	2d
23	INSTALL XMAS TREE ON IONA 4 . COMMISSION & HANDOVER	2d
24	CONSTRUCT NEW ACCESS ROAD TO OBS 2 (VIA WESTERN TRACK)	2d
25	MOVE RIG TO OBS-2 WELL SITE	2d
26	PREPARE & STORE SURPLUS PIPE STOCK ON I/W PAD	5d
27	PREP & STORE SURP. COPMLETION STOCK IN DRILLING CONTAINER	4d
28	DRILL OBS-2 WELL & COMPLETE, & HANDOVER TO OPERATIONS	12d
29	DEMOLIBISE RIG 30 FROM OBS 2 SITE	4d
30	HANDOVER IONA 3 TO OPERATIONS	1d
31	INSTALL XMAS TREE ON IONA 5 . COMMISSION & HANDOVER	2d
32	CONDUCT SITE CLEAN UP OPERATIONS	4d

Project: Western Underground Storage
 Train: WUG 400059
 P10_41 Status

Task Progress
 Milestone
 Summity

Rollled Up Task
 Rollled Up Milestone

Rollled Up Progress

Figure 2.1

wugs schedule200599 Page 1

2.5 CONTRACTORS

Table 2.2 Contractors

PROJECT MANAGERS	Kelly Down Consultants Pty Ltd
DRILLING	OD&E
LOCATION SURVEY	T. G Freeman and Associates
SITE CONSTRUCTION	Walter Mellis
WATER SUPPLY	Trucked in by Walter Mellis
FUEL SUPPLY	Supplied by Drilling Contractor
SUPPLY BASE	Max Nelson Storage yard – Cobden
CEMENTING	Halliburton
MUD SYSTEM	
- Drilling Fluids	Baroid
- Solids Control	Via Drilling Contractor
MUD LOGGING	Halliburton
ELECTRIC LOGGING	Schlumberger
DRILLING TOOLS	Tasman Oil Tools
DIRECTIONAL DRILLING	Sperry/Halliburton
GYRO SERVICES	Gyrodata via Halliburton
MWD	Halliburton
CASING SERVICES	Premium Casing
CORING	Corepro
CASING & TUBING	Marubeni/Sumitomo
WELLHEADS	
- Drilling Spools	- Wood Group/Gearhart
- Xmas Trees	- Wood Group/Keamey Engineering
- Miscellaneous Flanges/Xovers	- Gearhart & Baker Oil Tools
COMPLETION SERVICES	
- Slickline	- Halliburton
- Completion components	- Halliburton
- TCP perforating	- Schumberger
- Lubricator	- Expertest
WELL TESTING	Halliburton
ENVIRONMENTAL	
- Waste Disposal	Timboon Plumbing
FUEL SUPPLY	
RIG CAMP	Camp Cooriemungle
TRUCKING	Max Nelson Transport
CRANE SERVICES	Timboon Engineering
COMMUNICATIONS	
- Landlines	- Telstra
- E Mail/Internet	- Big Pond

3.0 DRILLING DATA

3.1 WELL STATUS

The following figures illustrate the suspended condition of the wellhead, completion, and other pertinent data at the time of well hand-over from drilling to production. Figure 3.1 is the Wellhead Diagram, Figure 3.2 is the Completion Diagram and Figure 3.3 is the Hand-over Certificate.

3.2 OPERATIONAL SUMMARY

3.2.1 Logistics and Planning

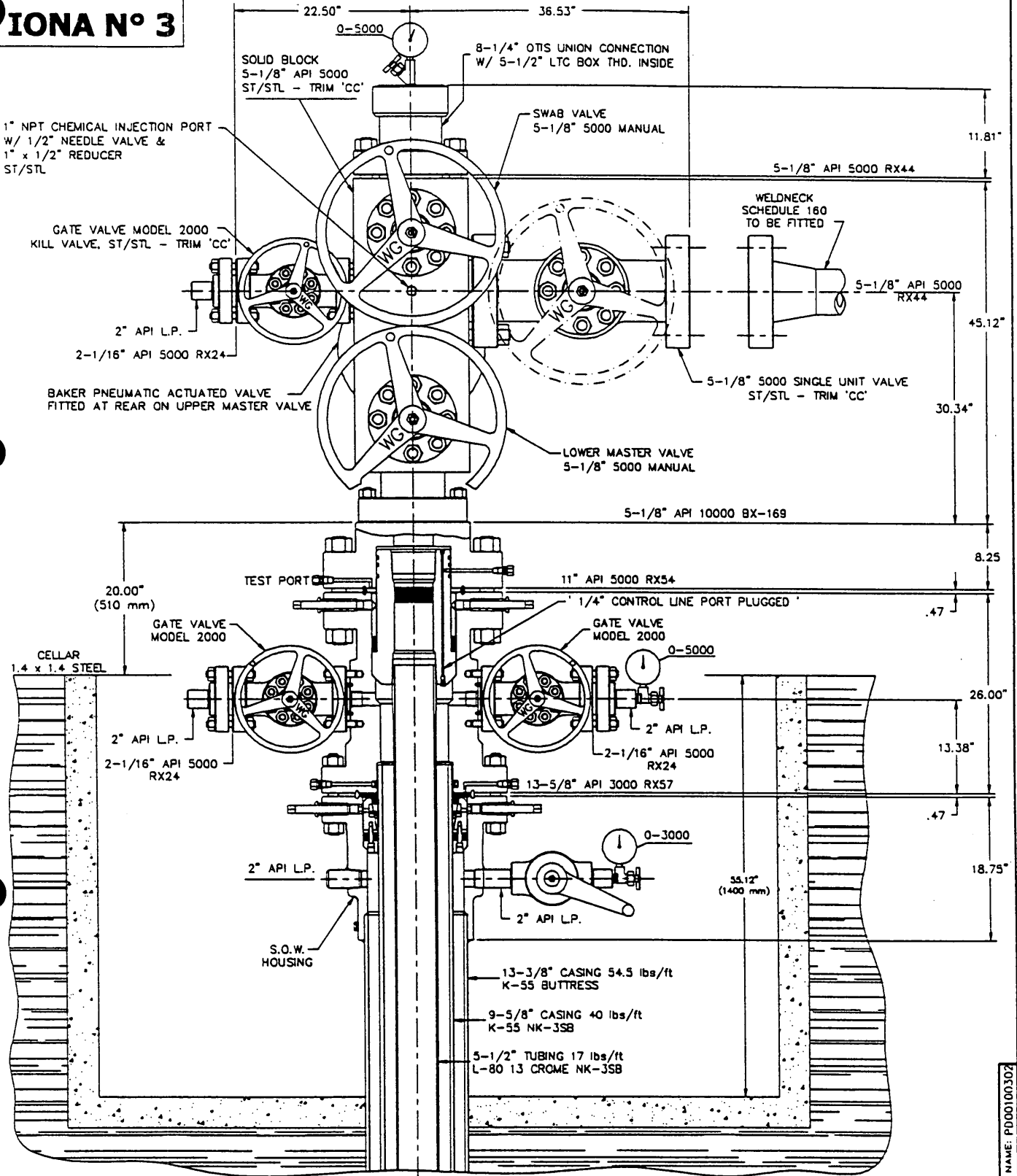
Kelly Down Consultants ("KDC") managed the drilling and completion of the Iona-3 well on behalf of WUGS as part of the project to drill and complete three injection/withdrawal wells, two observation wells, and the re-completion of the two existing wells.

Materials and logistics were managed out of the KDC Sydney offices with the input of the rig site team. Periodic visits to the well site by the materials and logistics coordinator ensured that inventory and service records were managed properly.

Mud and cement chemicals were supplied by Halliburton, from their Cheltenham facility. Directional drilling surveying and MWD equipment was provided by Halliburton from a number of locations mainly Perth and Darwin. The large distances and subsequent mobilisation times meant that it was often more economic to leave equipment on stand by in between jobs (such as casing running equipment) rather than truck equipment back and forth to the site.

The first site visit to assess lease building requirements took place on 21 December 1998. The Iona gas field site is set in a rural part of South West Victoria, approximately seven kilometers north of the township of Port Campbell. Two existing wells, Iona 1 and Iona 2, had commenced production at the site in 1992 and 1994 respectively. The new facilities for gas production/injection and processing were to be built on a large site encompassing the existing wells. The overall site area for the WUGS gas plant is approximately 0.5 km x 0.6 km square. All the new wells and the two existing wells have their surface locations within the security fence at the perimeter of the site.

**WELL
IONA N° 3**



CAD FILE NAME: PD00100302

CAD



Wood Group Pressure Control
 Mo: 0408-841683
 Fax: (03) 9589-6127
 Email: crossandregpc@ozemail.com.au

WESTERN UNDERGROUND
 IONA GAS INJECTION WELL N° 3
 CASING PROGRAM: 13-3/8" x 9-5/8" x 5-1/2"

Drawn by:
 R.C.

Date:
 04-05-1999

Scale:
 N.T.S.

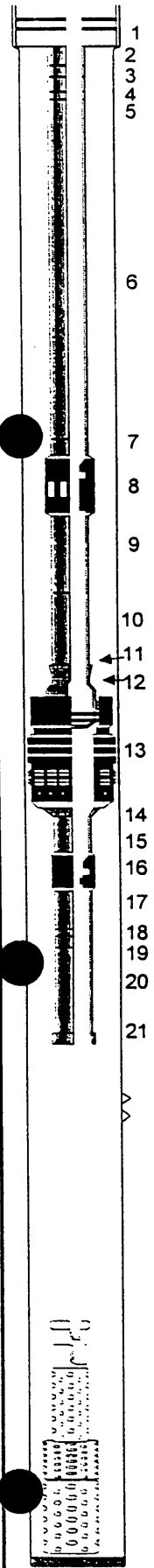
Drawing Number SH 1 of 1
 PD-001003-02

Figure 3.1




Australian Completions

WELL : Western Underground Gas Storage; Iona 3
 DATE : 14 April 99



Depth	Length(m)	No.	DESCRIPTION	O.D.	I.D.	PART / No
	1.190		Difference			
1.19	4.470		Elevation MDRKB			
5.66	0.240	1	Woodgroup Tubing Hanger	5.500	4.950	
5.90	0.000		Compression; 15,000.lb			
5.90	2.820	2	Pup Joint - 13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	
8.72	3.100	3	Pup Joint - 13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	
11.82	2.020	4	Pup Joint - 13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	
13.84	0.540	5	Pup Joint - 13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	
14.38	1306.750	6	Tubing -13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	109 jnts
1321.13	2.920	7	Pup Joint - 13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	
1324.05	1.380	8	SSD - 5 1/2" NK3-SB B x P 9 Cr	6.560	4.562	621 XD 45603
			[Open Down - Flow Area 16.35 sq in]			1KL-X9
			[Positioning Tool - 42 BO 153]			
1325.43	2.420	9	Pup Joint - 13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	
1327.85	2.920	10	Pup Joint - 13 Cr 80 - 5 1/2" 17 ppf NK3-SB	5.500	4.892	
1330.77	0.340	11	CrossOver - 5 1/2" NK3-SB B x 4 1/2" EUE P 9 Cr	6.020	3.958	MSO-7867-4
1331.11	0.420	12	Ratch Latch w/ RTR Seals - 4 1/2" EUE B 9 Cr	5.630	3.938	212 OO 7326
1331.53	2.460	13	Packer - 9 5/8" HVT 40 # LTC B 9 Cr	8.530	3.880	812HVT95382
1333.99	0.260	14	Crossover - 5" LTC P x 4 1/2" LTC Pin 9 Cr	5.020	3.830	Baker Fab
1334.25	2.930	15	10' Pup Jt - 4 1/2" 11.6 ppf K55 w/LTC BxP	4.500	3.958	
1337.18	0.410	16	'XN' Nipple - 4 1/2" LTC B x P 9 Cr	5.023	3.725	11XN 38160-A
1337.59	2.970	17	10' Pup Joint - 4 1/2" K55 w/LTC Box x Pin	4.500	3.958	
1340.56	0.280	18	CrossOver - 4 1/2" LTC Box by 4 1/2"EUE Pin	5.000	3.958	Baker Fab
1340.84	0.240	19	Debris Sub - w/ 4/12" EUE Box x Pin	5.560	3.880	
1341.08	9.620	20	Tubing Joint - 4 1/2" w/EUE Box x Pin	4.500	3.958	
1350.70	0.650	21	Schlumberger SAXR Re-Entry Guide.	5.520	3.860	
1351.35			End of Tubing			
			Perforations at 1365.5 m to 1377.5 m			
			7" TCP 30 deg phasing - 12 spf 37 gm HMX charges			
			Top of fish at 1420.18 meters			
			Schlumberger TCP Assembly - left in hole;			
			consisting of 7" guns and 3 3/8 gun spacer.	3.375		
			Total TCP length left in hole: 26.44 meters	7.000		
			PBTD at 1445.0 meters			
			Pick-up weight : 75,000.lb.; Slack-off: 70,000.lb.			
			15,000 lb compression on tubing			
			Ratch Latch pinned at 120,000. Lb			
			Completion fluid: 8.6 lb/gal inhibited 3% KCl brine.			

Figure 3.2



WELL HANDOVER & STATUS RECORD

TU AUSTRALIA
WESTERN UNDERGROUND GAS STORAGE

Detail	Description	Name	Distribution Company
Field / Country:	Iona / Australia	Gary Scott	WUGS
Well No:	Iona 3	Kurt Matheson	TU Australia
Well Surface Co-ordinates:	5728374.14 N; 677329.42 E	David Hesse	Worley/Bechtel
Well TD Co-ordinates:	5728111.6 N; 677522.42 W @ 1438.6 m MDRKB	Colin Stuart	KDC
Maximum inclination:	33.3 deg @ 1058.8 m MDRKB	Jim Slater	KDC
Well Drilled by :	OD&E Rig 30 - Drilling Management KDC ltd		
Rig Floor Elevations:	KB to GL: 4.98 m GL to MSL: 130 m		
Well TD/PBTD	TD: 1159 m MDRKB PBTD: 1145 m MDRKB		
Well Type:	Single Completion Gas Well		
Purpose of handover	Handing new well to Production Operations		
Handover from:	WUGS Drilling -		
Handover to:	Wugs Operations -		
HANDOVER DATE:	May 12 1999		

WELL STATUS (All depths MDRKB unless stated otherwise)

Item	Description	Status at handover	Pressure Status	Size/type/rating	Comments / Remarks
	Xmas Tree	Installed	Bled to Zero above BPV	5 1/2" 5,000 psi	Wood Group Block Tree
1	Swab Valve	Closed	0 psi above/below	5 1/8" API 5,000 psi	5,000 psi needle valve installed
2	Tree upper master valve	Open	0 psi	5 1/8" API 5,000 psi	
3	Upper master actuator	Lock out cap installed	Pneumatic, no air supply	100 psi air supply	Baker Oil Tools type 1705
4	Tree lower master valve	Closed	0 psi above/below	5 1/8" API 5,000 psi	
5	Flow wing valve	Closed	0 psi above/below	5 1/8" API 5,000 psi	5,000 psi gauge installed
6	Kill Wing Valve	Closed	0 psi above/below	2 1/16" API 5,000 psi	
7	Tree BPV	Installed	1500 psi below BPV	5" nominal Type H	
8	Tree cap	Installed			6,000 psi gauge installed
9	A annulus valve inner	Closed			3,000 psi gauge installed
10	A annulus valve outer	Closed			
11	B annulus valve	Closed			
12	Last rec.flow / FTHP	45.41 MMSCFD/1380 psig	SITHP = 1500 psig		MAX SITHP = 1500 psig
13	Well fluid	Gas above 36ft	1500 psi below BPV		SI pressure below 36ft 1500 psi
14	A Annulus	8.6 ppg 3% KCL inhibited brine	0 psi	2 x 208 Litre drums inhibitor	COAT 2748 Baroid inhibitor
15	Wireline plugs installed?	No			
16	Perforated Interval	Open		1365.5 m to 1377.5 m	7" TCP 30 deg, 12 spf, 37gm.hmx
17	Production Tubing	5 1/2" 13 Cr L80 17 ppf NK3SB		ID: 4.892" Drift: 4.767"	
18	Nipple Profile	XN @ 1337.18 m		ID: 3.725"	Part No. 11XN38160-A
19	Sliding Sleeve	5 1/2" SSD @ 1324 m		ID: 4.562"	Part No. 621 XD 45603
20	Production Packer	9 5/8" HVT 40# @ 1331 m		ID: 3.880"	Part No. 812HVT 95382
	Production Casing	9 5/8" 40 ppf 13 Cr L80 NK3SB		ID: 8.835" Drift: 8.679"	
	Minimum restriction	X/Over 5" x 4 1/2" @ 1334 m		ID: 3.830"	Packer to tailpipe X/O
23	Wellhead Type	13 3/8" x 9 5/8" x 5 1/2"	5,000 psi rated		Wood Group Slip & Seal Type

Remarks:

Well handed to WUGS Operations following completion of drilling and testing program.

Tree cap installed on Xmas tree.

Steel Cellar installed, with ground level grating.

Handwheels locked with looped chain.

Temporary protective steel cage installed around well.

Warning sign posted on actuator lockout cap.

Name Plate installed on cage.

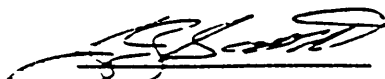
Cellar drain installed.

A 5 1/8" 5,000 psi to 6" Weld Neck flange, for flow wing valve outlet connection to flow line, has been left inside the protective cage c/w studs and nuts.

stores cabinet.

Signatures:

Well accepted by :



J. SLATER

Signed:



C. STUART

Date:

12/15/99

Handed over by :

Signed:

Date:

12/05/99

Figure 3.3

3.2.2 Site Preparation

Site construction for Iona-3 commenced in early January 1999. The lease area was on a flat paddock off the main plant access road. Iona-3 was to be situated on a drilling pad specifically designed for the drilling of the injection/withdrawal wells.

Uncertainty in the future field development plans necessitated provision for some flexibility in the slot configuration for the main pad. Consequently a 50 m spacing was selected as the optimum for phase one drilling. Bottom hole targets had been selected for the production/withdrawal wells by the subsurface team. The optimum slot to target profiles were selected which put the Iona-3 slot 125m west of the eastern edge of the main pad boundary.

A construction contractor was appointed to lay down a 600 mm limestone/sandstone base for the main pad for the drilling rig with an access road off the main site gate. Rig crew accommodation facilities were provided remote from the site at Camp Cooriemungle, approximately seven kilometers north of Iona. Site construction included the installation of a 1.8m x 1.8m x 1.8m deep cellar and 5m of 20 inch conductor pipe cemented in place.

Of particular concern throughout construction was adherence to the environmental management plan for the project, which stressed the minimisation of noise and dust levels. This necessitated the spraying of water, which had to be trucked into site from nearby water sources, as dam water on the WUGS site itself was reserved for gas plant construction requirements. A turkeys nest or small dam was eventually built to store trucked water for mud mixing. A water well was planned to be drilled on site by the gas plant construction group but this was delayed and as a result, water was trucked into the drilling site.

A schematic of the overall site showing the location of Iona-3 within the site boundary is shown on Figure 1.2.

3.2.3 Mobilisation

OD&E Rig 30 was mobilised from Sale in eastern Victoria on January 21, 1999 where it had been used to drill a well for Roma Petroleum NL. The rig contractor trucked the rig early to the site to perform some rig maintenance tasks.

Rig 30 is an Ideco H-725-D electric rig with four 600 kW generators powered by four CAT 3412 PCTA diesel engines. The generators were replaced with quiet generators for the duration of the project to meet noise guidelines provided in the environmental management plan.

The rig is a triple rig with a Dreco floor-mounted cantilever mast with a nominal hook gross load capacity of 510,000 lbs. The limiting performance factor of the rig was the mud pumps. Only two Gardner Denver PZ-8 (800 HP) pumps were provided by the drilling contractor.

Iona-3 was drilled during April as the second of the new injector/withdrawal wells.

3.2.4 Pre Spud

The Iona-3 pre-spud was held at the rig site on the 01st of April. The rig move from slot 3 (Iona 4) location commenced on the 1 st April at 0700 hrs and was completed by 1130 hrs on 03 April.

3.2.5 17 ½” Hole Section

After a full safety briefing with the rig crews, Iona-3 was spudded at 1130 hrs on the April, 3 1999. The 17 ½” hole was drilled using a KCL/PHPA/Polymer fresh water mud system. The PHPL was used to inhibit the reactive clays present within the Tertiary and Late Cretaceous claystones, ie. in the Gellibrand marl, Pember mudstone and Paaratte Formation.

A vertical hole was drilled as per the well plan to 636m. As in Iona 4, several hard stringers were encountered drilling through the Gellibrand marls. The BHA included 3 stabilisers, which were run to assist in “ straightening” the hole, and prevent a repeat of the stuck casing on Iona 4. A wiper trip prior to POOH showed the hole to be in good condition. The 13 3/8” casing was run and cemented in place trouble free. The casing was cut and the wellhead welded in place and pressure tested to 2000 psi prior to drilling out.

3.2.6 12 1/4” Hole section

A Formation Integrity Test (“ FIT”) was performed 3m outside the shoe resulting in a leak off of 10.1 ppg. The kick off assembly was run from the shoe with a PDC bit. After drilling to 934 m the bit was pulled, as the BHA would not build at the required rate. After changing out the bit to a tri-cone, the hole was drilled on target to TD without problems. Open hole logs were run at TD.

3.2.7 9 5/8 ” Production String

A combination 9 5/8” string was run with 100 m of 40 lb/ft 13 CR L80 NK3SB casing across the pay zone and L80 casing back to surface. The string was cemented successfully in place and the wiper plug bumped with 2500 psi. A conventional slip and seal type wellhead was installed after dropping the casing slips, and cutting the 9 5/8” casing. The tubing head was installed and tested to 2000 psi.

A CBL log showed effective isolation across the reservoir sands had been achieved.

3.2.8 Clean up and Perforate

A 9 5/8 ” casing scraper run ensured a clean setting position for the completion packer while circulating the well to brine prior to running the completion. A 3% KCL brine was circulated at TD preceded by a clean up sweep.

3.2.9 Completion

A 5 1/2" x 9 5/8" single packer completion was run simultaneously with 7" TCP guns. The completion was installed without incident and a 5 1/2" Wood group Xmas tree installed and tested. After rigging up surface test lines, the TCP guns were detonated by drop bar method, and the well flowed to clean up.

Test rate details can be found in the Halliburton Iona well test report, see Appendix 5.

3.3 DAILY OPERATIONS

3.3.1 Daily Drilling Reports

The details of the daily activities during rig up and drilling operations for the Iona-3 well are presented in the Daily Drilling reports in Appendix 1.

3.3.2 Time Depth curve

The daily cost estimates can be found in graphical format in the time depth curve in Figure 3.4.

3.3.3 Definitive Survey

A gyro survey was run in drill pipe on the casing scraper run. Details of the survey are found in Appendix 2 and Appendix 6.

3.3.4 Directional Drilling

Iona-3 was designed as a directional well. The well failed to build at the correct rate using the PDC bit due to excessive reactive torque, making the maintenance of a steady tool face impossible. After changing out the bit to a tri-cone, the well was successfully drilled to the target. A directional plot showing a plan and section view is presented in Figure 3.5.

3.3.5 Iona-3 Time Performance

Iona-3 was spudded at 11:30 hrs on April 3, 1999, with OD&E Rig 30. The rig was released 1700 hrs on April 19, 1999, after drilling, completion and testing in 16 days, and 5.5 hrs.

Table 3.1 and Figures 3.4, 3.5 and 3.6 illustrate the time performance.

Field : Iona
Structure : Iona Drillpad
Well : Iona #3

Scale: 1cm = 25m

Eastings

-225 -200 -175 -150 -125 -100 -75 -50 -25

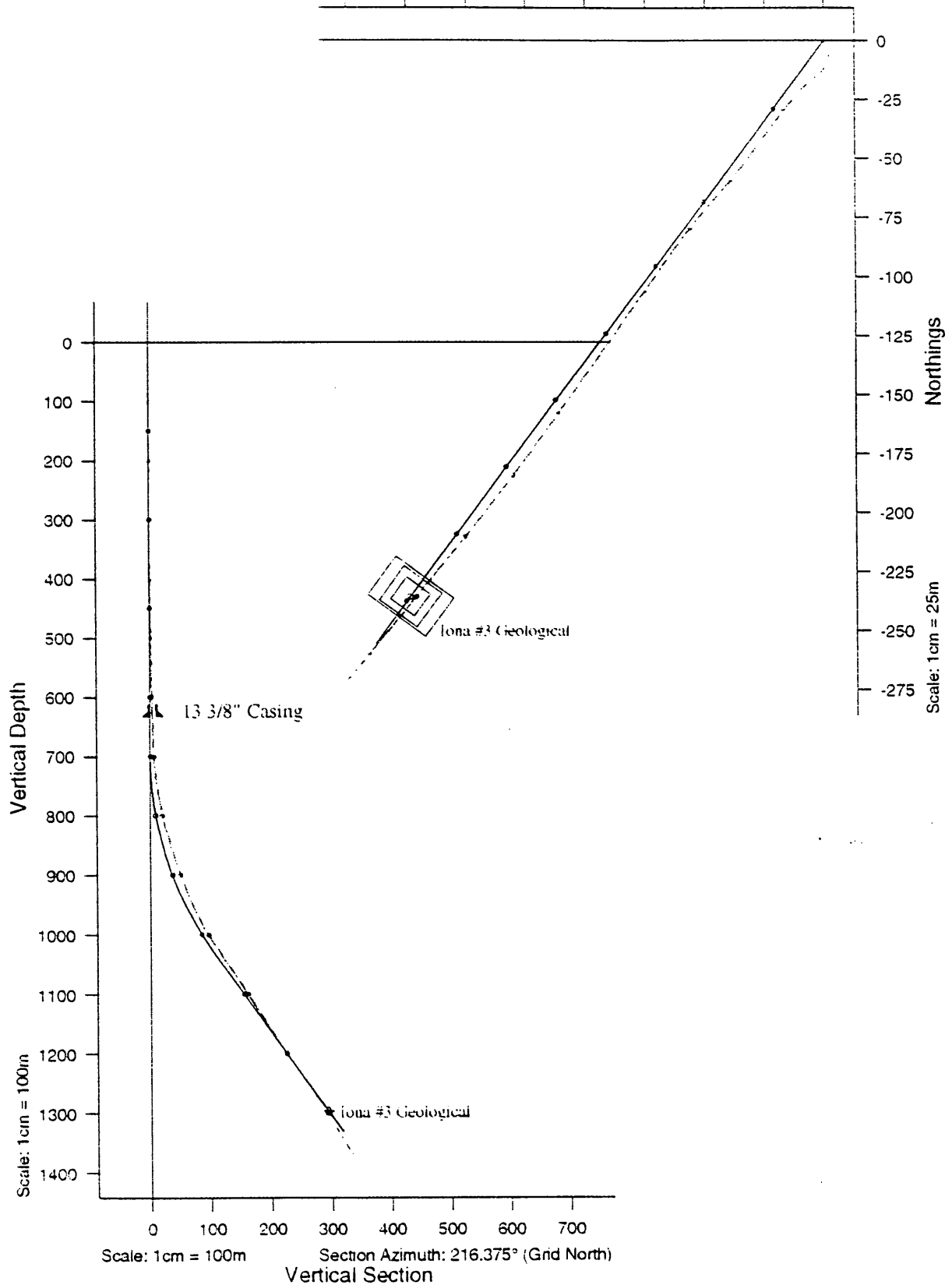


Figure 3.5

3.3.6 Time Analysis

Table 3.1 Time Summary

ACTIVITY	HOURS	DAYS
Rig move	37	1.54
Rig up	28.5	1.19
Drilling	119	4.96
Bit Trip	7	0.29
Wiper trip	37	1.54
Survey	3.5	0.15
Circulate and condition	10	0.42
Change BHA	1.5	0.06
Casing & Cementing	38.5	1.60
Wellhead & BOP's	70.5	2.94
Coring	0	0.00
Logging	10.5	0.44
Wash & Ream	24	1.00
Fishing	0	0.00
Rig Repairs	8	0.33
Completion	59	2.46
Miscellaneous	1	0.04
TOTAL	455	18.95

WUGS - WESTERN UNDERGROUND GAS STORAGE

28/04/99

Permit: PPL-2 Otway Basin

Actual elevations: GL to SS 130.0 m GL to KB 4.98 m

Rig: OD&E 30

Well: IONA-3

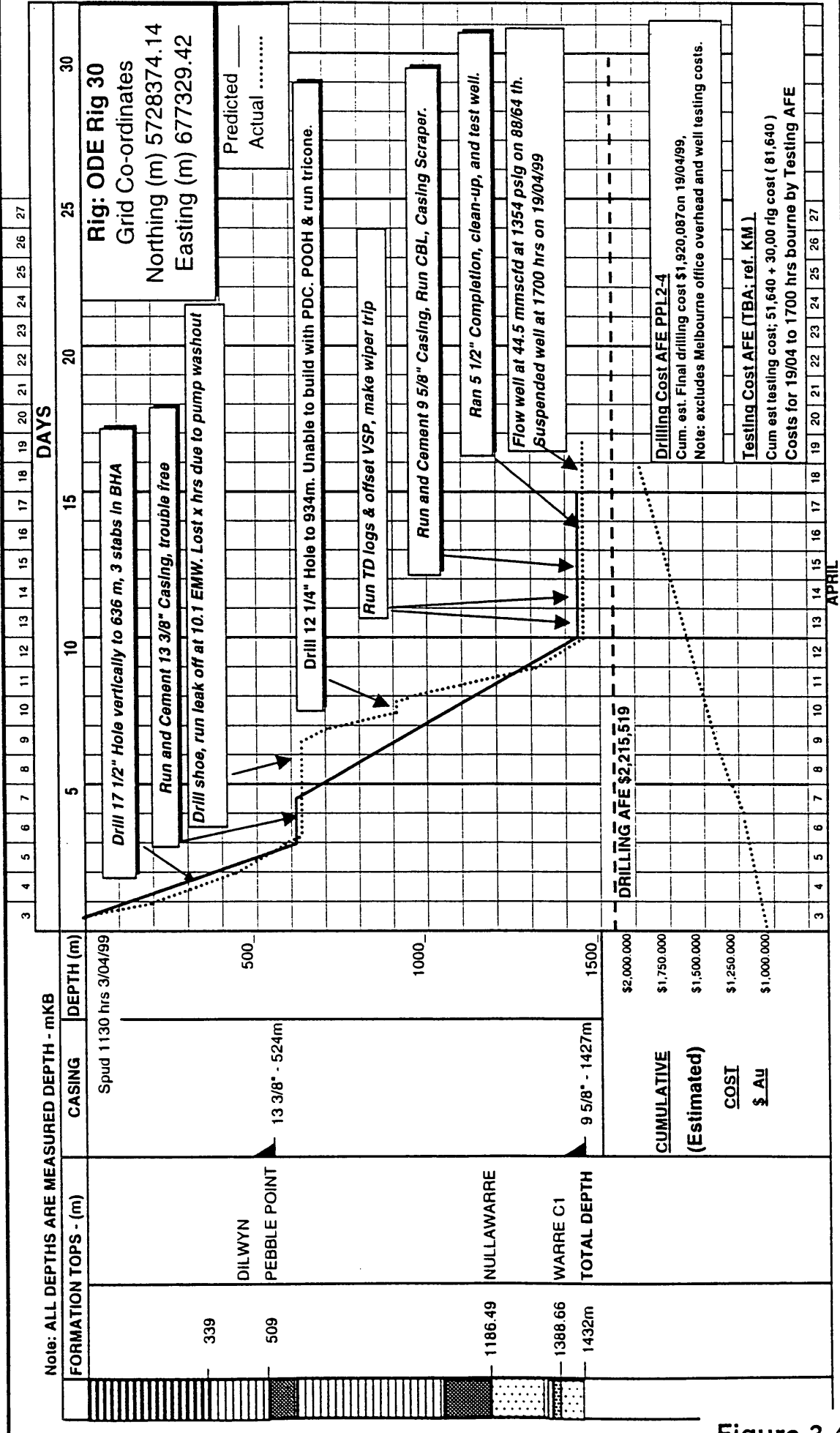


Figure 3.4

Figure 3.6 Time Performance Charts

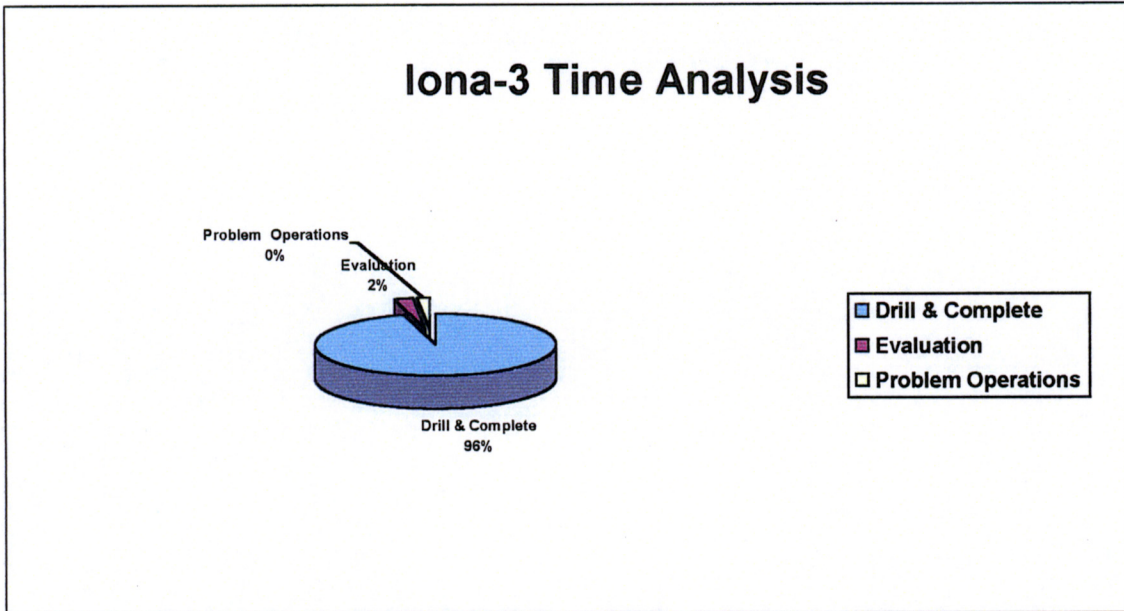


FIGURE 3.6a - OVERALL PERFORMANCE CHART

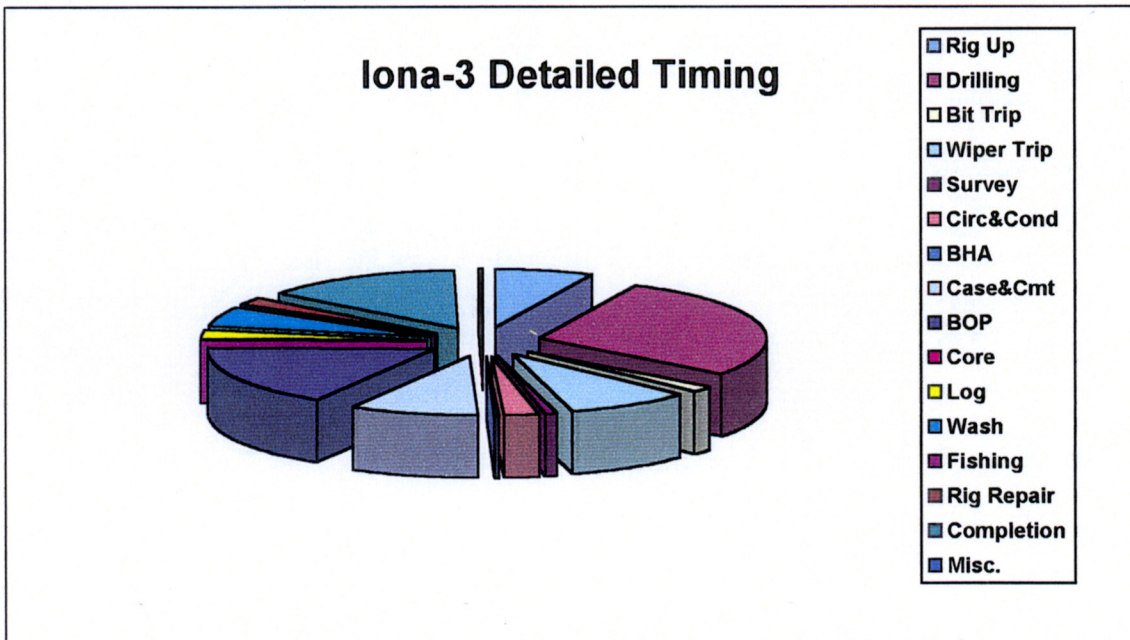


FIGURE 3.6b - DETAILED PERFORMANCE CHART

3.4 BHA AND BIT SUMMARIES

The BHA's and bit record are detailed in the Directional Drilling report in Appendix 6.

3.6 CASING AND CEMENTING REPORT

3.6.1 17 1/2" Hole Section : 13 3/8" Surface Casing (Surface to 635 m RT)

Table 3.2 13 3/8" Surface Casing Tally

SURFACE CASING

WELL NAME :	Iona-3	DATE RUN :	07/04/99
ELEVATIONS :	R.T. : 4.98 m	M.S.L. : 130.5 m	T.D. : 639 m
STRING TYPE :	13 3/8" Surface k55	RKB TO TOP OF LAST SPOOL :	

SURFACE CASING & EQUIPMENT RECORD AS RUN FROM TOP TO BOTTOM

Size O.D. (ins)	Weight (lb/ft)	No. of Joints	Thread Type	Length (m)	From (m)	To (m)	Remarks
13 3/8"	54.5	2	BTC	24.0	634.5	610.5	Shoe & float/Joints
13 3/8"	54.5	51	BTC	605.0	610.5	5.5	
Tally Total :				629.0	Casing Landed at : 5.5 m		

CASING SPOOL TYPE :	WG	SIZE :	13 3/8" x 9 7/8" x 5 1/2"
CENTRALISERS AT :	2 on shoe joint, 1 per second joint thereafter		
SCRATCHERS AT :	Cement basket at 120 m		

Table 3.3 Surface Casing Cement Details

SURFACE CASING CEMENT DETAILS

DRILLING FLUID PRIOR TO CEMENTING :	9.1ppg Weighted KCL / PHPL
PREFLUSH, SPACER DETAILS :	30 bbl, 8.3 ppg Drill Water ahead of cement.

CLASS	No. SX	ADDITIVE	FUNCTION	QUANTITY OF ADDITIVE (lbs./ gal)	%	HOW ADDED BLEND OR MIX WATER	REMARKS
'G'	1224	Bentonite CFR-3L NF-1	Gel Extender Friction Reducer Anti-Foam	2838 lb 88 gal 2 gals	2.5 2gals/10 bbl 1	Blend Mix Water Mix Water	Lead Slurry,
'G'	453					Mix Water	Tail Slurry – no losses

THEORETICAL TOP OF CEMENT (m) :	Surface	AVERAGE SLURRY WEIGHT (ppg) :	Lead 12.8 Tail 15.8
DISPLACEMENT FLUID :	8.3 ppg Fresh water	DISPLACEMENT RATE (bbl/min) :	6.2 (Rig pumps)
PLUG BUMPED WITH (psi) :	Bumped – 1500	DISPLACEMENT VOLUME (bbl) :	Calculated 310 Actual 310
REMARKS :	Good returns, floats held.		

3.6.2 12 1/4" Hole Section: 9 5/8" Production Casing (0 to 1459 m RT)

Table 3.4 9 5/8" Production Casing Tally

PRODUCTION/MONITORING CASING

WELL NAME :	Iona-3	DATE RUN :	15/04/99
ELEVATIONS :	R.T. : 4.98 m	M.S.L. : 130.5 m	T.D. : 1459 m
STRING TYPE :	9 5/8" Production	RKB TO TOP OF LAST SPOOL :	4.90m

SURFACE CASING & EQUIPMENT RECORD AS RUN FROM TOP TO BOTTOM

Size O.D. (ins)	Weight (lb/ft)	No. of Joints	Thread Type	Length (m)	From (m)	To (m)	Remarks
9 5/8"	40	2	NK3SB	24.4	1459	1434.6	Shoe&float joints
9 5/8"	40	13	NK3SB	152	1434.6	1282.6	13 cr Csg
9 5/8"	40	118	NK3SB	1287.4	1282.6	4.8	9 5/8" Joints
				Tally Total :	1463.8	Casing Landed at :	1459

Table 3.4 9 5/8" Production Casing Tally (continued)

CASING SPOOL TYPE :	WG	SIZE :	13 3/8" x 9 5/8" x 5 1/2"		
CENTRALISERS AT :	One per joint for first 10 joints, every 2 joints to shoe.				
SCRATCHERS AT :	Nil.				

3.6.3 9 5/8" Production Casing Cement Details

Table 3.5 Production Casing Cement Details

DRILLING FLUID PRIOR TO CEMENTING :	9.2 ppg Weighted KCL / PHPL
PREFLUSH, SPACER DETAILS :	20 bbls water plus 20 bbl, 8.5 ppg Mudflush.

CLASS	No. SXS	ADDITIVE	FUNCTION	QUANTITY OF ADDITIVE (lbs / gal)	%	HOW ADDED BLEND OR MIX WATER	REMARKS
'G'	374	Econolite	Extender	206 gal	.55 gals/sx	Mix Water	Lead Slurry.
		HR-6-L	Retarder	22 gal	.06 gals/sx	Mix Water	
		NF-1	Anti-foam		0.5 lb/1bbl	Mix Water	
'G'	376	Halad 322LXP	Water loss control	105 gals		Mix Water	Tail Slurry – no losses
		Gasstop	Gas check	23 gals			

THEORETICAL TOP OF CEMENT (m) :	534 m	AVERAGE SLURRY WEIGHT (ppg) :	Lead 12.5 Tail 15.8
DISPLACEMENT FLUID :	8.3 ppg Fresh water	DISPLACEMENT RATE (bbl/min) :	8.0 (Rig pumps)
PLUG BUMPED WITH (psi) :	Bumped – 2500	DISPLACEMENT VOLUME (bbl) :	Calculated Actual
REMARKS :	Good returns, spacer at surface when plug bumped.		

3.7 DRILLING FLUID RECAP

The drilling fluid details are found in the drilling fluids recap in Appendix 7.

3.8 COMPLETION SUMMARY

The details of the completion for Iona-3 are shown in the completion status diagram. Completion times achieved were as follows:

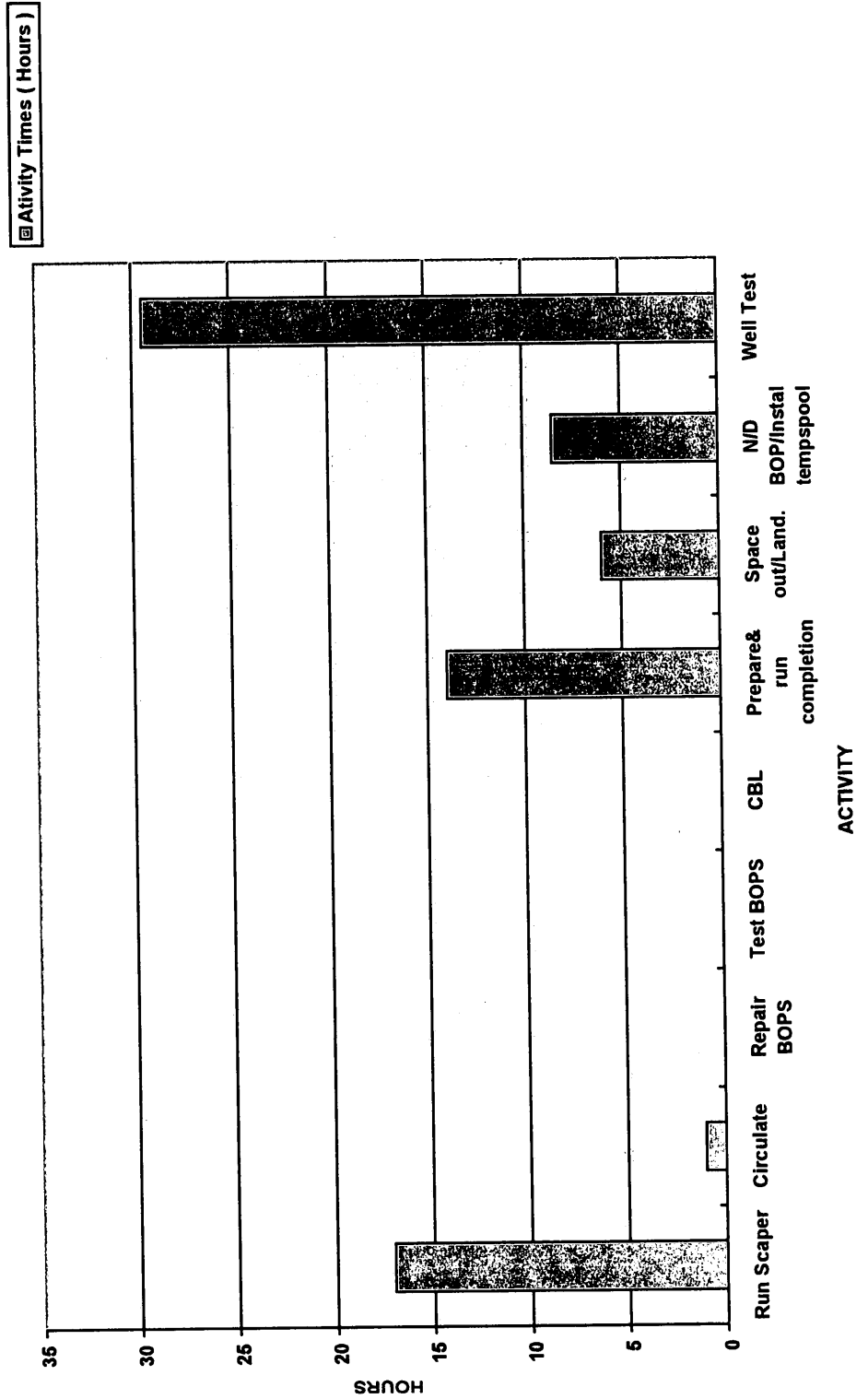
Table 3.6 Completion Times

Activity	Hours
Run Scraper	17
Circulate Completion Brine	1.0
Repair BOP's	0.0
Test BOP's	0.0
Run Cement Bond Log	0.0
Prepare TCP completion & Run Tubing	14.0
Spaceout/Land & test tubing	6.0
Nipple down BOP's, install Xmas Tree	8.5
Conduct well test	29.5

Figure 3.7 shows the comparative time performance for the completion.

FIGURE 3.7: IONA-3 COMPLETION TIME PERFORMANCE

IONA 3 COMPLETION TIMING



3.8 LESSONS LEARNED

Table 3.7 Incident Report No 1

Western Underground Gas Storage		INCIDENT REPORT/LESSON	
Report No: 1	Date: 30 March 1999	Prepared By: Colin Stuart	
Well: Iona-3	Operator: WUGS	Rig: OD&E Rig 30	
INCIDENT/LESSON Drilling build sections with PDC bits.			
WELL DATA/OPERATIONS PRECEEDING INCIDENT/LESSON Directionally drilling 12 ¼" hole			
EVALUATION OF INCIDENT (Cause, were procedures/orders followed?). A PDC bit was used in the drill-out assembly to drill both the build and tangent sections. The BHA was unable to maintain the required build rate. This was believed to be due to the bit being too aggressive for the mud motor. The BHA was pulled and a tri-cone run in its place. With the tri-cone bit on bottom no further problems were experienced with the build rate or the behaviour of the BHA generally.			
REMEDIAL WORK CARRIED OUT The bit was changed out for a tri-cone.			
RECOMMENDATIONS Review bit and BHA (motor) combinations carefully for build sections. Ensure directional contractors have input.			

4.0 FORMATION SAMPLING AND TESTING

4.1 CUTTINGS

Cuttings were collected at three metre intervals or as directed from surface to TD. Detailed cuttings descriptions are presented in Appendix 3.

4.2 CORES

4.2.1 Conventional Core

No conventional cores were cut in Iona-3.

4.2.2 Sidewall Cores

No sidewall cores were acquired in Iona-3.

4.3 TESTING

No drill stem tests or wireline formation tests were carried out in Iona-3. Results of the clean up and flow test of the well are presented in Appendix 5.

4.4 SAMPLE ANALYSIS

No petrological or palynological analyses were carried out in Iona-3.

4.5 LOGGING AND SURVEYS

4.5.1 Mud Logging

A standard Halliburton skid mounted unit for continuous recording of depth, penetration rate, mud gas, pump rate, and mud volume data as well as mud chromatographic analysis was operated from surface to total depth. Rate of penetration, weight on bit, total gas and chromatography were recorded and plotted on the Formation Evaluation Log (Mud Log) and are presented in Enclosure 1.

4.6 WIRELINE LOGGING

Wireline logging was carried out by Schlumberger Seaco using a standard truck mounted MAXIS unit. The logging suite consisted of two logging runs and a velocity check shot survey as follows.

Details of the log depth intervals for each log run are as follows.

Table 4.1 Details of Wireline Logs run

LOG	Logging/ Processing Date	Depth Logger (Mkb)	Depth Driller (mKB)	Top Log Interval	Bottom Log Interval	Max Temp Deg. C
RESISTIVITY CURVES HLLD, HLLS, RXOZ, SP, GR, Caliper: 1:200 & 1:500	13/04/99 13/04/99	1452	1459	30	1449.7	58,58,58
DIPOLE SONIC: 1:200 & 1:500	13/04/99 13/04/99	1452	1459	30	1449.7	58,58,58
NUCLEAR CURVES Neutron (TNPH), Density (RHOZ), Pe (PEFZ), GR, Caliper: 1:200 & 1:500	13/04/99 13/04/99	1452	1459	30	1449.7	58,58,58
CBL - VDL - GR - CCL: 1:200	16/04/99 16/04/99	1452	1459	560	1446	64,64,64
GR-CCL, TCP CORRELATION: 1:200 & 1:500	17/04/99 17/04/99	1452	1459	1150	1339	
RESIST'Y CURVES TVD INDEX-GR to Surface: 1:200 & 1:500	13/04/99 16/04/99					
NUCLEAR CURVES TVD INDEX-GR to Surface: 1:200 & 1:500	13/04/99 16/04/99					
OFFSET CHECKSHOT SURVEY	13/04/99 13/04/99	1452	1459	135	1456	62,62,62
GR-CCL: 1:200	07/06/99 07/06/99	1452	1459	1420	1325	

Each logging run is included at both 1:200 and 1:500 scale as an enclosure. Enclosures 9 and 10 are composite logs in MDKB and TVDKB format with depths validated to the definitive survey and all curves depth matched and environmentally corrected.

5.0 GEOLOGY

5.1 STRATIGRAPHY

The stratigraphic section penetrated in Iona-3 is shown in Table 5.1. Formation tops were picked on the basis of cuttings descriptions, rate of penetration and wireline logs and by correlation to Iona-1 and Iona-2. Unless otherwise stated all depths are referenced to the Kelly Bushing MDKB and based on the original field logs. The composite well log showing Formation tops for each unit from the top Pebble Point Formation down based on the original field logs is included as Enclosure 2. A detailed composite log for the reservoir section based on the definitive survey run on 6 June 1999, is included as Enclosure 3.

Table 5.1 Stratigraphic section Iona-3

Stratigraphic Unit	Depth			Thickness
	MDKB (m)	TVDKB (m)	TVDSS (m)	MDKB (m)
Ground Level	4.98	4.98	-135.0	
Heytesbury and Nirranda Groups (undifferentiated)				339.0
Narrawaturk Marl	200.5	200.5	65.5	86.0
Mepunga Formation	286.5	286.5	151.5	52.5
Wangerrip Group				328.5
Dilwyn Formation	339.0	339.0	204.0	207.5
Pember Mudstone	546.5	546.4	411.4	77.0
Pebble Point Formation	617.0	617.0	482.0	70.5
Sherbrook Group				783.5
Paaratte Formation	667.5	667.4	532.4	363.9
Skull Creek Member	1031.4	1012.5	877.5	150.6
Nullawarre Greensand	1182.0	1138.6	1003.6	94.8
Belfast Mudstone	1276.8	1218.2	1083.2	63.5
Flaxman Formation	1340.3	1271.3	1136.3	24.9
Top C1 sand	1365.2	1292.2	1157.2	12.3
Base C1 sand	1377.5	1302.6	1167.6	3.6
Top C2 sand	1381.1	1305.6	1170.6	18.4
Base C2 sand	1399.5	1321.1	1186.1	7.5
Top B sand	1407.0	1327.4	1192.4	11.5
Base B sand	1418.5	1337.1	1202.1	32.5
Total Depth (Driller)	1451.0	1364.7	1229.7	
Total Depth (Logger)	1459.0	1371.5	1236.5	

5.2 LITHOLOGY

Detailed descriptions of each interval sampled are included in Appendix 3 and a summary of each interval is included on the mudlog in Enclosure 1. The following is a summary of the lithological units observed in Iona-3.

5.2.1 Heytesbury and Nirranda Groups

(Surface – 339.0 metres)

5.2.1.1 Port Campbell Limestone

No Port Campbell Limestone was recorded in the well.

5.2.1.2 Gellibrand Marl / Clifton Limestone/ Narrawaturk Marl

From the surface to 286.5 metres the lithology was predominantly marl and the contact between the Gellibrand Marl and the Narrawaturk Marl may be at 200.5 metres based on the gamma ray log. The predominant lithology observed was:

Marl: medium greenish grey to brownish grey, very soft, sticky, occasionally silty, common to abundant fossil fragments, massive with trace pyrite and coaly fragments towards the base. The Clifton Limestone could not be identified or was not present and the boundary between the Gellibrand Marl and the Narrawaturk Marl could not be positively identified on logs.

5.2.1.3 Mepunga Formation (286.5 – 339.0 m)

Sandstone: medium to dark brownish grey, fine to coarse, dominantly coarse, poorly sorted, subangular to subrounded, dominantly subrounded quartz, common iron oxide and limonite coating of grains, rare glauconite, trace pyrite, trace mica, nil to moderate calcareous cement, fair visual porosity.

5.2.2 Wangerrip Group (339.0 – 667.5 m)

5.2.2.1 Dilwyn Formation (339.0 – 546.5 m)

Sandstone: off white to translucent, fine to coarse, dominantly coarse, poorly to moderately sorted, subangular to subrounded, dominantly subrounded quartz, common brown and orange iron oxide stain, occasional pyrite, occasional glauconite, trace mica, good intergranular porosity, interbedded with

Claystone: medium to dark brownish grey, abundant silt, micromicaceous, massive, soft, dispersive.

5.2.2.2 Pember Mudstone (546.5 – 623.5 m)

Claystone: medium to dark brownish grey to grey, nil to moderately silty, trace to common glauconite, trace pyrite, micromicaceous, massive, soft, dispersive.

5.2.2.3 Pebble Point Formation (617.0 – 667.5 m)

Sandstone: light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium to coarse grains, occasionally granule, dominantly coarse, sub angular to sub rounded occasionally rounded, common iron oxide and iron stained quartz, moderate sphericity, moderate to well sorted quartz, nil to common argillaceous matrix, trace to rare nodular pyrite, rare to minor skeletal fragments, friable to firm, good to excellent inferred porosity, interbedded with.

Claystone: medium to dark grey to brownish black in part, soft, dispersive, common to abundant quartz silt to fine sand, grading to arenaceous claystone, nil to trace carbonaceous specks, minor to common glauconite pellets oxidised in part, trace pyrite, trace to rare mica, slightly calcareous, massive, firm to moderately hard..

5.2.3 Sherbrook Group (667.5 – 1451.0 m)

5.2.3.1 Paaratte Formation (667.5 – 1031.4 m)

Sandstone: light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, poorly to moderately sorted quartz, nil to common multicoloured, orange, yellow, greyish blue hard lithic volcanic and siliceous grains, trace to rare nodular pyrite, nil to trace calcareous, moderate to good inferred porosity, interbedded with

Claystone: light to medium grey, soft to firm, dispersive, fissile, laminated, abundant argillaceous matrix, common to abundant very fine sand, common to abundant carbonaceous specks, common mica, trace pyrite, grading to Silty Claystone

Coal: trace to rare specks and laminae, black, soft to firm

5.2.3.2 Skull Creek Mudstone (1031.4 – 1182.0 m)

Siltstone: light to grey to brownish grey interbedded with greyish white laminations in part, soft to firm, dispersive, abundant argillaceous matrix, abundant very fine sand, common to abundant coal specks and laminae, minor mica, trace pyrite, grading to Clayey Siltstone, interbedded with minor to common

Sandstone: very light grey to white, soft, friable, very fine to fine, sub angular to sub rounded, poorly sorted, abundant clay matrix grading to argillaceous sandstone, rare mica, trace to rare pyrite, trace orange lithics, nil to poor visible porosity grading to

Sandstone: light grey to light brownish grey to white, clear to translucent grains, unconsolidated to friable, predominantly fine to coarse occasional very coarse to pebble grains, predominantly angular to sub rounded occasionally rounded, poor to moderate sphericity, moderately sorted, trace to rare pyrite cement, moderate to good inferred porosity.

5.2.3.3 Nullawarre Greensand (1182.0 – 1276.8 m)

Sandstone: light brownish grey to dark yellowish green, clear to translucent grains commonly coated with glauconite, unconsolidated to friable, predominantly fine to medium occasionally coarse, predominantly angular to sub rounded, occasionally rounded and polished grains, poor to moderate sphericity, moderately sorted, common to abundant glauconite grains, rare skeletal fragments, trace foraminifera infilled with glauconite, trace to rare pyrite nodules, good inferred porosity.

5.2.3.4 Belfast Mudstone (1276.8 – 1340.3 m)

Claystone: medium to dark grey to greenish black to occasionally yellowish grey in part, soft to firm, dispersive, rare to minor quartz silt, minor to common, occasionally abundant disseminated and nodular glauconite, rare coal specks, rare mica, trace pyrite

5.2.3.5 Flaxmans Formation (1340.3 – 1365.2 m)

Claystone: medium to dark grey to greenish black to occasionally yellowish grey in part, soft to firm, dispersive, rare to minor quartz silt, minor to common, occasionally abundant disseminated and nodular glauconite, rare coal specks, rare mica, trace pyrite

Sandstone: light brownish grey to greyish brown to dark yellowish green in part, clear to translucent grains commonly coated with glauconite, unconsolidated to friable, predominantly fine to medium occasionally coarse, predominantly angular to sub rounded, occasionally rounded and polished grains, poor to moderate sphericity, moderately sorted, common to abundant glauconite grains, rare skeletal fragments, trace foraminifera infilled with glauconite, trace to rare pyrite nodules, good inferred porosity.

5.2.4 Waarre Formation

5.2.4.1 Unit C (1365.2 – 1407.0 m)

Sandstone: light brownish grey to very light grey, fine to coarse, dominantly medium, moderately to well sorted, subangular to subrounded, firm to friable, predominantly loose and unconsolidated, trace pyrite, good to excellent visual porosity.

Claystone: medium to dark grey, soft to firm, dispersive, rare to minor carbonaceous laminations and specks, trace pyrite, trace resin

Coal: black, moderately hard, conchoidal fracture, vitreous.

5.2.4.2 Unit B (1407.0 – 1451.0 m)

Calcareous Sandstone: very light grey to white, fine to coarse occasionally very coarse, fair sphericity, moderately to well sorted, subangular to subrounded, firm to friable, predominantly loose and unconsolidated, 30 to 40 percent calcareous matrix, trace pyrite, common white to very light grey argillaceous matrix, trace carbonaceous fragments, grading to.

Sandstone: light brownish grey to very light grey, fine to coarse, dominantly medium, moderately to well sorted, subangular to subrounded, firm to friable, predominantly loose and unconsolidated, trace pyrite, good visual porosity

Claystone: medium to dark grey, soft to firm, dispersive, rare to minor carbonaceous laminations and specks, trace pyrite, trace resin.

6.0 VELOCITY SURVEY

6.1 SEISMIC CALIBRATION AND RESULTS

A velocity or checkshot survey was carried out by Schlumberger as part of the open-hole logging program in Iona-3. The source used for the survey was an airgun, with shots fired into a water filled pit dug at a surface location (E: 677155.7 N: 5728138.3 RL: 106.7m) over the Waarre C intersection in the well. The location of the pit directly above the Waarre C in the well was chosen to minimise any corrections due to seismic path distortion thereby permitting a direct tie into the 3D seismic data at the mapped Waarre C level.

A total of 18 levels were acquired in the survey. A single shot was used where a good first break was encountered on the record. Additional shots were fired at locations where the signal was poor. The data was then enhanced by stacking the shots together to obtain an acceptable first break on the record. Quality of the data obtained was generally good except for the records from near the surface casing shoe and at the sea level datum where casing and surface noises masked good records.

The data was processed by Schlumberger at their Melbourne processing centre. First breaks were picked from the edited data and corrections applied to obtain a set of time versus depth values below the seismic reference datum which was mean sea level.

6.2 DATA CORRECTIONS

The corrections applied consisted of the following:

6.2.1 Correction for Deviated Hole

The well was drilled as a deviated and hold hole through the reservoir section, so the depths which were measured with reference to KB, were converted to true vertical depth. Conversion to true vertical depth was made using a combination of the single and multi-shot survey data obtained during the drilling of the well. A linear interpolation was used to correct the measured depth value to true vertical depth for checkshots recorded between surveyed points.

6.2.2 Correction for shot and geophone geometry

The travel path of the wave as it travels from the source point is not vertical. A correction was made to the travel time values of the checkshot data to account for the non-vertical path so as to obtain a corrected vertical time from source for each checkshot.

6.2.3 Correction for datum

The checkshot survey was acquired at a near surface location. The reference datum for the Iona 3D Seismic Survey is sea level. The travel time from the surface source to datum has to be subtracted from the corrected vertical time derived above to match the datum used in the seismic survey. The datum correction consists of two components:

- A weathering or statics component,

This is the delay in time as a result of the seismic wave travelling in the weathered zone near the surface. The weathered zone generally has a lower velocity than the sub-weathered zone.

- An elevation component,

This takes into account the elevation above the datum where the source is located and the sub-weathered velocity.

For ease of computation, the static and elevation correction is replaced by a term called the replacement velocity, which represents the average velocity of the energy from the source travelling to datum.

An uphole survey (Uphole 5) was carried out over the reservoir location of Iona-3. The uphole yielded a datum correction from the surface of 73.8 msec, which was used in the generation of Schlumberger's Geogram

The corrected checkshot data was used to calibrate the sonic logs processed from the DSI logging run in the well. A vertical impedance log was then derived from the calibrated sonic and the depth corrected density log recorded. Three Ricker wavelets of predominant frequencies of 25, 30 and 35 Hertz respectively were convolved with the impedance log to produce the synthetic seismograms. Further details of the calibration, checkshot corrections and synthetic seismogram generation can be found in the accompanying Schlumberger Well Seismic Edit and Geogram Report. (Appendix 4).

6.3 RESULTS

Enclosure 11 shows the synthetic seismogram spliced onto the seismic section through the well annotated with the tops encountered. The derived synthetic seismogram matched the seismic data very well at the bottomhole location of the Iona-3 well. The synthetic confirmed that the event mapped as the Top Waarre C in the 3D seismic interpretation carried out prior to the drilling of the well to be correct. The match at the shallower horizons is not as good but this is not unexpected because the well is deviated. The assumption of a vertical well path from the source becomes less valid as the lateral distance of the source to the detector for the shallower horizon increases. Furthermore, the intersection of the shallow horizons is not as shown at the Waarre C intersection for which the synthetic is depicted.

The depth prognosis for the Waarre C and all horizons below the Belfast Formation was deeper than they were encountered in the well. The prognosed depths for the horizons above the Belfast is generally shallower than encountered.

Table 6.1 compares the Prognosed Depths and the Actual Well Depths for the main horizons encountered in the well. The original prognosis was made on the assumption that there was no velocity gradient over the field and that the velocities in Iona-1 and Iona-2 were representative of the total field area. The results of the well indicate this assumption to be incorrect and showed that a velocity gradient occurs between Iona -1 & 2 and Iona-3.

Table 6.1 Comparison of Prognosed and Actual Depths

Formation Tops	Original Prognosis(metres TVD subsea)	Actual Depth (metres TVD subsea)	Difference
Heytesbury Group	Surface	Surface	
Narrawaturk Marl	72	65.5	-6.5
Mepunga Formation	144	151.5	7.5
Dilwyn Formation	203	204.0	1.0
Pember Mudstone	404	411.4	7.4
Pebble Point Formation	473	481.5	8.5
Paaratte Formation	521	532.4	11.4
Skull Creek Member	870	877.5	7.5
Nullawarre Greensand	996	1003.6	7.6
Belfast Mudstone	1105	1083.2	-21.8
Waarre Formation D unit	1142	1136.3	-5.7
Top C1 Sand	1161	1157.2	-3.8
Base C1 Sand	NP*	1167.6	
Top C2 Sand	1174	1170.6	-3.4
Base C2 Sand	NP	1186.1	
Top B Sand	NP	1192.4	
Base B Sand	NP	1202.1	
Total Depth	1196	1236.5	40.5
NP* depth not prognosed			

Figure 6.1 is a plot that compares the measured average velocities and interval velocities from the Iona-1, -2 and 3 wells. The figure shows a lower average velocity to the top Waarre C at Iona-3 compared to Iona-1 and this resulted in the well coming in shallower than prognosed. The lower average velocity to the top of the Waarre C is caused by the presence lower interval velocities within the Tertiary sections in the well.

The encountered depths for the horizons above the Belfast generally are deeper than prognosed despite the presence of slower interval velocities in the Tertiary sections. This can be attributed to several reasons of which a likely one could be a mispick in time. Another reason is that since the well is deviated, it's actual well path may not be the exact path used in the prognosis, resulting in prognosis carried out not at the same lateral position encountered in the well.

IONA VELOCITY-DEPTH PLOT

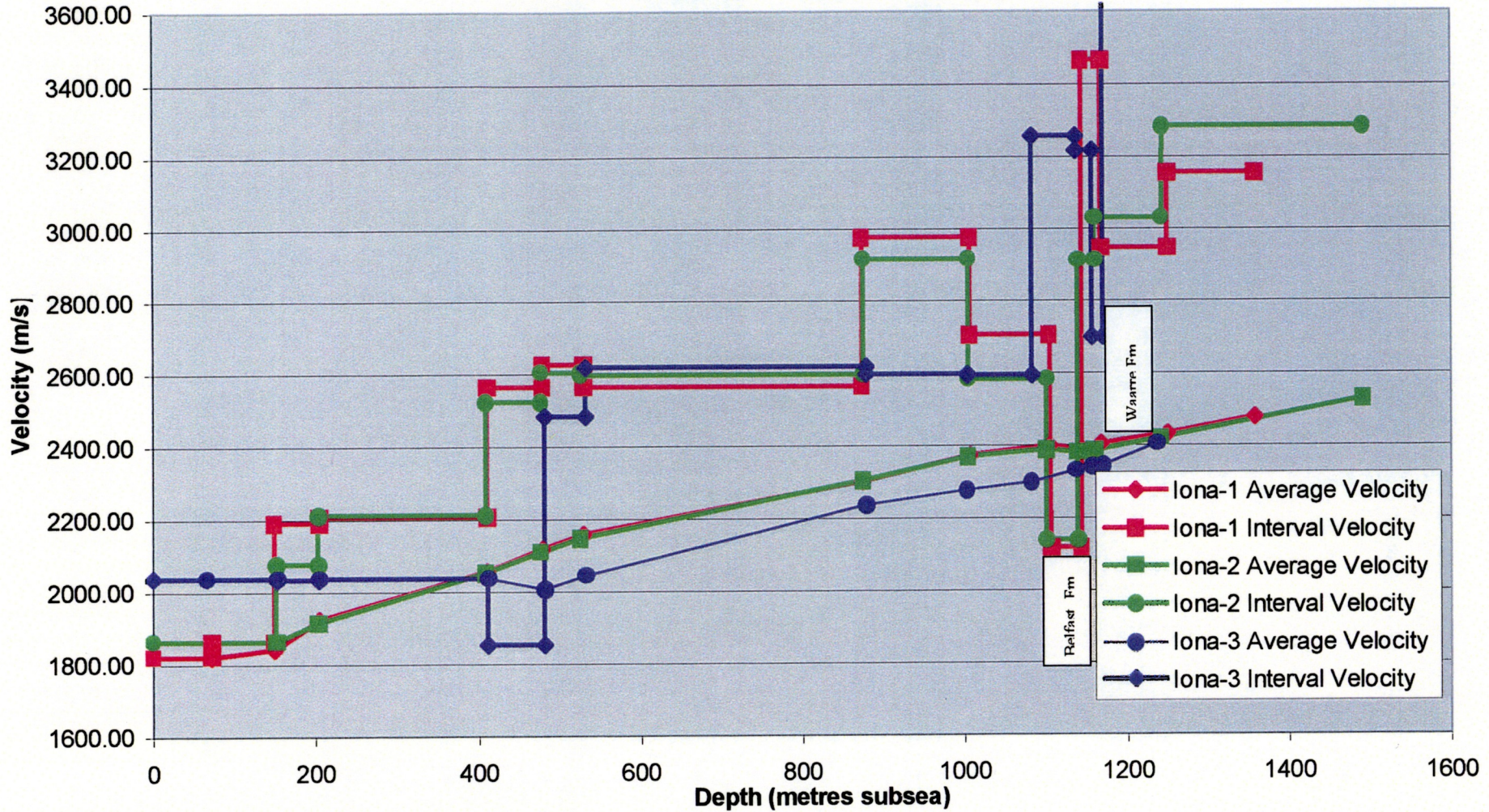


Figure 6.1: Comparison of Velocity Depth plots for Iona-1, 2 and 3

7.0 PETROPHYSICS

7.1 DATABASE

Field logs were acquired by Schlumberger using the Platform Express equipment. Tool measurements included, nuclear, resistivity and sonic. Schlumberger carried out a number of post-logging services including:

Borehole environment corrections;

Shoulder bed corrections (except for Iona-1);

Estimation of true formation resistivity, R_t (except for Iona-1);

Conversion to true vertical depth, KB datum; and,

Data re-sampling to a consistent 0.1 metre depth step.

The processed log data was supplied in LAS format. This data was loaded into the *G-Pick* software system for subsequent display and interpretation.

The ambient and overburden core data, including measurement of porosity, permeability and grain density were key punched and also loaded into the system. The core data matches log depth within an acceptable tolerance. A pseudo log, 'PHIO', was created by correcting the ambient core porosity to overburden conditions using the calibration provided by the limited core measurements at overburden pressures.

To evaluate the Waarre Formation a normalised gamma ray log, 'GRN', was calculated as the percentage deflection between the cleanest reservoir and the shale between Waarre B and C sandstones. This corrects for the distortion provided by KCl mud systems and different hole diameters and provides a log comparable with other Iona wells. Thereafter, a 'GRHB' log was calculated as the product of GRN times RHOB with the objective that this may better highlight the transition between reservoir and non-reservoir.

The photo-electric log is distorted due to the effect of barite in the mud system and the sonic log shows a significant gas effect. Both logs were rejected for quantitative analysis.

7.2 PETROPHYSICAL MODEL

The petrophysics were modelled using the *FAST* (*Formation Analysis using Statistical Techniques*) computer program which is typical of current log analysis technology based upon inverse, statistical algorithms.

The mineral model was constructed using Illite, Kaolinite, Quartz and Silt which is consistent with the core petrology. The logging tool responses for mineral endpoints were selected from chartbook tables. The clay minerals are defined as the dry clay endpoints and the bound water content is calculated dependent upon the salinity and temperature of the reservoir formation water. Wet clay endpoints are re-computed within the software. The endpoint parameters for the clay minerals expressed as GRHB were determined at first by conversion of average chartbook GR and RHOB and then by trial and error. The parameters for Silt were based on general empirical evidence that "shales" comprise clay minerals and silt with the latter a mixture of quartz, carbonates, micas and etcetera. The endpoints are generally taken to be

between those of quartz and limestone but with an intermediate GR level. The hypothetical "shale" endpoint assumed ~67% wet clays and 33% silt. This provides a reasonable solution of the neutron log.

The Dual Water saturation equation was selected since this is the default for Schlumberger's ELAN software.

The cementation exponent, m^0 , was calculated using the equation of Goode and Sen (1988) and this provides a dynamic solution at each data level dependent upon the porosity and CEC. This equation includes a small correction to m^* for the bound water layer in order that the cementation exponent is consistent with principles of the Dual Water equation.

The resistivity of formation water was accepted as 1.0 ohmm at 75F following analysis of all Iona wells.

7.3 LOG ANALYSIS RESULTS

The results of the log analysis are shown on the striplog on figure 7.1 and a description of the mnemonics is included below.

The current gas/water contact has been observed field-wide at -1,185 metres subsea. For Iona-3 this corresponds to 1,320 mTVD-KB which is effectively the base of Waarre C reservoir. There is no swept reservoir, due to the previous production of 8.4 Bcf, at this location. A summary of the petrophysics is tabulated as follows:

Table 7.1 Iona-3: Petrophysics Summary

Iona-3 : Petrophysics Summary			
Unit	Pay (metres)	Porosity %	Water Saturation %
C	26.7	25.1	20.5
B	2.6	24.7	24.6

7.4 FAST – STRIPLOG DESCRIPTION

Track 1:		depth scale in metres TVD-KB
Track 2:	CALI / CALS / HCAL	caliper – short dash, black
	TTR2	theoretical gamma ray/density – short dash, black
	GRHB	gamma ray % deflection x density – solid line, red
	SP	spontaneous potential – solid line, cyan
Track 3:	TTR0	theoretical density – short dash, black
	RHOZ / RHOB	density – solid line, red
	TTR1	theoretical neutron – short dash, black
	TNPH / NPHI	neutron environment corrected – solid line, green
	PEFZ / PEF / PEF	photoelectric environment corrected – solid line, cyan
	Qv	cation exchange capacity per unit pore volume – solid line, dark blue
Track 4:	RXOZ / MSFL / RXO	micro-laterolog – solid line, dark blue
	HLLS / SLLC / LLS	shallow laterolog environment corrected – short dash, green
	HLLD / DLLC / LLD	deep laterolog environment corrected – solid line, red
	HART / RT	true resistivity – solid line, magenta
Track 5:	wet Illite	pink clay pattern
	wet Kaolinite	green mudstone pattern
	Silt	siltstone pattern
	Quartz	coarse sandstone pattern
	Phie	effective porosity (white space to left of right margin)
Track 6:	KHOL	permeability from Goode & Sen equation – solid line, red; scale: 10 D to 1 mD
	MEXP	cementation m^o exponent calculated from ϕ_T and Qv - solid line, magenta
Track 7:	PHIO	core porosity (ambient data corrected to overburden) – cyan box symbols
	PHIT	total porosity (bound water porosity plus effective porosity) - separation between curves indicates bulk volume of bound water or ϕ_{BW} - shown as diagonal blue hatch
	PHIE	effective porosity - separation between curves indicates <i>residual hydrocarbons</i> coloured black
	BVWX	bulk volume of water in the flushed zone - separation between curves indicates <i>moveable oil</i> coloured red
	BVWU	bulk volume of water in the unflushed zone - separation between curves indicates <i>far water</i> (free water and capillary water) - shown as unfilled grid towards the right margin
Track 8:	SXO	water saturation in the flushed zone – short dash, dark blue
	SWT	total water saturation in the unflushed zone total porosity – solid line, red
Track 9:		depth scale in metres TVD-KB

APPENDIX 1

Daily Drilling Reports by Kelly Down Pty. Ltd.



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	31-Mar-99
REPORT No:	1
D.F.S:	
SHOE F.I.T:	

WELL NAME:	Iona 3	STATUS @ 2400 HRS:	Wait on daylight.
DEPTH - 2400 HRS:	m	FORMATION:	
DEPTH - PREVIOUS:	m	HOLE SIZE:	
24 HR PROGRESS:	m	ACCIDENTS:	
SAFETY MEETINGS:	Pre-tour Meetings.		

MUD PROPERTIES	ADDITIVES
DENSITY (ppg)	0 l Aldacide
VISCOSITY	0g EZ MUD
pH	sx PAC-R
PV / YP	sx XCD
GELS 0/10	38sx KCl tech
WL API / FC (cc)	dr Coat-2748
SOLIDS %	sx Soda Ash
SAND %	sx Aquagel
CHLORIDES	sx Kwikseal M
KCL ppb	sx Pac-L
MBT (ppb)	0sxBaracarb100
Pm Pm/Mf	0sxBaracarb25
TEMP (degC)	can Baracor 129
HOLE VOL (bbls)	sx Barite
SURFACE VOL (bbls)	sx Citric Acid
HOLE LOSSES (bbls)	sx Bicarb
MUD CO	Baroid sx EZ-Mud DP
MUD ENGINEER	Alan Searle can Baracide

SOLIDS CONTROL		
UNIT	GPM / HRS	UF / OF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:		

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @ 1478m		
SPR PRESS		

INVENTORY	
BARITE	657 sx
GEL	20 sx
CEMENT	260+144 sx
SALT	sx
KCL	200 sx
DRILLWATER	100 bbl
DIESEL FUEL	8,000 lts

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	53

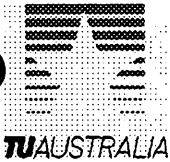
TIME ANALYSIS	
1. MOVE RIG	12
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	12

BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

BHA.:		
BHA WEIGHT :	lbs	STRING WT.:	lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	amps	DRAG UP :	lbs
TORQUE OFF BTM :	amps	DRAG DOWN :	lbs



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	1-Apr-99
REPORT No:	2
D.F.S:	
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Wait on daylight.

DEPTH - 2400 HRS: _____ m FORMATION: _____
 DEPTH - PREVIOUS: _____ m HOLE SIZE: _____
 24 HR PROGRESS: _____ m ACCIDENTS: nil

SAFETY MEETINGS: Pre-tour Meetings.

MUD PROPERTIES		ADDITIVES	SOLIDS CONTROL		
DENSITY (ppg)		0 l Aldacide	UNIT	GPM / HRS	UF / OF
VISCOSITY		0g EZ MUD	DESILTER		
pH		sx PAC-R	DESANDER		
PV / YP		sx XCD	MUDCLEANER		
GELS 0/10		38sx KCl tech	CENTRIFUGE		
WL API / FC (cc)		dr Coat-2748	SHAKER SCREENS:		
SOLIDS %		sx Soda Ash			
SAND %		sx Aquagel			
CHLORIDES		sx Kwikseal M			
KCL ppb		sx Pac-L			
MBT (ppb)		0sxBaracarb100			
Pm Pm/Mf		0sxBaracarb25			
TEMP (degC)		can Baracor 129			
HOLE VOL (bbls)		sx Barite			
SURFACE VOL (bbls)		sx Citric Acid			
HOLE LOSSES (bbls)		sx Bicarb			
MUD CO	Baroid	sx EZ-Mud DP			
MUD ENGINEER	Alan Searle	can Baracide			

KB - GL (m): 4.98
 SHOE DEPTH: _____
 LAST CASING: _____

INVENTORY	
BARITE	657 sx
GEL	20 sx
CEMENT	260+144 sx
SALT	sx
KCL	200 sx
DRILLWATER	100 bbl
DIESEL FUEL	8,000 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @ 1478m		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	54

BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MDI / (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	12
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	12

BHA.: _____

BHA WEIGHT : _____ lbs STRING WT.: _____ lbs

DP RATING : _____ lbs - 'G' Grade MARGIN : _____ lbs @ 75%

DP RATING : _____ lbs - 'S' Grade MARGIN : _____ lbs @ 75%

TORQUE ON BTM : _____ amps DRAG UP : _____ lbs

TORQUE OFF BTM : _____ amps DRAG DOWN : _____ lbs

DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	2-Apr-99
REPORT No:	3
D.F.S:	
SHOE F.I.T:	

TUAUSTRALIA

WELL NAME: Iona 3 STATUS @ 2400 HRS: Crew rest Prior to breaking tour

DEPTH - 2400 HRS:		m	FORMATION:		KB - GL (m):	4.98
DEPTH - PREVIOUS:		m	HOLE SIZE:		SHOE DEPTH:	
24 HR PROGRESS:		m	ACCIDENTS:	nil	LAST CASING:	
SAFETY MEETINGS:	Pre-tour Meetings.					

MUD PROPERTIES	ADDITIVES
DENSITY (ppg)	0 Aldacide
VISCOSITY	0g EZ MUD
pH	sx PAC-R
PV / YP	sx XCD
GELS 0/10	38sx KCl tech
WL API / FC (cc)	dr Coat-2748
SOLIDS %	sx Soda Ash
SAND %	sx Aquagel
CHLORIDES	sx Kwikseal M
KCL ppb	sx Pac-L
MBT (ppb)	0sxBaracarb100
Pm Pm/Mf	0sxBaracarb25
TEMP (degC)	can Baracor 129
HOLE VOL (bbls)	sx Barite
SURFACE VOL (bbls)	sx Citric Acid
HOLE LOSSES (bbls)	sx Bicarb
MUD CO	Baroid sx EZ-Mud DP
MUD ENGINEER	Alan Searle can Baracide

SOLIDS CONTROL		
UNIT	GPM / HRS	UF / OF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:		

PUMPS		
	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @ 1478m		
SPR PRESS		

INVENTORY	
BARITE	657 sx
GEL	20 sx
CEMENT	260+144 sx
SALT	sx
KCL	200 sx
DRILLWATER	100 bbl
DIESEL FUEL	8,000 lts

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	54

BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	12
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	12

BHA.:		
BHA WEIGHT :	lbs	STRING WT.:	lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	amps	DRAG UP :	lbs
TORQUE OFF BTM :	amps	DRAG DOWN :	lbs



DAILY DRILLING REPORT
RIG : OD & E 30
PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE: 3-Apr-99
 REPORT No: 4
 D.F.S: 0.52
 SHOE F.I.T:

WELL NAME: Iona 3 STATUS @ 2400 HRS: Drilling

DEPTH - 2400 HRS: 203 m FORMATION: clay
 DEPTH - PREVIOUS: m HOLE SIZE: 17 1/2"
 24 HR PROGRESS: 203 m ACCIDENTS: nil
 SAFETY MEETINGS: Pre-tour Meetings.

KB - GL (m): 4.98
 SHOE DEPTH:
 LAST CASING:

MUD PROPERTIES	ADDITIVES
DENSITY (ppg)	9.0 0 Aldacide
VISCOSITY	62 0g EZ MUD
pH	8.3 sx PAC-R
PV / YP	10/16 sx XCD
GELS 0/10	7/16 38sx KCl tech
WL API / FC (cc)	16.4 dr Coat-2748
SOLIDS %	3.9 sx Soda Ash
SAND %	0.5 sx Aquagel
CHLORIDES	19,000 sx Kwikseal M
KCL ppb	8.80 sx Pac-L
MBT (ppb)	16 0sxBaracarb100
Pm Pm/Mf	.06/.64 0sxBaracarb25
TEMP (degC)	30 can Baracor 129
HOLE VOL (bbls)	180 sx Barite
SURFACE VOL (bbls)	386 sx Citric Acid
HOLE LOSSES (bbls)	sx Bicarb
MUD CO	Baroid sx EZ-Mud DP
MUD ENGINEER	Alan Searle can Baracide

SOLIDS CONTROL		
UNIT	GPM / HRS	UF / OF
DESILTER	3 / 13	11.1 / 9
DESANDER		
MUDCLEANER		
CENTRIFUGE		/ 13
SHAKER SCREENS:	780 /13	84

INVENTORY	
BARITE	697 sx
GEL	87 sx
CEMENT	260+144 sx
SALT	sx
KCL	506 sx
DRILLWATER	100 bbl
DIESEL FUEL	4,000 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	140	140
PRESSURE		1180
GPM	390	390
AV (DP - ft/min)	69	
AV (DC - ft/min)	80	
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	55

BIT DATA	
BIT No.	1
SIZE (ins)	17 1/2"
TYPE	L135M
IADC CODE	1/01/01
SERIAL No.	72906
NOZZLES	18,18,24
OUT (m)	
IN (m)	
DRILLED (m)	203.0
HOURS	10 1/2
CONDITION	in
AVG ROP (m/hr)	19.30
WOB (x1000 lbs)	15 to 20 k
RPM	140
JET VEL (ft/sec)	232
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	11.5
3. DRILLING	10.5
4. BIT TRIP	2
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19.COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

BHA.: Bit, B/sub, 17 1/2"stab, 1x8"nmdc, 17 1/2"stab, 2x8"dc, 17 1/2"stab, 3x8" dc, 2 xo, 12x5"hwdp, jars, 1x 5"hwdp. Length :191m.

BHA WEIGHT : 54,000 lbs STRING WT.: 54,000 lbs

DP RATING : lbs - 'G' Grade MARGIN : lbs @ 75%

DP RATING : lbs - 'S' Grade MARGIN : lbs @ 75%

TORQUE ON BTM : amps DRAG UP : 64,000 lbs

TORQUE OFF BTM : amps DRAG DOWN : 50,000 lbs

DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

DATE:	4-Apr-99
REPORT No:	5
D.F.S:	1.52
SHOE F.I.T:	

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WUGS Western Underground Storage Project

WELL NAME: Iona 3 STATUS @ 2400 HRS: Drilling

DEPTH - 2400 HRS:	423	m	FORMATION:	clay	KB - GL (m):	4.98
DEPTH - PREVIOUS:	203	m	HOLE SIZE:	17 1/2"	SHOE DEPTH:	
24 HR PROGRESS:	220	m	ACCIDENTS:	nil	LAST CASING:	
SAFETY MEETINGS:	Pre-tour Meeti House keeping, handling casing					

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.0	1 x B/COR129
VISCOSITY	39	8 x EZ MUD
pH	8.3	4 x XCD
PV / YP	7 / 13	170 x KCL
GELS 0/10	4 / 12	6 X PAC-R
WL API / FC (cc)	11,8	6 X SODA ASH
SOLIDS %	3.9	6 X KOH
SAND %	0.25	
CHLORIDES	21000	
KCL ppb	11.9	
MBT (ppb)	15.0	
Pm Pm/Mf	04 / .65	
TEMP (degC)	43	
HOLE VOL (bbls)	386	
SURFACE VOL (bbls)	403	
HOLE LOSSES (bbls)		
MUD CO	Baroid	
MUD ENGINEER	Alan Searle	

SOLIDS CONTROL		
UNIT	GPM / HRS	UF / OF
DESILTER	24	11.1 / 9
DESANDER		
MUDCLEANER		
CENTRIFUGE	24	17 / 9
SHAKER SCREENS:	760 / 24	84

INVENTORY	
BARITE	697 sx
GEL	87 sx
CEMENT	260+144 sx
SALT	sx
KCL	336 sx
DRILLWATER	100 bbl
DIESEL FUEL	15,000 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		1340
GPM	380	380
AV (DP - ft/min)	66	
AV (DC - ft/min)	77	
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	56

BIT DATA	
BIT No.	1
SIZE (ins)	17 1/2"
TYPE	L135M
IADC CODE	1/01/01
SERIAL No.	72906
NOZZLES	18,18,24
OUT (m)	
IN (m)	
DRILLED (m)	423.0
HOURS	29
CONDITION	in
AVG ROP (m/hr)	14.50
WOB (x1000 lbs)	15
RPM	80 - 110
JET VEL (ft/sec)	220
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		
197	0.25	
395	0.80	S40E

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	18.5
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	1
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	4
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	0.5
30. SLIP & CUT LINE	
TOTAL	24

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

BHA.:	Bit, B/sub, 17 1/2"stab, 1x8"nmdc, 17 1/2"stab, 2x8"dc, 17 1/2"stab, 3x8"dc, 2 xo, 12x5"hwdp, jars, 18 x 5"hwdp, 1 xo. Length 346.08m	
BHA WEIGHT :	75,000 lbs	STRING WT.: 78,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN : lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN : lbs @ 75%
TORQUE ON BTM :	180 - 300 amps	DRAG UP : 85,000 lbs
TORQUE OFF BTM :	80 amps	DRAG DOWN : 75,000 lbs

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DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

DATE: 4-Apr-99

REPORT No: 5

D.F.S: 1.52

WELL NAME: Iona 3

STATUS @ 2400 HRS: Drilling

FROM	TO		24 HOUR SUMMARY
00:00	01:00	1	Drilled to 212m
01:00	01:30	0.5	Totco survey
01:30	02:00	0.5	Drilled to 218m
02:00	03:00	1	Repairs to # 2 pump.
03:00	03:30	0.5	Rig service
03:30	04:00	0.5	Drilled to 232m
04:00	07:00	3	airs to pump # 2
07:00	22:30	15.5	Drilled to 414m
22:30	23:00	0.5	Single shot survey.
23:00	24:00	1	Drilled to 423m.
			Incidents last 24hr: no

			DOWNHOLE TOOLS		
Hours	Serial No.	Tool			
25	47615	Str Stab			
25	22120	Srt Stab			
25	47619	Str Stab			
20	1416-1128	Jars.			
			- Weather : Clear sunny.		

FORMATION TOPS :

OPERATION TO 0600 HRS : Drilling to 455m, made 32 m since midnight. Formation 60% clay 40 % hard sand stringers.

PROGRAM - NEXT 24 HRS : Drill Ahead.

TRANSPORTATION		PERSONNEL		PROGRAMME COSTS	
TRANSPORT-1		CONTRACTOR	20	DAILY Aus\$:	
TRANSPORT-2		OPERATOR	2	CUMULATIVE Aus\$:	
TRANSPORT-3		SERVICE CO	16	REPORTED TO :	Colin Stuart
Transport -4				REPORTED BY :	Westman/Lambert
WATER HAULER	12.00				
CRANE		TOTAL :	38		

END OF REPORT



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	5-Apr-99
REPORT No:	6
D.F.S:	2.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Drilling

DEPTH - 2400 HRS: 585 m FORMATION: Clay & sand. KB - GL (m): 4.98
 DEPTH - PREVIOUS: 423 m HOLE SIZE: 17 1/2" SHOЕ DEPTH:
 24 HR PROGRESS: 162 m ACCIDENTS: nil LAST CASING:

SAFETY MEETINGS: Pre-tour Meetin Preparing casing.

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.1	3 x B/COR129
VISCOSITY	47	5 x EZ MUD
pH	8.3	8 x XCD
PV / YP	10 / 19	80 x KCL
GELS 0/10	8 / 18	5 X PAC-R
WL API / FC (cc)	12.2	10 X SODA ASH
SOLIDS %	4.3	5 X KOH
SAND %	0.75	
CHLORIDES	21000	
KCL ppb	11.9	
MBT (ppb)	15.0	
Pm Pm/Mf	.05 / .70	
TEMP (degC)	50	
HOLE VOL (bbls)	541	
SURFACE VOL (bbls)	365	
HOLE LOSSES (bbls)		
MUD CO	Baroid	
MUD ENGINEER	Alan Searle	

SOLIDS CONTROL		
UNIT	GPM / HRS	UF / OF
DESILTER	'24	11.1 / 9
DESANDER		
MUDCLEANER		
CENTRIFUGE	'24	'17 / 9
SHAKER SCREENS:	760 / 24	mesh 84

INVENTORY	
BARITE	697 sx
GEL	87 sx
CEMENT	1,800 sx
SALT	sx
KCL	248 sx
DRILLWATER	200 bbl
DIESEL FUEL	24,000 lts

PUMPS		
	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		1500
GPM	380	380
AV (DP - ft/min)	65	
AV (DC - ft/min)	77	
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	57

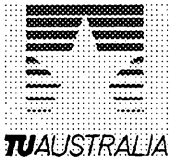
BIT DATA	
BIT No.	1
SIZE (ins)	17 1/2"
TYPE	L135M
IADC CODE	1/01/01
SERIAL No.	72906
NOZZLES	18,18,24
OUT (m)	
IN (m)	
DRILLED (m)	585.0
HOURS	52 1/2
CONDITION	in
AVG ROP (m/hr)	11.15
WOB (x1000 lbs)	'10 - 20
RPM	100 - 140
JET VEL (ft/sec)	275
HHP @ BIT	247

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MDI (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	23.5
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19.COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	0.5
30. SLIP & CUT LINE	
TOTAL	24

BHA.:	Bit, B/sub, 17 1/2"stab, 1x8"nmcd, 17 1/2"stab, 2x8"dc, 17 1/2"stab, 3x8"dc, 2 xo, 12x5"hwdp, jars, 18 x 5"hwdp, 1 xo. Length 346.08m		
BHA WEIGHT :	75,000 lbs	STRING WT.:	86,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	200 - 340 amps	DRAG UP :	96,000 lbs
TORQUE OFF BTM :	100 amps	DRAG DOWN:	83,000 lbs



DAILY DRILLING REPORT
RIG : OD & E 30
PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	6-Apr-99
REPORT No:	7
D.F.S:	3.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Run 13 3/8" casing.

DEPTH - 2400 HRS:	636	m	FORMATION:	Clay & sand.	KB - GL (m):	4.98
DEPTH - PREVIOUS:	585	m	HOLE SIZE:	17 1/2"	SHOE DEPTH:	
24 HR PROGRESS:	51	m	ACCIDENTS:	nil	LAST CASING:	

SAFETY MEETINGS: Pre-tour Meetin Safety meeting prior to running casing.

MUD PROPERTIES		ADDITIVES	
DENSITY (ppg)	9.1	1 x B/COR129	
VISCOSITY	55	1 x KOH	
pH	8.3	8 x B/Fibre	
PV / YP	10 / 27	25 x Barite	
GELS 0/10	15 / 28		
WL API / FC (cc)	12.4		
SOLIDS %	4.3		
SAND %	0.5		
CHLORIDES	21000		
KCL ppb	12.25		
MBT (ppb)	16		
Pm Pm/Mf	.04 / 70		
TEMP (degC)	50		
HOLE VOL (bbls)	621		
SURFACE VOL (bbls)	226		
HOLE LOSSES (bbls)			
MUD CO	Baroid		
MUD ENGINEER	Alan Searle		

SOLIDS CONTROL		
UNIT	GPM / HRS	UF / OF
DESILTER	'8	11.1 / 9
DESANDER		
MUDCLEANER		
CENTRIFUGE	'8	'17 / 9
SHAKER SCREENS:	760 / 24	mesh 84

INVENTORY	
BARITE	640 sx
GEL	87 sx
CEMENT	1,800 sx
SALT	sx
KCL	476 sx
DRILLWATER	20 bbl
DIESEL FUEL	21,000 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		1550
GPM	380	380
AV (DP - ft/min)	65	
AV (DC - ft/min)	77	
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	58

BIT DATA	
BIT No.	1
SIZE (ins)	17 1/2"
TYPE	L135M
IADC CODE	1/01/01
SERIAL No.	72906
NOZZLES	18,18,24
OUT (m)	
IN (m)	
DRILLED (m)	636.0
HOURS	59 1/2
CONDITION	in
AVG ROP (m/hr)	10.70
WOB (x1000 lbs)	'10 - 20
RPM	120 - 140
JET VEL (ft/sec)	275
HHP @ BIT	247

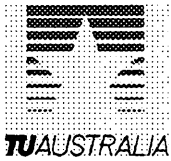
SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MDI (TVD)		
621.5	1.75	S 20 E

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	7
4. BIT TRIP	
5. WIPER TRIP	6.5
6. SURVEY	1
7. CIRC / COND	3
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	6
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	0.5
30. SLIP & CUT LINE	
TOTAL	24

BHA.: Bit, B/sub, 17 1/2"stab, 1x8"nmdc, 17 1/2"stab, 2x8"dc, 17 1/2"stab, 3x8"dc, 2 xo, 12x5"hwdp, jars, 18 x 5"hwdp, 1 xo. Length 346.08m

BHA WEIGHT :	75,000 lbs	STRING WT.:	88,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	160 - 200 amps	DRAG UP :	90,000 lbs
TORQUE OFF BTM :	100 amps	DRAG DOWN :	87,000 lbs



DAILY DRILLING REPORT
RIG : OD & E 30
PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	7-Apr-99
REPORT No:	8
D.F.S:	4.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Welding on Bradenhead

DEPTH - 2400 HRS:	636	m	FORMATION:		KB - GL (m):	4.98
DEPTH - PREVIOUS:		m	HOLE SIZE:		SHOE DEPTH:	635
24 HR PROGRESS:		m	ACCIDENTS:	nil	LAST CASING:	13 3/8"

MUD PROPERTIES		ADDITIVES	SOLIDS CONTROL			INVENTORY	
DENSITY (ppg)	9.1		UNIT	GPM / HRS	UF / OF	BARITE	640 sx
VISCOSITY	55		DESILTER			GEL	84 sx
pH	8.3		DESANDER			CEMENT	100 sx
PV / YP	10 / 25		MUDCLEANER			SALT	sx
GELS 0/10	17 / 30		CENTRIFUGE			KCL	476 sx
WL API / FC (cc)	12.8		SHAKER SCREENS:			DRILLWATER	bbl
SOLIDS %	4.2					DIESEL FUEL	19,000 lts
SAND %	0.5						
CHLORIDES	22,000		PUMPS			DRILLS / BOPS	
KCL ppb	12.70		TYPE	1	2	LAST BOP DRILL	
MBT (ppb)	16		STROKE	PZ-8	PZ-8	LAST FIRE DRILL	
Pm Pm/Mf	.20 / .70		LINER	8"	8"	LAST ABN.RIG DRILL	
TEMP (degC)	55		SPM	6"	6"	LAST BOP TEST	
HOLE VOL (bbls)	318		PRESSURE			NEXT BOP TEST	
SURFACE VOL (bbls)	480		GPM			DAYS SINCE LAST LTA	59
HOLE LOSSES (bbls)			AV (DP - ft/min)				
MUD CO	Baroid		AV (DC - ft/min)				
MUD ENGINEER	Alan Searle		SPR @				
			SPR PRESS				

BIT DATA	
BIT No.	1
SIZE (ins)	17 1/2"
TYPE	L135M
IADC CODE	1/01/01
SERIAL No.	72906
NOZZLES	18,18,24
OUT (m)	636.0
IN (m)	
DRILLED (m)	636.0
HOURS	59 1/2
CONDITION	7-7-wt-a-e-o-wt-td
AVG ROP (m/hr)	10.70
WOB (x1000 lbs)	10 - 20
RPM	120 - 140
JET VEL (ft/sec)	275
HHP @ BIT	247

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	10
10. WELLHEAD	7.5
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19.COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	6.5
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

BHA.:			
BHA WEIGHT :	lbs	STRING WT.:	lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	amps	DRAG UP :	lbs
TORQUE OFF BTM :	amps	DRAG DOWN :	lbs

DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

DATE:	8-Apr-99
REPORT No:	9
D.F.S:	5.52
SHOE F.I.T:	

TU AUSTRALIA

WUGS Western Underground Storage Project

WELL NAME: Iona 3 STATUS @ 2400 HRS: Testing BOP

DEPTH - 2400 HRS:	636	m	FORMATION:		KB - GL (m):	4.98
DEPTH - PREVIOUS:		m	HOLE SIZE:		SHOE DEPTH:	635
24 HR PROGRESS:		m	ACCIDENTS:	nil	LAST CASING:	13 3/8"
SAFETY MEETINGS:						

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.1	
VISCOSITY	55	
pH	8.3	
PV / YP	10 / 25	
GELS 0/10	17 / 30	
WL API / FC (cc)	12.8	
SOLIDS %	4.2	
SAND %	0.5	
CHLORIDES	22,000	
KCL ppb	12.70	
MBT (ppb)	16	
Pm Pm/Mf	.20 / .70	
TEMP (degC)	55	
HOLE VOL (bbls)	318	
SURFACE VOL (bbls)	480	
HOLE LOSSES (bbls)		
MUD CO	Baroid	
MUD ENGINEER		

SOLIDS CONTROL		
UNIT	GPM / HRS	UF / OF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:	84/110	84/110

PUMPS		
	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @		
SPR PRESS		

INVENTORY	
BARITE	640 sx
GEL	84 sx
CEMENT	100 sx
SALT	sx
KCL	476 sx
DRILLWATER	bbl
DIESEL FUEL	17,000 kts

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	
NEXT BOP TEST	
DAYS SINCE LAST LTA	60

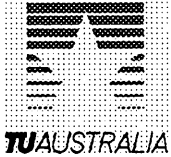
TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	24
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

BIT DATA	
BIT No.	2
SIZE (ins)	12 1/4"
TYPE	PDC
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

BHA.:			
BHA WEIGHT :	lbs	STRING WT.:	lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	amps	DRAG UP :	lbs
TORQUE OFF BTM :	amps	DRAG DOWN :	lbs



DAILY DRILLING REPORT
RIG : OD & E 30
PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	9-Apr-99
REPORT No:	10
D.F.S:	6.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Drilling (sliding)

DEPTH - 2400 HRS:	707 m	FORMATION:	Sand & clay.	KB - GL (m):	4.98
DEPTH - PREVIOUS:	635 m	HOLE SIZE:	12 1/4"	SHOE DEPTH:	635
24 HR PROGRESS:	72 m	ACCIDENTS:	nil	LAST CASING:	13 3/8"
SAFETY MEETINGS:	Pre tour re safe working practice				

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.0	b/cor 129 x1
VISCOSITY	47	ez-mud x1
pH	10.0	k/seal f x 10
PV / YP	10 / 17	pac-r x 4
GELS 0/10	8 / 18	pl/ chloride x 1
WL API / FC (cc)	12.8	xcd x 1
SOLIDS %	3.8	citric acid x 8
SAND %	0.25	soda ash x 2
CHLORIDES	21,500	bicarbonate x 8
KCL ppb	12 . 6	
MBT (ppb)	13 . 5	
Pm Pm/Mf	.30 / .90	
TEMP (degC)	47	
HOLE VOL (bbls)	325	
SURFACE VOL (bbls)	395	
HOLE LOSSES (bbls)		
MUD CO	Baroid	
MUD ENGINEER	Gerald Lange	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER	7	14 / '9
DESANDER		
MUDCLEANER		
CENTRIFUGE	6	9 / '17
SHAKER SCREENS:	84/110	84/110

INVENTORY	
BARITE	640 sx
GEL	84 sx
CEMENT	100 sx
SALT	sx
KCL	476 sx
DRILLWATER	100 bbl
DIESEL FUEL	15,000 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	125	125
PRESSURE		2100
GPM	350	350
AV (DP - ft/min)		61
AV (DC - ft/min)		199
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	8-Apr-99
NEXT BOP TEST	
DAYS SINCE LAST LTA	61

BIT DATA	
BIT No.	2
SIZE (ins)	12 1/4"
TYPE	BB650SR
IADC CODE	
SERIAL No.	510709
NOZZLES	2x12,4x14
OUT (m)	
IN (m)	635.0
DRILLED (m)	72.0
HOURS	3 1/2
CONDITION	in
AVG ROP (m/hr)	20.50
WOB (x1000 lbs)	5 - 10
RPM	120 - 200
JET VEL (ft/sec)	305
HHP @ BIT	242

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		
668	2.10	187.2
677	2.10	190.7
687	2.20	200
697	3.10	212
706	4.50	218.1

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	C1 tr
P.PRESS (ppg)	
ECD (ppg)	9.23

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	24
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

BHA.:	Bit, Sperrydrill, IB stab, float sub, MWD, 1 x nmcd, 2 x xo subs, 24 hwdp, drilling jars, 6 hwdp, ox.		
BHA WEIGHT :	57,000 lbs	STRING WT.:	84,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	amps	DRAG UP :	87,000 lbs
TORQUE OFF BTM :	amps	DRAG DOWN :	80,000 lbs



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	10-Apr-99
REPORT No:	11
D.F.S:	7.52
SHOE F.I.T:	10.1

WELL NAME: Iona 3 STATUS @ 2400 HRS: Drilling (sliding)

DEPTH - 2400 HRS:	960	m	FORMATION:	dstone & claystone.	KB - GL (m):	4.98
DEPTH - PREVIOUS:	707	m	HOLE SIZE:	12 1/4"	SHOE DEPTH:	635
24 HR PROGRESS:	253	m	ACCIDENTS:	nil	LAST CASING:	13 3/8"
SAFETY MEETINGS:	House keeping.					

MUD PROPERTIES	ADDITIVES
DENSITY (ppg)	9.1
VISCOSITY	48
pH	9.0
PV / YP	14 / 17
GELS 0/10	7 / 16
WL API / FC (cc)	6 . 8
SOLIDS %	4 . 1
SAND %	1
CHLORIDES	25,000
KCL ppb	15 . 4
MBT (ppb)	15
Pm Pm/Mf	0.1/0.6
TEMP (degC)	43
HOLE VOL (bbls)	441
SURFACE VOL (bbls)	404
HOLE LOSSES (bbls)	nil
MUD CO	Baroid
MUD ENGINEER	Gerald Lange

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER	'24	14 / '9.1
DESANDER		
MUDCLEANER		
CENTRIFUGE	'24	9.1 / '17
SHAKER SCREENS:	3 x 110	3 x 110

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		1700
GPM	370	370
AV (DP - ft/min)		90
AV (DC - ft/min)		216
SPR @	40	60
SPR PRESS	200	250

INVENTORY	
BARITE	592 sx
GEL	84 sx
CEMENT	100 sx
SALT	sx
KCL	476 sx
DRILLWATER	387 bbl
DIESEL FUEL	9,000 lts

DRILLS / BOPS	
LAST BOP DRILL	
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	8-Apr-99
NEXT BOP TEST	
DAYS SINCE LAST LTA	62

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	18
4. BIT TRIP	5
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	0.5
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	0.5
TOTAL	24

BIT DATA		
BIT No.	2	3
SIZE (ins)	12 1/4"	RR 12 1/4"
TYPE	BB650SR	ERA-03D
IADC CODE		4-1-7M
SERIAL No.	510709	681061
NOZZLES	2x12,4x14	3 X 24
OUT (m)	934.0	
IN (m)	635.0	934.0
DRILLED (m)	299.0	26.0
HOURS	19 1/2	2
CONDITION	7-wt-l	IN
AVG ROP (m/hr)	15.30	13.00
WOB (x1000 lbs)	36377	20 - 25
RPM	120 - 200	80 - 200
JET VEL (ft/sec)	305	195
HHP @ BIT	242	122

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	C1 tr
P.PRESS (ppg)	
ECD (ppg)	9.23

BHA.: 2 bit 3	Bit, Sperrydrill, IB stab, float sub, MWD, 1 x nmcd, 2 x xo subs, 24 hwdp, drilling jars, 6 hwdp, ox.		
BHA WEIGHT :	57,000 lbs	STRING WT.:	95,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	120 amps	DRAG UP :	105,000 lbs
TORQUE OFF BTM :	120 amps	DRAG DOWN :	80,000 lbs



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	11-Apr-99
REPORT No:	12
D.F.S:	8.52
SHOE F.I.T:	10.1

WELL NAME: Iona 3 STATUS @ 2400 HRS: Drilling (sliding)

DEPTH - 2400 HRS:	1,316 m	FORMATION:	dstone & claystone.	KB - GL (m):	4.98
DEPTH - PREVIOUS:	960 m	HOLE SIZE:	12 1/4"	SHOE DEPTH:	635
24 HR PROGRESS:	356 m	ACCIDENTS:	nil	LAST CASING:	13 3/8"
SAFETY MEETINGS:	BOP Drill .				

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.1	b/cor 129 x3
VISCOSITY	58	ez-mud x12
pH	8.5	k/seal m x 10
PV / YP	16 / 33	PAC R x 20
GELS 0/10	9 / 21	pl chloride x 4000 kg
WL API / FC (cc)	6 . 4	XCD x 11
SOLIDS %	4 . 2	Pot/ Hydroxide x 9
SAND %	0 . 75	
CHLORIDES	22,000	
KCL ppb	12 . 1	
MBT (ppb)	14 . 5	
Pm Pm/Mf	0.1/0.5	
TEMP (degC)	52	
HOLE VOL (bbls)	456	
SURFACE VOL (bbls)	482	
HOLE LOSSES (bbls)	nil	
MUD CO	Baroid	
MUD ENGINEER	Gerald Lange	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER	'24	14 / '9.1
DESANDER		
MUDCLEANER		
CENTRIFUGE	'24	9.1 / '17
SHAKER SCREENS:	3 x 110	3 x 110

INVENTORY	
BARITE	592 sx
GEL	84 sx
CEMENT	100 sx
SALT	sx
KCL	476 sx
DRILLWATER	588 bbl
DIESEL FUEL	8,500 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		1700
GPM	370	370
AV (DP - ft/min)		145
AV (DC - ft/min)		210
SPR @	40	60
SPR PRESS	230	270

DRILLS / BOPS	
LAST BOP DRILL	10-Apr-99
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	8-Apr-99
NEXT BOP TEST	
DAYS SINCE LAST LTA	63

BIT DATA	
BIT No.	RR 3
SIZE (ins)	12 1/4"
TYPE	ERA-03D
IADC CODE	4 -1-7m
SERIAL No.	681061
NOZZLES	3 x 25
OUT (m)	
IN (m)	934.0
DRILLED (m)	382.0
HOURS	25 1/2
CONDITION	In
AVG ROP (m/hr)	15.00
WOB (x1000 lbs)	15 - 30
RPM	160
JET VEL (ft/sec)	195
HHP @ BIT	122

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	23.5
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19.COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	0.5
30. SLIP & CUT LINE	
TOTAL	24

BHA.: 2 bit 3	Bit, Sperrydrill, IB stab, float sub, MWD, 1 x nmcd, 2 x xo subs, 24 hwdp, drilling jars, 6 hwdp, ox.		
BHA WEIGHT :	57,000 lbs	STRING WT.:	104,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	150 amps	DRAG UP :	125,000 lbs
TORQUE OFF BTM :	80 amps	DRAG DOWN :	90,000 lbs

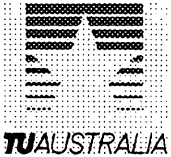
DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	12-Apr-99
REPORT No:	13
D.F.S:	9.52
SHOE F.I.T:	10.1



WELL NAME: Iona 3 STATUS @ 2400 HRS: Run In Wiper trip

DEPTH - 2400 HRS:	1,459 m	FORMATION:	dstone & claystone.	KB - GL (m):	4.98
DEPTH - PREVIOUS:	1,316 m	HOLE SIZE:	12 1/4"	SHOE DEPTH:	635
24 HR PROGRESS:	143 m	ACCIDENTS:	nil	LAST CASING:	13 3/8"

SAFETY MEETINGS: Safe tripping

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.2	Baracarb 288
VISCOSITY	58	Baracide 2
pH	8.5	EZ-mud 3
PV / YP	18 / 36	Pac- R 5
GELS 0/10	8 / 20	XCD 3
WL API / FC (cc)	6.0	Barite 24
SOLIDS %	5.3	Pot Hydro 2
SAND %	0.75	Soda ash 4
CHLORIDES	22,000	
KCL ppb	12.6	
MBT (ppb)	15	
Pm Pm/Mf	.07 / .45	
TEMP (degC)	55	
HOLE VOL (bbbls)	671	
SURFACE VOL (bbbls)	394	
HOLE LOSSES (bbbls)	nil	
MUD CO	Baroid	
MUD ENGINEER	Gerald Lange	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER	'24	14 / '9.1
DESANDER		
MUDCLEANER		
CENTRIFUGE	'24	9.1 / '17
SHAKER SCREENS:	3 x 110	3 x 110

INVENTORY	
BARITE	548 sx
GEL	84 sx
CEMENT	100 sx
SALT	sx
KCL	476 sx
DRILLWATER	177 bbl
DIESEL FUEL	23,500 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		2050
GPM	370	370
AV (DP - ft/min)		145
AV (DC - ft/min)		210
SPR @	40	60
SPR PRESS	200	290

DRILLS / BOPS	
LAST BOP DRILL	12-Apr-99
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	8-Apr-99
NEXT BOP TEST	
DAYS SINCE LAST LTA	64

BIT DATA	
BIT No.	RR 3
SIZE (ins)	12 1/4"
TYPE	ERA-03D
IADC CODE	4 -1-7m
SERIAL No.	681061
NOZZLES	3 x 24
OUT (m)	
IN (m)	934.0
DRILLED (m)	525.0
HOURS	43.5
CONDITION	In
AVG ROP (m/hr)	12.00
WOB (x1000 lbs)	15 - 30
RPM	160
JET VEL (ft/sec)	195
HHP @ BIT	122

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MDI (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	18
4. BIT TRIP	
5. WIPER TRIP	3.5
6. SURVEY	
7. CIRC / COND	1.5
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	0.5
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	0.5
30. SLIP & CUT LINE	
TOTAL	24

BHA: 2 bit 3 Bit, Sperrydrill, IB stab, float sub, MWD, 1 x nmhc, 2 x xo subs, 24 hwdp, drilling jars, 6 hwdp, ox.

BHA WEIGHT :	57,000 lbs	STRING WT.:	108,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	200 amps	DRAG UP :	130,000 lbs
TORQUE OFF BTM :	80 amps	DRAG DOWN :	95,000 lbs

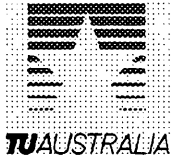
DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	13-Apr-99
REPORT No:	14
D.F.S:	10.52
SHOE F.I.T:	10.1



WELL NAME: Iona 3 STATUS @ 2400 HRS: Wash & ream

DEPTH - 2400 HRS:	1,459 m	FORMATION:		KB - GL (m):	4.98
DEPTH - PREVIOUS:	1,459 m	HOLE SIZE:	12 1/4"	SHOE DEPTH:	635
24 HR PROGRESS:	m	ACCIDENTS:	nil	LAST CASING:	13 3/8"

SAFETY MEETINGS: RE : logging

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.2	
VISCOSITY	68	Barite 60
pH	8.5	Pot. Hydrox 3
PV / YP	17 / 28	
GELS 0/10	8 / 19	
WL API / FC (cc)	5 . 8	
SOLIDS %	5.3	
SAND %	0 . 5	
CHLORIDES	21,500	
KCL ppb	12 . 4	
MBT (ppb)	15	
Pm Pm/Mf	.10 / .50	
TEMP (degC)	43	
HOLE VOL (bbls)	671	
SURFACE VOL (bbls)	308	
HOLE LOSSES (bbls)	10	
MUD CO	Baroid	
MUD ENGINEER	Gerald Lange	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER	'10	14 / '9.1
DESANDER		
MUDCLEANER		
CENTRIFUGE	'17	9.1 / '17
SHAKER SCREENS:	3 x 110	3 x 110

INVENTORY	
BARITE	488 sx
GEL	84 sx
CEMENT	1,050 sx
SALT	sx
KCL	476 sx
DRILLWATER	bbl
DIESEL FUEL	19,000 lts

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		2050
GPM	370	370
AV (DP - ft/min)		145
AV (DC - ft/min)		210
SPR @	40	60
SPR PRESS	200	290

DRILLS / BOPS	
LAST BOP DRILL	13-Apr-99
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	8-Apr-99
NEXT BOP TEST	
DAYS SINCE LAST LTA	65

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	6.5
6. SURVEY	
7. CIRC / COND	2
8. CHANGE BHA	1.5
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	10.5
15. REAM / WASH	3.5
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

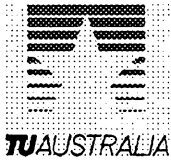
BIT DATA	
BIT No.	RR 3
SIZE (ins)	12 1/4"
TYPE	ERA-03D
IADC CODE	4 -1-7m
SERIAL No.	681061
NOZZLES	3 x 24
OUT (m)	
IN (m)	1,459.0
DRILLED (m)	
HOURS	
CONDITION	In
AVG ROP (m/hr)	
WOB (x1000 lbs)	5
RPM	160
JET VEL (ft/sec)	195
HHP @ BIT	122

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MDI (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

BHA.: 3 - RR bit 3 Bit, nb 12 1/4" stab, 1 x 8"dc, 12 1/4" stab, 2 x XO, 24 hwdp, Jars, 6 hwdp, Xo.

BHA WEIGHT :	43,000 lbs	STRING WT.:	87,000 lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	amps	DRAG UP :	lbs
TORQUE OFF BTM :	amps	DRAG DOWN :	lbs



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	14-Apr-99
REPORT No:	15
D.F.S:	11.52
SHOE F.I.T:	10.1

WELL NAME: Iona 3 STATUS @ 2400 HRS: Slip drilling line

DEPTH - 2400 HRS:	1,459	m	FORMATION:		KB - GL (m):	4.98
DEPTH - PREVIOUS:		m	HOLE SIZE:	12 1/4"	SHOE DEPTH:	635
24 HR PROGRESS:		m	ACCIDENTS:	nil	LAST CASING:	13 3/8"
SAFETY MEETINGS:	Safety awareness					

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	9.2	
VISCOSITY	59	EZ-MUD 2
pH	8.5	Pot. Hydrox 2
PV / YP	17 / 29	Pot Chloride 2
GELS 0/10	8 / 21	XCD 2
WL API / FC (cc)	6.0	
SOLIDS %	5.3	
SAND %	0.3	
CHLORIDES	22,000	
KCL ppb	12.6	
MBT (ppb)	15	
Pm Pm/Mf	.10 / .50	
TEMP (degC)	49	
HOLE VOL (bbls)	671	
SURFACE VOL (bbls)	384	
HOLE LOSSES (bbls)		
MUD CO	Baroid	
MUD ENGINEER	Gerald Lange	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER	'22	14 / '9.1
DESANDER		
MUDCLEANER		
CENTRIFUGE	'22	9.1 / '17
SHAKER SCREENS:	3 x 110	3 x 110

PUMPS		
	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM	135	135
PRESSURE		2050
GPM	370	370
AV (DP - ft/min)		145
AV (DC - ft/min)		210
SPR @	40	60
SPR PRESS	200	290

INVENTORY	
BARITE	488 sx
GEL	84 sx
CEMENT	1,050 sx
SALT	sx
KCL	476 sx
DRILLWATER	bbl
DIESEL FUEL	14,500 lts

DRILLS / BOPS	
LAST BOP DRILL	13-Apr-99
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	8-Apr-99
NEXT BOP TEST	
DAYS SINCE LAST LTA	66

BIT DATA	
BIT No.	RR 3
SIZE (ins)	12 1/4"
TYPE	ERA-03D
IADC CODE	4 -1-7m
SERIAL No.	681061
NOZZLES	3 x 24
OUT (m)	
IN (m)	1,459.0
DRILLED (m)	
HOURS	43 1/2
CONDITION	In
AVG ROP (m/hr)	
WOB (x1000 lbs)	5
RPM	80 - 100
JET VEL (ft/sec)	195
HHP @ BIT	122

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	1.5
6. SURVEY	
7. CIRC / COND	1.5
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	20.5
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	0.5
TOTAL	24

BHA.: 3 - RR bit 3 Bit, nb 12 1/4" stab, 1 x 8"dc, 12 1/4" stab, 2 x XO, 24 hwdp, Jars, 6 hwdp, Xo.			
BHA WEIGHT:	43,000 lbs	STRING WT.:	105 lbs
DP RATING:	lbs - 'G' Grade	MARGIN:	lbs @ 75%
DP RATING:	lbs - 'S' Grade	MARGIN:	lbs @ 75%
TORQUE ON BTM:	400 amps	DRAG UP:	lbs
TORQUE OFF BTM:	amps	DRAG DOWN:	lbs

DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

DATE:	15-Apr-99
REPORT No:	16
D.F.S:	12.52
SHOE F.I.T:	



WUGS Western Underground Storage Project

WELL NAME: Iona 3 STATUS @ 2400 HRS: Nipple down BOP

DEPTH - 2400 HRS:	1,459	m	FORMATION:		KB - GL (m):	4.98
DEPTH - PREVIOUS:		m	HOLE SIZE:		SHOE DEPTH:	1,459
24 HR PROGRESS:		m	ACCIDENTS:	nil	LAST CASING:	9 5/8"
SAFETY MEETINGS:	Safety awareness					

MUD PROPERTIES	ADDITIVES
DENSITY (ppg)	
VISCOSITY	
pH	Baracide 1
PV / YP	
GELS 0/10	
WL API / FC (cc)	
SOLIDS %	
SAND %	
CHLORIDES	
KCL ppb	
MBT (ppb)	
Pm Pm/Mf	
TEMP (degC)	
HOLE VOL (bbls)	
SURFACE VOL (bbls)	
HOLE LOSSES (bbls)	
MUD CO	Baroid
MUD ENGINEER	Gerald Lange

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:	3 x 110	3 x 110

PUMPS	1	2
TYPE	PZ-8	PZ-8
STROKE	8"	8"
LINER	6"	6"
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @		
SPR PRESS		

INVENTORY	
BARITE	488 sx
GEL	84 sx
CEMENT	150 sx
SALT	sx
KCL	456 sx
DRILLWATER	bbl
DIESEL FUEL	10,500 lts

DRILLS / BOPS	
LAST BOP DRILL	13-Apr-99
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	8-Apr-99
NEXT BOP TEST	
DAYS SINCE LAST LTA	67

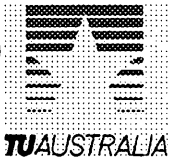
BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MDI (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

BHA.:			
.....			
.....			
.....			
BHA WEIGHT :	lbs	STRING WT.:	lbs
DP RATING :	lbs - 'G' Grade	MARGIN :	lbs @ 75%
DP RATING :	lbs - 'S' Grade	MARGIN :	lbs @ 75%
TORQUE ON BTM :	amps	DRAG UP :	lbs
TORQUE OFF BTM :	amps	DRAG DOWN :	lbs

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	4
6. SURVEY	
7. CIRC / COND	2
8. CHANGE BHA	
9. CASE & CEMENT	14
10. WELLHEAD	
11. BOP'S	4
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	16-Apr-99
REPORT No:	17
D.F.S:	13.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Lay out drill pipe

DEPTH - 2400 HRS:	<u>1,459</u> m	FORMATION:		KB - GL (m):	<u>4.98</u>
DEPTH - PREVIOUS:		HOLE SIZE:		SHOE DEPTH:	<u>1,459</u>
24 HR PROGRESS:		ACCIDENTS:	<u>nil</u>	LAST CASING:	<u>9 5/8"</u>
SAFETY MEETINGS:	<u>Laying down pipe.</u>				

MUD PROPERTIES		ADDITIVES	
DENSITY (ppg)	<u>8.6</u>		
VISCOSITY	<u>28</u>		
pH		<u>Coat 2748 - 2x208</u>	
PV / YP		<u>KCL</u>	<u>281</u>
GELS 0/10		<u>PAC-R</u>	<u>1</u>
WL API / FC (cc)			
SOLIDS %			
SAND %			
CHLORIDES	<u>34,500</u>		
KCL ppb	<u>19.80</u>		
MBT (ppb)			
Pm Pm/Mf			
TEMP (degC)			
HOLE VOL (bbls)			
SURFACE VOL (bbls)			
HOLE LOSSES (bbls)			
MUD CO	<u>Baroid</u>		
MUD ENGINEER	<u>Gerald Lange</u>		

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:	<u>3 x 110</u>	<u>3 x 110</u>

INVENTORY	
BARITE	<u>488 sx</u>
GEL	<u>84 sx</u>
CEMENT	<u>150 sx</u>
SALT	<u>sx</u>
KCL	<u>175 sx</u>
DRILLWATER	<u>bbl</u>
DIESEL FUEL	<u>18,150 lts</u>

PUMPS		
	1	2
TYPE	<u>PZ-8</u>	<u>PZ-8</u>
STROKE	<u>8"</u>	<u>8"</u>
LINER	<u>6"</u>	<u>6"</u>
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	<u>13-Apr-99</u>
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	<u>16-Apr-99</u>
NEXT BOP TEST	
DAYS SINCE LAST LTA	<u>68</u>

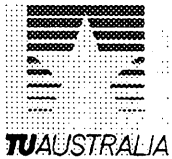
BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	<u>9</u>
6. SURVEY	<u>1.5</u>
7. CIRC / COND	<u>1.5</u>
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	<u>4</u>
11. BOP'S	<u>7</u>
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19.COMPLETION	
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	<u>1</u>
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

BHA.:			
BHA WEIGHT :	<u> </u> lbs	STRING WT.:	<u> </u> lbs
DP RATING :	<u> </u> lbs - 'G' Grade	MARGIN :	<u> </u> lbs @ 75%
DP RATING :	<u> </u> lbs - 'S' Grade	MARGIN :	<u> </u> lbs @ 75%
TORQUE ON BTM :	<u> </u> amps	DRAG UP :	<u> </u> lbs
TORQUE OFF BTM :	<u> </u> amps	DRAG DOWN :	<u> </u> lbs



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	17-Apr-99
REPORT No:	17
D.F.S:	14.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Pressure test tubing & set packer

DEPTH - 2400 HRS:	<u>1,459</u> m	FORMATION:		KB - GL (m):	<u>4.98</u>
DEPTH - PREVIOUS:		HOLE SIZE:		SHOE DEPTH:	<u>1,459</u> Pkr 1331.5
24 HR PROGRESS:		ACCIDENTS:	<u>nil</u>	LAST CASING:	<u>9 5/8"</u> <u>5 1/2"</u>
SAFETY MEETINGS:	<u>Safe pipe handling.</u>				

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	<u>8.6</u>	
VISCOSITY	<u>28</u>	<u>KCL 29</u>
pH		
PV / YP		
GELS 0/10		
WL API / FC (cc)		
SOLIDS %		
SAND %		
CHLORIDES	<u>34,500</u>	
KCL ppb	<u>19.80</u>	
MBT (ppb)		
Pm Pm/Mf		
TEMP (degC)		
HOLE VOL (bbls)		
SURFACE VOL (bbls)		
HOLE LOSSES (bbls)		
MUD CO	<u>Baroid</u>	
MUD ENGINEER	<u>Gerald Lange</u>	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:	<u>3 x 110</u>	<u>3 x 110</u>

INVENTORY	
BARITE	<u>488 sx</u>
GEL	<u>84 sx</u>
CEMENT	<u>150 sx</u>
SALT	<u>sx</u>
KCL	<u>146 sx</u>
DRILLWATER	<u>bbl</u>
DIESEL FUEL	<u>15,950 lts</u>

PUMPS	1	2
TYPE	<u>PZ-8</u>	<u>PZ-8</u>
STROKE	<u>8"</u>	<u>8"</u>
LINER	<u>6"</u>	<u>6"</u>
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	<u>13-Apr-99</u>
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	<u>16-Apr-99</u>
NEXT BOP TEST	
DAYS SINCE LAST LTA	<u>69</u>

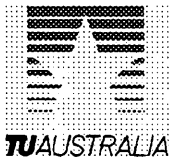
BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	<u>6</u>
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19.COMPLETION	<u>18</u>
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

BHA.:			
BHA WEIGHT :	<u> </u> lbs	STRING WT.:	<u> </u> lbs
DP RATING :	<u> </u> lbs - 'G' Grade	MARGIN :	<u> </u> lbs @ 75%
DP RATING :	<u> </u> lbs - 'S' Grade	MARGIN :	<u> </u> lbs @ 75%
TORQUE ON BTM :	<u> </u> amps	DRAG UP :	<u> </u> lbs
TORQUE OFF BTM :	<u> </u> amps	DRAG DOWN :	<u> </u> lbs



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	18-Apr-99
REPORT No:	19
D.F.S:	15.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Wait on daylight.

DEPTH - 2400 HRS:	<u>PBTD 1445</u> m	FORMATION:		KB - GL (m):	<u>4.98</u>
DEPTH - PREVIOUS:	<u>1,459</u> m	HOLE SIZE:		SHOE DEPTH:	<u>1,459</u> Pkr 1331.5
24 HR PROGRESS:		ACCIDENTS:	<u>nil</u>	LAST CASING:	<u>9 5/8" 5 1/2"</u>
SAFETY MEETINGS:	<u>Discussed expected activities and testing.</u>				

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	<u>8.6</u>	
VISCOSITY	<u>28</u>	
pH		
PV / YP		
GELS 0/10		
WL API / FC (cc)		
SOLIDS %		
SAND %		
CHLORIDES	<u>34,500</u>	
KCL ppb	<u>19.80</u>	
MBT (ppb)		
Pm Pm/Mf		
TEMP (degC)		
HOLE VOL (bbls)		
SURFACE VOL (bbls)		
HOLE LOSSES (bbls)		
MUD CO	<u>Baroid</u>	
MUD ENGINEER	<u>Gerald Lange</u>	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:		

INVENTORY	
BARITE	<u>488 sx</u>
GEL	<u>84 sx</u>
CEMENT	<u>150 sx</u>
SALT	<u>sx</u>
KCL	<u>146 sx</u>
DRILLWATER	<u>bbl</u>
DIESEL FUEL	<u>13,000 lts</u>

PUMPS	1	2
TYPE	<u>PZ-8</u>	<u>PZ-8</u>
STROKE	<u>8"</u>	<u>8"</u>
LINER	<u>6"</u>	<u>6"</u>
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @		
SPR PRESS		

DRILLS / BOPS	
LAST BOP DRILL	<u>13-Apr-99</u>
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	<u>16-Apr-99</u>
NEXT BOP TEST	
DAYS SINCE LAST LTA	<u>70</u>

BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	<u>24</u>
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

BHA.:			
BHA WEIGHT :	<u> </u> lbs	STRING WT.:	<u> </u> lbs
DP RATING :	<u> </u> lbs - 'G' Grade	MARGIN :	<u> </u> lbs @ 75%
DP RATING :	<u> </u> lbs - 'S' Grade	MARGIN :	<u> </u> lbs @ 75%
TORQUE ON BTM :	<u> </u> amps	DRAG UP :	<u> </u> lbs
TORQUE OFF BTM :	<u> </u> amps	DRAG DOWN :	<u> </u> lbs



DAILY DRILLING REPORT

RIG : OD & E 30

PERMIT : PPL-2 OTWAY BASIN

WUGS Western Underground Storage Project

DATE:	19-Apr-99
REPORT No:	20
D.F.S:	16.52
SHOE F.I.T:	

WELL NAME: Iona 3 STATUS @ 2400 HRS: Rig down to move to Iona # 5

DEPTH - 2400 HRS:	<u>PBTD 1445</u> m	FORMATION:		KB - GL (m):	<u>4.98</u>
DEPTH - PREVIOUS:	<u>1,459</u> m	HOLE SIZE:		SHOE DEPTH:	<u>1,459</u> Pkr 1331.5
24 HR PROGRESS:	<u></u> m	ACCIDENTS:	<u>nil</u>	LAST CASING:	<u>9 5/8" 5 1/2"</u>
SAFETY MEETINGS:	<u>Discussed expected activities and testing.</u>				

MUD PROPERTIES		ADDITIVES
DENSITY (ppg)	<u>8.6</u>	
VISCOSITY	<u>28</u>	
pH		
PV / YP		
GELS 0/10		
WL API / FC (cc)		
SOLIDS %		
SAND %		
CHLORIDES	<u>34,500</u>	
KCL ppb	<u>19.80</u>	
MBT (ppb)		
Pm Pm/Mf		
TEMP (degC)		
HOLE VOL (bbls)		
SURFACE VOL (bbls)		
HOLE LOSSES (bbls)		
MUD CO	<u>Baroid</u>	
MUD ENGINEER	<u>Gerald Lange</u>	

SOLIDS CONTROL		
UNIT	GPM / HRS	OF / UF
DESILTER		
DESANDER		
MUDCLEANER		
CENTRIFUGE		
SHAKER SCREENS:		

PUMPS		
	1	2
TYPE	<u>PZ-8</u>	<u>PZ-8</u>
STROKE	<u>8"</u>	<u>8"</u>
LINER	<u>6"</u>	<u>6"</u>
SPM		
PRESSURE		
GPM		
AV (DP - ft/min)		
AV (DC - ft/min)		
SPR @		
SPR PRESS		

INVENTORY	
BARITE	<u>488 sx</u>
GEL	<u>84 sx</u>
CEMENT	<u>150 sx</u>
SALT	<u>sx</u>
KCL	<u>146 sx</u>
DRILLWATER	<u>bbl</u>
DIESEL FUEL	<u>12,550 lts</u>

DRILLS / BOPS	
LAST BOP DRILL	<u>13-Apr-99</u>
LAST FIRE DRILL	
LAST ABN.RIG DRILL	
LAST BOP TEST	<u>16-Apr-99</u>
NEXT BOP TEST	
DAYS SINCE LAST LTA	<u>71</u>

TIME ANALYSIS	
1. MOVE RIG	
2. RIG UP	
3. DRILLING	
4. BIT TRIP	
5. WIPER TRIP	
6. SURVEY	
7. CIRC / COND	
8. CHANGE BHA	
9. CASE & CEMENT	
10. WELLHEAD	
11. BOP'S	
12. L.O.T.	
13. CORING	
14. LOGGING	
15. REAM / WASH	
16. FISH / STUCK	
17. LOSS CIRC	
18. KICK CONTROL	
19. COMPLETION	<u>24</u>
20. REP. SUBSURFACE	
21. REP. SURFACE	
22. WELL TEST	
23. W.O. WEATHER	
24. WAIT - OTHER	
25. ABANDON / SUSP	
26. RIG DOWN	
27. W.O. CEMENT	
28. DRILL CEMENT	
29. RIG SERVICE	
30. SLIP & CUT LINE	
TOTAL	24

BIT DATA	
BIT No.	
SIZE (ins)	
TYPE	
IADC CODE	
SERIAL No.	
NOZZLES	
OUT (m)	
IN (m)	
DRILLED (m)	
HOURS	
CONDITION	
AVG ROP (m/hr)	
WOB (x1000 lbs)	
RPM	
JET VEL (ft/sec)	
HHP @ BIT	

SURVEYS		
DEPTHS	Inc (deg)	Azimuth
MD/ (TVD)		

FORMATION DATA	
TRIP GAS (%)	
CONN.GAS (%)	
T.GAS (%)	
P.PRESS (ppg)	
ECD (ppg)	

BHA.:			
BHA WEIGHT :	<u></u> lbs	STRING WT.:	<u></u> lbs
DP RATING :	<u></u> lbs - 'G' Grade	MARGIN :	<u></u> lbs @ 75%
DP RATING :	<u></u> lbs - 'S' Grade	MARGIN :	<u></u> lbs @ 75%
TORQUE ON BTM :	<u></u> amps	DRAG UP :	<u></u> lbs
TORQUE OFF BTM :	<u></u> amps	DRAG DOWN :	<u></u> lbs

APPENDIX 2

Definitive Survey by Sperry Sun/Gyrodata



Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Iona Drillpad

Western Underground Gas Storage Pty. Ltd.
Iona

Comments

Measured Depth (m)	Station Coordinates		Comment	
	TVD (m)	Northings (m)		Eastings (m)
1438.60	1354.17	262.98 S	224.13 W	Previous Gyro Survey Extrapolated to TD
1459.00	1371.51	271.30 S	230.94 W	

908189 090



Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Western Underground Gas Storage Pty. Ltd.

Iona

Iona Drillpad

Measured Depth (m)	Incl.	Azim.	Vertical Depth (m)	Local Coordinates		Geographic Coordinates		Global Coordinates	
				Northings (m)	Eastings (m)	Latitude	Longitude	Northings (m)	Eastings (m)
0.00	0.000	0.000	0.00	0.00 N	25.00 W	38° 34' 30.9958" S	143° 02' 08.3786" E	5728374.14 N	677329.42 E
20.00	0.160	150.760	20.00	0.02 S	24.99 W	38° 34' 30.9966" S	143° 02' 08.3792" E	5728374.12 N	677329.43 E
40.00	0.160	176.630	40.00	0.08 S	24.97 W	38° 34' 30.9983" S	143° 02' 08.3799" E	5728374.06 N	677329.45 E
60.00	0.100	155.860	60.00	0.12 S	24.96 W	38° 34' 30.9997" S	143° 02' 08.3803" E	5728374.02 N	677329.46 E
80.00	0.160	172.720	80.00	0.16 S	24.95 W	38° 34' 31.0011" S	143° 02' 08.3808" E	5728373.98 N	677329.47 E
100.00	0.110	250.480	100.00	0.20 S	24.97 W	38° 34' 31.0022" S	143° 02' 08.3802" E	5728373.94 N	677329.45 E
120.00	0.120	278.950	120.00	0.20 S	25.00 W	38° 34' 31.0023" S	143° 02' 08.3786" E	5728373.94 N	677329.42 E
140.00	0.260	199.490	140.00	0.24 S	25.04 W	38° 34' 31.0036" S	143° 02' 08.3771" E	5728373.90 N	677329.38 E
160.00	0.240	175.660	160.00	0.33 S	25.05 W	38° 34' 31.0064" S	143° 02' 08.3767" E	5728373.81 N	677329.37 E
180.00	0.140	183.060	180.00	0.39 S	25.05 W	38° 34' 31.0085" S	143° 02' 08.3769" E	5728373.75 N	677329.37 E
200.00	0.110	206.270	200.00	0.43 S	25.06 W	38° 34' 31.0099" S	143° 02' 08.3765" E	5728373.71 N	677329.36 E
220.00	0.170	222.340	220.00	0.47 S	25.09 W	38° 34' 31.0112" S	143° 02' 08.3754" E	5728373.67 N	677329.33 E
240.00	0.270	222.290	240.00	0.53 S	25.14 W	38° 34' 31.0130" S	143° 02' 08.3733" E	5728373.61 N	677329.28 E
260.00	0.510	204.160	260.00	0.65 S	25.21 W	38° 34' 31.0169" S	143° 02' 08.3706" E	5728373.49 N	677329.21 E
280.00	0.590	168.310	280.00	0.83 S	25.22 W	38° 34' 31.0228" S	143° 02' 08.3701" E	5728373.31 N	677329.20 E
300.00	0.760	177.060	300.00	1.06 S	25.20 W	38° 34' 31.0303" S	143° 02' 08.3714" E	5728373.08 N	677329.22 E
320.00	0.850	182.060	319.99	1.34 S	25.20 W	38° 34' 31.0394" S	143° 02' 08.3718" E	5728372.80 N	677329.22 E
340.00	0.640	171.640	339.99	1.60 S	25.18 W	38° 34' 31.0478" S	143° 02' 08.3724" E	5728372.54 N	677329.24 E
360.00	0.860	157.570	359.99	1.85 S	25.11 W	38° 34' 31.0558" S	143° 02' 08.3757" E	5728372.29 N	677329.31 E
380.00	0.920	158.810	379.99	2.14 S	25.00 W	38° 34' 31.0651" S	143° 02' 08.3807" E	5728372.00 N	677329.42 E
400.00	1.070	162.200	399.99	2.47 S	24.88 W	38° 34' 31.0756" S	143° 02' 08.3858" E	5728371.67 N	677329.54 E
420.00	1.260	168.210	419.98	2.86 S	24.78 W	38° 34' 31.0883" S	143° 02' 08.3904" E	5728371.28 N	677329.64 E
440.00	1.330	171.280	439.98	3.30 S	24.70 W	38° 34' 31.1027" S	143° 02' 08.3941" E	5728370.84 N	677329.72 E
460.00	1.340	173.170	459.97	3.76 S	24.64 W	38° 34' 31.1176" S	143° 02' 08.3971" E	5728370.38 N	677329.78 E
480.00	1.340	173.830	479.97	4.23 S	24.58 W	38° 34' 31.1326" S	143° 02' 08.3997" E	5728369.91 N	677329.84 E

Continued...

DrillQuest



Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Western Underground Gas Storage Pty. Ltd.
Iona

Iona Drillpad

Measured Depth (m)	Incl.	Azim.	Vertical Depth (m)	Local Coordinates		Geographic Coordinates		Global Coordinates	
				Northings (m)	Eastings (m)	Latitude	Longitude	Northings (m)	Eastings (m)
500.00	1.410	182.250	499.96	4.71 S	24.57 W	38° 34' 31.1481" S	143° 02' 08.4008" E	5728369.43 N	677329.85 E
520.00	1.430	186.650	519.95	5.20 S	24.61 W	38° 34' 31.1641" S	143° 02' 08.3997" E	5728368.94 N	677329.81 E
540.00	1.480	190.890	539.95	5.70 S	24.68 W	38° 34' 31.1805" S	143° 02' 08.3969" E	5728368.44 N	677329.74 E
560.00	1.570	190.650	559.94	6.23 S	24.78 W	38° 34' 31.1975" S	143° 02' 08.3933" E	5728367.91 N	677329.64 E
580.00	1.600	188.300	579.93	6.77 S	24.87 W	38° 34' 31.2152" S	143° 02' 08.3900" E	5728367.37 N	677329.55 E
600.00	1.600	187.890	599.92	7.32 S	24.95 W	38° 34' 31.2332" S	143° 02' 08.3873" E	5728366.82 N	677329.47 E
620.00	1.640	190.470	619.92	7.88 S	25.04 W	38° 34' 31.2514" S	143° 02' 08.3841" E	5728366.26 N	677329.38 E
640.00	2.060	188.000	639.91	8.52 S	25.14 W	38° 34' 31.2721" S	143° 02' 08.3804" E	5728365.62 N	677329.28 E
660.00	2.080	186.550	659.89	9.24 S	25.24 W	38° 34' 31.2954" S	143° 02' 08.3773" E	5728364.90 N	677329.18 E
680.00	2.190	186.910	679.88	9.98 S	25.32 W	38° 34' 31.3195" S	143° 02' 08.3744" E	5728364.16 N	677329.10 E
700.00	3.380	209.960	699.86	10.87 S	25.66 W	38° 34' 31.3486" S	143° 02' 08.3611" E	5728363.27 N	677328.76 E
730.00	6.540	221.160	729.74	12.92 S	27.23 W	38° 34' 31.4163" S	143° 02' 08.2983" E	5728361.22 N	677327.19 E
760.00	8.820	230.310	759.47	15.67 S	30.13 W	38° 34' 31.5077" S	143° 02' 08.1813" E	5728358.47 N	677324.29 E
790.00	11.370	231.330	789.00	18.99 S	34.20 W	38° 34' 31.6182" S	143° 02' 08.0158" E	5728355.15 N	677320.22 E
820.00	15.610	221.100	818.17	23.88 S	39.17 W	38° 34' 31.7804" S	143° 02' 07.8152" E	5728350.26 N	677315.25 E
850.00	17.330	216.920	846.94	30.50 S	44.51 W	38° 34' 31.9987" S	143° 02' 07.6008" E	5728343.64 N	677309.91 E
880.00	18.690	216.340	875.47	37.94 S	50.04 W	38° 34' 32.2440" S	143° 02' 07.3791" E	5728336.20 N	677304.38 E
910.00	19.860	215.810	903.79	45.95 S	55.87 W	38° 34' 32.5077" S	143° 02' 07.1456" E	5728328.19 N	677298.55 E
925.00	20.800	215.550	917.85	50.18 S	58.91 W	38° 34' 32.6472" S	143° 02' 07.0240" E	5728323.96 N	677295.51 E
940.00	22.750	213.590	931.78	54.76 S	62.06 W	38° 34' 32.7980" S	143° 02' 06.8979" E	5728319.38 N	677292.36 E
955.00	24.560	219.710	945.52	59.58 S	65.66 W	38° 34' 32.9568" S	143° 02' 06.7537" E	5728314.56 N	677288.76 E
970.00	25.660	218.500	959.11	64.52 S	69.68 W	38° 34' 33.1199" S	143° 02' 06.5924" E	5728309.62 N	677284.74 E
1000.00	29.610	219.500	985.68	75.33 S	78.44 W	38° 34' 33.4766" S	143° 02' 06.2404" E	5728298.81 N	677275.98 E
1030.00	33.240	215.410	1011.28	87.76 S	87.92 W	38° 34' 33.8863" S	143° 02' 05.8601" E	5728286.38 N	677266.50 E
1060.00	33.540	215.920	1036.32	101.17 S	97.55 W	38° 34' 34.3281" S	143° 02' 05.4748" E	5728272.97 N	677256.87 E

Continued...



Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Western Underground Gas Storage Pty. Ltd.

Iona

Iona Drillpad

Measured Depth (m)	Incl.	Azim.	Vertical Depth (m)	Local Coordinates		Geographic Coordinates		Global Coordinates	
				Northings (m)	Eastings (m)	Latitude	Longitude	Northings (m)	Eastings (m)
1120.00	33.070	216.420	1086.47	127.77 S	116.99 W	38° 34' 35.2044" S	143° 02' 04.6961" E	5728246.37 N	677237.43 E
1180.00	32.380	214.750	1136.95	154.14 S	135.87 W	38° 34' 36.0730" S	143° 02' 03.9406" E	5728220.00 N	677218.55 E
1240.00	33.080	215.900	1187.42	180.60 S	154.63 W	38° 34' 36.9446" S	143° 02' 03.1900" E	5728193.54 N	677199.79 E
1300.00	33.500	218.970	1237.58	206.74 S	174.64 W	38° 34' 37.8064" S	143° 02' 02.3871" E	5728167.40 N	677179.78 E
1360.00	32.880	221.860	1287.79	231.75 S	195.93 W	38° 34' 38.6325" S	143° 02' 01.5309" E	5728142.39 N	677158.49 E
1420.00	32.130	222.830	1338.39	255.58 S	217.64 W	38° 34' 39.4207" S	143° 02' 00.6558" E	5728118.56 N	677136.78 E
1438.60	31.810	219.640	1354.17	262.98 S	224.13 W	38° 34' 39.6654" S	143° 02' 00.3945" E	5728111.16 N	677130.29 E
1459.00	31.800	219.000	1371.51	271.30 S	230.94 W	38° 34' 39.9400" S	143° 02' 00.1207" E	5728102.84 N	677123.48 E

All data is in metres unless otherwise stated. Directions and coordinates are relative to Grid North. Vertical depths are relative to RTE. Northings and Eastings are relative to Drillpad Slot #4.

Coordinate System is UTM Zone 54S on Australian Datum 1984, Meters. Grid Convergence at Surface is -1.270°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 1459.00m., The Bottom Hole Displacement is 340.61m., in the Direction of 217.202° (Grid).

Continued...



Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Iona Drillpad

Western Underground Gas Storage Pty. Ltd.

Iona

Comments

Measured Depth (m)	Station Coordinates		Comment	
	TVD (m)	Northings (m)		Eastings (m)
1438.60	1354.17	262.98 S	224.13 W	Previous Gyro Survey Extrapolated to TD
1459.00	1371.51	271.30 S	230.94 W	



Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Iona Drillpad

Western Underground Gas Storage Pty. Ltd.
Iona

Measured Depth (m)	Incl.	Azim.	Sub-Sea Depth (m)	Vertical Depth (m)	Local Coordinates Northings (m) Eastings (m)	Global Coordinates Northings (m) Eastings (m)	Dogleg Rate (°/30m)	Vertical Section (m)	Comment
0.00	0.000	0.000	-134.98	0.00	0.00 N 25.00 W	5728374.14 N 677329.42 E		0.00	
20.00	0.160	150.760	-114.98	20.00	0.02 S 24.99 W	5728374.12 N 677329.43 E	0.240	0.01	
40.00	0.160	176.630	-94.98	40.00	0.08 S 24.97 W	5728374.06 N 677329.45 E	0.107	0.04	
60.00	0.100	155.860	-74.98	60.00	0.12 S 24.96 W	5728374.02 N 677329.46 E	0.113	0.07	
80.00	0.160	172.720	-54.98	80.00	0.16 S 24.95 W	5728373.98 N 677329.47 E	0.106	0.10	
100.00	0.110	250.480	-34.98	100.00	0.20 S 24.97 W	5728373.94 N 677329.45 E	0.261	0.14	
120.00	0.120	278.950	-14.98	120.00	0.20 S 25.00 W	5728373.94 N 677329.42 E	0.086	0.16	
140.00	0.260	199.490	5.02	140.00	0.24 S 25.04 W	5728373.90 N 677329.38 E	0.399	0.22	
160.00	0.240	175.660	25.02	160.00	0.33 S 25.05 W	5728373.81 N 677329.37 E	0.158	0.29	
180.00	0.140	183.060	45.02	180.00	0.39 S 25.05 W	5728373.75 N 677329.37 E	0.154	0.34	
200.00	0.110	206.270	65.02	200.00	0.43 S 25.06 W	5728373.71 N 677329.36 E	0.087	0.38	
220.00	0.170	222.340	85.02	220.00	0.47 S 25.09 W	5728373.67 N 677329.33 E	0.107	0.43	
240.00	0.270	222.290	105.02	240.00	0.53 S 25.14 W	5728373.61 N 677329.28 E	0.150	0.51	
260.00	0.510	204.160	125.02	260.00	0.65 S 25.21 W	5728373.49 N 677329.21 E	0.400	0.64	
280.00	0.590	168.310	145.02	280.00	0.83 S 25.22 W	5728373.31 N 677329.20 E	0.520	0.79	
300.00	0.760	177.060	165.02	300.00	1.06 S 25.20 W	5728373.08 N 677329.22 E	0.298	0.96	
320.00	0.850	182.060	185.01	319.99	1.34 S 25.20 W	5728372.80 N 677329.22 E	0.171	1.19	
340.00	0.640	171.640	205.01	339.99	1.60 S 25.18 W	5728372.54 N 677329.24 E	0.374	1.39	
360.00	0.860	157.570	225.01	359.99	1.85 S 25.11 W	5728372.29 N 677329.31 E	0.428	1.54	
380.00	0.920	158.810	245.01	379.99	2.14 S 25.00 W	5728372.00 N 677329.42 E	0.095	1.70	
400.00	1.070	162.200	265.01	399.99	2.47 S 24.88 W	5728371.67 N 677329.54 E	0.242	1.89	
420.00	1.260	168.210	285.00	419.98	2.86 S 24.78 W	5728371.28 N 677329.64 E	0.338	2.14	
440.00	1.330	171.280	305.00	439.98	3.30 S 24.70 W	5728370.84 N 677329.72 E	0.148	2.45	
460.00	1.340	173.170	324.99	459.97	3.76 S 24.64 W	5728370.38 N 677329.78 E	0.068	2.78	
480.00	1.340	173.830	344.99	479.97	4.23 S 24.58 W	5728369.91 N 677329.84 E	0.023	3.12	

Continued...



Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Iona Drillpad

Western Underground Gas Storage Pty. Ltd.
Iona

Measured Depth (m)	Incl.	Azim.	Sub-Sea Depth (m)	Vertical Depth (m)	Local Coordinates Northings (m) Eastings (m)	Global Coordinates Northings (m) Eastings (m)	Dogleg Rate (°/30m)	Vertical Section (m)	Comment
500.00	1.410	182.250	364.98	499.96	4.71 S 24.57 W	5728369.43 N 677329.85 E	0.320	3.49	
520.00	1.430	186.650	384.97	519.95	5.20 S 24.61 W	5728368.94 N 677329.81 E	0.166	3.90	
540.00	1.480	190.890	404.97	539.95	5.70 S 24.68 W	5728368.44 N 677329.74 E	0.178	4.35	
560.00	1.570	190.650	424.96	559.94	6.23 S 24.78 W	5728367.91 N 677329.64 E	0.135	4.83	
580.00	1.600	188.300	444.95	579.93	6.77 S 24.87 W	5728367.37 N 677329.55 E	0.107	5.32	
600.00	1.600	187.890	464.94	599.92	7.32 S 24.95 W	5728366.82 N 677329.47 E	0.017	5.80	
620.00	1.640	190.470	484.94	619.92	7.88 S 25.04 W	5728366.26 N 677329.38 E	0.125	6.30	
640.00	2.060	188.000	504.93	639.91	8.52 S 25.14 W	5728365.62 N 677329.28 E	0.641	6.87	
660.00	2.080	186.550	524.91	659.89	9.24 S 25.24 W	5728364.90 N 677329.18 E	0.084	7.50	
680.00	2.190	186.910	544.90	679.88	9.98 S 25.32 W	5728364.16 N 677329.10 E	0.166	8.14	
700.00	3.360	209.960	564.88	699.86	10.87 S 25.66 W	5728363.27 N 677328.76 E	2.417	9.06	
730.00	6.540	221.160	594.76	729.74	12.92 S 27.23 W	5728361.22 N 677327.19 E	3.290	11.64	
760.00	8.820	230.310	624.49	759.47	15.67 S 30.13 W	5728358.47 N 677324.29 E	2.580	15.58	
790.00	11.370	231.330	654.02	789.00	18.99 S 34.20 W	5728355.15 N 677320.22 E	2.556	20.69	
820.00	15.610	221.100	683.19	818.17	23.88 S 39.17 W	5728350.26 N 677315.25 E	4.850	27.59	
850.00	17.330	216.920	711.96	846.94	30.50 S 44.51 W	5728343.64 N 677309.91 E	2.088	36.09	
880.00	18.690	216.340	740.49	875.47	37.94 S 50.04 W	5728336.20 N 677304.38 E	1.372	45.36	
910.00	19.860	215.810	768.81	903.79	45.95 S 55.87 W	5728328.19 N 677298.55 E	1.183	55.26	
925.00	20.800	215.550	782.87	917.85	50.18 S 58.91 W	5728323.96 N 677295.51 E	1.889	60.47	
940.00	22.750	213.590	796.80	931.78	54.76 S 62.06 W	5728319.38 N 677292.36 E	4.162	66.03	
955.00	24.580	219.710	810.54	945.52	59.58 S 65.66 W	5728314.56 N 677288.76 E	6.122	72.04	
970.00	25.660	218.500	824.13	959.11	64.52 S 69.68 W	5728309.62 N 677284.74 E	2.392	78.41	
1000.00	29.610	219.500	850.70	985.68	75.33 S 78.44 W	5728298.81 N 677275.98 E	3.977	92.31	
1030.00	33.240	215.410	876.30	1011.28	87.76 S 87.92 W	5728286.38 N 677266.50 E	4.208	107.94	
1060.00	33.540	215.920	901.34	1036.32	101.17 S 97.55 W	5728272.97 N 677256.87 E	0.411	124.45	

Continued...

Sperry-Sun Drilling Services

Survey Report for Iona #3 - Gyro Resurvey
Your Ref: Definitive Gyro Resurvey (7 June 1999)



Western Underground Gas Storage Pty. Ltd.

Iona Drillpad

Iona

Measured Depth (m)	Incl.	Azim.	Sub-Sea Depth (m)	Vertical Depth (m)	Local Coordinates Northings (m) Eastings (m)	Global Coordinates Northings (m) Eastings (m)	Dogleg Rate (°/30m)	Vertical Section (m)	Comment
1120.00	33.070	216.420	951.49	1086.47	127.77 S 116.99 W	5728246.37 N 677237.43 E	0.272	157.39	
1180.00	32.380	214.750	1001.97	1136.95	154.14 S 135.87 W	5728220.00 N 677218.55 E	0.568	189.81	
1240.00	33.080	215.900	1052.44	1187.42	180.60 S 154.63 W	5728193.54 N 677199.79 E	0.468	222.23	
1300.00	33.500	218.970	1102.60	1237.58	206.74 S 174.64 W	5728167.40 N 677179.78 E	0.868	255.15	
1360.00	32.880	221.860	1152.81	1287.79	231.75 S 195.93 W	5728142.39 N 677158.49 E	0.850	287.94	
1420.00	32.130	222.830	1203.41	1338.39	255.58 S 217.64 W	5728118.56 N 677136.78 E	0.457	320.05	Previous Gyro Survey
1438.60	31.810	219.640	1219.19	1354.17	262.98 S 224.13 W	5728111.16 N 677130.29 E	2.772	329.87	Extrapolated to TD
1459.00	31.800	219.000	1236.53	1371.51	271.30 S 230.94 W	5728102.84 N 677123.48 E	0.496	340.61	

All data is in metres unless otherwise stated. Directions and coordinates are relative to Grid North. Vertical depths are relative to RTE. Northings and Eastings are relative to Drillpad Slot #4.

Coordinate System is UTM Zone 54S on Australian Datum 1984, Meters.
Grid Convergence at Surface is -1.270°.

The Dogleg Severity is in Degrees per 30m.
Vertical Section is from Iona #3 Wellhead and calculated along an Azimuth of 217.202° (Grid).

Based upon Minimum Curvature type calculations, at a Measured Depth of 1459.00m.,
The Bottom Hole Displacement is 340.61m., in the Direction of 217.202° (Grid).

Continued...

APPENDIX 3

Cuttings Descriptions

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet Well: Iona - 3 Permit: PPL-2
17.5" Hole Section (590 – 635 mRT)		
	20	<u>SANDSTONE:</u> as above
621	60 40	<u>ARENACEOUS CLAYSTONE:</u> as above <u>SANDSTONE:</u> as above
624	70 30	<u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated, loose, predominantly medium to coarse grains, sub angular to sub rounded occasionally rounded and polished with ferruginous staining, low to moderate sphericity, moderate to well sorted quartz, trace to rare nodular pyrite, good to excellent inferred porosity. No shows. <u>ARENACEOUS CLAYSTONE:</u> medium to dark greenish grey to brownish grey in part, firm to moderately hard, abundant quartz silt to fine sand, nil to trace carbonaceous specks, minor to common glauconite pellets oxidised and ferruginised in part, trace to minor nodular pyrite, trace to rare mica flakes, trace skeletal fragments, slightly calcareous.
627	70 30 tr	<u>SANDSTONE:</u> as above. <u>ARENACEOUS CLAYSTONE:</u> as above <u>CLAYEY SANDSTONE:</u> light brownish to greenish grey, clear to translucent grains, moderately hard to hard, predominantly medium to coarse grains occasionally very coarse, angular to sub rounded occasionally rounded and polished with ferruginous staining, low to moderate sphericity, poorly to moderately sorted quartz, abundant quartz silt, abundant clay matrix, common calcareous-dolomitic cement, rare to minor glauconite, trace to rare nodular pyrite, nil to poor inferred porosity.
630	80 10 10	<u>SANDSTONE:</u> as above. <u>CLAYEY SANDSTONE:</u> as above <u>ARENACEOUS CLAYSTONE:</u> as above
631 Spot	50 40 10	<u>SANDSTONE:</u> as above. <u>CLAYEY SANDSTONE:</u> as above <u>ARENACEOUS CLAYSTONE:</u> as above
632	30	<u>CLAYEY SANDSTONE:</u> light brownish to greenish grey, clear to translucent grains, moderately hard to hard, predominantly medium to coarse grains occasionally very coarse, angular to sub rounded occasionally rounded and polished with ferruginous staining, low to moderate sphericity, poorly to moderately sorted quartz, abundant quartz silt, abundant clay matrix, common calcareous-dolomitic

Depth (mRT)	Lithol. (%)	<p style="text-align: center;">Western Underground Gas Storage Pty Ltd Cuttings Description Sheet</p> <p style="text-align: center;">Well: Iona - 3 Permit: PPL-2</p>
		17.5" Hole Section (590 – 635 mRT)
	40 30	cement, trace to rare nodular pyrite, nil to poor inferred porosity. <u>SANDSTONE:</u> as above. <u>ARENACEOUS CLAYSTONE:</u> as above
635 B.U. TD	50 40 10	<u>CLAYEY SANDSTONE:</u> as above <u>SANDSTONE:</u> as above. <u>ARENACEOUS CLAYSTONE:</u> as above

TD of 17.5" hole section 635 mRT reached at 21:52 hrs 6 April, 1999

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet
		Well: Iona - 3 Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)
	20	SANDSTONE: as above, with trace blue and brownish orange volcanic? Lithics
666		Missed sample
669	70	CLAYEY SANDSTONE: as above
	30	SANDSTONE: light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, poorly to moderately sorted quartz, trace to rare multicoloured, orange, yellow, greyish blue hard lithic volcanic? and siliceous grains, trace to rare nodular pyrite, nil to trace calcareous, moderate to good inferred porosity. No fluorescence.
672		Missed sample
675	30	CLAYSTONE: medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, trace to rare mica
	70	SANDSTONE: light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, poorly to moderately sorted quartz, minor multicoloured, orange, yellow, greyish blue hard lithic volcanic? and siliceous grains, trace to rare nodular pyrite, moderate to good inferred porosity. No fluorescence.
678		Missed sample – change to six metre intervals
681	80	CLAYSTONE: as above
	20	SANDSTONE: as above, minor to common multicoloured, orange, yellow, greyish blue hard lithic volcanic? and siliceous grains,
687	90	SANDSTONE: as above
	10	CLAYSTONE: as above
693	100	SANDSTONE: as above
	tr	CLAYSTONE: as above
696	90	SANDSTONE: as above
	10	CLAYSTONE: as above
699	90	SANDSTONE: as above
	10	CLAYSTONE: as above

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
702	100 tr	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
705	100 tr	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
708	90 10	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
711	90 10	<u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, poorly to moderately sorted quartz, minor multicoloured, orange, yellow, greyish blue hard lithic volcanic? and siliceous grains, trace to rare nodular pyrite, moderate to good inferred porosity. No fluorescence. <u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, trace to rare mica	
714	90 10	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
717	90 10	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
720	90 10	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
723	100 tr	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
723	100 tr	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
726	90 10	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	
729	80 20	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
732	80	<u>SANDSTONE:</u> as above	
	20	<u>CLAYSTONE:</u> as above	
735	70	<u>SANDSTONE:</u> as above	
	30	<u>CLAYSTONE:</u> as above	
738	100	<u>SANDSTONE:</u> as above	
	tr	<u>CLAYSTONE:</u> as above	
741	100	<u>SANDSTONE:</u> as above	
	tr	<u>CLAYSTONE:</u> as above	
744	70	<u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, minor multicoloured, orange, yellow, greyish blue hard lithic volcanic? and siliceous grains, trace to rare nodular pyrite, moderate to good inferred porosity. No fluorescence.	
	30	<u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, trace to rare mica	
747	70	<u>SANDSTONE:</u> as above	
	30	<u>CLAYSTONE:</u> as above	
750	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
753	70	<u>SANDSTONE:</u> as above	
	30	<u>CLAYSTONE:</u> as above	
756	60	<u>SANDSTONE:</u> as above	
	40	<u>CLAYSTONE:</u> as above	
759	80	<u>SANDSTONE:</u> as above	
	20	<u>CLAYSTONE:</u> as above	
762	80	<u>SANDSTONE:</u> as above	
	20	<u>CLAYSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
765	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
768	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
771	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
774	100	<u>SANDSTONE:</u> as above	
	tr	<u>CLAYSTONE:</u> as above	
777	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
780	90	<u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, minor multicoloured, orange, yellow, greyish blue hard lithic volcanic? and siliceous grains, trace to rare nodular pyrite, moderate to good inferred porosity. No fluorescence.	
	10	<u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, trace to rare mica	
783	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
786	100	<u>SANDSTONE:</u> as above	
	tr	<u>CLAYSTONE:</u> as above	
789	80	<u>SANDSTONE:</u> as above	
	20	<u>CLAYSTONE:</u> as above	
792	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
795	100	<u>SANDSTONE:</u> as above	
	tr	<u>CLAYSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
798	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
801	60	<u>SANDSTONE:</u> as above, nil to trace orange lithics, moderately well sorted, occasional milky quartz pebbles	
	40	<u>CLAYSTONE:</u> as above,	
804	60	<u>SANDSTONE:</u> as above	
	40	<u>CLAYSTONE:</u> as above	
807	70	<u>SANDSTONE:</u> as above	
	30	<u>CLAYSTONE:</u> as above	
810	60	<u>SANDSTONE:</u> as above	
	40	<u>CLAYSTONE:</u> as above	
813	70	<u>SANDSTONE:</u> as above	
	30	<u>CLAYSTONE:</u> as above	
816	80	<u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, trace to rare nodular pyrite, moderate to good inferred porosity. No fluorescence.	
	20	<u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, trace to rare mica	
819	100	<u>SANDSTONE:</u> as above	
		<u>CLAYSTONE:</u> as above	
822	80	<u>SANDSTONE:</u> as above	
	20	<u>CLAYSTONE:</u> as above	
825		Missed sample	
828	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
831	100	<u>SANDSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet Well: Iona - 3 Permit: PPL-2
12.5" Hole Section (635 – 1459 mRT)		
	tr	<u>CLAYSTONE:</u> as above Note: abundant LCM material
834	90 10	<u>SANDSTONE:</u> as above, rare coloured lithics, rare pyrite cemented sandstone <u>CLAYSTONE:</u> as above Note: common to abundant LCM material
837	70 30	<u>SANDSTONE:</u> as above, rare coloured lithics, minor pyrite cemented sandstone <u>CLAYSTONE:</u> as above
840	50 50 tr-5	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above <u>COAL:</u> black, moderately hard, brittle, heavily pyritized Note: minor LCM material
843	50 50 tr	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above <u>COAL:</u> black, moderately hard, brittle, heavily pyritized Note: minor LCM material
846	30 60 10	<u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, trace to rare nodular pyrite, moderate to good inferred porosity. No fluorescence. <u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, trace to rare mica <u>COAL:</u> black, moderately hard, brittle, heavily pyritized Note: minor LCM material
849	50 50 tr	<u>SANDSTONE:</u> as above <u>CLAYSTONE:</u> as above <u>COAL:</u> black, moderately hard, brittle, heavily pyritized
852	70	<u>SANDSTONE:</u> as above

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet
		Well: Iona - 3 Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)
	30	<u>CLAYSTONE</u> : as above
855	60	<u>SANDSTONE</u> : as above
	40	<u>CLAYSTONE</u> : as above
858	50	<u>SANDSTONE</u> : as above
	50	<u>CLAYSTONE</u> : as above
		Note: very small sample
861	70	<u>SANDSTONE</u> : as above
	30	<u>CLAYSTONE</u> : as above
864	60	<u>SANDSTONE</u> : as above
	40	<u>CLAYSTONE</u> : as above
	tr	<u>COAL</u> : black
867	40	<u>SANDSTONE</u> : as above, occasional pebble (>20mm)
	60	<u>CLAYSTONE</u> : as above
	tr	<u>COAL</u> : black
870	70	<u>SANDSTONE</u> : as above, grading to granule
	30	<u>CLAYSTONE</u> : as above, common mica
	tr	<u>COAL</u> : black
873	80	<u>SANDSTONE</u> : light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains grading to granule in part, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, trace to rare nodular pyrite, trace to rare coloured lithics, moderate to good inferred porosity. No fluorescence.
	20	<u>CLAYSTONE</u> : medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, rare to minor mica
	tr	<u>COAL</u> : black, moderately hard, brittle, heavily pyritized
876	90	<u>SANDSTONE</u> : as above
	10	<u>CLAYSTONE</u> : as above
879	80	<u>SANDSTONE</u> : as above

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet Well: Iona - 3 Permit: PPL-2
12.5" Hole Section (635 – 1459 mRT)		
	20	<u>CLAYSTONE:</u> as above
882	100 tr	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
885	90 10	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
888	80 20	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
891	80 20	<u>SANDSTONE:</u> as above, grading to conglomerate <u>CLAYSTONE:</u> as above
894	100 tr	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
897	100 tr	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
900	100 tr	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
903	100 tr	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
906	100 tr	<u>SANDSTONE:</u> as above, grading to granule <u>CLAYSTONE:</u> as above
909	90 10	<p><u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains grading to granule in part, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, trace to rare nodular pyrite, trace to rare coloured lithics, moderate to good inferred porosity. No fluorescence.</p> <p><u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, rare to minor mica</p> <p>Note: rare to minor LCM material</p>

Depth (mRT)	Lithol. (%)	<p style="text-align: center;">Western Underground Gas Storage Pty Ltd Cuttings Description Sheet</p> <p style="text-align: center;">Well: Iona - 3 Permit: PPL-2</p>
12.5" Hole Section (635 – 1459 mRT)		
912	90 10	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p> <p>Note: rare to minor LCM material</p>
915	80 20	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p>
918	90 10	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p>
921	70 30	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p>
924	70 30	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p>
927	80 20	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p>
930	90 10	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p>
931 B.U.	90 10	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p> <p>Note: minor LCM material, trip for new bit.</p>
933	60 40	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p> <p>Note: minor LCM material</p>
936	40 60	<p><u>SANDSTONE:</u> as above.</p> <p><u>CLAYSTONE:</u> as above</p>
939	40	<p><u>SANDSTONE:</u> light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains grading to granule in part, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, trace to rare nodular pyrite, trace to rare coloured lithics, moderate to good inferred porosity. No fluorescence.</p>

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet
		Well: Iona - 3 Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)
	60	CLAYSTONE: medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, rare to minor mica
942	30	SANDSTONE: as above.
	70	CLAYSTONE: as above
945		Missed sample – shakers overflowing
948		Missed sample
951	55	SANDSTONE: as above.
	40	CLAYSTONE: as above
	5	COAL: black, moderately hard, brittle, heavily pyritized
954	35	SANDSTONE: as above.
	60	CLAYSTONE: as above
	5	COAL: as above
957	50	SANDSTONE: as above.
	50	CLAYSTONE: as above
960	45	SANDSTONE: as above.
	50	CLAYSTONE: as above
	5	COAL: as above, minor to common pyrite
963	40	SANDSTONE: as above.
	60	CLAYSTONE: as above
966	40	SANDSTONE: as above.
	60	CLAYSTONE: as above
969		Missed sample
972	60	SANDSTONE: as above.
	30	CLAYSTONE: as above
	10	COAL: black, moderately hard, brittle, minor pyrite
975	80	SANDSTONE: light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet
		Well: Iona - 3 Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)
	20	grading to granule in part, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, trace to rare nodular pyrite, trace to rare coloured lithics, moderate to good inferred porosity. No fluorescence. <u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, rare to minor mica
978	80	<u>SANDSTONE:</u> as above.
	20	<u>CLAYSTONE:</u> as above
981		Missed sample
984	60	<u>SANDSTONE:</u> as above.
	30	<u>CLAYSTONE:</u> as above
	10	<u>COAL:</u> black, moderately hard, brittle, minor pyrite
987		Missed sample
990	90	<u>SANDSTONE:</u> as above.
	10	<u>CLAYSTONE:</u> as above
993	90	<u>SANDSTONE:</u> as above.
	10	<u>CLAYSTONE:</u> as above
996	80	<u>SANDSTONE:</u> as above.
	20	<u>CLAYSTONE:</u> as above
999	60	<u>SANDSTONE:</u> as above.
	40	<u>CLAYSTONE:</u> as above
1002	70	<u>SANDSTONE:</u> as above.
	30	<u>CLAYSTONE:</u> as above
1005	60	<u>SANDSTONE:</u> as above.
	40	<u>CLAYSTONE:</u> as above
1008	60	<u>SANDSTONE:</u> as above.
	40	<u>CLAYSTONE:</u> as above
1011	70	<u>SANDSTONE:</u> as above.

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet
		Well: Iona - 3 Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)
	30	CLAYSTONE: as above
1014	50 50	SANDSTONE: light grey to light brownish grey, clear to translucent grains, unconsolidated to friable, predominantly medium occasionally coarse grains grading to granule in part, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, trace to rare nodular pyrite, trace to rare coloured lithics, moderate to good inferred porosity. No fluorescence. CLAYSTONE: medium to light grey to brownish grey, very soft, dispersive, minor to common silt, minor very fine sand, minor pyritized coal specks, rare to minor mica
1017	50 50	SANDSTONE: as above. CLAYSTONE: as above
1020	80 20	SANDSTONE: as above. CLAYSTONE: as above
1023	90 10	SANDSTONE: as above. CLAYSTONE: as above
1026	50 50	SANDSTONE: as above. CLAYSTONE: medium to light grey to brownish grey, very soft, dispersive, minor to common silt, common to abundant very fine to fine sand grading to Sandy Claystone in part, minor pyritized coal specks, trace to rare mica flakes
1029	40 60	SANDSTONE: as above. CLAYSTONE: as above
1032	40 60	SANDSTONE: as above. CLAYSTONE: as above
1035	40 60	SANDSTONE: as above. CLAYSTONE: as above
1038	70 30	CLAYSTONE: medium to light grey to brownish grey, very soft, dispersive, minor to common silt, common to abundant very fine to fine sand grading to Sandy Claystone in part, minor pyritized coal specks, trace to rare mica flakes SANDSTONE: light grey to light brownish grey to white in part, clear to translucent grains, friable to moderately hard, predominantly very fine to medium grains, sub angular to sub rounded occasionally rounded, moderate sphericity,

Depth (mRT)	Lithol. (%)	<p style="text-align: center;">Western Underground Gas Storage Pty Ltd Cuttings Description Sheet</p> <p style="text-align: center;">Well: Iona - 3 Permit: PPL-2</p>
12.5" Hole Section (635 – 1459 mRT)		
moderately sorted quartz, rare glauconite, trace to rare nodular pyrite, poor to moderate inferred porosity. No fluorescence.		
1041	60 40 tr	<p><u>CLAYSTONE:</u> as above</p> <p><u>SANDSTONE:</u> as above</p> <p><u>DOLOMITE:</u> yellowish brown to medium grey, hard, blocky, trace pyrite, trace carbonaceous</p>
1044	70 30	<p><u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, common to abundant very fine to fine sand grading to Sandy Claystone in part, minor pyritized coal specks, trace to rare glauconite, trace to rare mica flakes</p> <p><u>SANDSTONE:</u> light grey to light brownish grey to white, clear to translucent grains, friable to moderately hard, predominantly very fine to medium grains, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, common to abundant argillaceous, rare glauconite, trace to rare nodular pyrite, poor to moderate inferred porosity. No fluorescence.</p>
1047	70 30 tr	<p><u>CLAYSTONE:</u> as above</p> <p><u>SANDSTONE:</u> as above</p> <p><u>DOLOMITE:</u> as above</p>
1050	80 20 tr	<p><u>CLAYSTONE:</u> as above</p> <p><u>SANDSTONE:</u> as above</p> <p><u>DOLOMITE:</u> as above</p>
1053		Missed sample
1056	90 10	<p><u>CLAYSTONE:</u> as above, grading to light grey to white in part</p> <p><u>SANDSTONE:</u> as above</p>
1059	90 10	<p><u>CLAYSTONE:</u> as above</p> <p><u>SANDSTONE:</u> as above</p>
1062	80 20	<p><u>CLAYSTONE:</u> as above</p> <p><u>SANDSTONE:</u> as above</p>
1065	80 20	<p><u>CLAYSTONE:</u> as above</p> <p><u>SANDSTONE:</u> as above</p>

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
	10	<u>SANDSTONE:</u> as above	
1098	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1101	80	<u>CLAYSTONE:</u> as above	
	20	<u>SANDSTONE:</u> as above	
1104	80	<u>CLAYSTONE:</u> as above	
	20	<u>SANDSTONE:</u> as above	
1107	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above, minor to common pyrite nodules	
1110	90	<u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, common to abundant very fine to fine sand grading to Sandy Claystone in part, minor pyritized coal specks, trace to rare glauconite, trace to rare mica flakes	
	10	<u>SANDSTONE:</u> light grey to light brownish grey to white, clear to translucent grains, friable to moderately hard, predominantly very fine to medium grains, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, common to abundant argillaceous, rare glauconite, trace to rare nodular pyrite, poor to moderate inferred porosity. No fluorescence.	
1113	80	<u>CLAYSTONE:</u> as above	
	20	<u>SANDSTONE:</u> as above	
1116	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1119	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1122	80	<u>CLAYSTONE:</u> as above	
	20	<u>SANDSTONE:</u> as above	
1125	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1128	100	<u>CLAYSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
	tr	<u>SANDSTONE:</u> as above	
1131	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1134	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1137	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1140	80	<u>CLAYSTONE:</u> as above	
	20	<u>SANDSTONE:</u> as above	
1143	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1146	100	<u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, common to abundant very fine to fine sand grading to Sandy Claystone in part, minor pyritized coal specks, trace to rare glauconite, trace to rare mica flakes	
	tr	<u>SANDSTONE:</u> light grey to light brownish grey to white, clear to translucent grains, friable to moderately hard, predominantly very fine to medium grains, sub angular to sub rounded occasionally rounded, moderate sphericity, moderately sorted quartz, common to abundant argillaceous, rare glauconite, trace to rare nodular pyrite, poor to moderate inferred porosity. No fluorescence.	
1149	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1152	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1155	90	<u>CLAYSTONE:</u> as above	
	10	<u>SANDSTONE:</u> as above	
1158	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1161	100	<u>CLAYSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
	tr	<u>SANDSTONE:</u> as above	
1164	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1167	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1170	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1173	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1176	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1179	100	<u>CLAYSTONE:</u> as above	
	tr	<u>SANDSTONE:</u> as above	
1182	70	<u>CLAYSTONE:</u> medium to light grey to brownish grey, very soft, dispersive, minor to common silt, common to abundant very fine to fine sand grading to Sandy Claystone in part, minor pyritized coal specks, trace to rare glauconite, trace to rare mica flakes	
	30	<u>SANDSTONE:</u> light greenish grey to light brownish grey grading to white, clear to translucent grains, loose to friable to sub blocky in part, predominantly very fine to fine, sub angular to sub rounded, moderate sphericity, well sorted quartz, minor to common white argillaceous matrix, nil to trace calcareous cement, minor to common glauconite, trace to rare nodular pyrite cement, poor to moderate inferred porosity. No fluorescence.	
1185	30	<u>CLAYSTONE:</u> as above	
	70	<u>SANDSTONE:</u> as above	
1188	50	<u>CLAYSTONE:</u> as above	
	50	<u>SANDSTONE:</u> as above	
1191	80	<u>SANDSTONE:</u> as above	
	20	<u>CLAYSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
1194	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
1197	100	<u>SANDSTONE:</u> as above, grading to yellowish brown in part	
	tr	<u>CLAYSTONE:</u> as above	
1200	100	<u>SANDSTONE:</u> as above	
	tr	<u>CLAYSTONE:</u> as above	
1203	100	<u>SANDSTONE:</u> as above	
1206	90	<u>SANDSTONE:</u> as above	
	10	<u>CLAYSTONE:</u> as above	
1209	80	<u>SANDSTONE:</u> as above	
	20	<u>CLAYSTONE:</u> as above	
1212	100	<u>SANDSTONE:</u> as above, abundant white to pale yellowish orange argillaceous matrix	
1215	100	<u>SANDSTONE:</u> as above, abundant white to pale yellowish orange argillaceous matrix	
1218	100	<u>SANDSTONE:</u> as above	
1221	100	<u>SANDSTONE:</u> as above	
1224		Missed sample	
1227	100	<u>SANDSTONE:</u> light greenish grey to light brownish grey grading to white, clear to translucent grains, loose to friable to sub blocky in part, predominantly very fine to fine, sub angular to sub rounded, moderate sphericity, well sorted quartz, minor to common white argillaceous matrix, nil to trace calcareous cement, minor to common glauconite, trace to rare nodular pyrite cement, poor to moderate inferred porosity. No fluorescence.	
1230	100	<u>SANDSTONE:</u> as above Note: fast drilling rate, change to 6 m samples	
1236	100	<u>SANDSTONE:</u> as above	
1239	100	<u>SANDSTONE:</u> as above	
1245	100	<u>SANDSTONE:</u> as above	

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet	
		Well: Iona - 3	Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)	
1251	100	<u>SANDSTONE</u> : as above	
1254	100	<u>SANDSTONE</u> : as above	
1260	100	<u>SANDSTONE</u> : as above	
1266	100	<u>SANDSTONE</u> : as above	
1272	100	<u>SANDSTONE</u> : as above, abundant white argillaceous matrix grading to Argillaceous Sandstone	
1275	100	<u>SANDSTONE</u> : as above Note: Change to 3 m samples	
1278	100	<u>SANDSTONE</u> : as above	
1281	100	<u>SANDSTONE</u> : as above	
1284	100	<u>SANDSTONE</u> : as above	
1287	100	<u>SANDSTONE</u> : as above	
1290	70	<u>SANDSTONE</u> : as above	
	30	<u>CLAYSTONE</u> : medium light grey to dark greenish grey, soft, very dispersive, rare to minor quartz silt, minor to common disseminated and nodular glauconite, rare coal specks, rare mica, trace pyrite	
1293	60	<u>SANDSTONE</u> : as above	
	40	<u>CLAYSTONE</u> : as above	
1296	30	<u>SANDSTONE</u> : as above	
	70	<u>CLAYSTONE</u> : as above	
1299	80	<u>CLAYSTONE</u> : medium light grey to dark greenish grey, soft, very dispersive, rare to minor quartz silt, minor to common disseminated and nodular glauconite, rare coal specks, rare mica, trace pyrite	
	20	<u>SANDSTONE</u> : light greenish grey to light brownish grey grading to white, clear to translucent grains, loose to friable to sub blocky in part, predominantly very fine to fine, sub angular to sub rounded, moderate sphericity, well sorted quartz, common to abundant white argillaceous matrix grading to Argillaceous Sandstone, nil to trace calcareous cement, minor to common glauconite, trace to rare nodular pyrite cement, poor to moderate inferred porosity. No fluorescence.	
1302	90	<u>CLAYSTONE</u> : as above	

Depth (mRT)	Lithol. (%)	<p style="text-align: center;">Western Underground Gas Storage Pty Ltd Cuttings Description Sheet</p> <p style="text-align: center;">Well: Iona - 3 Permit: PPL-2</p>
		12.5" Hole Section (635 – 1459 mRT)
		to <u>Argillaceous Sandstone</u> in part, common to abundant disseminated and nodular glauconite aggregates, rare to minor calcareous cement, trace to rare pyrite nodules, poor to moderate inferred porosity. No shows.
1338	70	<u>CLAYSTONE</u> : as above
	30	<u>SANDSTONE</u> : as above
1341	70	<u>CLAYSTONE</u> : as above
	30	<u>SANDSTONE</u> : as above, predominantly very fine to medium, loose
1344	80	<u>CLAYSTONE</u> : as above
	20	<u>SANDSTONE</u> : as above, predominantly very fine to medium, loose
1347	70	<u>CLAYSTONE</u> : as above
	30	<u>SANDSTONE</u> : as above
1350	80	<u>CLAYSTONE</u> : as above
	20	<u>SANDSTONE</u> : as above
1353	70	<u>CLAYSTONE</u> : as above
	30	<u>SANDSTONE</u> : as above
1356	50	<u>CLAYSTONE</u> : as above
	50	<u>SANDSTONE</u> : as above
1359	80	<u>CLAYSTONE</u> : as above
	20	<u>SANDSTONE</u> : as above
1362	80	<u>CLAYSTONE</u> : as above
	20	<u>SANDSTONE</u> : as above
1365	80	<u>CLAYSTONE</u> : as above
	20	<u>SANDSTONE</u> : as above
1368	50	<u>SANDSTONE</u> : light brownish grey to very light grey, fine to coarse, dominantly medium clear quartz, moderately to well sorted, subangular to subrounded, firm to friable, predominantly loose and unconsolidated, trace pyrite, excellent porosity, No shows.
	50	<u>CLAYSTONE</u> : medium light grey to dark greenish grey, soft, very dispersive, rare to minor quartz silt, minor to common disseminated and nodular glauconite, rare

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet
		Well: Iona - 3 Permit: PPL-2
		12.5" Hole Section (635 – 1459 mRT)
	tr	coal specks, rare mica, trace to minor nodular pyrite COAL: black, moderately hard, brittle, abundant pyrite
1371	80 20 tr	SANDSTONE: as above CLAYSTONE: as above, trace to rare glauconite COAL: as above
1374	70 30 tr	SANDSTONE: as above CLAYSTONE: as above COAL: as above
1377	70 30 tr	SANDSTONE: as above CLAYSTONE: as above COAL: as above
1380	70 30 tr	SANDSTONE: as above CLAYSTONE: as above COAL: as above
1383	70 30 tr	SANDSTONE: as above CLAYSTONE: as above COAL: as above
1386	80 20	SANDSTONE: as above CLAYSTONE: as above
1389	90 10	SANDSTONE: as above CLAYSTONE: as above
1392	70 30	SANDSTONE: as above CLAYSTONE: as above
1395	60 40	SANDSTONE: as above CLAYSTONE: as above
1398	60	SANDSTONE: light brownish grey to very light grey, fine to coarse, dominantly medium clear quartz, moderately to well sorted, subangular to subrounded, firm to

Depth (mRT)	Lithol. (%)	Western Underground Gas Storage Pty Ltd Cuttings Description Sheet Well: Iona - 3 Permit: PPL-2
12.5" Hole Section (635 – 1459 mRT)		
	40	friable, predominantly loose and unconsolidated, trace pyrite, excellent porosity, No shows. <u>CLAYSTONE:</u> medium light grey to dark greenish grey, soft, very dispersive, rare to minor quartz silt, minor to common very fine sand grading to Arenaceous Claystone in part, trace to rare disseminated and nodular glauconite, rare coal specks, rare mica, trace to minor nodular pyrite
1401	60	<u>SANDSTONE:</u> as above
	40	<u>CLAYSTONE:</u> as above
1404	30	<u>SANDSTONE:</u> as above, grading to very coarse to granule
	70	<u>CLAYSTONE:</u> as above
1407	40	<u>SANDSTONE:</u> as above
	60	<u>CLAYSTONE:</u> as above
1410	40	<u>SANDSTONE:</u> as above
	60	<u>CLAYSTONE:</u> as above
1413	50	<u>SANDSTONE:</u> as above
	50	<u>CLAYSTONE:</u> as above
1416	50	<u>SANDSTONE:</u> as above
	50	<u>CLAYSTONE:</u> as above
1419	40	<u>SANDSTONE:</u> as above
	60	<u>CLAYSTONE:</u> as above
1422	40	<u>SANDSTONE:</u> as above
	60	<u>CLAYSTONE:</u> as above
1425	30	<u>SANDSTONE:</u> as above
	70	<u>CLAYSTONE:</u> as above
1428	30	<u>SANDSTONE:</u> as above
	70	<u>CLAYSTONE:</u> as above
1431	20	<u>SANDSTONE:</u> as above
	80	<u>CLAYSTONE:</u> as above

Depth (mRT)	Lithol. (%)	<p style="text-align: center;">Western Underground Gas Storage Pty Ltd Cuttings Description Sheet</p> <p style="text-align: center;">Well: Iona - 3 Permit: PPL-2</p>
		12.5" Hole Section (635 – 1459 mRT)
		Fluorescence: 5 percent, dull yellow, very slow blooming cut.

TD of 12.5" hole section 1459 mKB reached at 19:15 hrs 12 April, 1999

APPENDIX 4

**Western Underground Gas Storage Iona-3 Report – Well Seismic Edit
and Geogram. Schlumberger GeoQuest**



GeoQuest

WESTERN UNDERGROUND GAS STORAGE

IONA 3

REPORT

WELL SEISMIC EDIT

AND GEOGRAM

FIELD	:	IONA
COUNTRY	:	AUSTRALIA
WELL HEAD LOCATION	:	Eastings : 677329.42 Northings : 5728374.14
	:	
LOCATION	:	VICTORIA
DATE OF VSP SURVEY	:	13-APR-1999
REFERENCE NO.	:	561287

August 1999

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Summary of Geophysical Listings

Well Seismic Report
Drift & Sonic Adjustment
Time to Depth Report
Velocity Report

Introduction

Checkshot data was acquired with the Seismic Acquisition Tool (SAT-A) in the IONA3 deviated onshore well on the 13th of APRIL 1999. The IONA 3 well is operated by **WESTERN UNDERGROUND GAS STORAGE**. A SM4 was used as the downhole geophone and the air gun (200 cu. in) was used as the source.

Processing of the data consisted of loading the raw data, editing bad shots, picking transit times, stacking and then applying corrections to Seismic Reference Depth (SRD) which in this case is at Mean Sea Level (MSL), correcting for TVD.

CONVENTION.

In the plots, each processing step is displayed according to the *SEG normal* polarity convention (1976) whereby an upgoing compressional wave, reflected by an increase of acoustic impedance with depth, is displayed as a white trough.

Data Acquisition

Table 1. Survey Parameters

Elevation of KB	134.98 m above MSL
Elevation of DF	134.68 m above MSL
Elevation of GL	130 m above MSL
Level Interval	135-1369 VD MSL
Energy Source	Air gun
Source Offset	300 m
Source Depth	104.2 m above MSL
Reference Sensor	Reference hydrophone
Hydrophone Offset	300 m
Hydrophone Depth	104.7 m above MSL
Source & Hyd. Azimuth	216.5 Degrees
Tool Type	200 cu. in. air gun
Tool Combination	Stand Alone
Number of Axis	3
Geophone Type	SM-4
Sampling Rate	1.0 ms
Recording Time	3.0 s
Acquisition Unit	MAXIS 500
Recording Format	DLIS

WELL SEISMIC EDIT

Each shot of the raw geophone data was evaluated and edited as necessary.

The good shots at each level were stacked, using a median stacking technique, to increase the signal to noise ratio of the data. The transit time of each trace was re-computed after stacking. Stacked Z component is displayed in Plot 1.

Data Quality

The overall quality of the data is good.

Transit Time Measurement

The transit time measured, Δt , corresponds to a difference between arrivals recorded by surface and downhole sensors. The reference time (zero time) is the physical recording of the source signal by accelerometers (fire pulse) on the gun or sensors positioned near the source (reference hydrophone and surface geophone). In this case, the reference hydrophone was used as the reference. First break picking algorithms were used on both the reference hydrophone and the downhole geophone.

Correction to Datum

Seismic Reference Datum (SRD) is at Mean Sea Level (MSL).

The source was positioned in the pit at 300 m, 216.5 degrees from the wellhead. elevation is 104.2 m above MSL. The surface velocity (1504 m/s) from an uphole survey used, supplied by the client.

Geophysical Airgun Report

The Geophysical Airgun Report listing contains all downhole seismic measurements obtained by analyzing stacked shots.

The level number, corresponding KB and SRD depth, observed (non-vertical) transit times and corrected (vertical) transit times from the source and from SRD are listed. Also included are average velocities between SRD and geophone together with level separation and corresponding transit times and finally interval velocities between levels. Vertical transit times have been corrected for the effects of geometry. The interval velocities listed are those computed from corrected (i.e. vertical) transit times.

Sonic Calibration

The aim of the sonic calibration is to reconcile seismic (checkshot) times and integrated sonic times for any given depth in a well. In the presence of checkshot data with scatter, the calibration always adjusts the sonic integrated times to match smoothed checkshot times.

A *drift* curve is determined by comparing an integrated sonic log transit time and vertical check shot times. The term drift is defined as the seismic time (from check shots) minus the sonic time (from integration of edited sonic). Commonly the word drift is used to identify the difference between sonic and seismic measurements either between two or more levels or over different zones in a well.

For a negative drift, $\frac{\Delta Drift}{\Delta Depth} < 0$ the sonic time is greater than the seismic time over a certain section of the log.

For a positive drift, $\frac{\Delta Drift}{\Delta Depth} > 0$ the sonic time is less than the seismic time over a certain section of the log.

The drift curve, between two levels, is then an indication of the error on the integrated sonic or an indication of the amount of correction required on the sonic to have the TTI of the corrected sonic match the check shot times.

Two methods of correction to the sonic log are used.

1. Uniform or block shift. This method applies a uniform correction to all the sonic values over the interval. This uniform correction is applied in the case of positive drift and is the average correction represented by the drift curve gradient expressed in $\mu\text{sec}/\text{ft}$.

2. ΔT Minimum. In the case of negative drift a second method is used, called ΔT minimum. This applies a differential correction to the sonic log, where it is assumed that the greatest amount of transit time error is caused by the lower velocity sections of the log. Over a given interval the method will correct only Δt values which are higher than a threshold, the Δt_{\min} . Values of Δt which are lower than the threshold are not corrected. The correction is a reduction of the excess of Δt over Δt_{\min} , $\Delta t - \Delta t_{\min}$.

$\Delta t - \Delta t_{\min}$ is reduced through multiplication by a reduction coefficient which remains constant over the interval. This reduction coefficient, named G, can be defined as:

$$G = 1 + \frac{\text{Drift}}{\int (\Delta t - \Delta t_{\min}) dz}$$

Where *Drift* is the drift over the interval to be corrected and the value

$\int (\Delta t - \Delta t_{\min}) dz$ is the time difference between the integrals of the two curves Δt and Δt_{\min} only over the intervals where $\Delta t > \Delta t_{\min}$.

Hence the corrected sonic: $\Delta t = G(\Delta t - \Delta t_{\min}) + \Delta t_{\min}$.

Open Hole Logs

The following table summarizes the availability of the sonic and density logs.

Log	Type	Interval
Sonic	Sonic data	637.2-1452 mKB
Density	Density data	637.2-1452 mKB

Both sonic and density have been depth matched to definitive ECGR.

Density log was edited extended to the SRD level using constant value of 2.3 g/cc.

DT5 curve was used as sonic log. It was edited for cycle skip in the interval 732-738 mTVD.

The gamma ray, deep resistivity and caliper logs have been included as correlation curves where they were available.

All logs were corrected for TVD.

Sonic Calibration Output

Zone Set Data

This listing shows the depth of selected knees from KB and SRD together with the measured drift. The amount of sonic adjustment and the type of correction (block shift or Delta T Minimum) plus the corresponding reduction factor G if applicable are all printed out.

Sonic Adjustment Data

The Drift & Sonic Adjustment Report contains the basic comparison of raw seismic and edited sonic integrated times at checkshot levels.

The level number, measured depth and vertical depth for all levels, vertical checkshot times adjusted to SRD and corresponding integrated sonic times are compiled in the listing. The drift between two adjacent checkshot levels is listed in milliseconds and the corrections to be applied to the sonic log in $\mu\text{sec}/\text{m}$ are also listed for all intervals between two adjacent levels

Drift Corrected Sonic Plot

The effect of the shifts listed in the Drift & Sonic Adjustment Report on the edited sonic log and the results of sonic adjustment for drift are graphically displayed on the Drift Corrected Sonic (Plot 5).

Velocity Report

The Average, RMS and interval velocities between two adjacent checkshot levels computed from corrected (adjusted) sonic log are listed in the Velocity Report with the sampling rate 2 ms.

Velocity Crossplot

Three velocities - Average, Interval, and Root Mean Square together with Time vs. Depth curve are computed for all checkshot levels. The results are plotted as a function of depth on the Velocity Crossplot.

Interval velocities (v_{int}) are those computed between two adjacent checkshot levels from corrected sonic logs and listed in the Velocity Report. Interval velocity is defined as

$$v_{\text{int}} = \frac{z_n - z_{n-1}}{t_n - t_{n-1}}$$

where z_n is the depth of nth layer and t_n its corresponding integrated sonic time.

Average velocities (v_{ave}) are computed by dividing SRD depth of checkshots and their corresponding integrated sonic times from corrected sonic log.

$$v_{\text{ave}} = \frac{\sum v_n t_n}{\sum t_n}$$

Root Mean Square Velocity (v_{rms}) is computed from calibrated sonic logs by

$$v_{rms} = \sqrt{\frac{\sum v_n^2 t_n}{\sum t_n}}$$

where v_n is an interval velocity over some specific time increment Δt_n of calibrated sonic log.

The Time vs. Depth Curve is the result of integration of the calibrated sonic log and is plotted as two way time (TWT) against depth.

Time to Depth Report

This listing is obtained from the calibrated sonic log. The results are listed against two way time (TWT) together with corresponding seismic datum (SRD) depths. Sampling rate is 1 ms.

Sonic Calibration Results

Plot 4, Velocity Crosssplot is a display of the sonic calibration output in 34" format.

Top of the sonic log was chosen as the start of the drift computation.

The calculated drift was small and well defined exhibiting very little scatter. The drift curve as expected increases steadily to a cumulative value of 8.4 msec at TD.

Knees are selected from the raw drift curve and lithological boundaries marked by the well logs. The depths of the knees define the zones for the adjustment.

The selected drift at the knees, defines the amount of time adjustment to the sonic log in each zone.

Geogram Processing

Composite Display plots 2, 3 (Normal and Reversed Polarities correspondingly at scale 1 s : 25 cm) and 6 and 7 (normal and Reversed Polarities at scale 1s : 50 cm) were generated using 25, 30 and 35 Hz zero phase Ricker wavelets (the sonic log used to generate the Geograms was calibrated using first break transit-times).

GEOGRAM processing produces synthetic seismic traces based on reflection coefficients generated from sonic and density measurements in the well-bore. The steps in the processing chain are described below.

Depth to Time Conversion

Open hole logs are recorded from the bottom to top with a depth index. These data are converted to a two-way time index in order to match the seismic section.

Primary Reflection Coefficients

Sonic and density data are averaged over chosen time intervals (normally 2 or 4 milliseconds). Reflection coefficients are then computed using:

$$R = \frac{\rho_2 v_2 - \rho_1 v_1}{\rho_2 v_2 + \rho_1 v_1}$$

where:

ρ_1 = density of the layer above the reflection interface

ρ_2 = density of the layer below the reflection interface

v_1 = compressional wave velocity of the layer above the reflection interface

v_2 = compressional wave velocity of the layer below the reflection interface

This computation is done for each time interval to generate a set of primary reflection coefficients without transmission losses.

Primaries with Transmission Loss

Transmission loss on two-way attenuation coefficients is computed using:

$$A_n = (1 - R_1^2).(1 - R_2^2).(1 - R_3^2)...(1 - R_n^2)$$

A set of primary reflection coefficients with transmission loss is generated using:

$$\text{Primary}_n = R_n \cdot A_{n-1}$$

Primaries plus Multiples

Multiples are computed from these input reflection coefficients using the transform technique from the top of the well to obtain the impulse response of the earth. The transform outputs primaries plus multiples.

Multiples Only

By subtracting previously calculated primaries from the above result we obtain multiples only.

Wavelet

A theoretical wavelet is chosen to use for convolution with the reflection coefficients previously generated. Choices available include:

- Klauder wavelet
- Ricker zero phase wavelet
- Ricker minimum phase wavelet
- Butterworth wavelet
- User defined wavelet

Time variant Butterworth filtering can be applied after convolution.

Polarity Convention

Throughout this report the following polarity convention is used. An increase in acoustic impedance gives a positive reflection coefficient, is written to tape as a negative number and is displayed as a white trough under normal polarity. This is displayed in figure 1.

Convolution

The standard procedure of convolving the wavelet with reflection coefficients is performed; the output is the synthetic seismogram.

Geograms were generated with zero phase Ricker wavelets with central frequencies of 25 Hz, 30 Hz and 35 Hz. They are displayed in Plots 2, 3 and 6,7.

A Summary of Geophysical Listings

Four geophysical data listings are appended to this report. Following is a brief description of the format of each listing.

Well Seismic Report

1. Level number: the level number starting from the top level (includes any imposed shots).
2. Vertical depth from SRD: *dsrd*, the depth in metres from seismic reference datum.
3. Measured depth from KB: *dkb*, the depth in metres from kelly bushing.
4. Observed travel time HYD to GEO: *tim0*, the transit time picked from the stacked data by subtracting the surface sensor first break time from the downhole sensor first break time.
5. Vertical travel time SRD to GEO: *shtm*, is *timv* corrected for the vertical distance between source and datum.
6. Delta depth between shots: $\Delta depth$, the vertical distance between each level.
7. Delta time between shots: $\Delta time$, the difference in vertical travel time (*shtm*), between each level.
8. Interval velocity between shots: the average seismic velocity between each level, $\Delta depth / \Delta time$
9. Average velocity SRD to GEO: the average seismic velocity from datum to the corresponding checkshot level, $\frac{dsrd}{shtm}$.

Drift & Sonic Adjustment

Zone Set Data

1. Knee number: the knee number starting from the highest knee. (The first knees listed will generally be at SRD and the top of sonic. The drift imposed at these knees will normally be zero.)
2. Measured depth from KB: the depth in metres from kelly bushing
3. Vertical depth from SRD: the depth in metres from seismic reference datum.

4. Selected Drift at knee: the value of drift imposed at each knee.
5. Shift: the change in drift divided by the change in depth between any two levels.
6. Delta-T: see section 4 of report for an explanation of Δt_{min} .
7. Reduction factor G: see section 4 of report.
8. Selected Drift Gradient: the gradient of the imposed drift curve.

Sonic Adjustment Data

1. Measured depth from KB: the depth in meters SRD from Kelly bushing
2. Vertical depth from SRD: the depth in meters from seismic reference datum.
3. Vertical shot time SRD to GEO: the calculated vertical travel time from datum to downhole geophone.
4. Adjusted Sonic Time.
5. Computed drift at level: the checkshot time minus the integrated raw sonic time.
6. Residual Shot Time - Adjusted Sonic Time.
7. Adjusted Interval Velocity.
8. Adjusted RMS Velocity.
9. Adjusted Average Velocity.

Velocity Report

The data in this listing has been resampled in time.

1. Two way travel time from SRD: this is the index for the data in this listing. The first value is at SRD (0 millisecs) and the sampling rate is 2 millisecs.
2. Measured depth from KB: the depth from KB at each corresponding value of two way time.
3. Vertical depth from SRD: the vertical depth from SRD at each corresponding value of two way time.

4. Average velocity SRD to GEO: the vertical depth from SRD divided by half the two way time.
5. RMS velocity: the root mean square velocity from datum to the corresponding value of two way time.

$$v_{rms} = \sqrt{\sum_{i=1}^n v_i^2 t_i / \sum_{i=1}^n t_i}$$

where v_i is the velocity between each 2 millisecc interval.

6. Interval velocity: the velocity between each sampled depth. Typically, the sampling rate is 2 millisecc two way time, (1 millisecc one way time) therefore the interval velocity will be equal to the depth increment divided by 0.002. It is equivalent to column 9 from the Velocity Report.

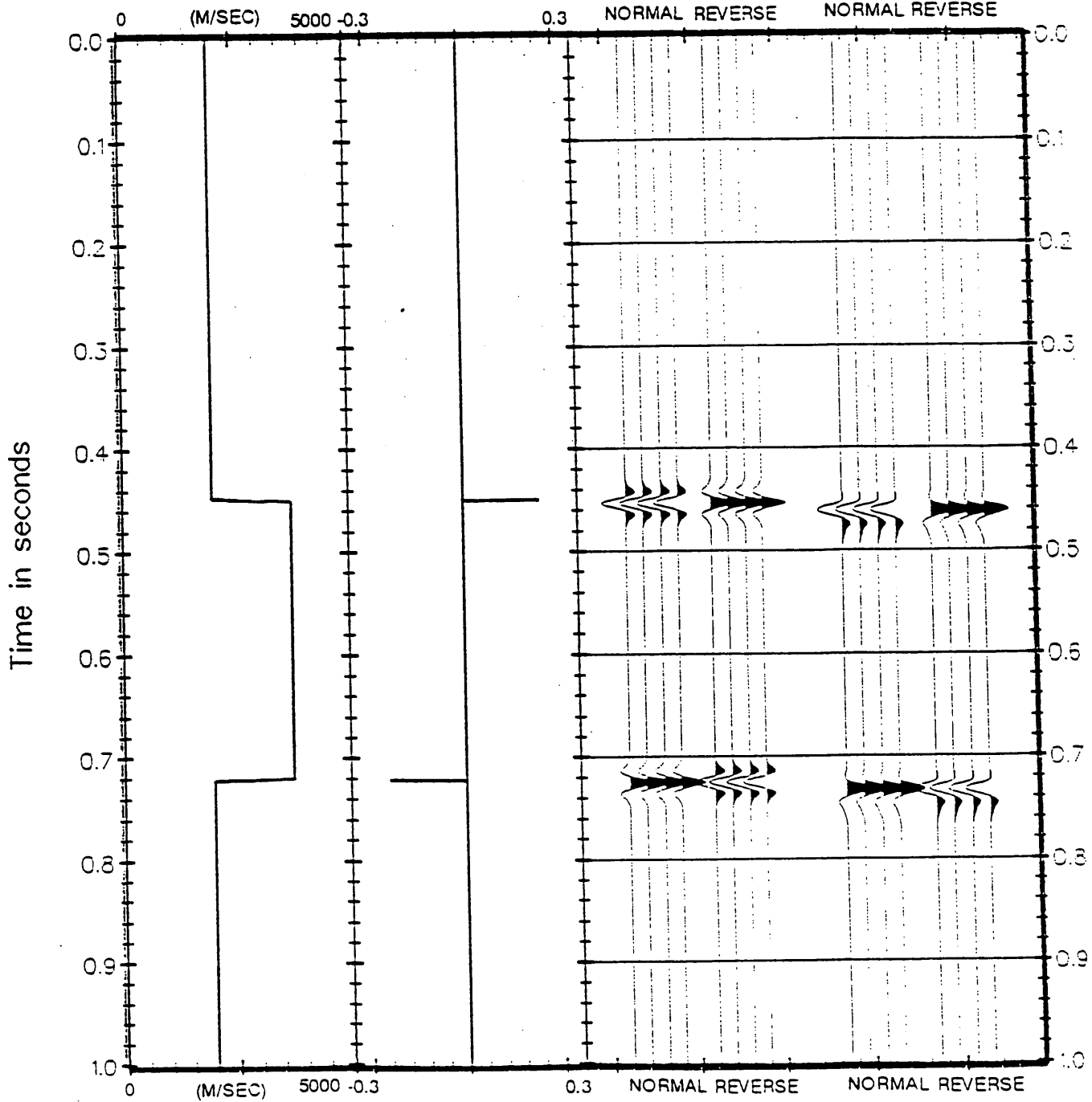
Time to Depth

1. Two Way Sonic Time from SRD

2-11. Depth at Time 0-9 ms: moveout times every 1 ms

SCHLUMBERGER (SEG-1976) WAVELET POLARITY CONVENTION

INTERVAL VELOCITY REFLECTION COEFF. ZERO PHASE MINIMUM PHASE



TVD Computation Report

This is a report of the TVD Computation Module for the data described below.

Company/Well Information:

Company Name:
Field: IONA
Well: IONA #3

Input Parameters:

General Parameters

Top Depth: 0.000 m
Bottom Depth: 1458.925 m
Sample Rate: -0.154 m

TVD Parameters

Method of Computation: Minimum Curvature Method
Type of Input Data: Log Inputs Only
Stations Input File: ./tvdcomp.dat
Station Data Output Sample Type?: Continuous
Magnetic Decl. Corr.?: Yes
Magnetic Declination: 0.000 deg

Tie Point Parameters

Measured Depth:	0.0 m
True Vertical Depth:	0.0 m
Azimuth:	0.0 deg
Deviation:	0.000 deg
North/South Drift:	0.0 m
East/West Drift:	0.0 m

Output Data Arrays (Channels):

Measured Depth: MD .TVD [A]
 True Vertical Depth: TVD .TVD [A]
 X-Component of Well Departure DX .TVD [A]
 Y-Component of Well Departure DY .TVD [A]

Output Array Data

Depth ft	Measured Depth m	True Vertical Depth m	X Well Departure m	Y Well Departure m
0.0	0.0	0.0	0.0	0.0
100.0	30.5	30.5	0.0	-0.0
200.0	61.0	61.0	0.0	-0.1
300.0	91.4	91.4	0.1	-0.2
400.0	121.9	121.9	-0.0	-0.2
500.0	152.4	152.4	-0.1	-0.3
600.0	182.9	182.9	-0.1	-0.4
700.0	213.4	213.4	-0.1	-0.4
800.0	243.8	243.8	-0.2	-0.5
900.0	274.3	274.3	-0.2	-0.8
1000.0	304.8	304.8	-0.2	-1.1
1100.0	335.3	335.3	-0.2	-1.5
1200.0	365.8	365.7	-0.1	-1.9
1300.0	396.2	396.2	0.1	-2.4
1400.0	426.7	426.7	0.2	-3.0
1500.0	457.2	457.2	0.3	-3.7
1600.0	487.7	487.6	0.4	-4.4
1700.0	518.2	518.1	0.4	-5.1
1800.0	548.6	548.6	0.3	-5.9
1900.0	579.1	579.1	0.1	-6.7
2000.0	609.6	609.5	-0.0	-7.6
2100.0	640.1	640.0	-0.2	-8.5
2200.0	670.6	670.4	-0.3	-9.6
2300.0	701.0	700.9	-0.7	-10.9
2400.0	731.5	731.2	-2.3	-13.1
2500.0	762.0	761.4	-5.3	-16.0

Output Array Data (Continued)

Depth ft	Measured Depth m	True Vertical Depth m	X Well Departure m	Y Well Departure m
2600.0	792.5	791.4	-9.5	-19.4
2700.0	823.0	821.0	-14.7	-24.5
2800.0	853.4	850.2	-20.1	-31.4
2900.0	883.9	879.2	-25.8	-39.0
3000.0	914.4	907.9	-31.8	-47.2
3100.0	944.9	936.3	-38.2	-56.4
3200.0	975.4	963.9	-46.1	-66.4
3300.0	1005.8	990.7	-55.3	-77.6
3400.0	1036.3	1016.5	-65.0	-90.6
3500.0	1066.8	1042.0	-74.8	-104.3
3600.0	1097.3	1067.4	-84.6	-117.8
3700.0	1127.8	1093.0	-94.5	-131.2
3800.0	1158.2	1118.6	-104.2	-144.6
3900.0	1188.7	1144.3	-113.6	-158.0
4000.0	1219.2	1170.0	-123.0	-171.5
4100.0	1249.7	1195.5	-132.8	-184.9
4200.0	1280.2	1221.0	-142.9	-198.2
4300.0	1310.6	1246.4	-153.4	-211.3
4400.0	1341.1	1271.9	-164.2	-224.1
4500.0	1371.6	1297.5	-175.2	-236.5
4600.0	1402.1	1323.2	-186.2	-248.6
4700.0	1432.6	1349.0	-197.1	-260.6

GEOGRAM+

Well Seismic Report

DATE 10/19/99

Schlumberger

Client and Well Information

Country AUSTRALIA
 State VICTORIA
 Logging Date 13-APR-1999
 Company
 Field IONA
 Well IONA #3

Check Shot Data

LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME (owt) s	Vertical Transit Time-SRD (owt) s	DELTA DEPTH m	DELTA TIME s	SEISMIC INTERVAL VELOCITY m/s	SEISMIC AVERAGE VELOCITY m/s
1	0.0			0.0000				
							1963	
2	66.0	201.0	0.2080	0.0336				1963
					138.0	0.0749	1843	
3	204.0	339.0	0.2472	0.1085				1881
					208.0	0.0976	2131	
4	412.0	547.0	0.3169	0.2061				1999
					77.0	0.0302	2549	
5	488.9	624.0	0.3406	0.2363				2070
					34.0	0.0125	2712	
6	522.9	658.0	0.3506	0.2488				2102
					140.9	0.0541	2606	
7	663.8	800.0	0.3953	0.3029				2192
					95.6	0.0398	2404	
8	759.4	900.0	0.4282	0.3426				2216
					113.5	0.0415	2735	

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Well Seismic Report

Check Shot Data (Continued)

LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME (owt) s	Vertical Transit Time-SRD (owt) s	DELTA DEPTH m	DELTA TIME s	SEISMIC INTERVAL VELOCITY m/s	SEISMIC AVERAGE VELOCITY m/s
9	872.9	1026.0	0.4620	0.3841				2272
					130.7	0.0488	2680	
10	1003.6	1182.0	0.5043	0.4329				2318
					88.1	0.0306	2874	
11	1091.7	1287.0	0.5330	0.4636				2355
					44.3	0.0160	2768	
12	1136.0	1340.0	0.5486	0.4795				2369
					21.0	0.0070	2994	
13	1157.0	1365.0	0.5555	0.4866				2378
					10.1	0.0030	3315	
14	1167.1	1377.0	0.5586	0.4896				2384
					3.4	0.0012	2913	
15	1170.5	1381.0	0.5597	0.4908				2385
					21.9	0.0069	3181	
16	1192.4	1407.0	0.5666	0.4977				2396
					10.2	0.0042	2446	
17	1202.5	1419.0	0.5708	0.5018				2396
					31.4	0.0109	2874	
18	1234.0	1456.0	0.5819	0.5127				2407

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Drift & Sonic Adjustment

DATE 10/21/99


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Client and Well Information

Country	AUSTRALIA
State	VICTORIA
Logging Date	13-APR-1999
Company	
Field	IONA
Well	IONA #3

Knee and Zone Data

Raw Drift is computed at each shot level as
 Shot Time - Sonic Time

From the raw drift curve, knees are selected. Knee depths define the zones for adjustment. Selected drift values define the amount of time adjustment to the sonic log in each zone.

When the gradient versus depth of the selected drift is POSITIVE, sonic velocities are deemed too fast. Sonic transit times are increased by a constant shift, the value of the selected drift gradient :

$$\text{Adjusted DT} = \text{DT} + \text{Shift}$$

When the gradient is NEGATIVE, sonic velocities are deemed too low. The excess sonic transit time over a threshold DT_Minimum is reduced by a constant reduction factor, G :

$$\text{When } \text{DT} < \text{DT_Minimum} \quad \text{Adjusted DT} = \text{DT}$$

$$\text{When } \text{DT} > \text{DT_Minimum} \quad \text{Adjusted DT} = \text{G} * (\text{DT} - \text{DT_Minimum}) +$$

DT_Minimum

AFTER THE ADJUSTMENT OF THE SONIC LOG :

Residual is computed at each shot level as

$$\text{Shot Time} - \text{Adjusted Sonic Time}$$

It indicates how closely the adjustment has followed the shot times

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Drift & Sonic Adjustment

Zone Set Data

KNEE NUMBER	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	SELECTED DRIFT AT KNEE ms	SHIFT us/m	DELTA_T MINIMUM us/m	REDUCTION FACTOR G	SELECTED DRIFT GRADIENT us/m
1	657.2	522.1	-0.0004				
				7.9			7.9
2	668.9	533.7	-0.0001				
					359.2	0.93	-2.0
3	724.2	588.6	-0.0004				
					359.2	0.93	-2.0
4	777.3	641.3	-0.0008				
				4.8			4.8
5	804.4	668.0	-0.0004				
				41.4			41.4
6	837.4	699.5	0.0039				
				40.1			40.1
7	901.5	760.8	0.0120				
					341.4	0.88	-3.8
8	1031.8	877.8	0.0105				
				16.6			16.6
9	1181.9	1003.6	0.0174				
				2.7			2.7
10	1272.0	1079.1	0.0180				
				0.9			0.9
11	1298.2	1101.1	0.0181				
				11.1			11.1
12	1365.0	1157.0	0.0201				

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Drift & Sonic Adjustment

Zone Set Data (Continued)

KNEE NUMBER	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	SELECTED DRIFT AT KNEE ms	SHIFT us/m	DELTA_T MINIMUM us/m	REDUCTION FACTOR G	SELECTED DRIFT GRADIENT us/m
					288.8	0.53	-28.5
13	1401.2	1187.5	0.0173				
				66.8			66.8
14	1417.6	1201.4	0.0203				
				77.8			77.8
15	1449.7	1228.6	0.0272				
				48.8			48.8
16		1236.7	0.0286				

Sonic Adjustment Data

MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	VERTICAL SHOT TIME ms	ADJUSTED SONIC TIME ms	RAW DRIFT SHOT - SONIC ms	RESIDUAL SHOT - ADJUSTED SONIC ms	ADJUSTED INTERVAL VELOCITY m/s	ADJUSTED RMS VELOCITY m/s	ADJUSTED AVERAGE VELOCITY m/s
	0.0	0.0	0.0	-241.1				
						1963		
201.0	66.0	33.6	33.6	-207.5			1963	1963
						1963		
339.0	204.0	108.5	108.5	-132.7			1881	1881
						1843		
547.0	412.0	206.1	206.1	-35.0			2004	1999
						2132		
624.0	488.9	236.3	236.3	-4.9			2081	2069
						2549		

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GEOGRAM+

Drift & Sonic Adjustment

Sonic Adjustment Data (Continued)

MEASURE D DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	VERTICAL SHOT TIME ms	ADJUSTED SONIC TIME ms	RAW DRIFT SHOT - SONIC ms	RESIDUAL SHOT - ADJUSTED SONIC ms	ADJUSTED INTERVAL VELOCITY m/s	ADJUSTED RMS VELOCITY m/s	ADJUSTED AVERAGE VELOCITY m/s
658.0	522.9	248.8	248.8	-0.0	0.0		2118	2102
						2540		
800.0	663.8	302.9	303.1	-0.3	-0.3		2211	2190
						2587		
900.0	759.4	342.6	342.7	3.7	-0.0		2237	2216
						2426		
1026.0	872.9	384.1	384.3	3.1	-0.2		2295	2271
						2669		
1182.0	1003.6	432.9	433.0	5.3	-0.1		2343	2318
						3055		
1287.0	1091.7	463.6	463.6	5.5	-0.1		2383	2355
						2860		
1340.0	1136.0	479.5	480.1	5.5	-0.5		2394	2366
						3286		
1365.0	1157.0	486.6	486.7	6.1	-0.1		2407	2377
						2902		
1377.0	1167.1	489.6	489.9	5.6	-0.3		2412	2382
						3391		
1381.0	1170.5	490.8	491.0	5.7	-0.2		2414	2384
						3084		
1407.0	1192.4	497.7	498.2	5.2	-0.5		2424	2393
						2778		
1419.0	1202.5	501.8	501.9	6.3	-0.1		2427	2396
						2565		
1456.0	1234.0	512.7	512.5	8.7	0.2			2408

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Drift & Sonic Adjustment

Sonic Adjustment Data (Continued)

MEASURE D DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	VERTICAL SHOT TIME ms	ADJUSTED SONIC TIME ms	RAW DRIFT SHOT - SONIC ms	RESIDUAL SHOT - ADJUSTED SONIC ms	ADJUSTED INTERVAL VELOCITY m/s	ADJUSTED RMS VELOCITY m/s	ADJUSTED AVERAGE VELOCITY m/s

GEOGRAM+

Time To Depth Report

DATE 10/19/99

Client and Well Information

Country AUSTRALIA
 State VICTORIA
 Logging Date 13-APR-1999
 Company
 Field IONA
 Well IONA #3

Time To Depth Data

TWO WAY SONIC TIME FROM SRD ms	DEPTH AT TIME +0 ms m	DEPTH AT TIME +1 ms m	DEPTH AT TIME +2 ms m	DEPTH AT TIME +3 ms m	DEPTH AT TIME +4 ms m	DEPTH AT TIME +5 ms m	DEPTH AT TIME +6 ms m	DEPTH AT TIME +7 ms m	DEPTH AT TIME +8 ms m	DEPTH AT TIME +9 ms m
0	0.0	0.9	2.0	2.9	4.0	4.9	5.9	6.9	7.9	8.8
10	9.8	10.8	11.7	12.8	13.7	14.8	15.7	16.6	17.7	18.6
20	19.7	20.6	21.6	22.6	23.6	24.5	25.5	26.5	27.4	28.5
30	29.4	30.5	31.4	32.5	33.4	34.3	35.4	36.3	37.3	38.3
40	39.3	40.2	41.3	42.2	43.1	44.2	45.1	46.2	47.1	48.2
50	49.1	50.0	51.1	52.0	53.0	53.9	55.0	55.9	57.0	57.9
60	58.8	59.9	60.8	61.9	62.8	63.9	64.8	65.8	66.8	67.7
70	68.6	69.5	70.4	71.3	72.2	73.2	74.1	75.0	75.9	76.8
80	77.7	78.6	79.6	80.5	81.4	82.4	83.4	84.3	85.2	86.1
90	87.0	87.9	88.8	89.8	90.7	91.6	92.5	93.4	94.3	95.2
100	96.2	97.1	98.0	98.9	99.8	100.9	101.8	102.7	103.6	104.5
110	105.5	106.4	107.3	108.2	109.1	110.0	110.9	111.9	112.8	113.7
120	114.6	115.5	116.4	117.3	118.3	119.2	120.2	121.2	122.1	123.0
130	123.9	124.8	125.7	126.6	127.6	128.5	129.4	130.3	131.2	132.1
140	133.0	134.0	134.9	135.8	136.7	137.6	138.5	139.6	140.5	141.4

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Time To Depth Report

Time To Depth Data (Continued)

TWO WAY SONIC TIME FROM SRD ms	DEPTH AT TIME +0 ms m	DEPTH AT TIME +1 ms m	DEPTH AT TIME +2 ms m	DEPTH AT TIME +3 ms m	DEPTH AT TIME +4 ms m	DEPTH AT TIME +5 ms m	DEPTH AT TIME +6 ms m	DEPTH AT TIME +7 ms m	DEPTH AT TIME +8 ms m	DEPTH AT TIME +9 ms m
150	142.3	143.3	144.2	145.1	146.0	146.9	147.8	148.7	149.7	150.6
160	151.5	152.4	153.3	154.2	155.1	156.1	157.0	157.9	159.0	159.9
170	160.8	161.7	162.6	163.5	164.4	165.4	166.3	167.2	168.1	169.0
180	169.9	170.8	171.8	172.7	173.6	174.5	175.4	176.3	177.2	178.2
190	179.2	180.1	181.1	182.0	182.9	183.8	184.7	185.6	186.5	187.5
200	188.4	189.3	190.2	191.1	192.0	192.9	193.9	194.8	195.7	196.6
210	197.7	198.6	199.5	200.4	201.3	202.2	203.1	204.1	205.1	206.2
220	207.3	208.3	209.4	210.5	211.5	212.6	213.7	214.7	215.8	216.9
230	217.9	219.0	220.1	221.1	222.2	223.3	224.3	225.4	226.5	227.5
240	228.6	229.7	230.7	231.8	232.9	233.9	235.0	236.1	237.1	238.2
250	239.3	240.3	241.4	242.5	243.5	244.6	245.7	246.7	247.8	248.9
260	249.9	251.0	252.1	253.1	254.2	255.1	256.2	257.3	258.3	259.4
270	260.5	261.5	262.6	263.7	264.7	265.8	266.9	267.9	269.0	270.1
280	271.1	272.2	273.3	274.3	275.4	276.5	277.5	278.6	279.7	280.7
290	281.8	282.9	283.9	285.0	286.1	287.1	288.2	289.3	290.3	291.4
300	292.5	293.5	294.6	295.7	296.7	297.8	298.9	299.9	301.0	302.1
310	303.1	304.2	305.3	306.3	307.4	308.5	309.5	310.6	311.7	312.7
320	313.8	314.9	315.9	317.0	318.1	319.1	320.2	321.3	322.3	323.4
330	324.5	325.5	326.6	327.7	328.7	329.8	330.9	331.9	333.0	334.1
340	335.1	336.2	337.3	338.3	339.4	340.5	341.5	342.6	343.7	344.7
350	345.8	346.9	347.9	349.0	350.1	351.1	352.2	353.3	354.3	355.4
360	356.5	357.5	358.6	359.7	360.7	361.8	362.9	363.9	365.0	366.1
370	367.1	368.2	369.3	370.3	371.4	372.5	373.5	374.6	375.7	376.7
380	377.8	378.9	379.9	381.0	382.1	383.1	384.2	385.3	386.3	387.4

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Time To Depth Report

Time To Depth Data (Continued)

TWO WAY SONIC TIME FROM SRD ms	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME
	+0 ms	+1 ms	+2 ms	+3 ms	+4 ms	+5 ms	+6 ms	+7 ms	+8 ms	+9 ms
	m	m	m	m	m	m	m	m	m	m
390	388.5	389.5	390.6	391.7	392.7	393.8	394.9	395.9	397.0	398.1
400	399.1	400.2	401.3	402.2	403.3	404.3	405.4	406.5	407.5	408.6
410	409.7	410.7	411.8	413.0	414.4	415.6	417.0	418.2	419.4	420.8
420	422.0	423.2	424.6	425.8	427.0	428.4	429.6	431.0	432.2	433.4
430	434.8	436.0	437.2	438.6	439.8	441.0	442.4	443.6	445.0	446.2
440	447.4	448.8	450.0	451.3	452.6	453.8	455.1	456.4	457.7	459.0
450	460.2	461.5	462.8	464.1	465.3	466.6	467.9	469.1	470.5	471.7
460	473.0	474.3	475.5	476.9	478.1	479.3	480.7	481.9	483.1	484.5
470	485.7	486.9	488.3	489.5	490.9	492.3	493.6	495.0	496.4	497.7
480	499.1	500.5	501.9	503.2	504.4	505.8	507.2	508.6	509.9	511.3
490	512.7	514.0	515.4	516.8	518.2	519.4	520.8	522.1	523.5	524.7
500	525.9	527.2	528.5	529.9	531.1	532.5	533.7	534.9	536.3	537.5
510	538.9	540.1	541.5	542.8	544.2	545.4	546.8	548.0	549.2	550.5
520	551.8	553.1	554.4	555.7	557.0	558.2	559.6	560.8	562.1	563.4
530	564.8	566.0	567.2	568.6	569.8	571.2	572.6	573.8	575.2	576.5
540	578.1	579.4	580.6	581.9	583.1	584.8	586.1	587.3	588.7	590.1
550	591.5	592.7	594.1	595.4	596.6	598.0	599.2	600.5	601.8	603.4
560	604.6	605.8	607.2	608.7	610.1	611.3	612.5	613.7	614.9	616.0
570	617.4	618.6	619.8	621.0	622.2	623.5	624.8	626.2	627.4	628.8
580	630.2	631.5	632.9	634.3	635.5	636.9	638.3	639.5	640.8	642.1
590	643.3	644.5	645.7	646.9	648.2	649.4	650.6	652.0	653.2	654.6
600	655.8	657.1	658.5	659.7	661.0	662.3	663.5	664.8	666.0	667.2
610	668.4	669.5	670.7	671.8	673.0	674.2	675.3	676.5	677.7	678.8
620	679.9	681.1	682.1	683.4	684.6	685.8	686.9	688.1	689.3	690.4

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GEOGRAM+

Time To Depth Report

Time To Depth Data (Continued)

TWO WAY SONIC TIME FROM SRD ms	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME
	+0 ms	+1 ms	+2 ms	+3 ms	+4 ms	+5 ms	+6 ms	+7 ms	+8 ms	+9 ms
	m	m	m	m	m	m	m	m	m	m
630	691.6	692.7	693.9	695.2	696.5	697.7	698.9	700.1	701.2	702.4
640	703.6	704.8	706.1	707.3	708.4	709.6	710.8	711.9	713.1	714.5
650	715.7	717.0	718.3	719.3	720.5	721.8	723.0	724.2	725.3	726.5
660	727.7	728.9	730.1	731.4	732.6	733.8	735.0	736.2	737.5	738.7
670	739.9	741.0	742.2	743.4	744.8	746.2	747.5	748.7	750.0	751.2
680	752.6	753.9	755.3	756.5	757.7	759.0	760.2	761.5	762.9	764.3
690	765.7	766.9	768.2	769.6	770.8	772.2	773.6	775.0	776.2	777.5
700	778.9	780.3	781.7	783.0	784.4	785.9	787.3	788.7	790.0	791.4
710	792.6	794.0	795.5	796.9	798.3	799.6	800.9	802.2	803.6	804.8
720	806.2	807.6	808.9	810.3	811.7	813.1	814.4	815.8	817.2	818.8
730	820.4	821.7	823.1	824.3	825.9	827.4	828.8	830.1	831.5	832.9
740	834.2	835.6	837.0	838.4	839.7	841.1	842.5	843.8	845.1	846.6
750	848.0	849.3	850.7	852.1	853.4	854.8	856.0	857.4	858.6	860.0
760	861.4	862.6	864.0	865.3	866.7	868.1	869.4	870.7	872.0	873.4
770	874.8	876.1	877.5	879.0	880.4	881.6	883.0	884.2	885.6	886.8
780	888.2	889.7	890.9	892.3	893.5	894.7	896.1	897.5	898.7	900.1
790	901.3	902.5	904.0	905.3	906.8	908.3	909.7	911.0	912.4	913.6
800	915.2	916.4	917.8	919.1	920.5	921.7	922.9	924.3	925.5	926.9
810	928.1	929.3	930.6	931.8	933.1	934.5	935.9	937.4	938.8	940.2
820	941.5	942.7	944.1	945.5	946.9	948.2	949.6	951.0	952.3	953.7
830	954.9	956.3	957.7	959.1	960.4	961.8	963.2	964.7	965.9	967.3
840	968.7	970.2	971.5	972.9	974.3	975.7	977.0	978.4	979.8	981.0
850	982.4	983.7	985.1	986.3	987.7	989.1	990.4	991.7	993.0	994.3
860	995.6	996.8	998.2	999.6	1001.0	1002.2	1003.6	1005.1	1006.4	1008.0

Schlumberger

GEOGRAM+

Time To Depth Report

Time To Depth Data (Continued)

TWO WAY SONIC TIME FROM SRD ms	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME	DEPTH AT TIME
	+0 ms	+1 ms	+2 ms	+3 ms	+4 ms	+5 ms	+6 ms	+7 ms	+8 ms	+9 ms
	m	m	m	m	m	m	m	m	m	m
870	1009.5	1011.0	1012.7	1014.1	1015.6	1017.0	1018.5	1020.0	1021.7	1023.1
880	1024.6	1026.1	1027.6	1029.2	1030.7	1032.2	1033.6	1034.9	1036.3	1037.7
890	1039.1	1040.4	1041.7	1043.2	1044.5	1046.1	1047.4	1048.8	1050.2	1051.6
900	1052.9	1054.2	1055.5	1056.9	1058.3	1059.6	1061.0	1062.5	1063.8	1065.4
910	1067.0	1068.6	1070.3	1071.8	1073.2	1074.6	1075.9	1077.3	1078.5	1079.9
920	1081.1	1082.5	1084.0	1085.4	1086.9	1088.3	1089.8	1091.3	1092.9	1094.2
930	1095.8	1097.1	1098.5	1099.9	1101.1	1102.5	1103.8	1105.2	1106.6	1107.8
940	1109.2	1110.5	1111.9	1113.1	1114.5	1115.7	1117.1	1118.3	1119.7	1120.9
950	1122.3	1123.6	1124.9	1126.2	1127.5	1128.8	1130.2	1131.6	1132.9	1134.3
960	1135.7	1137.2	1138.7	1140.3	1141.9	1143.6	1145.3	1147.0	1148.5	1150.2
970	1151.8	1153.4	1154.9	1156.6	1157.9	1159.6	1161.1	1162.7	1164.0	1165.7
980	1167.2	1168.9	1170.6	1172.1	1173.6	1175.3	1176.8	1178.5	1179.9	1181.4
990	1182.9	1184.5	1186.1	1187.7	1189.0	1190.4	1191.8	1193.1	1194.5	1195.7
1000	1197.1	1198.6	1200.1	1201.5	1202.9	1204.1	1205.5	1206.9	1208.2	1209.4
1010	1210.7	1211.9	1213.1	1214.3	1215.7	1216.9	1218.1	1219.5	1220.7	1222.1
1020	1223.3	1224.5	1225.9	1227.1	1228.3					

GEOGRAM+

Velocity Report

DATE 10/21/99


 Schlumberger

Client and Well Information

Country AUSTRALIA
 State VICTORIA
 Logging Date 13-APR-1999
 Company
 Field IONA
 Well IONA #3

Velocity Data

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
0		0.0			
					1963
2		2.0	1963	1963	
					1963
4		4.0	1963	1963	
					1963
6		5.9	1963	1963	
					1963
8		7.9	1963	1963	
					1963
10		9.8	1963	1963	
					1963
12		11.7	1963	1963	
					1963
14		13.7	1963	1963	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1963
16		15.7	1963	1963	
					1963
18		17.7	1963	1963	
					1963
20		19.7	1963	1963	
					1963
22		21.6	1963	1963	
					1963
24		23.6	1963	1963	
					1963
26		25.5	1963	1963	
					1963
28		27.4	1963	1963	
					1963
30		29.4	1963	1963	
					1963
32		31.4	1963	1963	
					1963
34		33.4	1963	1963	
					1963
36		35.4	1963	1963	
					1963
38		37.3	1963	1963	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1963
40		39.3	1963	1963	
					1963
42		41.3	1963	1963	
					1963
44		43.1	1963	1963	
					1963
46		45.1	1963	1963	
					1963
48		47.1	1963	1963	
					1963
50		49.1	1963	1963	
					1963
52		51.1	1963	1963	
					1963
54		53.0	1963	1963	
					1963
56		55.0	1963	1963	
					1963
58		57.0	1963	1963	
					1963
60		58.8	1963	1963	
					1963
62		60.8	1963	1963	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1963
64		62.8	1963	1963	
					1963
66		64.8	1963	1963	
					1963
68	201.7	66.8	1962	1962	
					1963
70	203.6	68.6	1959	1959	
					1843
72	205.4	70.4	1955	1956	
					1843
74	207.2	72.2	1952	1953	
					1843
76	209.0	74.1	1950	1950	
					1843
78	210.9	75.9	1947	1947	
					1843
80	212.7	77.7	1944	1945	
					1843
82	214.5	79.6	1942	1942	
					1843
84	216.4	81.4	1940	1940	
					1843
86	218.3	83.4	1937	1938	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1843
88	220.2	85.2	1935	1936	
					1843
90	222.0	87.0	1933	1934	
					1843
92	223.8	88.8	1931	1932	
					1843
94	225.7	90.7	1929	1930	
					1843
96	227.5	92.5	1927	1928	
					1843
98	229.3	94.3	1926	1927	
					1843
100	231.1	96.2	1924	1925	
					1843
102	233.0	98.0	1923	1923	
					1843
104	234.8	99.8	1921	1922	
					1843
106	236.8	101.8	1919	1920	
					1843
108	238.6	103.6	1918	1919	
					1843
110	240.4	105.5	1917	1918	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1843
112	242.3	107.3	1915	1916	
					1843
114	244.1	109.1	1914	1915	
					1843
116	245.9	110.9	1913	1914	
					1843
118	247.8	112.8	1912	1913	
					1843
120	249.6	114.6	1911	1912	
					1843
122	251.4	116.4	1910	1910	
					1843
124	253.2	118.3	1909	1909	
					1843
126	255.2	120.2	1907	1908	
					1843
128	257.1	122.1	1906	1907	
					1843
130	258.9	123.9	1905	1906	
					1843
132	260.7	125.7	1905	1905	
					1843
134	262.5	127.6	1904	1905	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1843
136	264.4	129.4	1903	1904	
					1843
138	266.2	131.2	1902	1903	
					1843
140	268.0	133.0	1901	1902	
					1843
142	269.9	134.9	1900	1901	
					1843
144	271.7	136.7	1899	1900	
					1843
146	273.5	138.5	1899	1900	
					1843
148	275.5	140.5	1898	1899	
					1843
150	277.3	142.3	1897	1898	
					1843
152	279.2	144.2	1896	1897	
					1843
154	281.0	146.0	1896	1897	
					1843
156	282.8	147.8	1895	1896	
					1843
158	284.6	149.7	1894	1895	

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Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1843
160	286.5	151.5	1894	1895	
					1843
162	288.3	153.3	1893	1894	
					1843
164	290.1	155.1	1893	1894	
					1843
166	292.0	157.0	1892	1893	
					1843
168	293.9	159.0	1891	1892	
					1843
170	295.8	160.8	1891	1892	
					1843
172	297.6	162.6	1890	1891	
					1843
174	299.4	164.4	1890	1891	
					1843
176	301.3	166.3	1889	1890	
					1843
178	303.1	168.1	1889	1890	
					1843
180	304.9	169.9	1888	1889	
					1843
182	306.7	171.8	1888	1889	

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1843
184	308.6	173.6	1887	1888	
					1843
186	310.4	175.4	1887	1888	
					1843
188	312.2	177.2	1886	1887	
					1843
190	314.2	179.2	1886	1887	
					1843
192	316.0	181.1	1885	1886	
					1843
194	317.9	182.9	1885	1886	
					1843
196	319.7	184.7	1885	1885	
					1843
198	321.5	186.5	1884	1885	
					1843
200	323.4	188.4	1884	1885	
					1843
202	325.2	190.2	1883	1884	
					1843
204	327.0	192.0	1883	1884	
					1843
206	328.8	193.9	1883	1883	

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Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					1843
208	330.7	195.7	1882	1883	
					1843
210	332.7	197.7	1882	1883	
					1843
212	334.5	199.5	1881	1882	
					1843
214	336.3	201.3	1881	1882	
					1843
216	338.1	203.1	1881	1882	
					1843
218	340.1	205.1	1882	1883	
					1843
220	342.3	207.3	1884	1885	
					2131
222	344.4	209.4	1886	1887	
					2131
224	346.5	211.5	1888	1890	
					2131
226	348.7	213.7	1891	1892	
					2131
228	350.8	215.8	1893	1894	
					2132
230	352.9	217.9	1895	1896	

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Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2131
232	355.1	220.1	1897	1899	
					2131
234	357.2	222.2	1899	1901	
					2131
236	359.3	224.3	1901	1903	
					2131
238	361.5	226.5	1903	1905	
					2132
240	363.6	228.6	1905	1907	
					2131
242	365.7	230.7	1907	1909	
					2131
244	367.9	232.9	1908	1911	
					2131
246	370.0	235.0	1910	1913	
					2131
248	372.1	237.1	1912	1914	
					2131
250	374.3	239.3	1914	1916	
					2131
252	376.4	241.4	1915	1918	
					2132
254	378.5	243.5	1917	1920	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2132
256	380.7	245.7	1919	1922	
					2131
258	382.8	247.8	1920	1923	
					2132
260	384.9	249.9	1922	1925	
					2131
262	387.1	252.1	1924	1927	
					2131
264	389.2	254.2	1925	1928	
					2132
266	391.2	256.2	1927	1930	
					2131
268	393.3	258.3	1928	1931	
					2131
270	395.5	260.5	1930	1933	
					2131
272	397.6	262.6	1931	1934	
					2132
274	399.7	264.7	1933	1936	
					2131
276	401.9	266.9	1934	1937	
					2132
278	404.0	269.0	1936	1939	

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Velocity Report

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2132
280	406.1	271.1	1937	1940	
					2131
282	408.3	273.3	1938	1942	
					2132
284	410.4	275.4	1940	1943	
					2131
286	412.5	277.5	1941	1945	
					2132
288	414.7	279.7	1942	1946	
					2131
290	416.8	281.8	1944	1947	
					2131
292	418.9	283.9	1945	1949	
					2132
294	421.1	286.1	1946	1950	
					2131
296	423.2	288.2	1947	1951	
					2131
298	425.3	290.3	1949	1952	
					2132
300	427.5	292.5	1950	1954	
					2131
302	429.6	294.6	1951	1955	

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Velocity Report

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2132
304	431.7	296.7	1952	1956	
					2132
306	433.9	298.9	1953	1957	
					2132
308	436.0	301.0	1955	1959	
					2132
310	438.1	303.1	1956	1960	
					2131
312	440.3	305.3	1957	1961	
					2132
314	442.4	307.4	1958	1962	
					2131
316	444.5	309.5	1959	1963	
					2131
318	446.7	311.7	1960	1964	
					2132
320	448.8	313.8	1961	1965	
					2131
322	450.9	315.9	1962	1966	
					2131
324	453.1	318.1	1963	1967	
					2132
326	455.2	320.2	1964	1968	

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Velocity Report

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2131
328	457.3	322.3	1965	1970	
					2132
330	459.5	324.5	1966	1971	
					2132
332	461.6	326.6	1967	1972	
					2132
334	463.7	328.7	1968	1973	
					2131
336	465.9	330.9	1969	1974	
					2131
338	468.0	333.0	1970	1975	
					2132
340	470.1	335.1	1971	1975	
					2131
342	472.3	337.3	1972	1976	
					2131
344	474.4	339.4	1973	1977	
					2132
346	476.5	341.5	1974	1978	
					2131
348	478.7	343.7	1975	1979	
					2131
350	480.8	345.8	1976	1980	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2132
352	483.0	347.9	1977	1981	
					2132
354	485.1	350.1	1978	1982	
					2131
356	487.2	352.2	1979	1983	
					2132
358	489.4	354.3	1979	1984	
					2132
360	491.5	356.5	1980	1984	
					2131
362	493.6	358.6	1981	1985	
					2131
364	495.8	360.7	1982	1986	
					2132
366	497.9	362.9	1983	1987	
					2131
368	500.0	365.0	1983	1988	
					2131
370	502.2	367.1	1984	1989	
					2132
372	504.3	369.3	1985	1989	
					2132
374	506.4	371.4	1986	1990	

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2131
376	508.6	373.5	1987	1991	
					2132
378	510.7	375.7	1987	1992	
					2132
380	512.8	377.8	1988	1992	
					2131
382	515.0	379.9	1989	1993	
					2132
384	517.1	382.1	1990	1994	
					2132
386	519.2	384.2	1990	1995	
					2131
388	521.4	386.3	1991	1995	
					2131
390	523.5	388.5	1992	1996	
					2132
392	525.6	390.6	1993	1997	
					2131
394	527.8	392.7	1993	1998	
					2131
396	529.9	394.9	1994	1998	
					2132
398	532.0	397.0	1995	1999	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2132
400	534.2	399.1	1995	2000	
					2132
402	536.3	401.3	1996	2000	
					2132
404	538.3	403.3	1997	2001	
					2132
406	540.4	405.4	1997	2002	
					2132
408	542.6	407.5	1998	2002	
					2131
410	544.7	409.7	1999	2003	
					2132
412	546.8	411.8	1999	2004	
					2132
414	549.4	414.4	2002	2006	
					2131
416	552.0	417.0	2004	2009	
					2549
418	554.4	419.4	2007	2012	
					2549
420	557.0	422.0	2010	2015	
					2549
422	559.6	424.6	2012	2018	

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Velocity Report

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2549
424	562.1	427.0	2015	2021	
					2549
426	564.7	429.6	2017	2024	
					2549
428	567.3	432.2	2020	2026	
					2549
430	569.8	434.8	2022	2029	
					2549
432	572.3	437.2	2024	2032	
					2549
434	574.9	439.8	2027	2034	
					2549
436	577.5	442.4	2029	2037	
					2549
438	580.1	445.0	2032	2040	
					2549
440	582.5	447.4	2034	2042	
					2549
442	585.1	450.0	2036	2045	
					2549
444	587.7	452.6	2039	2048	
					2549
446	590.1	455.1	2041	2050	

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Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2549
448	592.7	457.7	2043	2053	
					2549
450	595.3	460.2	2045	2055	
					2549
452	597.9	462.8	2048	2058	
					2549
454	600.3	465.3	2050	2060	
					2549
456	602.9	467.9	2052	2062	
					2549
458	605.5	470.5	2054	2065	
					2549
460	608.1	473.0	2056	2067	
					2549
462	610.5	475.5	2059	2069	
					2549
464	613.1	478.1	2061	2072	
					2549
466	615.7	480.7	2063	2074	
					2549
468	618.2	483.1	2065	2076	
					2549
470	620.8	485.7	2067	2078	

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Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2549
472	623.4	488.3	2069	2081	
					2549
474	625.9	490.9	2071	2083	
					2549
476	628.7	493.6	2074	2086	
					2715
478	631.4	496.4	2077	2090	
					2715
480	634.2	499.1	2080	2093	
					2715
482	636.9	501.9	2082	2096	
					2715
484	639.5	504.4	2085	2098	
					2715
486	642.3	507.2	2087	2101	
					2716
488	645.0	509.9	2090	2104	
					2715
490	647.8	512.7	2092	2107	
					2715
492	650.5	515.4	2095	2110	
					2715
494	653.2	518.2	2098	2113	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2715
496	655.8	520.8	2100	2115	
					2715
498	658.6	523.5	2102	2118	
					2715
500	661.0	525.9	2104	2120	
					2370
502	663.7	528.5	2106	2122	
					2440
504	666.3	531.1	2108	2124	
					2686
506	668.9	533.7	2110	2126	
					2862
508	671.5	536.3	2111	2128	
					2327
510	674.1	538.9	2113	2130	
					2476
512	676.7	541.5	2115	2132	
					2758
514	679.5	544.2	2117	2134	
					2732
516	682.1	546.8	2119	2136	
					2612
518	684.5	549.2	2121	2138	

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2534
520	687.2	551.8	2123	2140	
					2459
522	689.8	554.4	2124	2142	
					2476
524	692.4	557.0	2126	2143	
					2632
526	695.0	559.6	2128	2145	
					2524
528	697.4	562.1	2129	2147	
					2612
530	700.2	564.8	2131	2149	
					2632
532	702.7	567.2	2133	2150	
					2663
534	705.3	569.8	2134	2152	
					2593
536	708.0	572.6	2136	2154	
					2683
538	710.7	575.2	2138	2156	
					2529
540	713.6	578.1	2141	2160	
					2838
542	716.2	580.6	2143	2161	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2732
544	718.6	583.1	2144	2163	
					2524
546	721.7	586.1	2147	2166	
					2817
548	724.3	588.7	2149	2168	
					2432
550	727.1	591.5	2151	2170	
					2766
552	729.7	594.1	2152	2172	
					2583
554	732.3	596.6	2154	2174	
					2835
556	734.9	599.2	2156	2175	
					2635
558	737.5	601.8	2157	2177	
					2547
560	740.3	604.6	2159	2179	
					2922
562	742.9	607.2	2161	2181	
					2549
564	745.8	610.1	2163	2184	
					2770
566	748.3	612.5	2164	2185	

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Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2509
568	750.7	614.9	2165	2186	
					2394
570	753.2	617.4	2166	2187	
					2404
572	755.7	619.8	2167	2188	
					2474
574	758.1	622.2	2168	2188	
					2357
576	760.7	624.8	2169	2190	
					2588
578	763.3	627.4	2171	2192	
					2639
580	766.1	630.2	2173	2194	
					2424
582	768.9	632.9	2175	2196	
					2779
584	771.5	635.5	2177	2198	
					2752
586	774.3	638.3	2178	2199	
					2975
588	776.9	640.8	2180	2201	
					2584
590	779.3	643.3	2181	2202	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2656
592	781.8	645.7	2181	2203	
					2523
594	784.2	648.2	2182	2204	
					2357
596	786.8	650.7	2183	2205	
					2529
598	789.3	653.2	2185	2206	
					2455
600	791.9	655.8	2186	2207	
					2579
602	794.7	658.5	2188	2209	
					2583
604	797.1	661.0	2189	2210	
					2454
606	799.7	663.5	2190	2211	
					2579
608	802.3	666.0	2191	2212	
					2544
610	804.8	668.4	2192	2213	
					2559
612	807.2	670.7	2192	2213	
					2210
614	809.6	673.0	2192	2213	

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2227
616	812.0	675.3	2193	2214	
					2461
618	814.6	677.7	2193	2214	
					2488
620	816.8	679.9	2193	2214	
					2212
622	819.2	682.1	2193	2214	
					2223
624	821.7	684.6	2194	2215	
					2299
626	824.1	686.9	2195	2216	
					2268
628	826.7	689.3	2195	2216	
					2386
630	829.1	691.6	2195	2216	
					2234
632	831.5	693.9	2196	2217	
					2293
634	834.2	696.5	2197	2218	
					2417
636	836.7	698.9	2198	2218	
					2353
638	839.1	701.2	2198	2219	

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Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2366
640	841.7	703.6	2199	2219	
					2575
642	844.2	706.1	2199	2220	
					2494
644	846.6	708.4	2200	2220	
					2519
646	849.2	710.8	2200	2221	
					2203
648	851.6	713.1	2201	2221	
					2233
650	854.3	715.7	2202	2223	
					2492
652	857.0	718.3	2203	2224	
					2570
654	859.4	720.5	2204	2224	
					2485
656	861.9	723.0	2204	2225	
					2403
658	864.3	725.3	2204	2225	
					2429
660	866.9	727.7	2205	2226	
					2225
662	869.4	730.1	2206	2226	



GEOGRAM+

Velocity Report

908189 189

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2433
664	872.0	732.6	2207	2227	
					2459
666	874.5	735.0	2207	2228	
					2616
668	877.1	737.5	2208	2228	
					2442
670	879.6	739.9	2208	2229	
					2420
672	882.0	742.2	2209	2229	
					2299
674	884.7	744.8	2210	2230	
					2375
676	887.6	747.5	2212	2232	
					2723
678	890.1	750.0	2212	2233	
					2416
680	892.8	752.6	2214	2234	
					2602
682	895.7	755.3	2215	2235	
					2694
684	898.3	757.7	2216	2236	
					2665
686	900.9	760.2	2216	2237	

Schlumberger

GEOGRAM+

Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2384
688	903.9	762.9	2218	2238	
					2456
690	907.0	765.7	2219	2240	
					2787
692	909.8	768.2	2220	2241	
					2620
694	912.7	770.8	2222	2242	
					2752
696	915.8	773.6	2223	2244	
					2581
698	918.6	776.2	2224	2245	
					2645
700	921.7	778.9	2225	2246	
					2672
702	924.7	781.7	2227	2248	
					2655
704	927.8	784.4	2228	2250	
					2841
706	931.0	787.3	2230	2252	
					3247
708	934.0	790.0	2232	2253	
					2714
710	936.9	792.6	2233	2254	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2614
712	940.1	795.5	2234	2256	
					2686
714	943.2	798.3	2236	2258	
					2757
716	946.0	800.9	2237	2259	
					2721
718	949.1	803.6	2238	2260	
					2600
720	951.9	806.2	2239	2261	
					2601
722	955.0	808.9	2241	2263	
					2813
724	958.0	811.7	2242	2264	
					2659
726	961.1	814.4	2244	2266	
					2662
728	964.1	817.2	2245	2267	
					2758
730	967.7	820.4	2248	2270	
					2922
732	970.7	823.1	2249	2272	
					2719
734	973.8	825.9	2250	2273	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2587
736	977.0	828.8	2252	2275	
					3414
738	980.0	831.5	2253	2277	
					2963
740	983.1	834.2	2255	2278	
					2716
742	986.1	837.0	2256	2279	
					2760
744	989.2	839.7	2257	2281	
					2816
746	992.2	842.5	2259	2282	
					2836
748	995.1	845.1	2260	2283	
					2592
750	998.3	848.0	2261	2285	
					2604
752	1001.3	850.7	2263	2286	
					2710
754	1004.4	853.4	2264	2288	
					2739
756	1007.2	856.0	2265	2288	
					2544
758	1010.1	858.6	2266	2289	

Schlumberger

GEOGRAM+

Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2614
760	1013.2	861.4	2267	2291	
					2670
762	1016.0	864.0	2268	2291	
					2597
764	1019.1	866.7	2269	2293	
					2706
766	1022.0	869.3	2270	2294	
					2694
768	1025.0	872.0	2271	2295	
					2691
770	1028.2	874.8	2272	2296	
					2624
772	1031.5	877.5	2273	2297	
					2655
774	1034.9	880.4	2275	2299	
					3013
776	1038.0	883.0	2276	2300	
					2958
778	1041.1	885.6	2277	2301	
					2637
780	1044.2	888.2	2277	2301	
					2602
782	1047.5	890.9	2279	2303	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2645
784	1050.6	893.5	2279	2304	
					2440
786	1053.7	896.1	2280	2304	
					2484
788	1056.8	898.7	2281	2305	
					2665
790	1059.9	901.3	2282	2306	
					2697
792	1063.1	904.0	2283	2307	
					2557
794	1066.4	906.8	2284	2308	
					2892
796	1069.9	909.7	2286	2310	
					2805
798	1073.1	912.4	2287	2311	
					2738
800	1076.4	915.2	2288	2312	
					2696
802	1079.5	917.8	2289	2313	
					2735
804	1082.8	920.5	2290	2314	
					2735
806	1085.7	922.9	2290	2315	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2707
808	1088.8	925.5	2291	2316	
					2604
810	1091.9	928.1	2292	2316	
					2621
812	1094.8	930.6	2292	2316	
					2459
814	1097.9	933.1	2293	2317	
					2479
816	1101.1	935.9	2294	2318	
					2624
818	1104.6	938.8	2295	2320	
					3624
820	1107.9	941.5	2296	2321	
					2901
822	1111.0	944.1	2297	2322	
					2648
824	1114.2	946.9	2298	2323	
					2669
826	1117.5	949.6	2299	2324	
					2752
828	1120.8	952.3	2300	2325	
					2739
830	1123.9	954.9	2301	2326	

Schlumberger

GEOGRAM+

Velocity Report

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2635
832	1127.1	957.7	2302	2327	
					2779
834	1130.4	960.4	2303	2328	
					2709
836	1133.7	963.2	2304	2329	
					2676
838	1137.0	965.9	2305	2330	
					2714
840	1140.2	968.7	2306	2331	
					2693
842	1143.7	971.5	2308	2333	
					2758
844	1147.0	974.3	2309	2334	
					2735
846	1150.2	977.0	2310	2335	
					2849
848	1153.5	979.8	2311	2336	
					2770
850	1156.6	982.4	2311	2337	
					2690
852	1159.9	985.1	2312	2337	
					2673
854	1163.0	987.7	2313	2338	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2693
856	1166.3	990.4	2314	2339	
					2659
858	1169.3	993.0	2315	2340	
					2513
860	1172.4	995.6	2315	2340	
					2600
862	1175.5	998.2	2316	2341	
					2554
864	1178.8	1001.0	2317	2342	
					2709
866	1181.9	1003.6	2318	2343	
					2690
868	1185.2	1006.3	2319	2344	
					2990
870	1189.0	1009.5	2321	2346	
					2922
872	1192.8	1012.7	2323	2348	
					3057
874	1196.1	1015.4	2324	2350	
					2917
876	1199.7	1018.5	2325	2351	
					2912
878	1203.5	1021.7	2327	2354	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					3017
880	1207.0	1024.6	2329	2355	
					3109
882	1210.6	1027.6	2330	2357	
					3118
884	1214.2	1030.7	2332	2359	
					3026
886	1217.7	1033.6	2333	2360	
					3035
888	1221.0	1036.3	2334	2361	
					2760
890	1224.2	1039.1	2335	2362	
					2668
892	1227.3	1041.7	2336	2362	
					2643
894	1230.8	1044.5	2337	2364	
					2849
896	1234.2	1047.4	2338	2365	
					2925
898	1237.5	1050.2	2339	2366	
					2743
900	1240.8	1052.9	2340	2367	
					3153
902	1243.8	1055.5	2340	2367	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2589
904	1247.1	1058.3	2341	2368	
					2866
906	1250.4	1061.0	2342	2369	
					2947
908	1253.6	1063.8	2343	2370	
					3022
910	1257.5	1067.0	2345	2372	
					3031
912	1261.5	1070.3	2347	2375	
					3679
914	1264.9	1073.2	2348	2376	
					2971
916	1268.2	1075.9	2349	2377	
					2706
918	1271.3	1078.5	2350	2377	
					2545
920	1274.4	1081.1	2350	2378	
					2591
922	1277.8	1084.0	2351	2379	
					2655
924	1281.3	1086.9	2353	2380	
					2821
926	1284.7	1089.8	2354	2382	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2934
928	1288.3	1092.9	2355	2383	
					3153
930	1291.8	1095.8	2356	2384	
					2866
932	1295.1	1098.5	2357	2385	
					2844
934	1298.2	1101.1	2358	2386	
					2679
936	1301.5	1103.8	2359	2387	
					2608
938	1304.8	1106.6	2359	2387	
					2694
940	1307.9	1109.2	2360	2388	
					2581
942	1311.1	1111.9	2361	2389	
					2711
944	1314.2	1114.5	2361	2389	
					2596
946	1317.4	1117.1	2362	2389	
					2651
948	1320.5	1119.7	2362	2390	
					2589
950	1323.6	1122.3	2363	2390	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					2616
952	1326.7	1124.9	2363	2391	
					2625
954	1329.8	1127.5	2364	2391	
					2609
956	1333.0	1130.2	2365	2392	
					2694
958	1336.3	1132.9	2365	2393	
					2656
960	1339.6	1135.7	2366	2394	
					2733
962	1343.2	1138.7	2367	2395	
					2922
964	1347.1	1141.9	2369	2397	
					2971
966	1351.0	1145.3	2371	2400	
					3124
968	1354.9	1148.5	2373	2402	
					3251
970	1358.9	1151.8	2375	2404	
					3124
972	1362.5	1154.9	2376	2406	
					3299
974	1366.1	1157.9	2378	2407	

GEOGRAM+

Velocity Report

Schlumberger

Velocity Data (Continued)

TWO WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
					3013
976	1369.9	1161.1	2379	2409	2936
978	1373.4	1164.0	2381	2410	2987
980	1377.2	1167.2	2382	2412	3001
982	1381.2	1170.6	2384	2414	3425
984	1384.8	1173.6	2386	2416	3084
986	1388.6	1176.8	2387	2417	3249
988	1392.2	1179.9	2389	2419	3077
990	1395.8	1182.9	2390	2420	3024
992	1399.6	1186.1	2391	2422	2952
994	1403.0	1189.0	2392	2423	3364
996	1406.3	1191.8	2393	2424	2847
998	1409.5	1194.5	2394	2425	

GEOGRAM+

Velocity Report



Velocity Data (Continued)

TWO-WAY TRAVEL TIME FROM SRD ms	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM SRD m	AVERAGE VELOCITY SRD/GEO m/s	RMS VELOCITY m/s	INTERVAL VELOCITY m/s
1024	1449.4	1228.3	2399	2429	2532

ANALYSIS

Plot 3

Velocity Report

ANALYSIS

Plot 3

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ANALYSIS

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Velocity Report

PE908190

This is an enclosure indicator page.
The enclosure PE908190 is enclosed within the
container PE908189 at this location in this
document.

The enclosure PE908190 has the following characteristics:

ITEM_BARCODE = PE908190
CONTAINER_BARCODE = PE908189
NAME = Iona-3 Vertical Seismic Profile Plot
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = SYNTH_SEISMOGRAM
DESCRIPTION = Iona-3 Vertical Seismic Profile Plot,
Z-Axis Processing Steps, Z Median
Stack, Appendix 4 Plot 1
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Western Underground Gas Storage Pty Ltd
WELL_NAME =
CONTRACTOR =
AUTHOR =
ORIGINATOR = Western Underground Gas Storage Pty Ltd
TOP_DEPTH =
BOTTOM_DEPTH =
ROW_CREATED_BY = DN07_SW

Iona-3

(Inserted by DNRE - Vic Govt Mines Dept)

PE908191

This is an enclosure indicator page.
The enclosure PE908191 is enclosed within the
container PE908189 at this location in this
document.

The enclosure PE908191 has the following characteristics:

ITEM_BARCODE = PE908191
CONTAINER_BARCODE = PE908189
NAME = Iona-3 Vertical Seismic Profile Plot
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = SYNTH_SEISMOGRAM
DESCRIPTION = Iona-3 Vertical Seismic Profile Plot,
Composite Display, Normal Polarity,
Appendix 4 Plot 2
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Western Underground Gas Storage Pty Ltd
WELL_NAME =
CONTRACTOR =
AUTHOR =
ORIGINATOR = Western Underground Gas Storage Pty Ltd
TOP_DEPTH =
BOTTOM_DEPTH =
ROW_CREATED_BY = DN07_SW

Iona-3

(Inserted by DNRE - Vic Govt Mines Dept)

PE908192

This is an enclosure indicator page.
The enclosure PE908192 is enclosed within the
container PE908189 at this location in this
document.

The enclosure PE908192 has the following characteristics:

ITEM_BARCODE = PE908192
CONTAINER_BARCODE = PE908189
NAME = Iona-3 Vertical Seismic Profile Plot
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = SYNTH_SEISMOGRAM
DESCRIPTION = Iona-3 Vertical Seismic Profile Plot,
Composite Display, Reverse Polarity,
Appendix 4 Plot 3
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Western Underground Gas Storage Pty Ltd
WELL_NAME =
CONTRACTOR =
AUTHOR =
ORIGINATOR = Western Underground Gas Storage Pty Ltd
TOP_DEPTH =
BOTTOM_DEPTH =
ROW_CREATED_BY = DN07_SW

Iona-3

(Inserted by DNRE - Vic Govt Mines Dept)

PE908194

This is an enclosure indicator page.
The enclosure PE908194 is enclosed within the
container PE908189 at this location in this
document.

The enclosure PE908194 has the following characteristics:

ITEM_BARCODE = PE908194
CONTAINER_BARCODE = PE908189
NAME = Iona-3 Drift Corrected Sonic Plot
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = WELL_LOG
DESCRIPTION = Iona-3 Drift Corrected Sonic, Scale
1:500, Appendix 4 Plot 5
REMARKS =
DATE_WRITTEN = 13-APR-1999
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Western Underground Gas Storage Pty Ltd
WELL_NAME =
CONTRACTOR = Western Underground Gas Storage Pty Ltd
AUTHOR =
ORIGINATOR = Western Underground Gas Storage Pty Ltd
TOP_DEPTH =
0
BOTTOM_DEPTH = 1250
ROW_CREATED_BY = DN07_SW

Iona-3

(Inserted by DNRE - Vic Govt Mines Dept)

PE908195

This is an enclosure indicator page.
The enclosure PE908195 is enclosed within the
container PE908189 at this location in this
document.

The enclosure PE908195 has the following characteristics:

ITEM_BARCODE = PE908195
CONTAINER_BARCODE = PE908189
NAME = Iona-3 Drift Corrected Sonic Plot
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = WELL_LOG
DESCRIPTION = Iona-3 Drift Corrected Sonic, Appendix
4 Plot 5
REMARKS =
DATE_WRITTEN = 13-APR-1999
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Western Underground Gas Storage Pty Ltd
WELL_NAME =
CONTRACTOR = Western Underground Gas Storage Pty Ltd
AUTHOR =
ORIGINATOR = Western Underground Gas Storage Pty Ltd
TOP_DEPTH =
0
BOTTOM_DEPTH = 1250
ROW_CREATED_BY = DN07_SW

Iona-3

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 5

Test Report by Haliburton

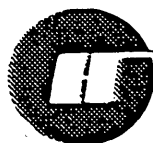
WELL TEST DATA REPORT

COMPANY : WESTERN UNDERGROUND GAS STORAGE PTY LTD

WELL : IONA 3

TEST NO. : PRODUCTION FLOWBACK TESTS

DATE : 30-MARCH-99 TO 19-APRIL-99



HALLIBURTON



23rd APRIL 1999

WESTERN UNDERGROUND GAS STORAGE PTY LTD
LEVEL 49, 525 COLLINS STREET
MELBOURNE 3000
VICTORIA
AUSTRALIA

Attention: Petroleum Operations and Quality Systems Superintendent.

Dear Sir,

Please find enclosed the report for the PRODUCTION TESTS conducted on IONA - 1,2,3 and 4 during the period 30th March to 6th April and 19th April 1999.

We trust this report is complete and to your satisfaction. Should you have any questions please do not hesitate to contact us.

It has been a pleasure to be of service to you and we hope to have the opportunity to do so again in the future.

Yours sincerely



GARY GIANCASPRO
Data Acquisition Specialist
HALLIBURTON AUSTRALIA PTY LTD

DISCLAIMER

These calculations are based on certain data, assumptions and applied mathematical methods. Inaccurate well data, changing well conditions, tolerance variations of mechanical components, mechanical malfunctions and other factors may affect these calculations.

HALLIBURTON AUSTRALIA PTY. LTD. ('H.E.S')

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ACCURACY OF THE DATA, CALCULATIONS OR OPINIONS EXPRESSED

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PURPOSE. USER AGREES BY ITS USE THEREOF THAT USER WILL

RELEASE, INDEMNIFY ANY COSTS RELATED THERE TO ARISING OUT OF

OR IN CONNECTION WITH SUCH USE AND INCURRED BY USER OR THIRD

PARTIES, WHETHER DUE TO NEGLIGENCE OR OTHERWISE.

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TEST EQUIPMENT

IONA - PRODUCTION TESTS

CHOKER MANIFOLD FOLEY 3 1/16" 10,000 PSI

SEPARATOR 10' X 48" 1440 PSI 12,000 bbl/d OIL
80 MMSCF/D GAS 2,500 bbl/d H₂O

1 X HALLIBURTON HYDRAULIC FLOW WING SAFETY VALVE

TEXSTEAM & HASKELL CHEMICAL INJECTION PUMPS

ASSOCIATED PIPEWORK AND COFLEXIP HOSE(S)

S.T.E TEST LABORATORY

SURFACE COMPUTER ACQUISITION NETWORK (SCAN₂) UNIT

METERS:

GAS - DANIELS 5.761" METER RUN
BARTON RECORDER

2.0" OIL - TURBINE - 515 - 6,000 bbl/d

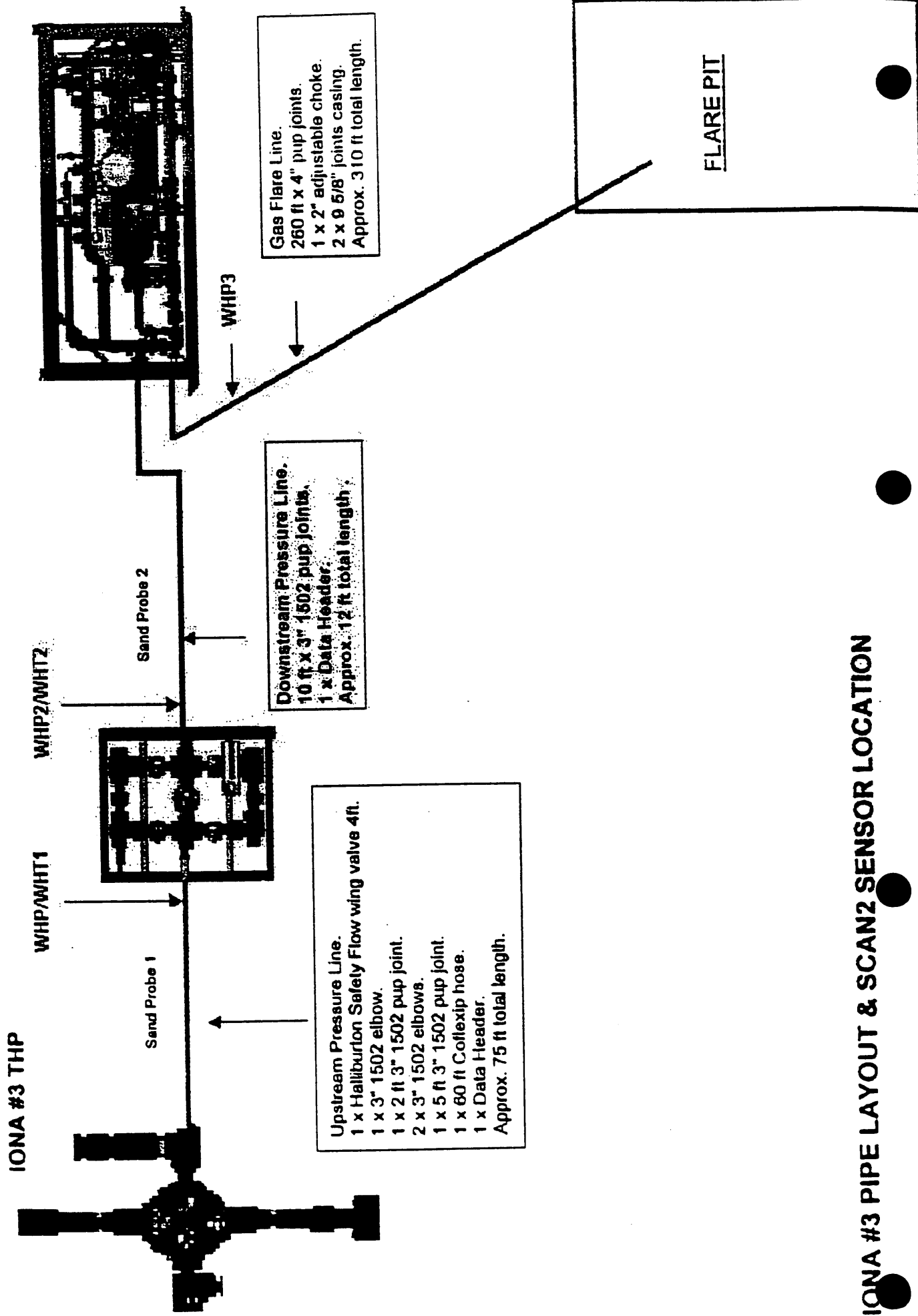
3.0" OIL - TURBINE - 2,100 - 21,000 bbl/d

WATER - TURBINE 1" 170 - 1,700 bbl/d

FLOWLINE - PRODUCTION TREE TO CHOKE MANIFOLD

IONA - PRODUCTION TESTS

ITEM	DESCRIPTION	ID (Inches)	LENGTH (Ft)
1	COFLEXIP HOSE	2.50	60.0
2	DATA HEADER	3.00	2.75
3	CHOKE MANIFOLD TO BEAN	3.00	2.90



IONA #3 THP

WHP/WHT1

WHP2/WHT2

Sand Probe 1

Sand Probe 2

WHP3

FLARE PIT

Gas Flare Line.
 260 ft x 4" pup joints.
 1 x 2" adjustable choke.
 2 x 9 5/8" joints casing.
 Approx. 310 ft total length.

Downstream Pressure Line.
 10 ft x 3" 1502 pup joints.
 1 x Data Header.
 Approx. 12 ft total length.

Upstream Pressure Line.
 1 x Halliburton Safety Flow wing valve 4ft.
 1 x 3" 1502 elbow.
 1 x 2 ft 3" 1502 pup joint.
 2 x 3" 1502 elbows.
 1 x 5 ft 3" 1502 pup joint.
 1 x 60 ft Coflexip hose.
 1 x Data Header.
 Approx. 75 ft total length.

IONA #3 PIPE LAYOUT & SCAN2 SENSOR LOCATION



WELL TEST DATA SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:00
 RIG : O.D.E #30

PERFORATION INTERVAL : 1365.5 m - 1377.5 m KB
 TEST No. : Production Flowback
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE : Australia

DATE & TIME	CHOKE		FLOW RATES				SEPARATOR				CUMMLATIVE			REMARKS					
	SIZE (64ms)	Iona #3 THIP (psig)	WHP (psig)	WHIT (°F)	CSG (psig)	GAS (MMscfd)	OIL (bopd)	WATER (bopd)	GOR (mcsf/bbl)	PRES. (psig)	TEMP. (°F)	BS&W (%)	WCT (%)		GAS (MMscf)	OIL (bbls)	WATER (bbls)	OIL (API@60°F)	GAS (Air=1)
19-Apr 06:35				45.2															
19-Apr 06:37				45.1															
19-Apr 06:38				45.1															
19-Apr 06:39				45.1															
19-Apr 06:40				45.1															
19-Apr 06:41		56.8	56.6	45.1	16.5														
19-Apr 06:42		67.5	69.3	45.1	35.0														
19-Apr 06:43	32	71.3	73.7	45.2	44.6														
19-Apr 06:44	64	79.2	74.9	45.2	68.9														
19-Apr 06:45	32	174.9	179.8	47.4	95.6														
19-Apr 06:50	32	373.7	376.2	68.4	155.9														
19-Apr 06:55	32	643.2	645.3	79.4	208.6														
19-Apr 06:57	40	766.0	761.7	82.1	227.9														
19-Apr 07:00	40	1098.3	1090.1	85.6	254.4														
19-Apr 07:01	40	1221.1	1215.0	86.8	260.4														
19-Apr 07:02	40	1297.4	1294.1	88.0	263.4														
19-Apr 07:05	40	1382.6	1385.5	89.4	265.6														

WELL TEST DATA SHEET

PERFORATION INTERVAL : 1365.5 m - 1377.5 m KB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06.35 - 19-April 15:00
 RIG : O.D.E #30

BASE: Australia



DATE & TIME	CHOKES				FLOW RATES			SEPARATOR				CUMMLATIVE			REMARKS				
	SIZE (inches)	Iona #3 THIP (psi)	WHP (psi)	WHT (°F)	CSG (psi)	GAS (MMscfd)	OIL (bpd)	WATER (bpd)	GOR (mcf/bbl)	PRES. (psig)	TEMP. (°F)	BS&W (%)	WCT (%)	GAS (MMscf)		OIL (bbls)	WATER (bbls)	OIL (API@60°F)	GAS (AIR=1)
19-Apr 07 10	40	1335.5	1334.1	85.7	254.7														
19-Apr 07 15	48	1372.5	1363.4	84.7	276.5														Increased choke to 48/64" adjustable CO2 = 6.0% H2S = 0 PPM
19-Apr 07 17	48	1424.9	1423.6	84.6	291.8														Rocked the choke
19-Apr 07 20	48	1415.2	1399.8	85.5	300.7														
19-Apr 07 25	48	1429.9	1409.1	86.1	323.6														
19-Apr 07 30	48	1441.1	1418.5	86.3	341.9														Increased choke to 56/64" adjustable
19-Apr 07 35	56	1438.6	1416.0	86.6	358.2														
19-Apr 07 40	56	1405.6	1368.8	86.6	377.2														
19-Apr 07 45	64	1409.3	1368.4	87.1	398.1														Increased choke to 64/64 adjustable CO2 = 6.0% H2S = 0 PPM
19-Apr 07 50	64	1366.4	1311.4	87.2	417.5														
19-Apr 07 55	64	1379.9	1320.6	87.6	438.1														
19-Apr 08 00	64	1384.5	1332.4	88.0	457.7														Diverted flow through separator Leaking ball valve on separator - diverted flow back to flare
19-Apr 08 01	64	1387.5	1335.4	88.0	461.1														
19-Apr 08 05	64	1391.0	1337.9	88.4	481.1														Shut well in at choke to repair leaking valve
19-Apr 08 08		1392.9	1339.4	88.8	489.7														Depressed separator through H2O line to flare pit
19-Apr 08 09		1498.7	1503.4	88.9	495.3														
19-Apr 08 10		1495.8	1500.2	88.8	493.8														



WELL TEST DATA SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:00
 RIG : O.D.E #30

PERFORATION INTERVAL : 1365.5 m - 1377.5 m KB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE & TIME	CHOKE				FLOW RATES			SEPARATOR				CUMMLATIVE			SPECIFIC GRAVITY		REMARKS
	SIZE (inches)	WHP (psig)	WHIT (°F)	CSG (psig)	GAS (MMscfd)	OIL (bopd)	WATER (bopd)	GOR (mscf/bbl)	PRES. (psig)	TEMP. (°F)	BS&W (%)	WCT (%)	GAS (MMscf)	OIL (bbbls)	WATER (bbbls)	OIL (API@60°F)	
19-Apr 08:12	40	1479.4	88.3	484.6													Opened well to flare and increased choke to 64/64" adjustable
19-Apr 08:15	64	1345.7	88.3	483.4													Diverted flow through separator
19-Apr 08:20	64	1348.6	89.4	502.6													
19-Apr 08:25	64	1344.2	90.5	518.3													Stopped injecting Methanol at choke
19-Apr 08:27	72	1343.8	90.9	524.7													Increased choke to 72/64" adjustable
19-Apr 08:30	72	1275.6	91.2	528.8													Increased choke to 80/64" adjustable
19-Apr 08:33	80	1209.0	91.3	533.6													
19-Apr 08:35	80	1233.0	91.5	538.1													Changed to 88/64" positive choke
19-Apr 08:39	88	1230.9	91.6	548.9													
19-Apr 08:40	88	1245.3	91.6	551.4													Installed 3.750" orifice plate
19-Apr 08:44	88	1275.6	91.9	560.8													Gas gravity = 0.678
19-Apr 08:45	88	1254.9	92.0	562.6	43.04				1041.6	78.7		0.030				0.678	CO2 = 6% H2S = 0 PPM
19-Apr 08:50	88	1260.4	92.3	575.7	43.84				1041.4	79.1		0.182				0.678	
19-Apr 08:55	88	1281.0	92.7	582.0	44.47				1046.1	80.2		0.337				0.678	
19-Apr 09:00	88	1277.9	93.0	590.5	44.64				1046.2	80.5		0.491				0.678	H2S = 0 PPM CO2 = 6.0%
19-Apr 09:05	88	1277.0	93.3	601.1	44.55				1048.4	81.1		0.645				0.678	
19-Apr 09:10	88	1294.7	93.9	605.6	44.66				1051.8	81.5		0.800				0.678	



WELL TEST DATA SHEET

PERFORATION INTERVAL : 1365 5 m - 1377.5 m KB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:00
 RIG : O.D.E #30

BASE: Australia

DATE & TIME	CHOKE				FLOW RATES				SEPARATOR				CUMMLATIVE			SPECIFIC GRAVITY		REMARKS	
	SIZE (inches)	Iona #3 THP (psig)	WHIP (psig)	WHT (°F)	CSG (psig)	GAS (MMscfd)	OIL (bpd)	WATER (bpd)	GOR (mcs/bbl)	PRES. (psig)	TEMP. (°F)	BS&W (%)	WCT (%)	GAS (MMscf)	OIL (bbbl)	WATER (bbbl)	OIL (API@60°F)		GAS (Air=1)
19-Apr 09 15	88	1356 1	1281 7	94.5	611.5	44.63				1050.9	81.8			0.955				0.678	
19-Apr 09 20	88	1354 6	1293 1	95.0	618.2	44.70				1051.4	82.2			1.110				0.678	
19-Apr 09 25	88	1359 7	1281 5	95.4	622.3	44.83				1052.2	82.6			1.266				0.678	
19-Apr 09 30	88	1359 1	1296 4	95.9	628.0	44.85				1053.6	82.7			1.421				0.678	
19-Apr 09 35	88	1366 0	1295 8	95.9	631.7	44.87				1054.8	82.9			1.578				0.678	
19-Apr 09 40	88	1364 8	1275 8	96.2	637.0	44.97				1055.4	83.2			1.734				0.678	
19-Apr 09 45	88	1366 2	1306 9	96.2	640.9	44.94				1056.4	83.9			1.889				0.678	
19-Apr 09 50	88	1358 2	1314 9	96.1	644.3	45.11				1057.5	84.0			2.044				0.678	
19-Apr 09 55	88	1372 3	1291 0	96.3	647.5	44.90				1057.8	84.2			2.199				0.678	
19-Apr 10 00	88	1357 6	1297 3	96.6	652.2	44.87				1059.1	84.4			2.355				0.682	Gas gravity = 0.682
19-Apr 10 05	88	1369 4	1297 0	96.8	655.5	44.93				1059.6	84.5			2.511				0.682	
19-Apr 10 10	88	1370 9	1311 0	96.8	658.4	44.82				1061.2	84.6			2.667				0.682	
19-Apr 10 15	88	1365 0	1310 7	96.7	661.6	44.92				1060.9	84.9			2.822				0.682	
19-Apr 10 20	88	1367 9	1295 4	96.7	664.1	44.97				1061.3	85.0			2.978				0.682	
19-Apr 10 25	88	1371 1	1296 6	96.5	666.4	45.12				1061.3	85.1			3.134				0.682	
19-Apr 10 30	88	1379 0	1293 7	96.3	668.6	45.03				1059.6	85.2			3.291				0.682	
19-Apr 10 35	88	1370 7	1308 0	96.1	670.8	44.94				1060.3	85.3			3.447				0.682	



WELL TEST DATA SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:00
 RIG : O.D.E #30

PERFORATION INTERVAL : 1365.5 m - 1377.5 m KU
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE & TIME	CHOKE				FLOW RATES			SEPARATOR				CUMMLATIVE			SPECIFIC GRAVITY		REMARKS	
	SIZE (64ths)	Iona #3 THP (psig)	WHP (psig)	WHT (°F)	CSG (psig)	GAS (MMscfd)	OIL (bopd)	WATER (bopd)	GOR (mscf/bbl)	PRES. (psig)	TEMP. (°F)	BS&W (%)	WCT (%)	GAS (MMscf)	OIL (bbls)	WATER (bbls)		OIL (API@60°F)
19-Apr 10:40	88	1368.3	1316.6	96.2	672.9	45.10				1060.2	85.5			3.604				0.682
19-Apr 10:45	88	1367.3	1316.8	96.6	674.7	45.12				1060.8	85.6			3.761				0.682
19-Apr 10:50	88	1377.2	1289.5	97.2	677.2	45.10				1060.9	85.6			3.918				0.682
19-Apr 10:55	88	1373.8	1272.6	97.1	679.4	44.90				1060.2	85.7			4.073				0.682
19-Apr 11:00	88	1362.9	1329.0	96.8	680.5	44.97				1061.1	85.8			4.228				0.684
19-Apr 11:05	88	1369.2	1288.0	96.7	681.9	45.14				1062.0	85.8			4.386				0.684
19-Apr 11:10	88	1366.0	1327.2	97.1	684.7	45.08				1062.4	86.0			4.543				0.684
19-Apr 11:15	88	1367.5	1317.0	97.2	685.7	45.07				1062.0	86.0			4.699				0.684
19-Apr 11:20	88	1375.5	1319.6	97.0	686.8	44.99				1062.7	86.0			4.855				0.684
19-Apr 11:25	88	1365.0	1316.2	97.0	687.7	45.55				1045.6	85.6			5.013				0.684
19-Apr 11:30	88	1372.5	1283.2	97.4	689.2	45.65				1046.9	85.7			5.171				0.684
19-Apr 11:35	88	1379.3	1277.7	97.5	690.3	45.45				1046.9	85.7			5.329				0.684
19-Apr 11:40	88	1364.1	1329.3	97.4	691.9	45.44				1046.6	85.7			5.487				0.684
19-Apr 11:45	88	1369.2	1301.9	97.6	692.4	45.45				1047.7	85.9			5.645				0.684
19-Apr 11:50	88	1366.8	1326.9	97.6	693.0	45.62				1048.5	85.8			5.804				0.684
19-Apr 11:55	88	1375.7	1273.0	97.7	693.8	45.74				1048.9	85.9			5.963				0.684
19-Apr 12:00	88	1376.5	1322.1	97.6	695.5	45.55				1048.7	85.8			6.121				0.684

Oil gravity = 58.4 @ 60°F
 Gas gravity = 0.684 CO2 = 6.0% H2S = 0 PPM

Dumped (manually) condensate from separator - too small to measure
 Commenced taking 1st HP gas sample from separator

Gas gravity = 0.684 CO2 = 6.0%
 Finished taking 1st HP gas sample from separator



WELL TEST DATA SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:00
 RIG : O.D.E #30

PERFORATION INTERVAL : 1365 5 m - 1377 5 m KB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE & TIME	CHOKE				FLOW RATES			SEPARATOR				CUMMLATIVE			SPECIFIC GRAVITY		REMARKS	
	SIZE (e-4in.)	Iona #3 THP (psig)	WHP (psig)	WHT (°F)	CSG (psig)	GAS (MMscfd)	OIL (bopd)	WATER (bopd)	GOR (mscf/bbl)	PRES. (psig)	TEMP. (°F)	BS&W (%)	WCT (%)	GAS (MMscf)	OIL (bbls)	WATER (bbls)		OIL (API@60°F)
19-Apr 12:05	88	1371.1	1282.7	97.5	696.6	45.61				1048.3	86.0			6.279				0.684
19-Apr 12:10	88	1378.2	1305.9	97.8	697.3	45.62				1049.4	86.2			6.437				0.684
19-Apr 12:15	88	1372.9	1301.7	98.4	697.7	45.72				1048.9	86.2			6.596				0.684
19-Apr 12:20	88	1375.5	1281.9	98.6	699.1	45.27				1049.1	86.4			6.753				0.684
19-Apr 12:25	88	1366.6	1303.6	99.0	700.4	45.29				1049.5	86.5			6.911				0.684
19-Apr 12:30	88	1377.8	1304.4	99.1	701.3	45.46				1056.7	86.9			7.069				0.684
19-Apr 12:35	88	1376.9	1301.3	98.9	702.5	45.37				1056.2	86.9			7.226				0.684
19-Apr 12:40	88	1372.5	1330.7	98.5	703.5	45.33				1057.1	86.8			7.384				0.684
19-Apr 12:45	88	1371.3	1295.0	98.4	704.3	45.27				1056.5	86.8			7.541				0.684
19-Apr 12:50	88	1381.6	1303.2	98.4	705.0	45.24				1056.9	86.8			7.698				0.684
19-Apr 12:55	88	1382.4	1289.3	98.6	705.4	45.46				1056.8	86.9			7.855				0.684
19-Apr 13:00	88	1380.3	1302.5	98.7	706.2	45.98				1056.7	86.9			8.012				0.684
19-Apr 13:10		1499.4	1507.0	96.6	690.6													
19-Apr 13:15		1499.4	1507.0	94.3	674.6													
19-Apr 13:20		1498.7	1506.7	92.2	659.5													
19-Apr 13:25		1498.5	1505.7	90.1	645.5													
19-Apr 13:30		1499.2	1507.4	88.4	633.7													

Commenced taking 2nd HP gas sample from separator

Finished taking 2nd HP gas sample from separator

Shut well in at choke manifold

R.I.H with slick line to set XXN plug in tubing



WELL TEST DATA SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06.35 - 19-April 15 00
 RIG : O.D.E #30

PERFORATION INTERVAL : 1365.5 m - 1377.5 m KB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE : Australia

DATE & TIME (03 hours to min)	CHOKES				FLOW RATES			SEPARATOR				CUMMLATIVE			SPECIFIC GRAVITY		REMARKS	
	SIZE (L4ths)	Iona #3 THP (psig)	WHIP (psig)	WHT (°F)	CSG (psig)	GAS (MMscfd)	OIL (bpd)	WATER (bpd)	GOR mscf/bbl	PRES. (psig)	TEMP. (°F)	BS&W (%)	WCT (%)	GAS (MMscf)	OIL (bbls)	WATER (bbls)		OIL (API@60°F)
19-Apr 14 08		988 6	982 7	84 6	467 7													
19-Apr 14 09		990 2	984 4	84 6	467 0													
19-Apr 14 10		993 1	984 6	84 5	466 9													
19-Apr 14 11		993 1	987 0	84 4	466 2													
19-Apr 14 12		992 5	987 2	84 3	465 7													
19-Apr 14 13		992 1	986 5	84 3	466 2													
19-Apr 14 14		993 6	986 3	84 2	464 5													
19-Apr 14 15		994 0	986 1	84 1	463 8													
19-Apr 14 16		993 1	986 7	83 9	463 3													
19-Apr 14 17		993 2	986 1	83 8	462 0													
19-Apr 14 18		993 6	985 1	83 6	461 5													
19-Apr 14 19		992 3	987 0	83 4	460 2													
19-Apr 14 20				83 3	458 9													
19-Apr 14 25				80 9	453 7													
19-Apr 14 30					448 0													
19-Apr 14 35					442 6													
19-Apr 14 40					436 5													
																		Pressure test good - rigged down slick line



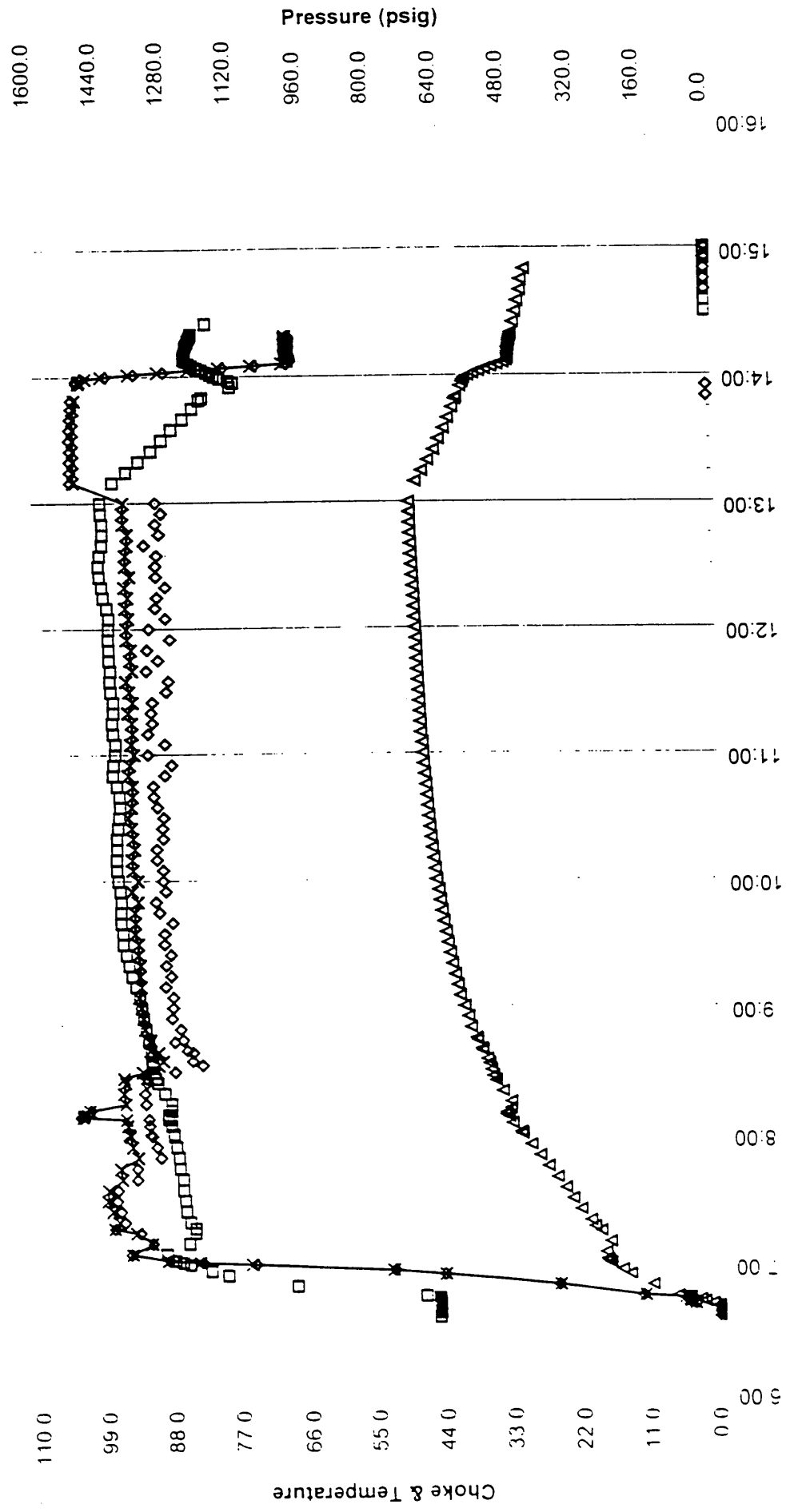
WELL TEST DATA SHEET

PERFORMANCE INTERVAL : 1365.5 m - 1377.5 m KB TEST No. : Production Flowback . 1 CUSTOMER REP. : Rob Viner HES SUPERVISOR : Dylan Richards		CUSTOMER : Western Underground Gas Storage WELL NAME : Iona . 3 DATE : 19-April 06:35 - 19-April 15:00 RIG : O.D.E #30		BASE: Australia														
DATE & TIME	CHOKE			FLOW RATES			SEPARATOR			CUMMLATIVE			SPECIFIC GRAVITY			REMARKS		
	Iona #3 THP (psig)	WHP (psig)	WHIT ("F)	CSG (psig)	GAS (MMscfd)	OIL (bpd)	WATER (bpd)	GOR (msc/ bbl)	PRES. (psig)	TEMP. ("F)	BS&W (%)	WCT (%)	GAS (MMscf)	OIL (bbls)	WATER (bbls)		OIL (API@60°F)	GAS (Air=1)
19-Apr 14 45				434.2														
19-Apr 14 50				425.7														
19-Apr 14 55																		
19-Apr 15 00																		Set Back Pressure Valve in tubing hanger

Western Underground Gas Storage Iona - 3 Production Flowback - 1



HEATHBURTON



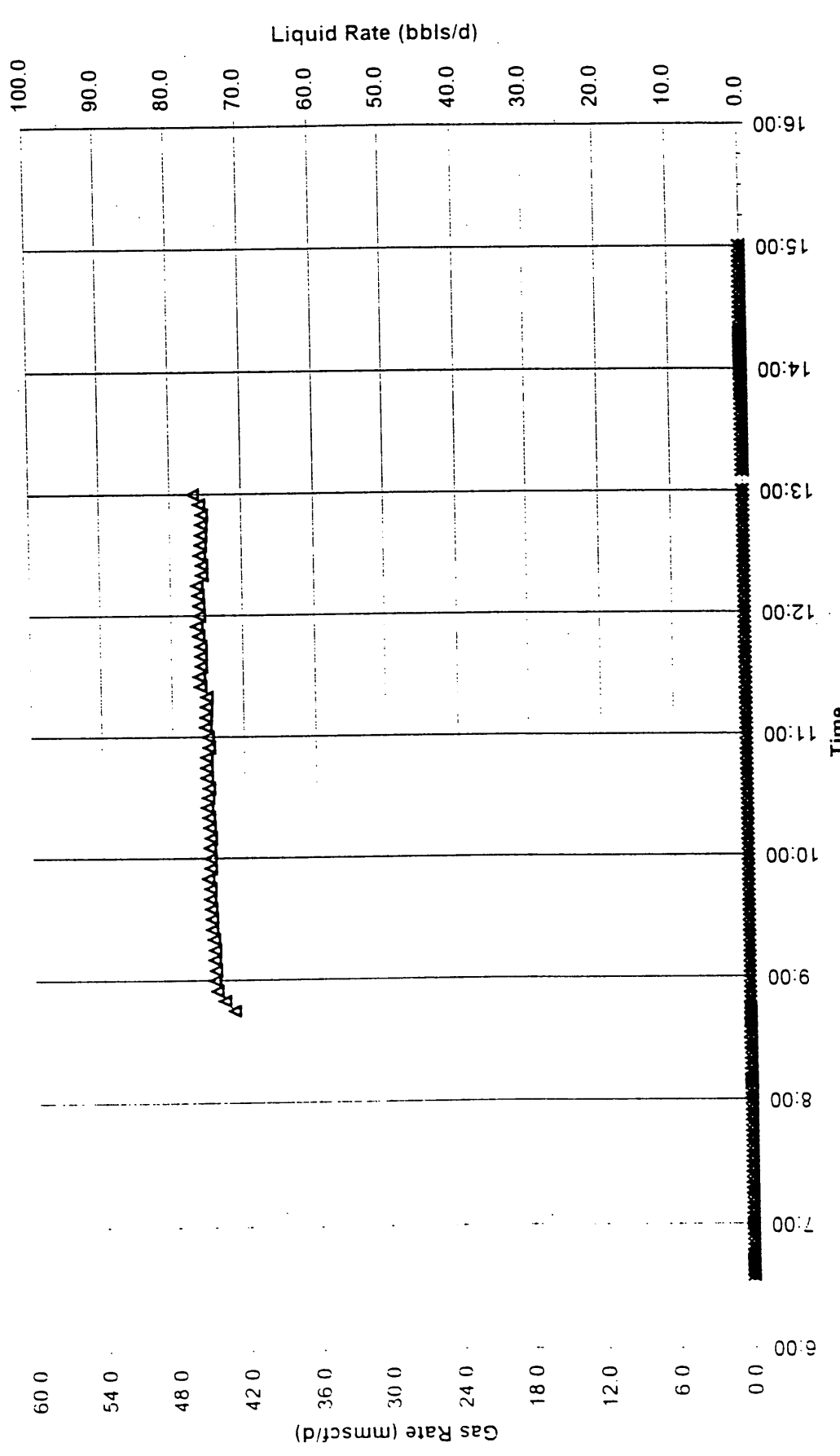
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□ WIT ◇ WIP △ CSG × Iona 3 THP

Wellhead Plot

19 Apr 99

Western Underground Gas Storage Iona - 3 Production Flowback - 1



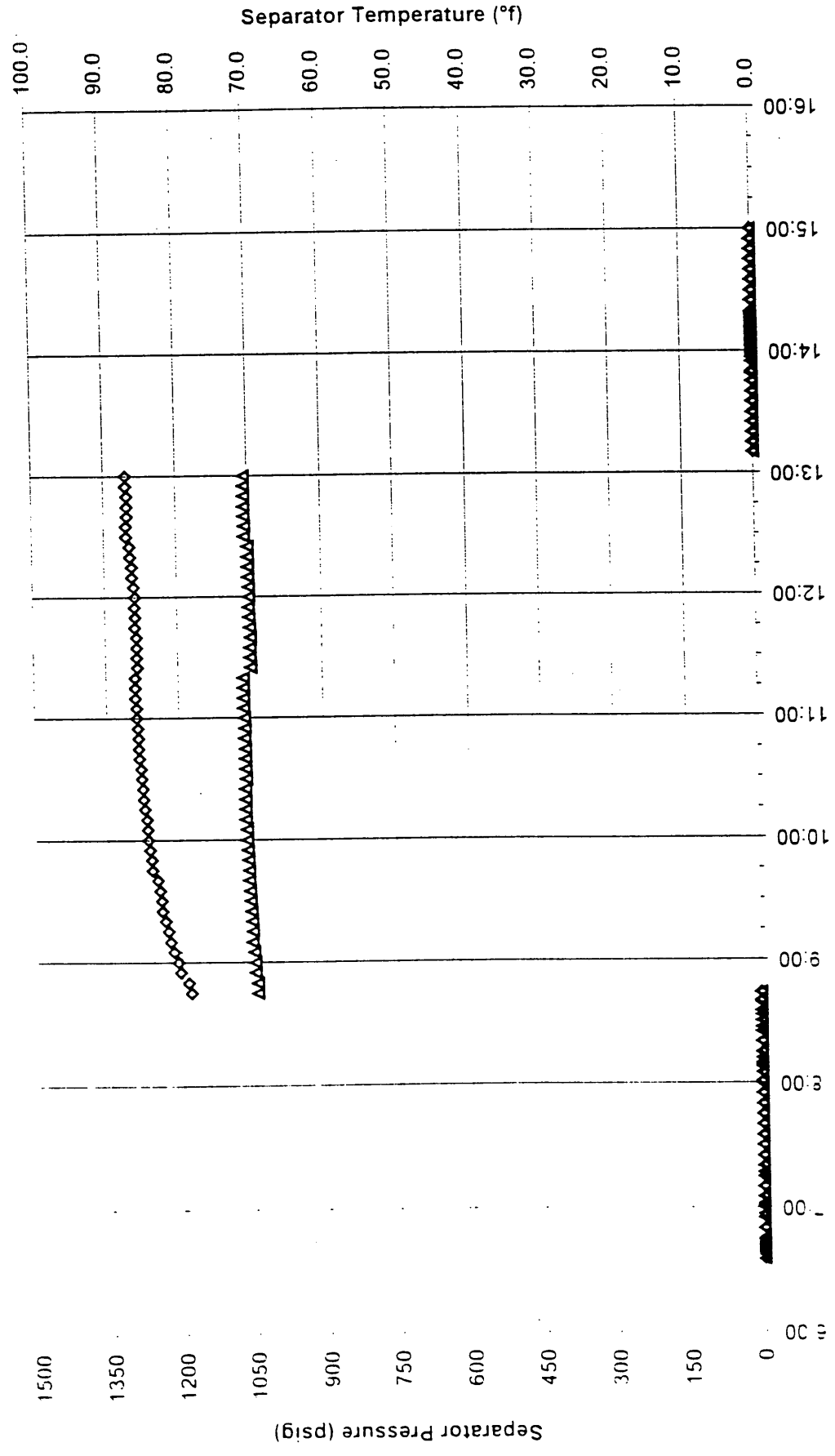
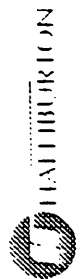
19-Apr-99

Δ GAS X OIL ◇ WATER

19-Apr-99

Production Plot

Western Underground Gas Storage Iona - 3 Production Flowback - 1



19-Apr-99

Time
Δ PRES.
◇ TEMP.

19-Apr-99

Separator Plot



INTERNATIONAL

GAS FLOW DATA SHEET

Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06 35 - 19-April 15 00
 RIG : O D E #30

PERFORATION INTERVAL : 1365 5 m - 1377 5 m KB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE:

DATE	TIME	CHOKESIZE	PI	DIFF	GAS TEMP	ORIFICE SIZE	SQRT	Fb	Fpb	Fib	Fg	Fr	Y	Fpv	C'	GAS RATE	REMARKS
		(in)	(psi)	(psi)	(°C)	(in)	(ft ² / hr)									(mmscfd)	
19/04/99	8:45	88	1041	179	79	3 750	434.3	3172.090	1.000	1.000	1.2140	0.9825	1.0001	1.0900	4130.00	43.044	Gas gravity = 0.678
19/04/99	8:50	88	1043	185	79	3 750	442.6	3172.090	1.000	1.000	1.2140	0.9821	1.0001	1.0900	4127.80	43.843	CO2 = 6% H2S = 0 PPM
19/04/99	8:55	88	1045	191	80	3 750	449.6	3172.09	1.000	1.000	1.2140	0.9811	1.0001	1.0890	4121.78	44.474	
19/04/99	9:00	88	1047	192	81	3 750	451.4	3172.09	1.000	1.000	1.2140	0.9808	1.0001	1.0890	4120.12	44.636	H2S = 0 PPM CO2 = 6.0%
19/04/99	9:05	88	1049	191	81	3 750	450.9	3172.09	1.000	1.000	1.2140	0.9803	1.0001	1.0890	4117.34	44.552	
19/04/99	9:10	88	1052	192	82	3 750	452.1	3172.09	1.000	1.000	1.2140	0.9799	1.0001	1.0890	4115.37	44.656	
19/04/99	9:15	88	1051	192	82	3 750	452.2	3172.09	1.000	1.000	1.2140	0.9796	1.0001	1.0890	4112.91	44.633	
19/04/99	9:20	88	1052	192	82	3 750	453.0	3172.09	1.000	1.000	1.2140	0.9793	1.0001	1.0890	4111.00	44.697	H2S = 0 PPM CO2 = 6.0%
19/04/99	9:25	88	1053	194	83	3 750	454.6	3172.09	1.000	1.000	1.2140	0.9790	1.0001	1.0880	4108.76	44.827	
19/04/99	9:30	88	1054	194	83	3 750	454.9	3172.09	1.000	1.000	1.2140	0.9788	1.0001	1.0880	4108.11	44.849	
19/04/99	9:35	88	1055	194	83	3 750	455.2	3172.09	1.000	1.000	1.2140	0.9787	1.0001	1.0880	4107.12	44.873	
19/04/99	9:40	88	1056	195	83	3 750	456.4	3172.09	1.000	1.000	1.2140	0.9784	1.0001	1.0880	4105.84	44.971	
19/04/99	9:45	88	1057	195	84	3 750	456.6	3172.09	1.000	1.000	1.2140	0.9778	1.0001	1.0880	4101.44	44.940	
19/04/99	9:50	88	1058	196	84	3 750	458.3	3172.09	1.000	1.000	1.2140	0.9777	1.0001	1.0880	4100.94	45.106	
19/04/99	9:55	88	1058	194	84	3 750	456.3	3172.09	1.000	1.000	1.2140	0.9775	1.0001	1.0880	4099.92	44.898	
19/04/99	10:00	88	1059	194	84	3 750	457.0	3172.09	1.000	1.000	1.2110	0.9774	1.0001	1.0890	4091.04	44.871	Gas gravity = 0.682
19/04/99	10:05	88	1060	195	85	3 750	457.7	3172.09	1.000	1.000	1.2110	0.9772	1.0001	1.0890	4090.13	44.931	
19/04/99	10:10	88	1061	194	85	3 750	456.7	3172.09	1.000	1.000	1.2110	0.9771	1.0001	1.0890	4089.64	44.825	
19/04/99	10:15	88	1061	195	85	3 750	457.8	3172.09	1.000	1.000	1.2110	0.9769	1.0001	1.0890	4088.29	44.920	

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GAS FLOW DATA SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06 35 - 19-April 15:00
 RIG : ODE #30

PERFORATION INTERVAL : 1365 5 m - 1377 5 m KB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE	TIME	CHOKESIZE	PI	DIFF	GAS TEMP	ORIFICE SIZE	SQRT	Fb	Fpb	Fib	Fg	Fif	Fr	Y	Fpv	C'	GAS RATE	REMARKS
		(in)	(psi)	(psi)	(°F)	(in)	(ft ² · lbw)										(mmscfd)	
19/04/99	10 20	88	1062	195	85	3 750	458.3	3172.09	1.000	1.000	1.2110	0.9768	1.0001	1.0009	1.0880	4087.87	44.967	
19/04/99	10 25	88	1060	197	85	3 750	460.0	3172.09	1.000	1.000	1.2110	0.9767	1.0001	1.0009	1.0880	4086.95	45.115	
19/04/99	10 30	88	1060	196	85	3 750	459.2	3172.09	1.000	1.000	1.2110	0.9766	1.0001	1.0009	1.0880	4085.78	45.025	
19/04/99	10 35	88	1060	195	85	3 750	458.3	3172.090	1.000	1.000	1.2110	0.9765	1.0001	1.0009	1.0880	4085.25	44.937	
19/04/99	10 40	88	1060	197	86	3 750	460.1	3172.090	1.000	1.000	1.2110	0.9763	1.0001	1.0009	1.0880	4084.08	45.098	
19/04/99	10 45	88	1061	197	86	3 750	460.4	3172.09	1.000	1.000	1.2110	0.9762	1.0001	1.0009	1.0880	4083.36	45.117	
19/04/99	10 50	88	1061	197	86	3 750	460.2	3172.09	1.000	1.000	1.2110	0.9762	1.0001	1.0009	1.0880	4083.53	45.105	
19/04/99	10 55	88	1061	195	86	3 750	458.2	3172.09	1.000	1.000	1.2110	0.9762	1.0001	1.0009	1.0880	4083.17	44.900	Oil gravity = 58.4 @60°F Gas gravity = 0.684 CO2 = 6.0% H2S = 0 PPM
19/04/99	11 00	88	1061	196	86	3 750	459.4	3172.09	1.000	1.000	1.2090	0.9761	1.0001	1.0009	1.0880	4078.66	44.969	
19/04/99	11 05	88	1062	198	86	3 750	461.1	3172.09	1.000	1.000	1.2090	0.9761	1.0001	1.0009	1.0880	4078.66	45.140	
19/04/99	11 10	88	1062	197	86	3 750	460.6	3172.09	1.000	1.000	1.2090	0.9759	1.0001	1.0009	1.0880	4077.77	45.079	
19/04/99	11 15	88	1062	197	86	3 750	460.6	3172.09	1.000	1.000	1.2090	0.9759	1.0001	1.0009	1.0880	4077.12	45.066	
19/04/99	11 20	88	1058	197	86	3 750	459.9	3172.09	1.000	1.000	1.2090	0.9759	1.0001	1.0009	1.0880	4075.95	44.989	Dumped (manually) condensate from separator - too small to measure
19/04/99	11 25	88	1046	205	86	3 750	465.8	3172.09	1.000	1.000	1.2090	0.9762	1.0001	1.0010	1.0870	4074.97	45.550	Commenced taking 1st HP gas sample from separator
19/04/99	11 30	88	1047	205	86	3 750	466.8	3172.09	1.000	1.000	1.2090	0.9761	1.0001	1.0010	1.0870	4074.47	45.645	
19/04/99	11 35	88	1047	203	86	3 750	464.7	3172.09	1.000	1.000	1.2090	0.9762	1.0001	1.0009	1.0870	4074.93	45.450	
19/04/99	11 40	88	1047	203	86	3 750	464.7	3172.09	1.000	1.000	1.2090	0.9761	1.0001	1.0009	1.0870	4074.60	45.444	
19/04/99	11 45	88	1048	203	86	3 750	464.8	3172.09	1.000	1.000	1.2090	0.9760	1.0001	1.0009	1.0870	4074.20	45.445	
19/04/99	11 50	88	1049	205	86	3 750	466.5	3172.09	1.000	1.000	1.2090	0.9761	1.0001	1.0009	1.0870	4074.86	45.620	



HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 06:35					45.2							
19-Apr 06:36					45.2							
19-Apr 06:37					45.1							Dropped TCP firing bar
19-Apr 06:38					45.1							
19-Apr 06:39					45.1							
19-Apr 06:40					45.1							Pressure increase at surface - indicating guns fired
19-Apr 06:41	56.8		16.5	56.6	45.1							
19-Apr 06:42	67.5		35.0	69.3	45.1							
19-Apr 06:43	71.3	32	44.6	73.7	45.2	0.6	45.1				128	Opened well to flare on 32/64" adjustable choke
19-Apr 06:44	79.2	64	68.9	74.9	45.2	3.1	45.2			0.1	128	Increased choke to 64/64" adjustable
19-Apr 06:45	174.9	32	95.6	179.8	47.4	1.2	47.3				128	Decreased choke to 32/64" adjustable
19-Apr 06:46	208.3	32	112.3	212.0	51.9	1.9	49.8				128	
19-Apr 06:47	246.1	32	127.3	249.7	56.7	2.8	52.0			0.7	128	
19-Apr 06:48	286.5	32	141.5	289.7	61.0	3.1	54.3			0.7	128	
19-Apr 06:49	328.8	32	144.6	331.8	65.0	2.6	56.5			0.9	128	
19-Apr 06:50	373.7	32	155.9	376.2	68.4	3.9	58.7			1.5	128	
19-Apr 06:51	420.8	32	166.7	425.1	71.4	3.2	60.8			1.8	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64lls)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64lls)
19-Apr 06 52	471.3	32	179.8	472.8	73.9	4.6	62.8			2.1	128	
19-Apr 06 53	526.1	32	188.9	528.8	76.0	4.7	64.8			2.3	128	
19-Apr 06 54	584.4	32	200.0	587.2	77.8	5.0	66.6			2.6	128	
19-Apr 06 55	643.2	32	208.6	645.3	79.4	5.2	68.4			2.9	128	
19-Apr 06 56	706.1	32	218.7	707.0	80.8	5.4	69.9			3.3	128	
19-Apr 06 57	766.0	40	227.9	761.7	82.1	8.0	71.5			6.3	128	Increased choke to 40/64" adjustable
19-Apr 06 58	866.7	40	237.4	860.6	83.1	15.3	72.9			13.7	128	
19-Apr 06 59	978.1	40	246.4	971.2	84.4	17.4	74.3			15.5	128	
19-Apr 07 00	1098.3	40	254.4	1090.1	85.6	21.1	75.8			18.1	128	Commenced injecting Methanol at choke
19-Apr 07 01	1221.1	40	260.4	1215.0	86.8	99.9	77.1			94.6	128	Gas to surface
19-Apr 07 02	1297.4	40	263.4	1294.1	88.0	130.6	78.4			123.6	128	Unable to light gas flare - pilot alight
19-Apr 07 03	1353.9	40	265.1	1353.7	89.0	153.2	79.4			144.9	128	
19-Apr 07 04	1363.4	40	265.7	1370.7	89.5	54.6	78.4			51.2	128	
19-Apr 07 05	1382.6	40	265.6	1385.5	89.4	6.7	75.6			4.4	128	Gas Pilot confirmed alight
19-Apr 07 06	1380.1	40	262.1	1381.9	89.0	17.9	73.6			13.9	128	
19-Apr 07 07	1373.2	40	257.6	1377.3	88.2	56.3	71.5			52.5	128	
19-Apr 07 08	1360.3	40	253.3	1361.9	87.4	116.6	69.3			112.0	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 07 09	1334.9	40	253.2	1331.4	86.5	187.2	66.7			179.0	128	
19-Apr 07 10	1335.5	40	254.7	1334.1	85.7	170.3	64.7			161.6	128	
19-Apr 07 11	1333.2	40	260.0	1330.3	85.2	190.1	63.0			184.6	128	
19-Apr 07 12	1362.9	40	265.3	1360.0	84.8	175.5	61.7			166.6	128	
19-Apr 07 13	1371.7	40	269.0	1362.1	84.6	181.5	60.9			171.8	128	
19-Apr 07 14	1370.6	40	272.5	1364.2	84.6	193.1	59.9			186.5	128	
19-Apr 07 15	1372.5	48	276.5	1363.4	84.7	195.4	58.9			187.9	128	Increased choke to 48/64" adjustable
19-Apr 07 16	1336.8	48	281.6	1316.6	84.7	280.2	57.8			271.0	128	
19-Apr 07 17	1424.9	48	291.8	1423.6	84.6	33.6	56.9			28.3	128	Rocked the choke
19-Apr 07 18	1403.4	48	293.6	1383.2	84.8	321.9	57.3			312.6	128	
19-Apr 07 19	1408.3	48	297.7	1385.1	85.2	271.6	56.8			261.3	128	
19-Apr 07 20	1415.2	48	300.7	1399.8	85.5	247.0	56.1			235.9	128	
19-Apr 07 21	1412.7	48	307.2	1392.8	85.7	314.3	55.4			307.2	128	
19-Apr 07 22	1434.8	48	312.9	1422.9	85.8	292.4	54.4			281.6	128	
19-Apr 07 23	1416.3	48	316.1	1391.0	85.9	306.9	53.8			299.7	128	
19-Apr 07 24	1431.2	48	322.1	1411.8	86.0	310.5	53.0			300.9	128	
19-Apr 07 25	1429.9	48	323.6	1409.1	86.1	310.2	52.2			300.3	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

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DATE & TIME	WELLHEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64ths)	
19-Apr 07 26	1430.4	48	327.4	1410.1	86.2	302.6	51.1			293.7	128	
19-Apr 07 27	1433.9	48	332.3	1413.3	86.2	300.2	50.1			289.5	128	
19-Apr 07 28	1436.7	48	337.9	1416.4	86.3	310.8	49.2			301.8	128	
19-Apr 07 29	1438.6	48	339.3	1416.0	86.2	311.6	48.2			306.2	128	
19-Apr 07 30	1441.1	48	341.9	1418.5	86.3	315.0	47.3			307.6	128	
19-Apr 07 31	1443.6	48	345.6	1421.1	86.4	316.3	46.4			307.2	128	
19-Apr 07 32	1442.8	48	348.6	1423.0	86.4	309.3	45.5			298.0	128	
19-Apr 07 33	1443.4	48	352.7	1422.9	86.4	307.3	44.6			301.2	128	
19-Apr 07 34	1443.6	48	355.7	1421.9	86.5	304.6	43.8			297.2	128	
19-Apr 07 35	1438.6	56	358.2	1416.0	86.6	325.6	42.9			316.0	128	Increased choke to 56/64" adjustable
19-Apr 07 36	1408.1	56	362.1	1369.5	86.5	414.3	42.3			403.4	128	
19-Apr 07 37	1405.1	56	363.6	1365.3	86.5	408.6	42.0			389.8	128	
19-Apr 07 38	1403.7	56	367.8	1369.1	86.5	410.4	41.8			411.0	128	
19-Apr 07 39	1403.2	56	371.1	1366.9	86.5	403.7	41.6			390.7	128	
19-Apr 07 40	1405.6	56	377.2	1368.8	86.6	401.0	41.5			389.5	128	
19-Apr 07 41	1410.4	56	381.6	1372.6	86.7	397.5	41.4			387.3	128	
19-Apr 07 42	1412.5	56	387.2	1372.8	86.8	412.4	41.4			395.7	128	



CHATFIELD BURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELL HEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 T1P (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 07 43	1413 5	56	390 9	1375 2	86.9	408.3	41.5			396.8	128	
19-Apr 07 44	1414 6	56	395 4	1377 5	87.1	410.3	41.6			409.0	128	
19-Apr 07 45	1409 3	64	398 1	1368 4	87.1	430.4	41.7			425.9	128	Increased choke to 64/64" adjustable
19-Apr 07 46	1373 2	64	400 7	1317 3	87.1	498.2	41.9			490.9	128	
19-Apr 07 47	1370 0	64	404 1	1312 4	87.1	500.3	42.3			491.3	128	
19-Apr 07 48	1368 9	64	407 2	1312 4	87.1	479.5	42.8			475.9	128	
19-Apr 07 49	1366 0	64	412 7	1310 9	87.1	472.9	43.2			457.1	128	
19-Apr 07 50	1366 4	64	417 5	1311 4	87.2	472.6	43.6			465.4	128	
19-Apr 07 51	1368 9	64	421 3	1310 3	87.2	497.4	44.0			493.7	128	
19-Apr 07 52	1372 1	64	425 3	1313 7	87.3	499.7	44.5			484.1	128	
19-Apr 07 53	1374 4	64	429 9	1318 1	87.4	493.9	45.0			484.8	128	
19-Apr 07 54	1377 8	64	434 5	1317 1	87.5	483.4	45.4			475.4	128	
19-Apr 07 55	1379 9	64	438 1	1320 6	87.6	486.1	45.8			476.3	128	
19-Apr 07 56	1380 7	64	442 3	1325 5	87.7	476.6	46.1			469.9	128	
19-Apr 07 57	1382 6	64	446 1	1327 6	87.8	482.3	46.4			471.0	128	
19-Apr 07 58	1382 8	64	451 0	1329 5	87.9	474.1	46.6			462.4	128	
19-Apr 07 59	1386 0	64	453 1	1330 3	87.9	476.2	46.9			464.7	128	

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WELL TEST PRESSURE SUMMARY SHEET

CUSTOMER : Western Underground Gas Storage
WELL NAME : Iona - 3
DATE : 19-April 06:35 - 19-April 15:20
RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
TEST No. : Production Flowback - 1
CUSTOMER REP. : Rob Viner
HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 TIIP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 08 00	1384.5	64	457.7	1332.4	88.0	478.0	47.1			471.0	128	Diverted flow through separator
19-Apr 08 01	1387.5	64	461.1	1335.4	88.0	461.1	47.2	450.3	62.4	452.3	128	Leaking ball valve on sep - diverted flow back to flare
19-Apr 08 02	1389.8	64	465.5	1336.2	88.1	480.6	47.3	428.7	56.4	468.8	128	
19-Apr 08 03	1387.2	64	468.7	1335.6	88.2	475.8	47.5	412.8	55.0	468.1	128	
19-Apr 08 04	1388.7	64	475.8	1335.2	88.3	479.3	47.7	396.6	54.0	466.3	128	
19-Apr 08 05	1391.0	64	481.1	1337.9	88.4	473.5	47.8	353.9	53.1	470.1	128	
19-Apr 08 06	1392.7	64	482.3	1336.8	88.5	478.1	48.0	302.5	52.0	473.2	128	
19-Apr 08 07	1391.7	64	486.6	1338.3	88.6	477.4	48.1	217.4	50.9	465.4	128	
19-Apr 08 08	1392.9		489.7	1339.4	88.8	479.9	48.3	160.0	49.6	471.0	128	Shut well in at choke to repair leaking valve
19-Apr 08 09	1498.7		495.3	1503.4	88.9	0.2	48.4	11.5	48.3		128	Depressured separator through H2O line to flare pit
19-Apr 08 10	1495.8		493.8	1500.2	88.8	0.7	48.6	0.1	47.9		128	
19-Apr 08 11	1492.4		486.9	1495.2	88.5	89.4	48.5	0.8	47.8	84.7	128	
19-Apr 08 12	1481.5	40	484.6	1479.4	88.3	198.9	47.7	1.2	47.8	194.1	128	Opened well to flare - increased choke to 64/64" adj
19-Apr 08 13	1449.1	64	480.7	1435.0	88.2	349.0	46.9	1.2	47.8	338.4	128	
19-Apr 08 14	1395.0	64	479.5	1350.7	88.3	476.6	46.3	1.0	47.7	463.9	128	
19-Apr 08 15	1395.2	64	483.4	1345.7	88.3	479.4	46.2	1.1	47.8	467.4	128	Diverted flow through separator
19-Apr 08 16	1397.8	64	488.1	1344.2	88.4	497.3	46.1	490.4	62.4	447.2	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 08 17	1400 3	64	491 2	1343 0	88.6	780.2	46.3	774.8	59.6	297.4	128	
19-Apr 08 18	1403 2	64	494 6	1349 3	88.9	699.4	47.1	692.0	56.9	497.6	128	
19-Apr 08 19	1405 5	64	498 7	1355 2	89.1	771.2	48.1	766.3	60.2	436.5	128	
19-Apr 08 20	1399 5	64	502 6	1348 6	89.4	869.6	49.3	865.0	64.0	480.7	128	
19-Apr 08 21	1396 3	64	504 5	1346 9	89.7	970.9	50.9	962.8	67.5	471.5	128	
19-Apr 08 22	1393 1	64	508 6	1350 3	89.9	1029.8	52.9	1024.4	70.5	499.8	128	
19-Apr 08 23	1391 9	64	511 8	1342 3	90.1	1029.8	55.0	1024.6	71.0	467.5	128	
19-Apr 08 24	1395 0	64	513 7	1339 4	90.3	1026.2	57.0	1022.8	71.4	491.5	128	
19-Apr 08 25	1394 2	64	518 3	1344 2	90.5	1030.9	58.9	1027.1	71.9	460.7	128	Stopped injecting Methanol at choke
19-Apr 08 26	1394 8	64	524 5	1341 1	90.7	1035.4	60.6	1029.9	72.4	485.1	128	
19-Apr 08 27	1397 8	72	524 7	1343 8	90.9	1035.5	62.3	1031.4	72.7	477.2	128	Increased choke to 72/64" adjustable
19-Apr 08 28	1352 5	72	523 2	1273 0	91.0	1042.1	63.8	1035.6	73.3	553.9	128	
19-Apr 08 29	1355 1	72	527 1	1281 1	91.1	1049.1	65.3	1042.9	74.7	563.2	128	
19-Apr 08 30	1352 6	72	528 8	1275 6	91.2	1033.4	66.6	1031.4	74.9	571.1	128	
19-Apr 08 31	1354 9	72	530 8	1284 4	91.2	1035.6	67.9	1029.8	75.2	574.9	128	
19-Apr 08 32	1352 6	72	534 6	1276 6	91.3	1035.3	69.1	1028.0	75.5	564.8	128	
19-Apr 08 33	1344 9	80	544 6	1209 0	91.3	1039.0	70.2	1032.6	76.5	633.0	128	Increased choke to 80/64" adjustable

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELL HEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 08 34	1311.3	80	535.9	1222.5	91.4	1035.6	71.3	1030.5	77.4	633.8	128	
19-Apr 08 35	1303.7	80	538.1	1233.0	91.5	1040.9	72.2	1036.1	78.0	636.1	128	
19-Apr 08 36	1310.7	80	540.5	1228.4	91.6	1038.3	73.1	1032.2	77.9	616.5	128	
19-Apr 08 37	1312.2	80	543.4	1247.2	91.6	1038.5	73.9	1032.3	78.1	618.0	128	
19-Apr 08 38	1311.9	80	546.4	1223.6	91.6	1043.6	74.7	1034.6	78.3	621.7	128	
19-Apr 08 39	1314.3	88	548.9	1230.9	91.6	1047.3	75.4	1037.3	78.5	623.1	128	Changed to 88/64" positive choke
19-Apr 08 40	1334.2	88	551.4	1245.3	91.6	1042.9	75.9	1038.4	78.1	603.5	128	
19-Apr 08 41	1336.4	88	553.9	1247.8	91.7	1046.6	76.4	1042.9	78.3	613.1	128	
19-Apr 08 42	1336.1	88	557.5	1271.8	91.7	1052.1	76.8	1045.6	78.4	606.6	128	
19-Apr 08 43	1337.0	88	557.3	1253.3	91.8	1054.6	77.2	1044.9	78.6	609.9	128	
19-Apr 08 44	1334.5	88	560.8	1275.6	91.9	1053.6	77.6	1037.5	78.5	624.6	128	Installed 3.750" orifice plate
19-Apr 08 45	1332.4	88	562.6	1254.9	92.0	1054.1	77.9	1041.6	78.7	615.8	128	
19-Apr 08 46	1340.8	88	564.3	1257.3	92.1	1049.5	78.2	1035.5	78.4	614.6	128	
19-Apr 08 47	1338.2	88	568.0	1268.4	92.2	1052.8	78.4	1039.8	78.6	620.5	128	
19-Apr 08 48	1343.3	88	569.6	1251.8	92.2	1052.9	78.7	1042.0	78.9	617.3	128	
19-Apr 08 49	1347.3	88	570.9	1266.1	92.3	1055.9	78.8	1046.2	79.0	621.2	128	
19-Apr 08 50	1346.2	88	575.7	1260.4	92.3	1051.8	79.1	1041.4	79.1	628.5	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE & TIME (dd mmm hh mm)	WELL HEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 08 51	1346.9	88	577.1	1274.5	92.4	1052.0	79.2	1039.4	79.0	628.2	128	
19-Apr 08 52	1347.7	88	576.6	1270.3	92.5	1058.6	79.4	1041.5	79.4	626.4	128	
19-Apr 08 53	1354.6	88	579.6	1261.3	92.5	1059.3	79.4	1043.8	79.5	632.1	128	
19-Apr 08 54	1351.5	88	580.4	1290.5	92.5	1058.4	79.6	1046.8	79.8	630.2	128	
19-Apr 08 55	1349.6	88	582.0	1281.0	92.7	1060.2	79.7	1046.1	80.2	639.5	128	
19-Apr 08 56	1356.5	88	584.0	1296.0	92.8	1058.6	79.9	1043.6	80.1	641.0	128	
19-Apr 08 57	1350.0	88	586.0	1278.7	92.8	1059.0	80.0	1044.2	80.2	642.8	128	
19-Apr 08 58	1354.4	88	587.4	1284.4	92.9	1062.0	80.1	1045.5	80.3	640.8	128	
19-Apr 08 59	1354.4	88	588.7	1288.4	92.9	1063.4	80.2	1047.0	80.4	641.7	128	
19-Apr 09 00	1354.0	88	590.5	1277.9	93.0	1057.2	80.3	1046.2	80.5	639.9	128	
19-Apr 09 01	1356.7	88	592.3	1281.5	93.2	1060.0	80.5	1046.0	80.6	637.2	128	
19-Apr 09 02	1352.6	88	594.3	1284.8	93.3	1059.5	80.6	1046.1	80.7	640.9	128	
19-Apr 09 03	1348.1	88	596.9	1283.2	93.3	1057.5	80.7	1048.3	80.8	640.4	128	
19-Apr 09 04	1351.4	88	604.9	1283.0	93.3	1061.3	80.8	1048.4	80.9	638.3	128	
19-Apr 09 05	1359.1	88	601.1	1277.0	93.3	1063.7	80.9	1048.4	81.1	644.9	128	
19-Apr 09 06	1359.1	88	600.8	1271.2	93.5	1063.1	80.9	1048.8	81.1	645.9	128	
19-Apr 09 07	1356.8	88	601.6	1296.2	93.6	1066.0	81.0	1049.8	81.1	643.0	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 09 08	1362.0	88	602.6	1292.8	93.8	1069.0	81.1	1049.5	81.3	637.4	128	
19-Apr 09 09	1349.0	88	604.9	1294.5	93.8	1062.7	81.2	1050.2	81.4	646.6	128	
19-Apr 09 10	1354.0	88	605.6	1294.7	93.9	1060.2	81.2	1051.8	81.5	643.6	128	
19-Apr 09 11	1350.2	88	607.5	1303.8	94.1	1067.1	81.3	1052.2	81.5	645.5	128	
19-Apr 09 12	1363.3	88	608.4	1278.7	94.2	1065.2	81.4	1052.1	81.6	641.0	128	
19-Apr 09 13	1355.1	88	609.4	1305.0	94.3	1064.8	81.4	1052.1	81.7	646.1	128	
19-Apr 09 14	1347.3	88	610.4	1309.3	94.4	1063.5	81.6	1051.9	81.7	642.5	128	
19-Apr 09 15	1356.1	88	611.5	1281.7	94.5	1067.1	81.6	1050.9	81.8	639.9	128	
19-Apr 09 16	1364.3	88	612.9	1283.6	94.6	1063.8	81.7	1050.8	81.9	647.2	128	
19-Apr 09 17	1354.2	88	613.9	1307.8	94.8	1063.8	81.7	1051.3	82.0	643.5	128	
19-Apr 09 18	1358.0	88	614.8	1287.8	94.8	1066.4	81.8	1051.4	82.1	642.0	128	
19-Apr 09 19	1358.9	88	616.1	1268.6	94.9	1066.3	81.9	1051.7	82.1	645.6	128	
19-Apr 09 20	1354.6	88	618.2	1293.1	95.0	1065.4	81.9	1051.4	82.2	647.1	128	
19-Apr 09 21	1360.1	88	618.2	1265.9	95.0	1063.7	81.9	1052.0	82.2	649.1	128	
19-Apr 09 22	1362.8	88	619.2	1277.7	95.1	1063.0	82.0	1051.6	82.2	643.3	128	
19-Apr 09 23	1354.6	88	621.0	1297.9	95.3	1066.6	82.1	1052.1	82.3	645.7	128	
19-Apr 09 24	1357.6	88	621.9	1290.9	95.3	1067.9	82.1	1051.9	82.4	645.5	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THIP (psig)	Choke Size (64lls)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64lls)	
19-Apr 09 25	1359 7	88	622 3	1281.5	95.4	1064.1	82.2	1052.2	82.6	646.3	128	
19-Apr 09 26	1348 5	88	623 8	1306 5	95.5	1069 0	82.2	1052.1	82.5	641.5	128	
19-Apr 09 27	1354 2	88	625 3	1307 0	95.6	1065.2	82.3	1052.6	82.6	645.4	128	
19-Apr 09 28	1356 1	88	624 7	1295 0	95.7	1068.5	82.2	1053 0	82.7	640.4	128	
19-Apr 09 29	1349 2	88	626 2	1301 9	95.7	1068.2	82.3	1053.1	82.7	644.4	128	
19-Apr 09 30	1359 1	88	628 0	1296.4	95.9	1067.0	82.4	1053.6	82.7	646.9	128	
19-Apr 09 31	1362 2	88	629 1	1268.0	96.0	1062.3	82.4	1053.6	82.7	645.2	128	
19-Apr 09 32	1356 5	88	629 2	1311.6	95.9	1067.1	82.4	1054.4	82.8	643.1	128	
19-Apr 09 33	1365 8	88	630 6	1285.9	95.9	1068.5	82.4	1054.5	82.8	644.4	128	
19-Apr 09 34	1360 1	88	631.3	1291.2	95.9	1071.8	82.4	1054.1	82.8	642.5	128	
19-Apr 09 35	1366 0	88	631 7	1295.8	95.9	1071.5	82.3	1054.8	82.9	648.4	128	
19-Apr 09 36	1355 1	88	633 0	1289.3	95.9	1070.1	82.3	1054.4	82.9	648.7	128	
19-Apr 09 37	1355 3	88	633 7	1309.9	96.0	1067.1	82.3	1054.6	83.0	648.5	128	
19-Apr 09 38	1366 0	88	635 0	1307 6	96.1	1070.4	82.4	1055.6	83.0	644.9	128	
19-Apr 09 39	1368 3	88	636 1	1305.3	96.2	1066.6	82.3	1055.7	83.1	651.4	128	
19-Apr 09 40	1364 8	88	637 0	1275 8	96.2	1067.0	82.3	1055.4	83.2	645.6	128	
19-Apr 09 41	1359 3	88	636 5	1298 5	96.3	1069.6	82.4	1055.6	84.6	646.4	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Vinor

HES SUPERVISOR : Dylan Richards

DATE & TIME (dd mmmmm bh mm)	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 09:42	1359.9	88	638.5	1296.2	96.3	1071.2	82.4	1055.3	85.4	642.7	128	
19-Apr 09:43	1356.8	88	638.8	1279.6	96.3	1069.3	82.4	1056.1	84.1	645.5	128	
19-Apr 09:44	1357.0	88	640.2	1273.9	96.2	1071.5	82.5	1056.4	83.9	648.3	128	
19-Apr 09:45	1366.2	88	640.9	1306.9	96.2	1074.3	82.3	1056.4	83.9	646.4	128	
19-Apr 09:46	1355.3	88	641.6	1310.5	96.1	1067.3	82.4	1056.7	84.0	652.8	128	
19-Apr 09:47	1357.8	88	642.3	1322.1	96.1	1073.4	82.4	1056.5	84.0	652.2	128	
19-Apr 09:48	1372.9	88	643.3	1281.9	96.0	1073.3	82.5	1056.6	84.1	650.9	128	
19-Apr 09:49	1368.1	88	644.7	1290.1	96.1	1072.0	82.5	1056.7	84.0	647.8	128	
19-Apr 09:50	1358.2	88	644.3	1314.9	96.1	1070.4	82.5	1057.5	84.0	648.3	128	
19-Apr 09:51	1370.0	88	645.5	1289.0	96.1	1073.1	82.6	1058.0	84.2	648.6	128	
19-Apr 09:52	1368.1	88	645.4	1294.1	96.2	1072.3	82.5	1058.0	84.2	652.5	128	
19-Apr 09:53	1359.9	88	646.9	1306.1	96.2	1069.4	82.5	1057.8	84.0	649.7	128	
19-Apr 09:54	1362.9	88	647.6	1291.4	96.3	1071.6	82.5	1058.2	84.1	650.7	128	
19-Apr 09:55	1372.3	88	647.5	1291.0	96.3	1068.4	82.5	1057.8	84.2	650.8	128	
19-Apr 09:56	1372.7	88	648.8	1282.1	96.4	1073.4	82.5	1058.6	84.3	647.2	128	
19-Apr 09:57	1360.3	88	651.3	1292.0	96.4	1073.4	82.5	1058.7	84.4	652.1	128	
19-Apr 09:58	1363.9	88	650.7	1307.2	96.5	1076.9	82.5	1058.3	84.3	649.5	128	

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HARTBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELL HEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64lbs)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64lbs)	
19-Apr 09 59	1364.5	88	650.7	1304.0	96.6	1075.9	82.5	1058.8	84.4	648.7	128	
19-Apr 10 00	1357.6	88	652.2	1297.3	96.6	1069.4	82.5	1059.1	84.4	650.6	128	
19-Apr 10 01	1370.8	88	651.5	1274.5	96.7	1076.4	82.5	1059.0	84.5	649.0	128	
19-Apr 10 02	1361.4	88	654.1	1280.0	96.7	1073.7	82.6	1059.3	84.5	650.6	128	
19-Apr 10 03	1360.7	88	654.1	1290.7	96.8	1073.6	82.5	1059.6	84.5	649.2	128	
19-Apr 10 04	1361.8	88	654.9	1314.1	96.8	1074.0	82.6	1059.8	84.5	650.7	128	
19-Apr 10 05	1369.4	88	655.5	1297.0	96.8	1071.3	82.5	1059.6	84.5	651.0	128	
19-Apr 10 06	1361.0	88	656.0	1285.3	96.9	1073.3	82.6	1059.4	84.5	650.4	128	
19-Apr 10 07	1370.4	88	657.2	1304.4	96.8	1070.4	82.6	1059.9	84.6	646.9	128	
19-Apr 10 08	1362.2	88	657.5	1319.2	96.8	1071.6	82.6	1059.9	84.7	650.8	128	
19-Apr 10 09	1364.3	88	657.0	1312.0	96.8	1076.3	82.6	1060.1	84.6	651.6	128	
19-Apr 10 10	1370.9	88	658.4	1311.0	96.8	1077.5	82.5	1061.2	84.6	654.8	128	908189
19-Apr 10 11	1364.1	88	659.6	1313.1	96.8	1075.7	82.6	1060.3	84.7	652.2	128	240
19-Apr 10 12	1370.0	88	659.3	1290.5	96.8	1077.0	82.5	1061.0	84.8	648.8	128	
19-Apr 10 13	1377.6	88	660.3	1275.6	96.8	1074.5	82.6	1059.9	84.8	651.4	128	
19-Apr 10 14	1364.1	88	660.7	1289.1	96.8	1069.7	82.6	1060.7	84.8	651.0	128	
19-Apr 10 15	1365.0	88	661.6	1310.7	96.7	1079.9	82.7	1060.9	84.9	648.8	128	



HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME (dd-mm-yy hh:mm)	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 10 16	1367.3	88	661.9	1313.1	96.7	1075.6	82.6	1060.6	84.8	651.6	128	
19-Apr 10 17	1378.4	88	663.0	1293.9	96.7	1075.2	82.7	1061.0	84.9	648.5	128	
19-Apr 10 18	1370.0	88	663.1	1292.6	96.6	1073.3	82.7	1060.7	85.0	653.6	128	
19-Apr 10 19	1371.1	88	663.4	1297.3	96.6	1073.0	82.7	1060.7	85.0	647.4	128	
19-Apr 10 20	1367.9	88	664.1	1295.4	96.7	1078.6	82.7	1061.3	85.0	652.9	128	
19-Apr 10 21	1376.5	88	664.8	1305.1	96.7	1078.2	82.8	1061.7	85.0	650.3	128	
19-Apr 10 22	1372.9	88	664.7	1289.9	96.7	1078.0	82.8	1061.4	85.0	656.0	128	
19-Apr 10 23	1377.4	88	665.1	1283.4	96.7	1073.6	82.8	1061.6	85.1	655.6	128	
19-Apr 10 24	1369.4	88	666.0	1304.2	96.6	1073.8	82.9	1061.8	85.1	653.7	128	
19-Apr 10 25	1371.1	88	666.4	1296.6	96.5	1071.0	82.9	1061.3	85.1	650.6	128	
19-Apr 10 26	1375.9	88	667.0	1284.8	96.5	1073.4	82.9	1060.2	85.1	651.3	128	
19-Apr 10 27	1380.3	88	667.6	1300.6	96.4	1072.2	83.0	1060.2	85.1	652.5	128	
19-Apr 10 28	1374.0	88	668.4	1285.5	96.3	1072.3	83.0	1059.6	85.2	653.4	128	
19-Apr 10 29	1371.1	88	668.3	1295.0	96.3	1074.0	83.0	1060.1	85.2	650.3	128	
19-Apr 10 30	1379.0	88	668.6	1293.7	96.3	1073.3	83.0	1059.6	85.2	650.1	128	
19-Apr 10 31	1367.7	88	668.9	1298.1	96.1	1075.6	83.0	1059.0	85.1	658.0	128	
19-Apr 10 32	1373.6	88	670.0	1297.0	96.1	1074.4	83.1	1059.5	85.2	651.7	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THIP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64ths)	
19-Apr 10 33	1374.6	88	669.7	1307.8	96.1	1076.2	83.1	1060.0	85.2	653.0	128	
19-Apr 10 34	1366.6	88	670.1	1309.0	96.0	1074.1	83.2	1060.0	85.5	660.1	128	
19-Apr 10 35	1370.2	88	670.8	1308.0	96.1	1070.1	83.2	1060.3	85.3	654.3	128	
19-Apr 10 36	1372.9	88	669.5	1302.1	96.1	1077.6	83.2	1060.1	85.4	653.7	128	
19-Apr 10 37	1370.6	88	671.7	1298.3	96.1	1077.6	83.2	1059.9	85.3	654.5	128	
19-Apr 10 38	1372.9	88	672.3	1295.2	96.2	1073.6	83.3	1060.9	85.4	653.5	128	
19-Apr 10 39	1364.8	88	672.5	1301.5	96.2	1073.1	83.3	1060.0	85.5	654.5	128	
19-Apr 10 40	1368.3	88	672.9	1316.6	96.2	1076.0	83.4	1060.2	85.5	652.0	128	
19-Apr 10 41	1361.8	88	674.3	1316.0	96.3	1068.7	83.4	1060.1	85.5	651.2	128	
19-Apr 10 42	1370.0	88	673.9	1308.2	96.4	1075.0	83.5	1060.6	85.5	658.1	128	
19-Apr 10 43	1373.0	88	674.3	1309.9	96.4	1073.4	83.5	1060.9	85.5	661.3	128	
19-Apr 10 44	1365.6	88	674.6	1317.1	96.5	1076.2	83.6	1060.5	85.6	653.3	128	908189
19-Apr 10 45	1367.3	88	674.7	1316.8	96.6	1072.7	83.7	1060.8	85.6	654.4	128	248
19-Apr 10 46	1370.4	88	675.7	1320.6	96.8	1078.6	83.8	1060.2	85.7	657.9	128	
19-Apr 10 47	1372.9	88	675.9	1294.7	96.8	1070.1	83.9	1061.1	85.6	651.1	128	
19-Apr 10 48	1364.8	88	675.4	1314.3	97.0	1075.2	84.0	1060.8	85.6	651.3	128	
19-Apr 10 49	1368.7	88	676.4	1290.9	97.1	1073.8	84.0	1060.8	85.6	652.0	128	



HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB.
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64lbs)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64lbs)	
19-Apr 10 50	1377.2	88	677.2	1289.5	97.2	1073.8	84.0	1060.9	85.6	653.9	128	
19-Apr 10 51	1377.0	88	677.6	1294.3	97.2	1076.2	84.1	1061.6	85.8	657.8	128	
19-Apr 10 52	1368.1	88	677.6	1303.8	97.2	1077.0	84.2	1061.6	85.7	652.4	128	
19-Apr 10 53	1379.3	88	678.5	1283.2	97.2	1073.7	84.2	1061.3	85.7	655.5	128	
19-Apr 10 54	1372.7	88	678.8	1292.4	97.2	1074.7	84.3	1061.1	85.7	654.1	128	
19-Apr 10 55	1373.8	88	679.4	1272.6	97.1	1074.3	84.3	1060.2	85.7	654.5	128	
19-Apr 10 56	1375.7	88	678.8	1309.0	97.2	1076.3	84.4	1061.5	85.8	655.1	128	
19-Apr 10 57	1375.1	88	679.7	1306.5	97.1	1076.0	84.4	1061.5	85.8	656.5	128	
19-Apr 10 58	1369.2	88	679.7	1293.0	97.1	1078.1	84.4	1060.5	85.7	657.2	128	
19-Apr 10 59	1372.3	88	679.9	1303.0	97.0	1069.7	84.5	1061.6	85.7	651.9	128	
19-Apr 11 00	1362.9	88	680.5	1329.0	96.8	1079.3	84.5	1061.1	85.8	659.1	128	
19-Apr 11 01	1375.5	88	679.9	1304.6	96.8	1079.5	84.5	1061.5	85.8	659.4	128	
19-Apr 11 02	1373.8	88	680.6	1295.8	96.8	1074.8	84.5	1060.7	85.9	655.2	128	
19-Apr 11 03	1369.4	88	681.6	1316.8	96.8	1078.8	84.5	1061.1	85.8	657.6	128	
19-Apr 11 04	1366.8	88	682.0	1320.4	96.7	1072.5	84.5	1061.6	85.8	653.1	128	
19-Apr 11 05	1369.2	88	681.9	1288.0	96.7	1071.9	84.4	1062.0	85.8	658.3	128	
19-Apr 11 06	1375.3	88	682.6	1307.4	96.7	1078.1	84.5	1062.5	85.9	657.5	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THIP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64ths)	
19-Apr 11 07	1377.4	88	682.5	1315.0	96.8	1076.8	84.5	1061.4	85.9	659.1	128	
19-Apr 11 08	1372.3	88	683.2	1317.1	96.8	1077.1	84.6	1062.3	85.9	652.4	128	
19-Apr 11 09	1371.9	88	683.7	1318.3	97.0	1075.6	84.6	1061.5	85.9	655.5	128	
19-Apr 11 10	1366.0	88	684.7	1327.2	97.1	1074.7	84.7	1062.4	86.0	656.7	128	
19-Apr 11 11	1371.5	88	684.0	1314.7	97.2	1078.2	84.9	1062.7	86.1	654.2	128	
19-Apr 11 12	1372.5	88	684.6	1303.8	97.3	1075.1	85.0	1062.0	86.1	656.9	128	
19-Apr 11 13	1366.2	88	685.0	1314.3	97.3	1071.8	85.1	1062.1	86.1	653.3	128	
19-Apr 11 14	1375.7	88	685.3	1309.9	97.2	1075.4	85.2	1062.6	86.1	655.6	128	
19-Apr 11 15	1367.5	88	685.7	1317.0	97.2	1072.4	85.2	1062.0	86.0	654.5	128	
19-Apr 11 16	1366.2	88	685.1	1325.7	97.2	1073.4	85.3	1061.3	86.1	655.6	128	
19-Apr 11 17	1375.1	88	685.9	1301.5	97.2	1077.1	85.3	1062.7	86.2	655.1	128	
19-Apr 11 18	1375.5	88	686.4	1281.7	97.1	1075.9	85.2	1062.2	86.1	657.4	128	
19-Apr 11 19	1372.3	88	686.0	1280.6	97.1	1076.9	85.3	1061.9	86.1	655.4	128	
19-Apr 11 20	1375.5	88	686.8	1319.6	97.0	1076.8	85.2	1062.7	86.0	655.6	128	
19-Apr 11 21	1379.1	88	686.1	1288.0	97.0	1074.5	85.1	1062.5	86.1	656.5	128	
19-Apr 11 22	1368.3	88	686.8	1321.0	96.9	1079.3	85.1	1062.2	86.2	655.4	128	
19-Apr 11	1365.0	88	687.3	1311.2	96.9	1069.6	85.0	1056.3	86.3	670.7	128	

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WELL TEST PRESSURE SUMMARY SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME <small>(dd mmm yyyy hh:mm)</small>	WELL HEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 TRIP <small>(psig)</small>	Choke Size <small>(64ths)</small>	Annulus Pressure <small>(psig)</small>	Upstream Choke Pressure <small>(psig)</small>	Upstream Choke Temperature <small>(°F)</small>	Downstream Choke Pressure <small>(psig)</small>	Downstream Choke Temperature <small>(°F)</small>	Separator Pressure <small>(psig)</small>	Separator Temp <small>(°F)</small>	Gas Flare Line Pressure <small>(psig)</small>		Flare Line Choke Size <small>(64ths)</small>
19-Apr 11 24	1368 7	88	687 2	1304.0	96.9	1061.6	85.0	1046.1	85.7	664.0	128	
19-Apr 11 25	1365 0	88	687 7	1316 2	97.0	1063.7	85.0	1045.6	85.6	666.5	128	Dumped condensate from sep - too small to measure
19-Apr 11 26	1374 8	88	688 1	1280 2	97.1	1060.6	84.9	1045.5	85.7	664.7	128	
19-Apr 11 27	1370 6	88	687 7	1292 2	97.2	1058.9	85.0	1046.2	85.7	663.0	128	
19-Apr 11 28	1371 3	88	688 1	1322 3	97.3	1058.9	84.9	1046.4	85.7	663.0	128	
19-Apr 11 29	1369 2	88	688 8	1301 5	97.4	1058.6	84.9	1046.5	85.7	661.7	128	
19-Apr 11 30	1372 5	88	689 2	1283 2	97.4	1057.8	84.9	1046.9	85.7	662.3	128	Commenced taking 1st HP gas sample from sep
19-Apr 11 31	1373 6	88	689 4	1294 5	97.4	1064.4	85.0	1046.5	85.7	665.1	128	
19-Apr 11 32	1373 4	88	689 4	1324 6	97.5	1057.3	84.9	1045.8	85.8	662.5	128	
19-Apr 11 33	1362 9	88	689 0	1325 7	97.6	1059.3	85.0	1046.9	85.7	664.3	128	
19-Apr 11 34	1375 1	88	690 4	1276 6	97.5	1063.5	85.0	1046.4	85.7	667.5	128	
19-Apr 11 35	1379 3	88	690 3	1277 7	97.5	1063.9	84.9	1046.9	85.7	669.0	128	
19-Apr 11 36	1366 4	88	690 2	1299 8	97.4	1062.8	85.0	1047.0	85.8	661.0	128	
19-Apr 11 37	1362 9	88	690 6	1304 0	97.4	1064.2	84.9	1046.9	85.8	661.2	128	
19-Apr 11 38	1370 4	88	690 8	1279 4	97.4	1057.1	84.8	1047.6	86.3	661.3	128	
19-Apr 11 39	1367 9	88	691 3	1319 0	97.4	1060.8	84.8	1046.8	85.8	662.0	128	
19-Apr 11 40	1364 1	88	691 9	1329 3	97.4	1060.9	84.8	1046.6	85.7	665.1	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

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DATE & TIME	WELLHEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64ths)	
19-Apr 11 41	1370.2	88	691.8	1316.0	97.5	1063.0	84.8	1047.3	85.8	667.0	128	
19-Apr 11 42	1374.6	88	691.7	1280.8	97.6	1061.3	84.8	1047.2	85.8	664.0	128	
19-Apr 11 43	1368.9	88	691.6	1323.6	97.6	1061.2	84.8	1047.5	85.7	664.6	128	
19-Apr 11 44	1371.3	88	692.1	1278.7	97.6	1061.1	84.8	1046.7	85.8	662.3	128	
19-Apr 11 45	1369.2	88	692.4	1301.9	97.6	1059.8	84.8	1047.7	85.9	659.2	128	
19-Apr 11 46	1368.7	88	692.5	1302.7	97.7	1062.3	84.8	1047.7	85.8	665.4	128	
19-Apr 11 47	1371.3	88	693.2	1292.8	97.6	1064.8	84.8	1049.9	85.8	673.2	128	
19-Apr 11 48	1378.2	88	692.6	1286.1	97.7	1062.0	84.8	1047.7	85.9	667.7	128	
19-Apr 11 49	1375.9	88	693.9	1298.9	97.7	1059.7	84.8	1048.8	85.8	672.7	128	
19-Apr 11 50	1366.8	88	693.0	1326.9	97.6	1065.7	84.8	1048.5	85.8	675.4	128	
19-Apr 11 51	1385.1	88	693.9	1285.9	97.7	1063.2	84.9	1049.1	85.8	665.6	128	
19-Apr 11 52	1374.2	88	693.2	1293.5	97.6	1065.2	84.9	1048.4	85.9	665.4	128	
19-Apr 11 53	1366.6	88	694.2	1305.0	97.7	1059.0	84.8	1048.3	85.9	665.9	128	
19-Apr 11 54	1369.6	88	694.0	1296.4	97.7	1062.4	84.9	1049.6	85.9	666.2	128	
19-Apr 11 55	1375.7	88	693.8	1273.0	97.7	1064.7	84.9	1048.9	85.9	664.5	128	
19-Apr 11 56	1369.8	88	694.9	1304.0	97.7	1061.1	84.8	1048.4	85.9	667.5	128	
19-Apr 11 57	1371.0	88	695.2	1293.7	97.6	1063.1	84.9	1048.7	85.9	665.0	128	



HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME (dd-mm-yy hh:mm)	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 11:58	1373.0	88	695.4	1295.8	97.6	1063.0	84.9	1048.4	86.0	663.3	128	Finished taking 1st HP gas sample from separator
19-Apr 11:59	1370.6	88	695.8	1315.8	97.6	1062.6	84.8	1048.6	85.9	663.8	128	
19-Apr 12:00	1376.5	88	695.5	1322.1	97.6	1064.8	84.8	1048.7	85.8	661.2	128	
19-Apr 12:01	1367.1	88	695.2	1316.6	97.6	1062.2	84.8	1048.6	85.8	663.8	128	
19-Apr 12:02	1378.2	88	696.0	1282.7	97.5	1064.7	84.8	1047.8	85.9	666.6	128	
19-Apr 12:03	1378.8	88	696.6	1300.8	97.5	1061.9	84.8	1048.6	85.9	663.5	128	
19-Apr 12:04	1374.6	88	697.2	1323.0	97.5	1063.4	84.8	1048.0	86.0	665.0	128	
19-Apr 12:05	1371.1	88	696.6	1282.7	97.5	1060.8	84.8	1048.3	86.0	668.2	128	
19-Apr 12:06	1363.0	88	696.2	1290.7	97.5	1062.4	84.8	1048.5	85.9	664.3	128	
19-Apr 12:07	1370.6	88	697.3	1291.2	97.5	1064.6	84.8	1048.8	86.0	667.6	128	
19-Apr 12:08	1378.0	88	695.7	1314.9	97.5	1064.3	84.8	1048.2	86.1	667.3	128	
19-Apr 12:09	1377.4	88	697.3	1293.9	97.7	1062.3	84.9	1048.5	86.2	665.6	128	
19-Apr 12:10	1378.2	88	697.3	1305.9	97.8	1060.4	85.0	1049.4	86.2	669.8	128	
19-Apr 12:11	1368.3	88	698.3	1316.0	98.0	1063.8	85.1	1050.1	86.1	667.2	128	
19-Apr 12:12	1368.3	88	698.0	1296.4	98.1	1063.9	85.3	1049.1	86.0	664.0	128	
19-Apr 12:13	1373.4	88	697.9	1290.5	98.1	1059.5	85.4	1049.1	86.1	661.0	128	
19-Apr 12:14	1379.7	88	698.5	1279.8	98.3	1059.8	85.6	1049.3	86.2	664.1	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE & TIME <small>(dd mmm yyyy hh:mm)</small>	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP <small>(psig)</small>	Choke Size <small>(64lbs)</small>	Annulus Pressure <small>(psig)</small>	Upstream Choke Pressure <small>(psig)</small>	Upstream Choke Temperature <small>(°F)</small>	Downstream Choke Pressure <small>(psig)</small>	Downstream Choke Temperature <small>(°F)</small>	Separator Pressure <small>(psig)</small>	Separator Temp <small>(°F)</small>	Gas Flare Line Pressure <small>(psig)</small>		Flare Line Choke Size <small>(64lbs)</small>
19-Apr 12 15	1372.9	88	697.7	1301.7	98.4	1064.5	85.7	1048.9	86.2	662.4	128	Commenced taking 2nd HIP gas sample from sep
19-Apr 12 16	1373.4	88	698.8	1293.5	98.4	1059.7	85.9	1048.4	86.2	662.9	128	
19-Apr 12 17	1374.4	88	698.5	1312.0	98.5	1062.8	86.0	1048.8	86.2	662.6	128	
19-Apr 12 18	1372.9	88	699.3	1284.0	98.5	1062.2	86.1	1048.9	86.2	666.7	128	
19-Apr 12 19	1375.7	88	699.5	1280.8	98.6	1061.1	86.2	1048.9	86.3	666.1	128	
19-Apr 12 20	1379.5	88	699.1	1281.9	98.6	1063.5	86.3	1049.1	86.4	666.9	128	
19-Apr 12 21	1374.8	88	699.0	1297.7	98.8	1068.4	86.4	1050.2	86.4	679.7	128	
19-Apr 12 22	1366.6	88	699.4	1313.9	98.8	1066.6	86.5	1050.9	86.3	675.8	128	
19-Apr 12 23	1371.9	88	700.7	1308.4	98.9	1066.7	86.5	1051.5	86.3	686.2	128	
19-Apr 12 24	1368.3	88	700.1	1312.4	98.9	1069.6	86.5	1049.9	86.4	667.6	128	
19-Apr 12 25	1366.6	88	700.4	1303.6	99.0	1060.6	86.5	1049.5	86.5	664.4	128	
19-Apr 12 26	1372.1	88	700.6	1290.5	98.9	1064.2	86.6	1049.1	86.4	663.9	128	
19-Apr 12 27	1378.0	88	700.8	1286.5	99.0	1066.3	86.5	1055.5	86.6	661.4	128	
19-Apr 12 28	1370.4	88	701.3	1297.7	99.0	1066.8	86.5	1056.5	86.7	657.5	128	
19-Apr 12 29	1380.1	88	701.6	1292.8	99.0	1075.1	86.6	1056.4	86.7	661.8	128	
19-Apr 12 30	1377.8	88	701.3	1304.4	99.1	1066.7	86.7	1056.7	86.9	661.8	128	
19-Apr 12 31	1374.0	88	701.7	1324.0	99.1	1068.8	86.8	1056.7	86.8	660.5	128	

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Vinor
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 12 32	1374.6	88	701.8	1296.0	99.1	1069.5	86.9	1056.8	86.8	660.7	128	
19-Apr 12 33	1381.6	88	702.5	1283.6	99.0	1075.3	86.8	1056.1	86.8	658.5	128	
19-Apr 12 34	1377.8	88	702.6	1294.7	99.0	1071.6	86.9	1056.6	86.8	660.6	128	
19-Apr 12 35	1376.9	88	702.5	1301.3	98.9	1072.5	86.9	1056.2	86.9	662.8	128	
19-Apr 12 36	1376.3	88	702.1	1281.1	98.8	1072.7	86.9	1056.4	86.9	659.6	128	
19-Apr 12 37	1377.0	88	702.6	1313.3	98.7	1070.1	86.7	1056.0	86.8	661.2	128	
19-Apr 12 38	1371.5	88	703.3	1312.0	98.6	1070.9	86.7	1056.7	86.8	660.0	128	
19-Apr 12 39	1370.9	88	702.8	1323.0	98.5	1073.0	86.6	1056.7	86.8	664.1	128	
19-Apr 12 40	1372.5	88	703.5	1330.7	98.5	1067.7	86.5	1057.1	86.8	662.2	128	
19-Apr 12 41	1373.2	88	703.7	1328.2	98.4	1064.8	86.6	1056.5	86.9	660.8	128	
19-Apr 12 42	1371.9	88	703.7	1312.8	98.4	1069.5	86.5	1056.4	86.8	661.6	128	
19-Apr 12 43	1371.7	88	703.5	1321.9	98.5	1070.1	86.5	1056.5	86.8	660.4	128	
19-Apr 12 44	1370.8	88	703.9	1305.7	98.5	1069.6	86.4	1057.8	86.8	661.7	128	
19-Apr 12 45	1371.3	88	704.3	1295.0	98.4	1071.1	86.4	1056.5	86.8	663.3	128	Finished taking 2nd HP gas sample from separator
19-Apr 12 46	1378.0	88	704.5	1312.4	98.4	1068.7	86.4	1057.0	86.9	665.4	128	
19-Apr 12 47	1378.0	88	704.1	1301.3	98.4	1068.0	86.4	1056.5	86.8	658.5	128	
19-Apr 12 48	1369.8	88	704.5	1316.8	98.4	1072.9	86.4	1061.3	86.9	686.8	128	

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HARTBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flinback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD			UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64ths)	Annilus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64ths)	
19-Apr 12 49	1376.3	88	704.3	1295.0	98.4	1070.9	86.3	1056.8	86.8	668.5	128	
19-Apr 12 50	1381.6	88	705.0	1303.2	98.4	1069.6	86.3	1056.9	86.8	664.7	128	
19-Apr 12 51	1378.6	88	704.8	1298.7	98.4	1072.0	86.3	1057.2	86.9	661.6	128	
19-Apr 12 52	1384.1	88	704.9	1282.9	98.5	1070.4	86.3	1056.9	86.9	659.7	128	
19-Apr 12 53	1379.3	88	705.4	1284.8	98.5	1074.0	86.3	1056.7	86.9	659.2	128	
19-Apr 12 54	1378.8	88	705.4	1289.3	98.6	1073.0	86.2	1056.7	86.8	660.0	128	
19-Apr 12 55	1382.4	88	705.4	1289.3	98.6	1075.5	86.3	1056.8	86.9	663.2	128	
19-Apr 12 56	1370.6	88	705.3	1316.2	98.5	1069.6	86.3	1056.7	86.8	665.7	128	
19-Apr 12 57	1379.0	88	706.1	1303.2	98.6	1074.1	86.3	1056.6	87.0	662.0	128	
19-Apr 12 58	1380.7	88	705.3	1302.3	98.6	1071.9	86.3	1056.5	86.9	664.2	128	
19-Apr 12 59	1374.6	88	705.9	1285.5	98.7	1070.3	86.3	1056.5	86.9	663.1	128	
19-Apr 13 00	1380.3	88	706.2	1302.5	98.7	1066.2	86.3	1056.7	86.9	660.0	128	Shut well in at choke manifold
19-Apr 13 01	1374.0		706.0	1314.3	98.7	1070.0	86.3	1056.4	87.0	665.7		
19-Apr 13 02	1502.1		713.3	1507.0	98.8	892.9	86.3	891.7	83.9	2.5		
19-Apr 13 03	1502.7		713.4	1508.8	98.8	870.4	86.2	869.2	83.2	7.5		
19-Apr 13 04	1500.8		710.7	1509.7	98.7	853.6	86.2	852.6	83.2	1.2		
19-Apr 13 05	1499.4		707.5	1509.0	98.6	796.4	86.0	795.5	82.5			

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)		Flare Line Choke Size (64ths)
19-Apr 13 06	1500 2		704 2	1507 6	98.3	806.2	85.9	805.2	82.3			
19-Apr 13 07	1500 6		700 7	1507 4	98.0	806.7	85.8	805.6	82.1			
19-Apr 13 08	1499 6		697 5	1506.3	97.5	760.4	85.7	759.5	81.7	1.9		
19-Apr 13 09	1500 8		693 2	1507.8	97.1	688.4	85.5	687.6	80.6			
19-Apr 13 10	1499 4		690 6	1507.0	96.6	702.7	85.3	702.2	80.2			
19-Apr 13 11	1500 0		686 6	1507.0	96.1	230.6	85.0	230.5	59.0	102.0		
19-Apr 13 12	1500 2		683 6	1507.4	95.7	5.2	84.7	5.3	34.2	2.6		
19-Apr 13 13	1500 4		680.7	1506.9	95.3	4.9	84.4	4.2	41.7			
19-Apr 13 14	1499 4		677 3	1506 9	94 8	5.3	84.3	5.1	45.1			
19-Apr 13 15	1499 4		674 6	1507.0	94.3	5.7	84.0	5.4	46.8			R.I.H with slick line to set XXN plug in tubing
19-Apr 13 16	1499 4		672.1	1506.1	93.9	6.1	83.7	5.6	48.0			
19-Apr 13 17	1499 6		668 5	1506.7	93.5	6.0	83.5	5.8	49.0			
19-Apr 13 18	1499 4		665 7	1506.1	93.1	6.1	83.3	5.9	50.0			
19-Apr 13 19	1498 9		663 1	1507.2	92.6	7.0	83.1	6.1	50.9			
19-Apr 13 20	1498 7		659 5	1506.7	92.2	6.1	82.9	6.0	51.8			
19-Apr 13 21	1499 0		656 9	1506.9	91.8	6.4	82.7	6.3	52.6			
19-Apr 13 22	1498 3		654 8	1506.1	91.3	7.0	82.4	6.5	53.4			

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

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DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	Flare Line Choke Size (64ths)	
19-Apr 13 23	1499 2	651 7	1506.5	90.8	7.0	82.1	6.6	54.3			
19-Apr 13 24	1497 7	648 3	1507.2	90.5	7.3	82.0	6.8	55.0			
19-Apr 13 25	1498 5	645 5	1505.7	90.1	7.7	81.7	6.7	55.8			
19-Apr 13 26	1497 9	644 1	1505.9	89.7	7.5	81.5	7.1	56.4			
19-Apr 13 27	1500 4	641 2	1505.1	89.3	7.2	81.2	7.4	57.1			
19-Apr 13 28	1500 0	638 5	1505.5	89.0	8.1	81.0	7.5	57.7			
19-Apr 13 29	1499 8	636 3	1507.6	88.6	7.8	80.8	7.3	58.3			
19-Apr 13 30	1499 2	633 7	1507.4	88.4	7.9	80.6	7.5	58.6			
19-Apr 13 31	1498 3	631 5	1506.3	88.1	7.9	80.4	7.8	59.1			
19-Apr 13 32	1498 3	628 6	1504.8	87.7	8.8	80.2	7.8	59.5			
19-Apr 13 33	1498 3	626 5	1505.9	87.4	8.7	80.1	8.2	59.9			
19-Apr 13 34	1498 3	624 3	1506.3	87.1	8.5	79.8	8.1	60.2			
19-Apr 13 35	1498 7	621 8	1506.1	86.8	8.4	79.6	8.4	60.5			
19-Apr 13 36	1497 5	619 7	1505.5	86.4	8.9	79.5	8.3	60.8			
19-Apr 13 37	1497 7	617 4	1504.4	86.1	8.7	79.3	8.5	61.1			
19-Apr 13 38	1497 9	615 1	1504.0	85.6	9.1	79.0	8.6	61.3			
19-Apr 13 39	1499 0	613 0	1503.8	85.3	9.5	78.8	8.5	61.5			



HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME (dd mmm hh:mm)	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	
19-Apr 13:40	1498.9		611.0	1504.0	84.9	9.6	78.7	8.8	61.7		
19-Apr 13:41	1498.1		608.7	1503.6	84.6	9.4	78.4	8.8	61.8		
19-Apr 13:42	1495.6		606.6	1504.0	84.3	9.9	78.3	9.1	62.0		
19-Apr 13:43	1497.0		604.0	1504.0	84.0	9.4	78.1	9.0	62.1		
19-Apr 13:44	1495.6		602.5	1503.2	83.6	9.4	77.9	9.1	62.2		
19-Apr 13:45	1496.4		601.1	1501.7	83.3	9.7	77.7	9.2	62.4		
19-Apr 13:46	1496.4		597.7	1501.9	83.0	9.7	77.5	9.3	62.5		
19-Apr 13:47	1495.8		595.8	1501.7	82.7	9.5	77.3	9.1	62.6		
19-Apr 13:48	1494.5		594.2	1501.3	82.3	1.1	77.1	0.7	62.6		
19-Apr 13:49	1493.1		593.6	1500.4	82.1	0.4	76.9	1.1	62.5		O.O.H - checked tool - OK
19-Apr 13:50			591.0		81.6		76.1	1.5	62.5		
19-Apr 13:51			587.5		79.8						
19-Apr 13:52			585.7		78.6						
19-Apr 13:53			583.1		77.9						
19-Apr 13:54			582.8		77.5						
19-Apr 13:55			580.8		77.1						
19-Apr 13:56			577.1		76.8						

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

BASE: Australia

CUSTOMER : Western Underground Gas Storage

WELL NAME : Iona - 3

DATE : 19-April 06:35 - 19-April 15:20

RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB

TEST No. : Production Flowback - 1

CUSTOMER REP. : Rob Viner

HES SUPERVISOR : Dylan Richards

DATE & TIME	WELL HEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64lbs)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	
19-Apr 14 14	993 6		464 5	986 3	84.2						
19-Apr 14 15	994 0		463 8	986 1	84.1						
19-Apr 14 16	993 1		463 3	986 7	83.9						
19-Apr 14 17	993 2		462 0	986 1	83.8						
19-Apr 14 18	993 6		461 5	985 1	83.6						
19-Apr 14 19	992 3		460 2	987 0	83.4						
19-Apr 14 20	436 3		458 9	433 3	83.3						
19-Apr 14 21			457 7		82.5						
19-Apr 14 22			456 8		81.9						
19-Apr 14 23			455 3		81.4						
19-Apr 14 24			455 4		81.1						
19-Apr 14 25			453 7		80.9						
19-Apr 14 26			452 9		80.6						
19-Apr 14 27			451 3		80.3						
19-Apr 14 28			450 7		80.1						
19-Apr 14 29			448 9								
19-Apr 14 30			448 0								

Pressure test good - rigged down slick line

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HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

BASE: Australia

DATE & TIME <small>(dd-mm-yy hh:mm)</small>	WELL HEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS	
	Iona #3 THP <small>(psig)</small>	Choke Size <small>(64lins)</small>	Annulus Pressure <small>(psig)</small>	Upstream Choke Pressure <small>(psig)</small>	Upstream Choke Temperature <small>(°F)</small>	Downstream Choke Pressure <small>(psig)</small>	Downstream Choke Temperature <small>(°F)</small>	Separator Pressure <small>(psig)</small>	Separator Temp <small>(°F)</small>	Gas Flare Line Pressure <small>(psig)</small>		Flare Line Choke Size <small>(64lins)</small>
19-Apr 14 31			446.6									
19-Apr 14 32			445.9									
19-Apr 14 34			444.2									
19-Apr 14 35			442.6									
19-Apr 14 36			440.1									
19-Apr 14 37			438.9									
19-Apr 14 38			438.0									
19-Apr 14 39			437.0									
19-Apr 14 40			436.5									
19-Apr 14 41			452.0									
19-Apr 14 42			453.7									
19-Apr 14 43			443.8									
19-Apr 14 44			436.7									
19-Apr 14 45			434.2									
19-Apr 14 46			431.4									
19-Apr 14 47			430.6									
19-Apr 14 48			429.1									

908189 262



HALLIBURTON

WELL TEST PRESSURE SUMMARY SHEET

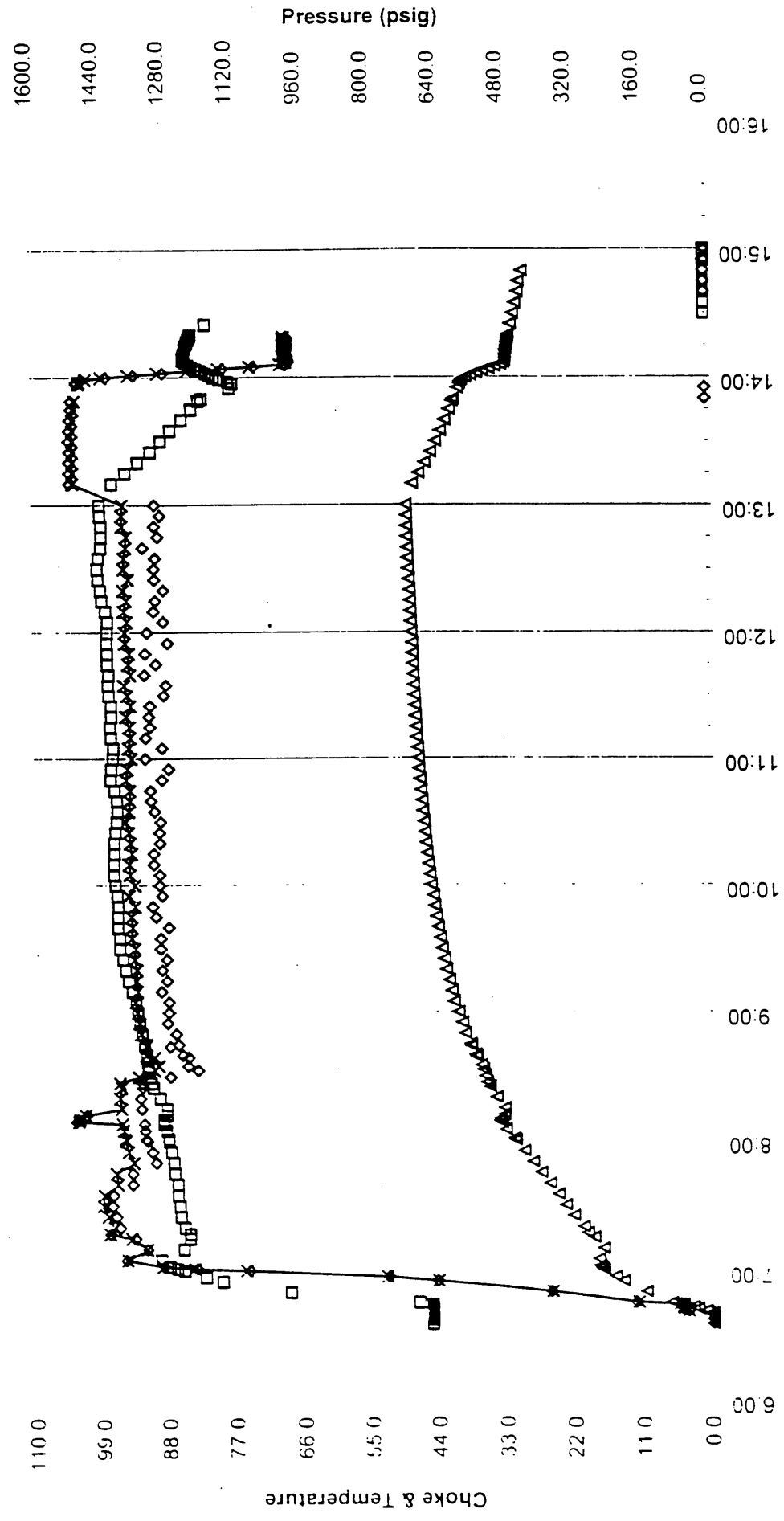
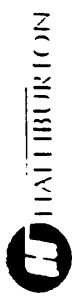
BASE: Australia

CUSTOMER : Western Underground Gas Storage
 WELL NAME : Iona - 3
 DATE : 19-April 06:35 - 19-April 15:20
 RIG : ODE #30

PERFORATION INTERVAL : 1454 - 1467 mKB
 TEST No. : Production Flowback - 1
 CUSTOMER REP. : Rob Viner
 HES SUPERVISOR : Dylan Richards

DATE & TIME	WELLHEAD		UPSTREAM		DOWNSTREAM		SEPARATOR		DOWNSTREAM GAS FLARE LINE		REMARKS
	Iona #3 THP (psig)	Choke Size (64ths)	Annulus Pressure (psig)	Upstream Choke Pressure (psig)	Upstream Choke Temperature (°F)	Downstream Choke Pressure (psig)	Downstream Choke Temperature (°F)	Separator Pressure (psig)	Separator Temp (°F)	Gas Flare Line Pressure (psig)	
19-Apr 14 49			427 4								
19-Apr 14 50			425 7								
19-Apr 14 51			425 4								
19-Apr 14 52			423 5								
19-Apr 14 53			423 0								
19-Apr 14 54											
19-Apr 14 55											
19-Apr 14 56											
19-Apr 14 57											
19-Apr 14 58											
19-Apr 14 59											
19-Apr 15 (10)											Set Back Pressure Valve in tubing hanger

Western Underground Gas Storage Iona - 3 Production Flowback - 1



Time

□ WHT ◇ WHP △ CSG —X— Iona 3 THP

Wellhead Plot

19-Apr-99

19-Apr-99

HALLIBURTON ENERGY SERVICES
 PRODUCTION TEST DETAIL REPORT
 SEQUENCE OF OPERATIONS

CUSTOMER : Western Underground Gas Storage
 TEST No. : Production Flowback - 1
 WELL : Iona - 3
 RIG NAME : O.D.E #30

DATE	TIME	OPERATIONS
14-Apr-99	18:00	D.Richards, G.Giancaspro, R.McPherson M.Hodge, S.Marcuccio & T.Malbi
14-Apr-99	18:00	arrived location from Melbourne airport
15-Apr-99	7:00	Arrived on location and prepared equipment for transporting to well site
15-Apr-99	10:30	Crane and HIAB truck arrived on location and commenced moving S.T.E/D.A.S
15-Apr-99	10:30	equipment to Iona #3 wellsite
15-Apr-99	14:30	Completed moving and spotting all equipment
15-Apr-99	15:00	Commenced rigging up S.T.E/D.A.S labs and equipment
15-Apr-99	16:00	Laid out 4" pipe work from separator to gas flare pit
15-Apr-99	18:00	Connected up pipe work to lease roadway
15-Apr-99	18:30	Secured equipment overnight
16-Apr-99	6:00	Arrived on location and continued rigging up S.T.E/D.A.S
17-Apr-99	14:00	Pressure tested pipework and separator to 1200 psi - OK
18-Apr-99	7:00	Commenced fitting wellhead to well
18-Apr-99	9:30	Crane arrived on location - rigged up to install Coflex hose from Xmas tree to choke
18-Apr-99	9:55	Picked up Coflex hose from basket
18-Apr-99	11:45	Pressure tested to adjustable choke in flare line - OK
18-Apr-99	12:00	Pressure tested across Xmas tree/Coflexip to choke manifold to 3000 psi
18-Apr-99	12:05	Test good - bled off pressure and closed Xmas tree kill valve
18-Apr-99	12:10	Reconnected gas flare line to choke
18-Apr-99	12:15	Rigged up slick line to open S.S.D
18-Apr-99	12:55	Lubricator rigged up on wellhead - Pressure tested same to 2000 psi - OK
18-Apr-99	13:06	R.I.H with shifting tool
18-Apr-99	13:25	Slick line tools @ S.S.D - jarred down to open S.S.D
18-Apr-99	13:40	S.S.D opened - P.O.O.H
18-Apr-99	13:45	Injected N ₂ @ choke manifold and checked for returns - OK
18-Apr-99	14:00	Slick line O.O.H
18-Apr-99	14:05	Function tested safety valve on Xmas tree
18-Apr-99	14:15	Commenced N ₂ displacement of tubing
18-Apr-99	14:20	R I H with wireline - 25 bbls
18-Apr-99	15:10	Wireline @ S.S.D - Closed S.S.D - OK
18-Apr-99	15:20	Pressure tested annulus to 1000 psi against S.S.D

HALLIBURTON ENERGY SERVICES

PRODUCTION TEST DETAIL REPORT
SEQUENCE OF OPERATIONS

CUSTOMER : Western Underground Gas Storage
 TEST No. : Production Flowback - 1
 WELL : Iona - 3
 RIG NAME : O.D.E #30

DATE	TIME	OPERATIONS
18-Apr-99	15:30	P.O.O.H with wireline
18-Apr-99	15:46	Depressured lubricator and laid out tools - checked pin - OK
18-Apr-99	15:47	Bled N2 to zero through choke
18-Apr-99	16:00	Installed TCP drop bar in lubricator - unable to perforate due to time
18-Apr-99	18:30	Secured well and monitored overnight
19-Apr-99	6:00	Arrived location and final checked equipment
19-Apr-99	6:30	Held safety meeting prior to perforating the well
19-Apr-99	6:37	Dropped TCP firing bar
19-Apr-99	6:40	Pressure increase at surface - indicating guns fired
19-Apr-99	6:43	Opened well to flare on 32/64" adjustable choke
19-Apr-99	6:44	Increased choke to 64/64" adjustable
19-Apr-99	6:45	Decreased choke to 32/64" adjustable
19-Apr-99	6:57	Increased choke to 40/64" adjustable
19-Apr-99	7:00	Commenced injecting Methanol at choke
19-Apr-99	7:01	Gas to surface
19-Apr-99	7:02	Unable to light gas flare - pilot alight
19-Apr-99	7:05	Gas Pilot confirmed alight
19-Apr-99	7:15	Increased choke to 48/64" adjustable CO2 = 6.0% H2S = 0 PPM
19-Apr-99	7:17	Rocked the choke
19-Apr-99	7:35	Increased choke to 56/64" adjustable
19-Apr-99	7:45	Increased choke to 64/64 adjustable CO2 = 6.0% H2S = 0 PPM
19-Apr-99	8:00	Diverted flow through separator
19-Apr-99	8:01	Leaking ball valve on separator - diverted flow back to flare
19-Apr-99	8:08	Shut well in at choke to repair leaking valve
19-Apr-99	8:09	Depressured separator through H2O line to flare pit
19-Apr-99	8:12	Opened well to flare and increased choke to 64/64" adjustable
19-Apr-99	8:15	Diverted flow through separator
19-Apr-99	8:25	Stopped injecting Methanol at choke
19-Apr-99	8:27	Increased choke to 72/64" adjustable
19-Apr-99	8:33	Increased choke to 80/64" adjustable
19-Apr-99	8:39	Changed to 88/64" positive choke

HALLIBURTON ENERGY SERVICES

PRODUCTION TEST DETAIL REPORT
SEQUENCE OF OPERATIONS

CUSTOMER : Western Underground Gas Storage
 TEST No. : Production Flowback - 1
 WELL : Iona - 3
 RIG NAME : O.D.E #30

DATE	TIME	OPERATIONS
19-Apr-99	8:44	Installed 3.750" orifice plate
19-Apr-99	8:45	Gas gravity = 0.678
19-Apr-99	8:50	CO2 = 6% H2S = 0 PPM
19-Apr-99	9:00	H2S = 0 PPM CO2 = 6.0%
19-Apr-99	9:20	H2S = 0 PPM CO2 = 6.0%
19-Apr-99	10:00	Gas gravity = 0.682
19-Apr-99	10:55	Oil gravity = 58.4°@60°F
19-Apr-99	11:00	Gas gravity = 0.684 CO2 = 6.0% H2S = 0 PPM
19-Apr-99	11:25	Dumped (manually) condensate from separator - too small to measure
19-Apr-99	11:30	Commenced taking 1st HP gas sample from separator
19-Apr-99	11:55	Gas gravity = 0.684 CO2 = 6.0%
19-Apr-99	12:00	Finished taking 1st HP gas sample from separator
19-Apr-99	12:15	Commenced taking 2nd HP gas sample from separator
19-Apr-99	12:45	Finished taking 2nd HP gas sample from separator
19-Apr-99	13:00	Shut well in at choke manifold
19-Apr-99	13:15	R.I.H with slick line to set XXXN plug in tubing
19-Apr-99	13:49	O.O.H - checked tool - OK
19-Apr-99	13:57	Stabbed lubricator on - bled down 500 psi above plug to check plug seal integrity
19-Apr-99	14:06	Stopped bleeding tubing off - monitored pressure for signs of leak
19-Apr-99	14:20	Pressure test good - rigged down slick line
19-Apr-99	15:00	Set Back Pressure Valve in tubing hanger
19-Apr-99	15:45	Bled off pressure above BPV to test - tested OK
19-Apr-99	15:50	Opened separator - no sand production evident
19-Apr-99	16:00	Rigged all S T E D A S equipment off location
19-Apr-99	16:30	End of Test



HALLIBURTON

SURFACE SAMPLING DATA

TEST NUMBER Production Flowback **AREA** South-West Victoria **DATE (DAY/MO/YR)** 19-Apr-1999 **PAGE OF** 1
WELL NAME OR NUMBER Iona #3 **FIELD** Development **FORMATION** C.I. Waite
TIME WELL FLOWING OR SHUT IN BEFORE SAMPLING 06:02:00 **DAYS** **INTERVAL TESTED - METERS** 1365.5 - 1377.5m K/D
PRESS **TEMP** **OTHER**

GAS
SAMPLE # 2 **CONTAINER #** 3276A
CONTAINER SHIPPING PRESSURE (PSIG) 1056.5 **SAMPLING PRESSURE (PSIG)** 1056.5 **SAMPLING TEMP (°F)** 86.8 **ATMOSPHERIC PRESSURE (PSI)** 14.73 **ATMOSPHERIC TEMPERATURE (°F)** 65.0
SAMPLE TAKEN AT Separator **TIME TO TAKE SAMPLE (MIN)** 30 mins
INITIALS OF FIELD REMAINING W/SAMPLE 0.0

FIELD READINGS AND FACTORS USED

WELL HEAD PRESS (PSIG)	WELL HEAD TEMP (°F)	STAGE SEPARATION		BOTTOMHOLE		OIL		GAS		OIL/GAS RATIOS AT		TOTAL GAS/OIL FLOW RATE AT STOCK TANK (mmscf/d)	SEPARATION TYPE	SEPARATION EFFICIENCY (%)	WATER FLOW RATE (bopd)
		IN PRESS (PSIG)	OUT PRESS (PSIG)	TEMP (°F)	TEMP (°F)	GRAVITY @ 60°F (API)	US&W (%)	WT	CT	GRVITY (AIR=1)	F _{pv}				
1373	98.3	1056.5	96.8	1056.5	96.8	58.4	0.684	1.0870000	0.684	1.0870000	n/a	45.271	n/a	n/a	n/a

OIL
SAMPLE # 2 **CONTAINER #** 3276A
CONTAINER SHIPPING PRESSURE (PSIG) 1056.5 **SAMPLING PRESSURE (PSIG)** 1056.5 **SAMPLING TEMP (°F)** 86.8 **ATMOSPHERIC PRESSURE (PSI)** 14.73 **ATMOSPHERIC TEMPERATURE (°F)** 65.0
SAMPLE TAKEN AT Separator **TIME TO TAKE SAMPLE (MIN)** 30 mins
INITIALS OF FIELD REMAINING W/SAMPLE 0.0

FIELD READINGS AND FACTORS USED

WELL HEAD PRESS (PSIG)	WELL HEAD TEMP (°F)	STAGE SEPARATION		BOTTOMHOLE		OIL		GAS		OIL/GAS RATIOS AT		TOTAL GAS/OIL FLOW RATE AT STOCK TANK (mmscf/d)	SEPARATION TYPE	SEPARATION EFFICIENCY (%)	WATER FLOW RATE (bopd)
		IN PRESS (PSIG)	OUT PRESS (PSIG)	TEMP (°F)	TEMP (°F)	GRAVITY @ 60°F (API)	US&W (%)	WT	CT	GRVITY (AIR=1)	F _{pv}				
1373	98.3	1056.5	96.8	1056.5	96.8	58.4	0.684	1.0870000	0.684	1.0870000	n/a	45.271	n/a	n/a	n/a

GAS
SAMPLE # 2 **CONTAINER #** 3276A
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SAMPLE TAKEN AT Separator **TIME TO TAKE SAMPLE (MIN)** 30 mins
INITIALS OF FIELD REMAINING W/SAMPLE 0.0

FIELD READINGS AND FACTORS USED

WELL HEAD PRESS (PSIG)	WELL HEAD TEMP (°F)	STAGE SEPARATION		BOTTOMHOLE		OIL		GAS		OIL/GAS RATIOS AT		TOTAL GAS/OIL FLOW RATE AT STOCK TANK (mmscf/d)	SEPARATION TYPE	SEPARATION EFFICIENCY (%)	WATER FLOW RATE (bopd)
		IN PRESS (PSIG)	OUT PRESS (PSIG)	TEMP (°F)	TEMP (°F)	GRAVITY @ 60°F (API)	US&W (%)	WT	CT	GRVITY (AIR=1)	F _{pv}				
1373	98.3	1056.5	96.8	1056.5	96.8	58.4	0.684	1.0870000	0.684	1.0870000	n/a	45.271	n/a	n/a	n/a

WELL HEAD PRESS (PSIG) 1373 **WELL HEAD TEMP (°F)** 98.3
STAGE SEPARATION IN PRESS (PSIG) 1056.5 **STAGE SEPARATION OUT PRESS (PSIG)** 96.8
BOTTOMHOLE TEMP (°F) 1056.5 **BOTTOMHOLE TEMP (°F)** 96.8
OIL GRAVITY @ 60°F (API) 58.4 **OIL US&W (%)** 0.684 **OIL WT** 1.0000 **OIL CT** 1.0000
GAS GRAVITY (AIR=1) 0.684 **GAS F_{pv}** 1.0870000 **GAS GOR** n/a **GAS OCGR** n/a
TOTAL GAS/OIL FLOW RATE AT STOCK TANK (mmscf/d) 45.271

WELL HEAD PRESS (PSIG) 1373 **WELL HEAD TEMP (°F)** 98.3
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TOTAL GAS/OIL FLOW RATE AT STOCK TANK (mmscf/d) 45.271

WELL HEAD PRESS (PSIG) 1373 **WELL HEAD TEMP (°F)** 98.3
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GAS GRAVITY (AIR=1) 0.684 **GAS F_{pv}** 1.0870000 **GAS GOR** n/a **GAS OCGR** n/a
TOTAL GAS/OIL FLOW RATE AT STOCK TANK (mmscf/d) 45.271

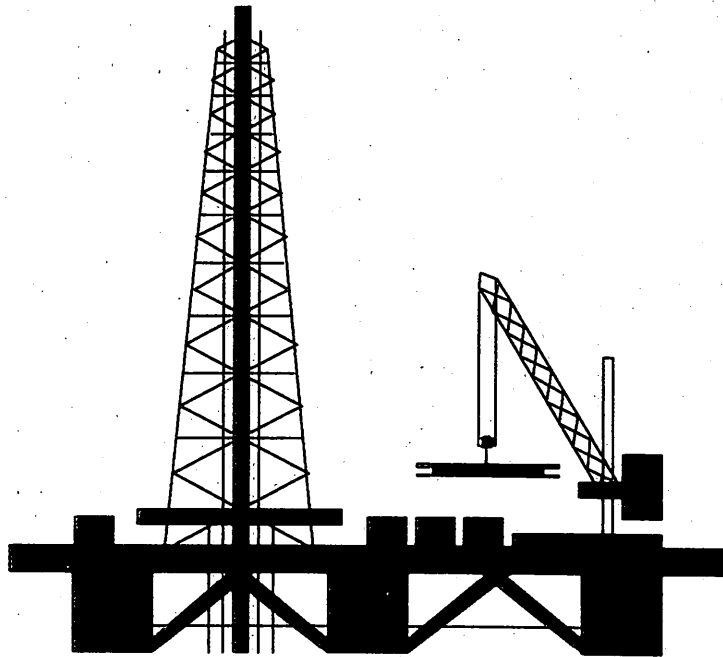
SAMPLED BY: HALLIBURTON

CONDITIONS INCLUDE WEATHERING FACTOR.

APPENDIX 6

Directional Drilling end of well report by Sperry Sun

WESTERN UNDERGROUND GAS
STORAGE PTY. LTD.



DIRECTIONAL DRILLING END OF WELL REPORT

WELL : IONA #3

sperry-sun
DRILLING SERVICES

WESTERN UNDERGROUND GAS
STORAGE PTY. LTD.

WELL : IONA #3

TABLE OF CONTENTS

SECTION ONE :	WELL SUMMARY
SECTION TWO :	SURVEY PLOT & DEFINITIVE SURVEY REPORTS
SECTION THREE :	SURVEY & DRILLING PARAMETERS
SECTION FOUR :	BHA DATA
SECTION FIVE :	MOTOR PERFORMANCE REPORTS
SECTION SIX :	DAILY DIRECTIONAL DRILLING REPORTS

Customer : Western Underground Gas Storage Pty Ltd

Well : Iona 3

Job Objectives:

To kickoff and drill 12¼" hole from 700m to 35°, along an azimuth of 216.4 degrees.

Summary of Results:

An initial attempt was made to kick off and steer using a PDC bit. Toolface control was almost impossible with the PDC, so a trip was made to replace it with a tricone. Drilling continued without problems.

Discussion:

BHA #	Bit #	Motor Run #	Hole Size (in)	MD In (m)	MD Out (m)	TVD In (m)	TVD Out (m)	Inc In (deg)	Inc Out (deg)	Azi In (deg)	Azi Out (deg)	Drig hrs	Circ hrs
1	1			0	636	0	636	0.0	1.8	0	177	60	4
2	2	1	12.250	636	935	636	927	1.8	21.6	177	217	20	4
3	3r1	2	12.250	935	1459	927	1373	21.6	31.8	217	220	44	4

Table 1 - BHA Summary

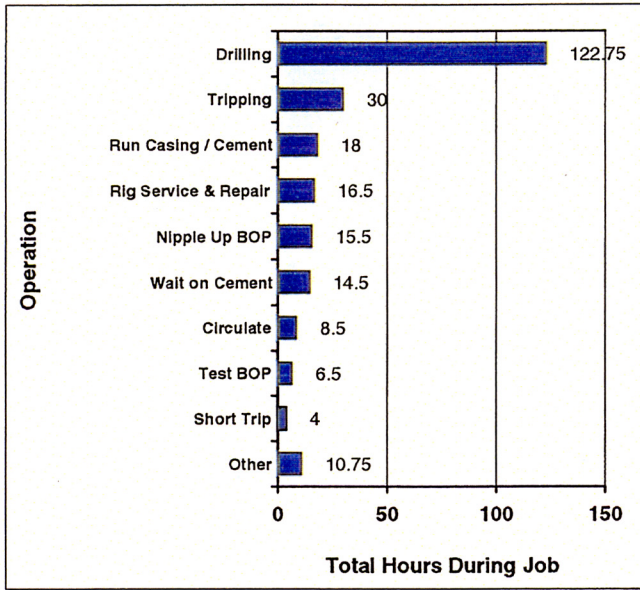
Motor Run #	Manufacturer	Type	Lobe	OD (in)	Gauge (in)	Bend (deg)	Adj	DLS (Ori) (°/30m)	ROP (Ori) (m/hr)	ROP (Rot) (m/hr)
1	SSDS	SperryDrill	6/7	8.000	12.000	1.50	N	6.50	11	21
2	SSDS	SperryDrill	6/7	8.000	12.000	1.50	N	4.00	12	12

Table 2 - Motor Run Summary

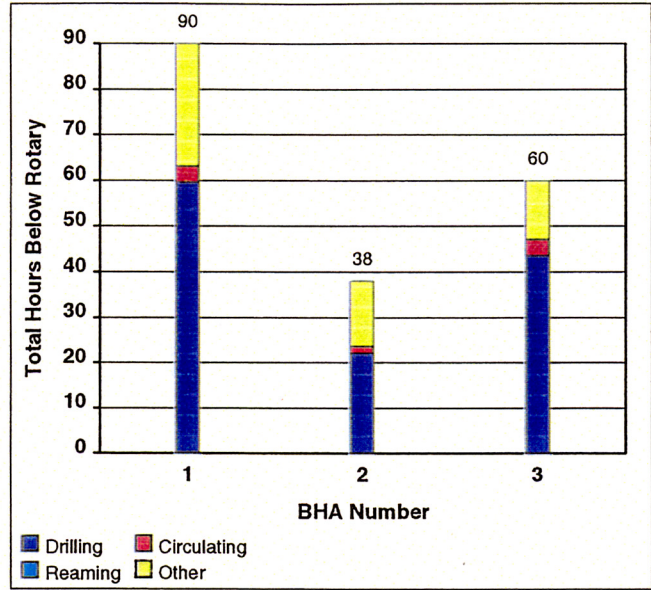
Bit #	Manufacturer	Style	OD (in)	Gge Len (in)	Nozzles (/32's)	TFA (in ²)	Dull Grades					Ftge (m)	Drig hrs	ROP (m/hr)		
							I	O	D	L	B				G	O
1	Varel	L135M		0.410	1x24, 2x18	0.939						636	59.50	11		
2	BBL	BB650SR	12.250	12.250	2x12, 4x14	0.822	4	7	WT	AN	A-1	CT	PR	299	19.75	15
3r1	SEC	ERA	12.250	12.250	3x24	1.325	3	4	WT	A	E-4	F	CTD	524	43.50	12

Table 3 - Bit Run Summary

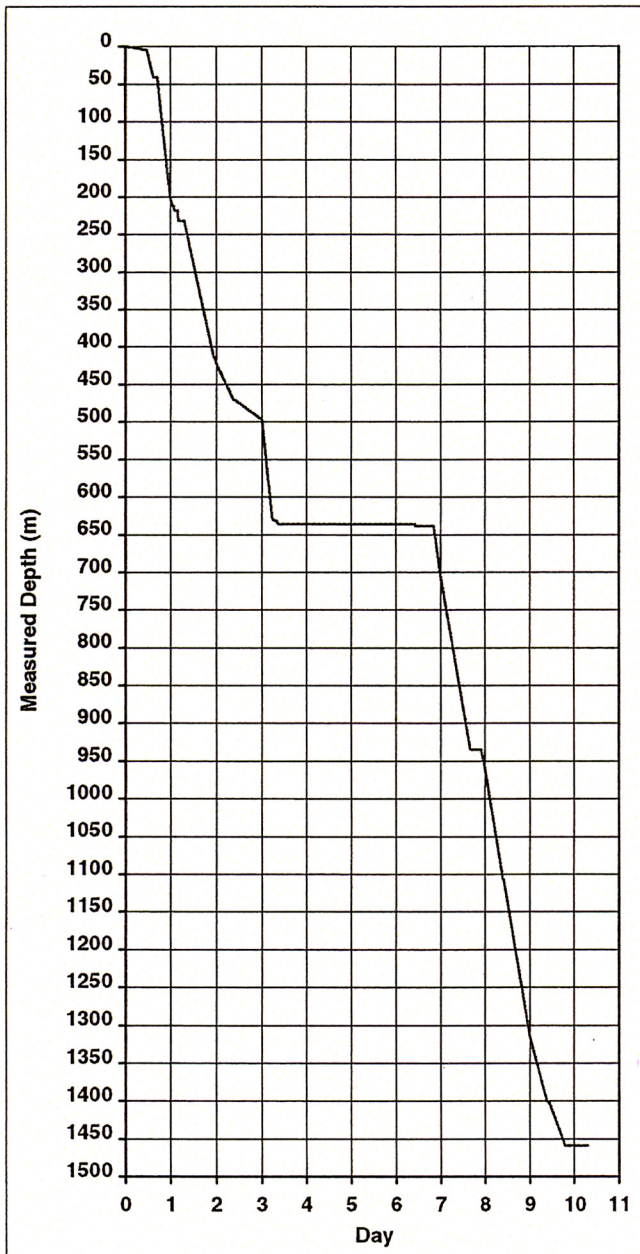
Hours by Operation Summary



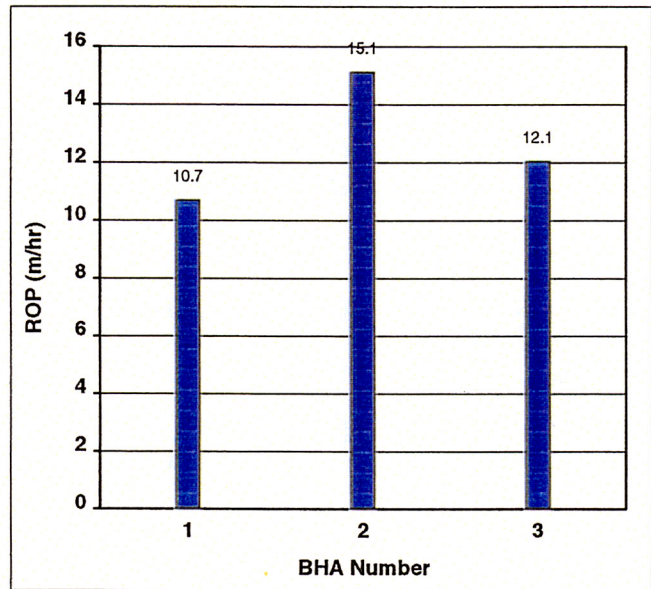
Hours per BHA Breakdown



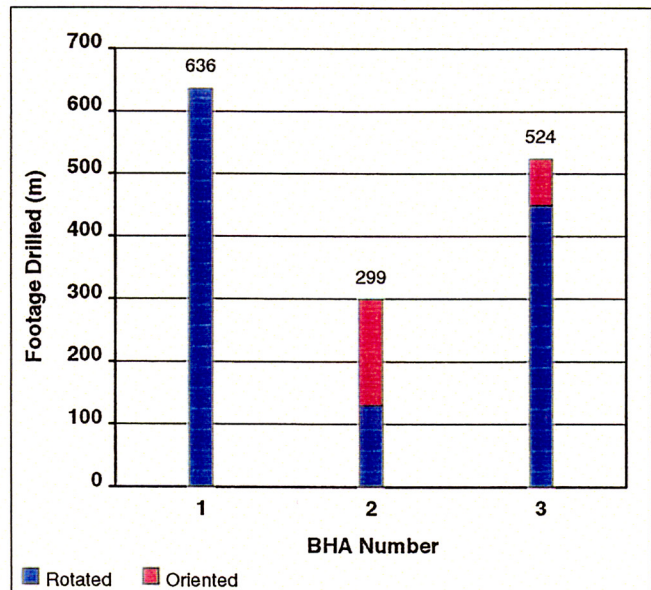
Days vs. Depth



Average Rate of Penetration per BHA



Footage per BHA



Australia
PPL 2 Otway Basin
AU-DD-90009

Western Underground Gas Storage Pty Ltd
Iona 3
Rig 30

Sperry-Sun Drilling Services

MD (m)	Formation Name MD/TVD	Inclination DLS	Bit Data	Drilling Parameters	Motor	BHA Stabilizers	Comments	BHA ID
0 - 1500								
0 - 650			L135M 1x24, 2x18/32's 10.7 m/hr 59.50 hrs	WOB 17 kbs RPM 108 FLO 716 gpm SPP psi		17.500 in @ 2.91 m 17.500 in @ 14.51 m 17.500 in @ 34.89 m	Drill to 13.3/8" csg. point @ 636m. 17x stabilizers were ringed out. Hole good condition.	#1 @ 0
650 - 950			BB650SR 2x12, 4x14/32's 15.1 m/hr 19.75 hrs	WOB 10 kbs RPM 64 FLO 717 gpm SPP 1829 psi	8" SperryDrill 67 L 1.50" BH	12.062 in @ 1.07 m 11.750 in @ 10.98 m	Drill with a PDC bit. At 17 deg, it was hanging up; unable to control tool face. Pull out change to a tricone bit.	#2 @ 636
950 - 1500			ERA 3x24/32's 12.1 m/hr 43.50 hrs	WOB 26 kbs RPM 61 FLO 740 gpm SPP 1647 psi	8" SperryDrill 67 L 1.50" BH	12.062 in @ 1.07 m 11.750 in @ 10.98 m	Drilled to TD	#3 @ 935

Sperry-Sun Drilling Services



Survey Report for Iona #3 : Gyro Re-survey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Western Underground Gas Storage Pty. Ltd.
Iona

Iona Drillpad

Measured Depth (m)	Incl.	Azim.	Vertical Depth (m)	Northings (m)	Eastings (m)	Vertical Section (m)	Dogleg Rate (°/30m)
0.00	0.000	0.000	0.00	0.00 N	25.00 W	0.00	
20.00	0.160	150.760	20.00	0.02 S	24.99 W	0.01	0.240
40.00	0.160	176.630	40.00	0.08 S	24.97 W	0.04	0.107
60.00	0.100	155.860	60.00	0.12 S	24.96 W	0.07	0.113
80.00	0.160	172.720	80.00	0.16 S	24.95 W	0.10	0.106
100.00	0.110	250.480	100.00	0.20 S	24.97 W	0.14	0.261
120.00	0.120	278.950	120.00	0.20 S	25.00 W	0.17	0.086
140.00	0.260	199.490	140.00	0.24 S	25.04 W	0.22	0.399
160.00	0.240	175.660	160.00	0.33 S	25.05 W	0.29	0.158
180.00	0.140	183.060	180.00	0.39 S	25.05 W	0.35	0.154
200.00	0.110	206.270	200.00	0.43 S	25.06 W	0.38	0.087
220.00	0.170	222.340	220.00	0.47 S	25.09 W	0.43	0.107
240.00	0.270	222.290	240.00	0.53 S	25.14 W	0.51	0.150
260.00	0.510	204.160	260.00	0.65 S	25.21 W	0.64	0.400
280.00	0.590	168.310	280.00	0.83 S	25.22 W	0.80	0.520
300.00	0.760	177.060	300.00	1.06 S	25.20 W	0.97	0.298
320.00	0.850	182.060	319.99	1.34 S	25.20 W	1.20	0.171
340.00	0.640	171.640	339.99	1.60 S	25.18 W	1.40	0.374
360.00	0.860	157.570	359.99	1.85 S	25.11 W	1.55	0.428
380.00	0.920	158.810	379.99	2.14 S	25.00 W	1.72	0.095
400.00	1.070	162.200	399.99	2.47 S	24.88 W	1.91	0.242
420.00	1.260	168.210	419.98	2.86 S	24.78 W	2.17	0.338
440.00	1.330	171.280	439.98	3.30 S	24.70 W	2.48	0.148
460.00	1.340	173.170	459.97	3.76 S	24.64 W	2.81	0.068
480.00	1.340	173.830	479.97	4.23 S	24.58 W	3.16	0.023
500.00	1.410	182.250	499.96	4.71 S	24.57 W	3.53	0.320
520.00	1.430	186.650	519.95	5.20 S	24.61 W	3.95	0.166
540.00	1.480	190.890	539.95	5.70 S	24.68 W	4.40	0.178
560.00	1.570	190.650	559.94	6.23 S	24.78 W	4.88	0.135
580.00	1.600	188.300	579.93	6.77 S	24.87 W	5.38	0.107
600.00	1.600	187.890	599.92	7.32 S	24.95 W	5.87	0.017
620.00	1.640	190.470	619.92	7.88 S	25.04 W	6.37	0.125
640.00	2.060	188.000	639.91	8.52 S	25.14 W	6.95	0.641
660.00	2.080	186.550	659.89	9.24 S	25.24 W	7.58	0.084
680.00	2.190	186.910	679.88	9.98 S	25.32 W	8.22	0.166
700.00	3.380	209.960	699.86	10.87 S	25.66 W	9.14	2.417
730.00	6.540	221.160	729.74	12.92 S	27.23 W	11.72	3.290
760.00	8.820	230.310	759.47	15.67 S	30.13 W	15.66	2.580
790.00	11.370	231.330	789.00	18.99 S	34.20 W	20.75	2.556
820.00	15.610	221.100	818.17	23.88 S	39.17 W	27.63	4.850
850.00	17.330	216.920	846.94	30.50 S	44.51 W	36.13	2.088
880.00	18.690	216.340	875.47	37.94 S	50.04 W	45.40	1.372
910.00	19.860	215.810	903.79	45.95 S	55.87 W	55.30	1.183
925.00	20.800	215.550	917.85	50.18 S	58.91 W	60.51	1.889
940.00	22.750	213.590	931.78	54.76 S	62.06 W	66.07	4.162

Continued...

Sperry-Sun Drilling Services



Survey Report for Iona #3 : Gyro Re-survey
Your Ref: Definitive Gyro Resurvey (7 June 1999)

Western Underground Gas Storage Pty. Ltd.
Iona

Iona Drillpad

Measured Depth (m)	Incl.	Azim.	Vertical Depth (m)	Northings (m)	Eastings (m)	Vertical Section (m)	Dogleg Rate (°/30m)
955.00	24.580	219.710	945.52	59.58 S	65.66 W	72.09	6.122
970.00	25.660	218.500	959.11	64.52 S	69.68 W	78.45	2.392
1000.00	29.610	219.500	985.68	75.33 S	78.44 W	92.34	3.977
1030.00	33.240	215.410	1011.28	87.76 S	87.92 W	107.97	4.208
1060.00	33.540	215.920	1036.32	101.17 S	97.55 W	124.48	0.411
1120.00	33.070	216.420	1086.47	127.77 S	116.99 W	157.43	0.272
1180.00	32.380	214.750	1136.95	154.14 S	135.87 W	189.86	0.568
1240.00	33.080	215.900	1187.42	180.60 S	154.63 W	222.29	0.468
1300.00	33.500	218.970	1237.58	206.74 S	174.64 W	255.21	0.868
1360.00	32.880	221.860	1287.79	231.75 S	195.93 W	287.96	0.850
1420.00	32.130	222.830	1338.39	255.58 S	217.64 W	320.03	0.457
1438.60	31.810	219.640	1354.17	262.98 S	224.13 W	329.84	2.772
1459.00	31.800	219.000	1371.51	271.30 S	230.94 W	340.58	0.496

All data is in metres unless otherwise stated. Directions and coordinates are relative to Grid North. Vertical depths are relative to RTE. Northings and Eastings are relative to Drillpad Slot #4.

Coordinate System is UTM Zone 54S on Australian Datum 1984, Meters.
Grid Convergence at Surface is -1.270°. Magnetic Convergence at Surface is -12.206° (11-Jun-99)

The Dogleg Severity is in Degrees per 30m.
Vertical Section is from Iona #3 Wellhead and calculated along an Azimuth of 216.375° (Grid).

Based upon Minimum Curvature type calculations, at a Measured Depth of 1459.00m.,
The Bottom Hole Displacement is 340.61m., in the Direction of 217.202° (Grid).

Casing details

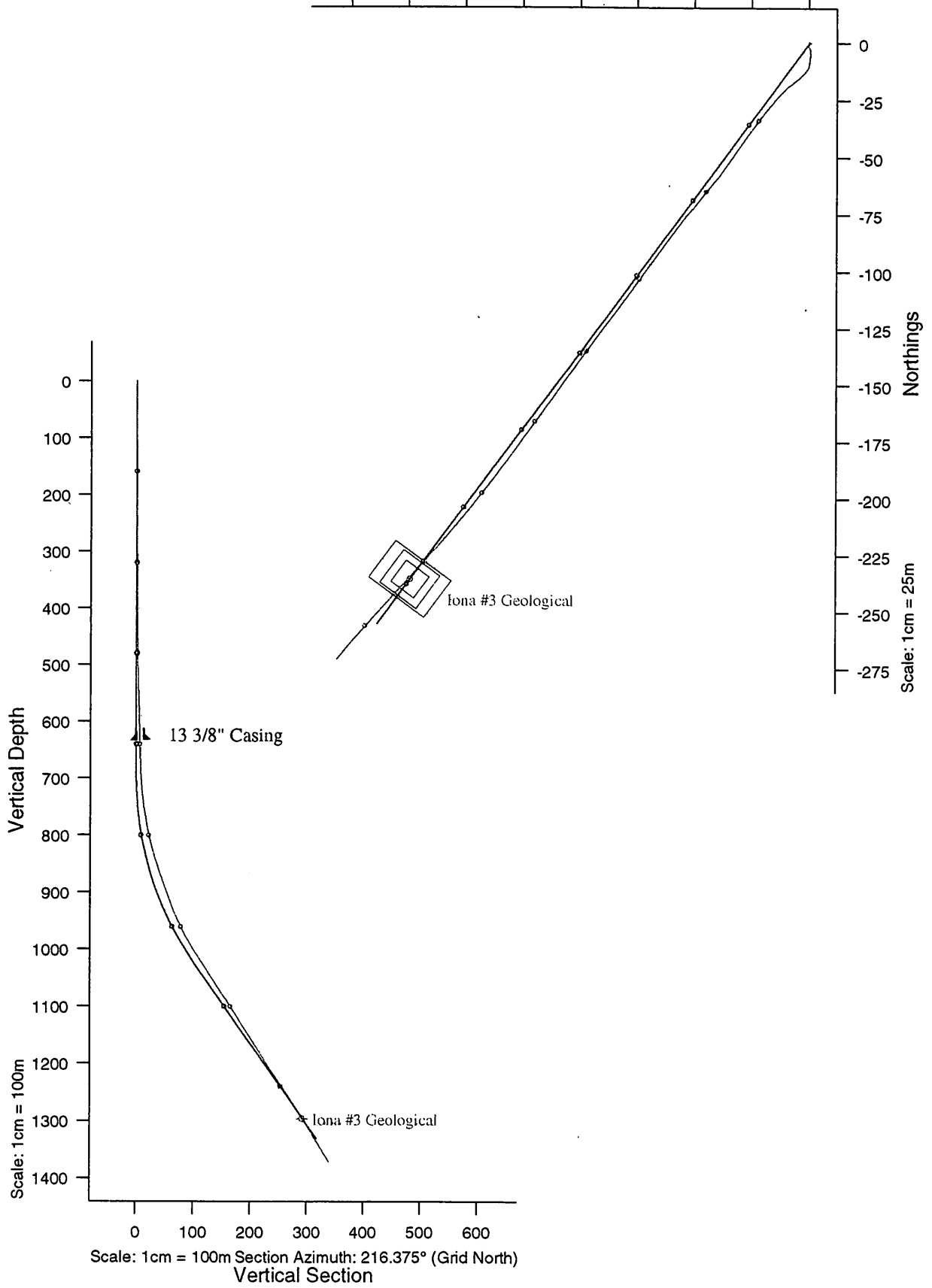
From		To		Casing Detail
Measured Depth (m)	Vertical Depth (m)	Measured Depth (m)	Vertical Depth (m)	
<Surface>	<Surface>	633.00	632.91	13 3/8" Casing

Well : Iona #3

Scale: 1cm = 25m

Eastings

-225 -200 -175 -150 -125 -100 -75 -50 -25



SPERRY-SUN

DRILLING SERVICES

Survey and Drilling Parameters

Customer : Western Underground Gas Storage Pty Ltd Country : Australia
 Well : Iona 3 Lease : PPL 2 Otway Basin
 Rig : Rig 30 Job # : AU-DD-90009

North Ref : Grid Declination : 12.20° VS Dir : 216.37° (from 0.ON, -25.0E)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	Orientation To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
0.00	0.00	0.00	0.0	0.0	0.0	-25.0	0.00	0.00	0.00	18	140	750						1	Tieon
395.00	0.80	152.20	395.0	1.2	-2.4	-23.7	0.06	0.06	0.00	14	100	700						1	Single shot #1
621.50	1.75	172.20	621.4	4.4	-7.3	-22.5	0.14	0.13	0.00	18	80	700					20	2	
668.00	2.10	187.20	667.9	5.6	-8.8	-22.5	0.39	0.23	9.68	8	40	720	650				20	2	
677.60	2.10	190.70	677.5	5.9	-9.2	-22.6	0.40	0.00	10.94	8	40	720	650				20	2	
687.60	2.20	200.00	687.5	6.3	-9.5	-22.7	1.09	0.30	27.90	8	40	720	650				20	2	
697.10	3.10	212.00	697.0	6.7	-9.9	-22.9	3.32	2.84	37.89	10		720	2100	688	697	220m	20	2	
706.60	4.50	218.10	706.5	7.3	-10.4	-23.2	4.60	4.42	19.26	10		720	2100	697	698	220m	20	2	
716.10	6.10	220.60	715.9	8.2	-11.1	-23.8	5.10	5.05	7.89	10		720	2100	707	707	220m	20	2	
725.70	6.40	221.80	725.5	9.3	-11.9	-24.5	1.02	0.94	3.75	10		720	2100	707	716	220m	20	2	
735.20	6.70	222.70	734.9	10.3	-12.7	-25.2	1.00	0.95	2.84	8	80	720	2100	726	727	220m	50	2	
744.70	7.20	225.00	744.3	11.5	-13.5	-26.0	1.81	1.58	7.26	8	80	720	2100				50	2	
754.20	8.30	227.90	753.7	12.7	-14.4	-26.9	3.69	3.47	9.16	10		720	2100	746	754	10R	20	2	
763.80	9.00	231.30	763.2	14.1	-15.3	-28.0	2.71	2.19	10.63	10		720	2100	754	755	10R	20	2	
773.30	9.50	232.00	772.6	15.6	-16.3	-29.2	1.62	1.58	2.21	8	80	720	2100	755	764	10R	50	2	
782.80	10.40	231.10	782.0	17.2	-17.3	-30.5	2.88	2.84	-2.84	10		720	2100	774	783	20L	20	2	
792.30	11.30	228.40	791.3	18.9	-18.5	-31.9	3.26	2.84	-8.53	10		720	2100	783	783	20L	20	2	
801.80	12.60	225.30	800.6	20.9	-19.8	-33.3	4.58	4.11	-9.79	10		720	2100	783	792	60L	20	2	
811.30	14.50	222.40	809.8	23.1	-21.4	-34.9	6.37	6.00	-9.16	10		720	2100	792	793	60L	20	2	
820.80	15.70	221.20	819.0	25.5	-23.3	-36.5	3.92	3.79	-3.79	10		720	2100	793	802	60L	20	2	
830.30	16.70	219.60	828.1	28.2	-25.3	-38.2	3.46	3.16	-5.05	12		717	2050	802	811	60L	20	2	

SPERRY-SUN

DRILLING SERVICES

Survey and Drilling Parameters

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Rig : Rig 30
 Country : Australia
 Lease : PPL 2 Otway Basin
 Job # : AU-DD-90009
 North Ref : Grid Declination : 12.20° VS Dir : 216.37° (from 0.ON, -25.0E)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
839.80	17.00	218.90	837.2	30.9	-27.4	-40.0	1.14	0.95	-2.21	8	80	717	2050	821	830	60L	50	2	
849.30	17.10	218.00	846.3	33.7	-29.6	-41.7	0.89	0.32	-2.84	8	80	717	2050	831	834	70L	50	2	
858.90	17.10	217.50	855.5	36.5	-31.8	-43.4	0.46	0.00	-1.56	8	80	717	2050	840	843	70L	50	2	
868.30	17.50	217.70	864.4	39.3	-34.0	-45.1	1.29	1.28	0.64	8	80	717	2050	850	852	70L	50	2	
887.30	18.90	217.00	882.5	45.3	-38.8	-48.7	2.24	2.21	-1.11	8	80	717	2050	859	861	70L	50	2	
897.20	18.90	216.60	891.9	48.5	-41.3	-50.6	0.39	0.00	-1.21	8	75	700	2000	869	876	10L	50	2	
906.70	19.00	216.40	900.8	51.6	-43.8	-52.5	0.38	0.32	-0.63	12	75	700	2000	878	885	10L	50	2	
925.60	20.00	214.80	918.7	57.9	-48.9	-56.2	1.80	1.59	-2.54	8	75	700	2000	888	894	20L	50	2	
935.20	21.70	217.20	927.6	61.3	-51.7	-58.2	5.94	5.31	7.50	20	80	740	1600	901	907	20L	20	2	
944.90	23.50	218.30	936.6	65.0	-54.6	-60.4	5.72	5.57	3.40	20	80	740	1600	907	907	20L	50	2	
954.20	24.70	219.50	945.1	68.8	-57.6	-62.8	4.18	3.87	3.87	20	80	740	1600	907	912	20L	20	2	
963.70	24.90	220.50	953.7	72.8	-60.6	-65.4	1.47	0.63	3.16	20	80	740	1600	917	923	20L	20	2	
973.20	25.30	221.10	962.3	76.8	-63.7	-68.0	1.50	1.26	1.89	20	80	740	1600	926	934	HS	25	3	
982.70	26.90	220.70	970.8	81.0	-66.9	-70.8	5.08	5.05	-1.26	20	80	740	1600	934	935	HS	30	3	
992.20	28.30	220.50	979.3	85.4	-70.2	-73.6	4.43	4.42	-0.63	20	80	740	1600	935	936	HS	30	3	
1001.70	29.90	220.30	987.6	90.0	-73.7	-76.6	5.06	5.05	-0.63	20	80	740	1600	936	943	10L	25	3	
1011.30	31.30	219.00	995.8	94.8	-77.5	-79.7	4.84	4.38	-4.06	20	80	740	1600	945	954	20R	25	3	
1030.30	33.20	215.50	1011.9	105.0	-85.5	-85.9	4.21	3.00	-5.53	20	80	740	1600	954	955	20R	30	3	
1058.80	33.30	214.50	1035.7	120.6	-98.3	-94.8	0.59	0.11	-1.05	20	80	740	1600	974	980	20L	35	3	
1087.30	33.10	214.50	1059.6	136.2	-111.2	-103.7	0.21	-0.21	0.00	20	80	740	1600	983	990	20L	35	3	
1096.80	33.00	214.60	1067.5	141.4	-115.5	-106.6	0.36	-0.32	0.32	20	80	740	1600	993	1000	20L	35	3	
										20	80	740	1600	1003	1008	30L	35	3	
										20	80	740	1600	1012	1019	50L	35	3	
										20	80	740	1600	1022	1029	60L	35	3	

SPERRY-SUN

DRILLING SERVICES

Survey and Drilling Parameters

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Rig : Rig 30

Country : Australia
 Lease : PPL 2 Otway Basin
 Job # : AU-DD-90009

North Ref : Grid Declination : 12.20° VS Dir : 216.37° (from 0.0N, -25.0E)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
1106.30	32.90	214.60	1075.5	146.5	-119.7	-109.5	0.32	-0.32	0.00	20	80	740	1600				35	3	
1115.80	32.90	214.50	1083.5	151.7	-124.0	-112.5	0.17	0.00	-0.32	20	80	740	1600				35	3	
1125.30	32.60	214.70	1091.5	156.8	-128.2	-115.4	1.01	-0.95	0.63	20	80	740	1600				35	3	
1134.80	32.50	214.60	1099.5	161.9	-132.4	-118.3	0.36	-0.32	-0.32	20	80	740	1600				35	3	
1163.30	32.10	214.70	1123.6	177.2	-144.9	-127.0	0.42	-0.42	0.11	20	80	740	1600				35	3	
1172.80	32.20	214.70	1131.6	182.2	-149.1	-129.8	0.32	0.32	0.00	20	80	740	1600				35	3	
1191.30	31.80	214.80	1147.3	192.0	-157.2	-135.4	0.65	-0.65	0.16	20	80	740	1600				35	3	
1220.30	32.50	215.90	1171.9	207.4	-169.7	-144.3	0.94	0.72	1.14	20		740	1700	1213	1220	60R	20	3	
1248.80	33.70	216.70	1195.7	223.0	-182.3	-153.6	1.34	1.26	0.84	20		740	1700	1220	1221	60R	20	3	
1277.30	33.80	218.40	1219.4	238.8	-194.8	-163.2	1.00	0.11	1.79	35	40	740	1700	1240	1249	20R	15	3	
1296.30	33.30	218.20	1235.3	249.3	-203.1	-169.7	0.81	-0.79	-0.32	35	40	740	1700				15	3	
1315.40	33.20	218.70	1251.2	259.8	-211.3	-176.2	0.46	-0.16	0.79	35	40	740	1700				15	3	
1334.40	33.00	218.80	1267.1	270.2	-219.4	-182.7	0.33	-0.32	0.16	35	40	740	1700				15	3	
1362.90	32.70	219.10	1291.1	285.6	-231.4	-192.4	0.36	-0.32	0.32	35	40	740	1700				15	3	
1381.90	32.30	219.20	1307.1	295.8	-239.3	-198.9	0.64	-0.63	0.16	35	40	740	1700				15	3	
1438.60	31.80	219.70	1355.2	325.9	-262.5	-218.0	0.30	-0.26	0.26	35	40	740	1700				15	3	
1459.00	31.80	219.70	1372.5	336.6	-270.8	-224.9	0.00	0.00	0.00	35	40	740	1700				15	3	

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DRILLING SERVICES

BHA Report

Customer : Western Underground Gas Storage Pty Ltd

Well : Iona 3

Country : Australia

Lease : PPL 2 Otway Basin

Rig : Rig 30

Job # : AU-DD-90009

BHA# 1

BHA# 1 : Date In 3/04/99 MD In (m) : 0 TVD In (m) : 0 Date Out 6/04/99 MD Out (m): 636 TVD Out(m): 636

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
1		Varel	L135M	72906	1x24, 2x18	0.939	

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Tricone	72906				17.500	P 6-5/8" Reg	0.41	
2	Bit Sub		8.000	3.000		147.22	B 6-5/8" Reg	0.82	
3	Integral Blade Stabiliser	47615	8.188	3.000	17.500	155.36	B 6-5/8" Reg	3.37	2.9
4	Non-Mag Drill collar	6849	7.813	2.810		142.25	B 6-5/8" Reg	8.93	
5	Integral Blade Stabiliser	22120	8.188	3.000	17.500	155.36	B 6-5/8" Reg	1.95	14.51
6	2x Spiral Drill collar		8.000	2.810		150.00	B 6-5/8" Reg	18.41	
7	Integral Blade Stabiliser	47619	8.188	3.000	17.500	155.36	B 6-5/8" Reg	2.00	34.89
8	3x Spiral Drill collar		8.000	2.810		150.00	B 6-5/8" Reg	26.81	
9	Cross Over Sub		8.188	2.875		157.33	B 4-1/2" IF	0.83	
10	Cross Over Sub		6.188	2.875		80.37	B 4" IF	0.37	
11	HWDP		4.000	2.563		29.70	B 4" IF	109.32	
12	Drilling Jar	1416-1128 wt2800	6.375	2.750		88.54	B 4" IF	9.95	
13	HWDP		4.000	2.563		29.70	B 4" IF	163.64	
14	Cross Over Sub								

Parameter	Min	Max	Ave
WOB (klbs) :	14	18	17
RPM (rpm) :	80	140	108
Flow (gpm) :	700	750	716
SPP (psi) :			

Activity	Hrs
Drilling :	59.50
Reaming :	0.00
Circ-Other :	3.50
Total :	63.00

BHA Weight	(lb)
in Air (Total) :	
in Mud (Total) :	
in Air (Bel Jars) :	0
in Mud (Bel Jars) :	0

Drill String	OD(in)	Len(m)

PERFORMANCE

	In	Out
Inclination (deg)	0.00	1.84
Azimuth (deg)	0.00	177.47

	Distance(m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			
Rotated :	636.00	0			
Total :	636.00	11	0.09	0.00	0.09

COMMENTS

Drill to 13 3/8" csg. point @ 636m.
17 1/2" stabilisers were ringed out. Hole good condition.

sperry-sun
DRILLING SERVICES

BHA Report page 2

Customer : Western Underground Gas Storage Pty Ltd

Well : Iona 3

Country : Australia

Lease : PPL 2 Otway Basin

Rig : Rig 30

Job # : AU-DD-90009

BHA# 1

OBJECTIVES:

Drill 17½" hole at vertical to casing point +/- 630m

RESULTS:

Hole was drilled with a maximum of 1.70°, measured depth of 636m.

Soft with some hard stringers

(formations)

Three stabilisers were used - two had been Ringed out

The 13 3/8" went to bottom okay

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DRILLING SERVICES

BHA Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

BHA# 2

BHA# 2 : Date In 9/04/99 MD In (m) : 636 TVD In (m) : 636 Date Out 10/04/99 MD Out (m) : 935 TVD Out (m) : 927

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
2	12.250	BBL	BB650SR	510709R2	2x12, 4x14	0.822	4-7-WT-AN-A-1-CT-PR

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
1	8.000	SSDS	SperryDrill	800177	1.50°		-104	23.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	PDC	510709R2	12.250				P 6-5/8" Reg	0.25	
2	8" SperryDrill Lobe 6/7 - 4.0 stg	800177	8.000	5.250	12.000	97.53	B 6-5/8" Reg	9.61	1.07
3	Integral Blade Stabiliser	47568	8.250	2.810	11.750	161.04	B 6-5/8" Reg	2.33	10.99
4	Float Sub	A 234	8.125	3.312		147.34	B 6-5/8" Reg	0.73	
5	8" DWD 1200 System	HOC46807	8.375	3.750		150.10	B 6-5/8" Reg	9.91	
6	Non-Mag Drill collar	6849	8.000	2.810		150.17	B 6-5/8" Reg	8.93	
7	Cross Over Sub		6.188	2.875		80.37	B 4" IF	0.83	
8	Cross Over Sub		6.313	2.813		85.49	B 4-1/2" IF	0.37	
9	24x HWDP		5.000	3.000		49.30	B 4-1/2" IF	218.67	
10	Drilling Jar		6.375	2.750		88.54	B 4-1/2" IF	9.80	
11	6x HWDP		5.000	3.000		49.30	B 4-1/2" IF	54.34	
12	Cross Over Sub		6.500	2.750		92.85	B 4" IF	0.50	
								316.27	

Parameter	Min	Max	Ave
WOB (klbs) :	8	20	10
RPM (rpm) :	40	80	64
Flow (gpm) :	700	740	717
SPP (psi) :	650	2100	1829

Activity	Hrs
Drilling :	19.75
Reaming :	0.00
Circ-Other :	3.75
Total :	23.50

BHA Weight	(lb)
in Air (Total) :	
in Mud (Total) :	
in Air (Bel Jars) :	0
in Mud (Bel Jars) :	0

Drill String	OD(in)	Len(m)

PERFORMANCE

	In	Out
Inclination (deg)	1.84	21.61
Azimuth (deg)	177.47	217.09

	Distance(m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	169.71	11			6.50
Rotated :	129.00	21	0.25	0.25	
Total :	298.71	15	1.99	3.98	2.03

COMMENTS

Drill with a PDC bit.
 At 17 deg, it was hanging up; unable to control tool face.
 Pull out change to a tricone bit .

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DRILLING SERVICES

BHA Report page 2

Customer : Western Underground Gas Storage Pty Ltd

Well : Iona 3

Country : Australia

Lease : PPL 2 Otway Basin

Rig : Rig 30

Job # : AU-DD-90009

BHA# 2

OBJECTIVES:

A PDC bit and mud motor will be used to drill out the shoe
Drill to kickoff point +/- 690m.

RESULTS:

The PDC bit was not the bit to use.
Motor and string stabilisers were hanging up in slide mode.
Tool face was out of control.
Pull out change to a tricone bit.

RECOMMENDATIONS:

DO NOT USE A PDC BIT IN THE (IONA) FIELD

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DRILLING SERVICES

BHA Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

BHA# 3

BHA# 3 : Date In :10/04/99 MD In (m) : 935 TVD In (m) : 927 Date Cur.13/04/99 MD Cur (m): 1459 TVD Cur(m): 1373

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
3rr1	12.250	SEC	ERA	681061	3x24	1.325	3-4-WT-A -E-4- F-CTD

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
2	8.000	SSDS	SperryDrill	800177	1.50°		100	70.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Tricone	681061	12.250				P 6-5/8" Reg	0.25	
2	8" SperryDrill Lobe 6/7 - 4.0 stg	800177	8.000	5.250	12.000	97.53	B 6-5/8" Reg	9.61	1.07
3	Integral Blade Stabiliser	47568	8.250	2.810	11.750	161.04	B 6-5/8" Reg	2.33	10.98
4	Float Sub	A 234	8.125	3.312		147.34	B 6-5/8" Reg	0.73	
5	8" DWD 1200 System	HOC46807	8.375	3.750		150.10	B 6-5/8" Reg	9.91	
6	Non-Mag Drill collar	6849	8.000	2.810		150.17	B 6-5/8" Reg	8.93	
7	Cross Over Sub		6.188	2.875		80.37	B 4" IF	0.83	
8	Cross Over Sub		6.313	2.813		85.49	B 4-1/2" IF	0.37	
9	24x HWDP		5.000	3.000		49.30	B 4-1/2" IF	218.67	
10	Drilling Jar		6.375	2.750		88.54	B 4-1/2" IF	9.80	
11	6x HWDP		5.000	3.000		49.30	B 4-1/2" IF	54.34	
12	Cross Over Sub		6.500	2.750		92.85	B 4" IF	0.50	
								316.27	

Parameter	Min	Max	Ave
WOB (klbs) :	20	35	26
RPM (rpm) :	40	80	61
Flow (gpm) :	740	740	740
SPP (psi) :	1600	1700	1647

Activity	Hrs
Drilling :	43.50
Reaming :	0.00
Circ-Other :	3.50
Total :	47.00

BHA Weight (lb)	
in Air (Total) :	
in Mud (Total) :	
in Air (Bel Jars) :	0
in Mud (Bel Jars) :	0

Drill String	OD(in)	Len(m)

PERFORMANCE

	In	Out
Inclination (deg)	21.61	31.80
Azimuth (deg)	217.09	219.70

	Distance(m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	75.29	12			4.00
Rotated :	449.00	12	0.25	0.25	
Total :	524.29	12	0.58	0.15	0.59

COMMENTS

Drilled to TD

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DRILLING SERVICES

BHA Report page 2

Customer : Western Underground Gas Storage Pty Ltd

Well : Iona 3

Country : Australia

Lease : PPL 2 Otway Basin

Rig : Rig 30

Job # : AU-DD-90009

BHA# 3

OBJECTIVES:

A mud motor and PDC bit will be used, with a 1.5° bend in the motor. Build to 30° @ 216° azimuth.
It was recommended by Western Underground Gas Storage Pty. Ltd. to rotary drill as much as possible.

RESULTS:

BHA #3 performed as expected.
Drilling time was very good.



MOTOR PERFORMANCE REPORT

M-AU-DD-90009-2

Motor Serial # : 800177 Job # : AU-DD-90009
 Directional Driller(s) : Ron.Boisvert, Robert Wyche Customer : Western Underground Gas Storage Pty Ltd
 Location : PPL 2 Otway Basin Rig : Rig 30
 Well : Iona 3 Bit Run # : 2 BHA # : 2 Motor Run # : 1
 Depth In/Out : 636 / 935 m Date In/Out : 9/04/99 / 10/04/99 Hole Size : 12.250 in
 Application Details :

MOTOR CONFIGURATION

	From Bit (m)	Component	Type	Diam In/Out (in)	
Up Stab	1 1.07	Sleeve Stab/Pad	Yes Stab: 1 0°	12.000 12.000	
	2 3.01	Bent Housing	Yes Non-Adjustable: 1.50° bend		
Lwr Stab or Pad Sub	3	Housing Tool Used	No		
Motor Top	4 9.86	Stator Elastomer	Nitrile		
Pad	5	Bent Sub / 2nd Bent Hsg	No		
Bend (Housing)	6 10.98	Lower String Stab	Yes Stab: 3 270°	11.750 11.750	
	7	Upper String Stab	No		
Sleeve Tool		Additional Features :		Arr Ret	
		Flex Collar : No	Short Brg Pack : No	Rtr Noz / Size : /32's	Pick Up Sub : Yes Yes
		Brg Cfg (Off/On) :	Lobe Cfg : 6/7	BHA OD/ID : 8.250 / 2.810 in	Bit Box Protr : Yes Yes

MOTOR RUN DATA

Max Dogleg While Rotating	: /30m	RPM	: Motor Stalled : No	Prev Job/Well Hrs	: 0.00	
Max Dogleg Overpulled In	: /30m	Force	: lbf	Float Valve	: No	
Max Dogleg Pushed Through	: /30m	Force	: lbf	DP Filter	: No	
Hole Azimuth Start / End	: 177.47° / 217.09°	Inc Start / End	: 1.84° / 21.61°	Circ Hrs	: 3.75	
Interval Oriented / Rot.	: 170 / 129 m	Directional Perf Ori / Rot	: 6.50 / 0.26 /30m	Reaming Hrs	: 0.00	
Jarring Occured	: No			Total Hrs This Run	: 23.50	
				New Cumulative Hrs	: 23.50	
Diff Press (psi)	Str RPM	Rotn Torque (ft-lbs)	Drag Up/Dn (lbf)	WOB (klbs)	ROP Oriented (m/hr)	ROP Rotated (m/hr)
Avg : -104	64		/	10	11	21
Max : 150	80		/	20	25	50

PRE-RUN TESTS

Motor Tested Pre-Run : No with :
 Dump Sub Operating : N/A Brg Play : mm
 Flow 1 : gpm Pressure 1 : psi
 Flow 2 : gpm Pressure 2 : psi
 Driveshaft Rotation Observed : No
 Bearing Leakage Observed : No

POST-RUN TESTS

Motor Tested Post-Run : No with :
 Dump Sub Operating : N/A Brg Play : mm
 Flow 1 : gpm Pressure 1 : psi
 Flow 2 : gpm Pressure 2 : psi
 Driveshaft Rotation Observed : No
 Bearing Leakage Observed : No
 Driveshaft Rotated to Drain Mud : No
 Fluid Flushed : No Fluid Used :

MUD DATA

Base : Water Additives : Mud Wt : 9.1 ppg SPP Start/End : 650 / 1600 psi
 % Oil/Water : / % Solids : 38.40 % Sand : 0.50 PV : 10 cp YP : 27.0 lb/100ft² pH : 8.3
 DH Temp Avg/Max : / FlowRate Avg/Max : 717 / 740 gpm Chloride Content : 21000 ppm
 Principle Formation Name(s) : Lithology :

BIT DATA

Make : BBL	Type : BB650SR	Serial # : 510709R2	Dull Grade	1	2	3	4	5	6	7	8
Prev Drilling Hrs : 0.00	Prev Reaming Hrs : 0.00	No of Runs This Bit : 1	In	1	1						
Jet Sizes (/32's) : 2x12, 4x14	TFA : 0.822 in²	Gage Length : 12.250 in	Out	4	7	WT	AN	A	1	CT	PR

PERFORMANCE COMMENTS

Problem Perceived : No Problem Date : Service Interrupt : No Service Interrupt Hrs :
 Performance Motor : Yes Tandem Motor : No LIH : No PPR Ref # :

Customer Representative's Signature (optional) : Date:



MOTOR PERFORMANCE REPORT

M-AU-DD-90009-3

Motor Serial # : 800177 Job # : AU-DD-90009
 Directional Driller(s) : Ron.Boisvert, Robert Wyche Customer : Western Underground Gas Storage Pty Ltd
 Location : PPL 2 Otway Basin Rig : Rig 30
 Well : Iona 3 Bit Run # : 3rr1 BHA # : 3 Motor Run # : 2
 Depth In/Out : 935 / 1459 m Date In/Out : 10/04/99 / 13/04/99 Hole Size : 12.250 in
 Application Details : Steerable Drilling

MOTOR CONFIGURATION

	From Bit (m)	Component	Type	Diam In/Out (in)
Upr Stab	1 1.07	Sleeve Stab/Pad	Yes	Stab: 1 0°
	2 3.01	Bent Housing	Yes	Non-Adjustable: 1.50° bend
Lwr Stab or Pad Sub	3	Housing Tool Used	No	
Motor Top	4 9.86	Stator Elastomer	Nitrile	
Pad	5	Bent Sub / 2nd Bent Hsg	No	
Bend (Housing)	6 10.98	Lower String Stab	Yes	Stab: 3 270°
Sleeve Tool	7	Upper String Stab	No	

Additional Features :	Arr Ret
Flex Collar : No	Pick Up Sub : Yes Yes
Short Brg Pack : No	Bit Box Protr : Yes Yes
Rtr Noz / Size : /32's	
Brg Cfg (Off/On) :	
Lobe Cfg : 6/7	
BHA OD/ID : 8.250 / 2.810 in	

MOTOR RUN DATA

Max Dogleg While Rotating	6.00 /30m	RPM	80	Motor Stalled	Yes	Prev Job/Well Hrs	23.50
Max Dogleg Overpulled In	/30m	Force	lbf	Float Valve	Yes	Drilling Hrs	43.50
Max Dogleg Pushed Through	/30m	Force	lbf	DP Filter	No	Circ Hrs	3.50
Hole Azimuth Start / End	217.09° / 219.70°	Inc Start / End	21.61° / 31.80°	Total Hrs This Run	47.00	Reaming Hrs	0.00
Interval Oriented / Rot.	75 / 449 m	Directional Perf Ori / Rot	4.00 / 0.27 /30m	New Cumulative Hrs	70.50		
Jarring Occured	No						

Diff Press (psi)	Str RPM	Rotn Torque (ft-lbs)	Drag Up/Dn (lbf)	WOB (klbs)	ROP Oriented (m/hr)	ROP Rotated (m/hr)
Avg : 100	61		20000 / 20000	26	12	12
Max : 100	80		50000 / 40000	35	25	35

PRE-RUN TESTS

Motor Tested Pre-Run : Yes with : 0 Collars, Bit, MWD
 Dump Sub Operating : Yes Brg Play : 3.0 mm
 Flow 1 : 730 gpm Pressure 1 : 2000 psi
 Flow 2 : gpm Pressure 2 : psi
 Driveshaft Rotation Observed : Yes
 Bearing Leakage Observed : Yes

POST-RUN TESTS

Motor Tested Post-Run : No with :
 Dump Sub Operating : Yes Brg Play : 11.0 mm
 Flow 1 : 730 gpm Pressure 1 : 2000 psi
 Flow 2 : gpm Pressure 2 : psi
 Driveshaft Rotation Observed : Yes
 Bearing Leakage Observed : Yes
 Driveshaft Rotated to Drain Mud : Yes
 Fluid Flushed : Yes Fluid Used : Oil & Water

MUD DATA

Base : Water Additives : Mud Wt : 9.1 ppg SPP Start/End : 1600 / 1700 psi
 % Oil/Water : 0.00 / 62.40 % Solids : 36.60 % Sand : 1.00 PV : 14 cp YP : 17.0 lbf/100ft² pH : 9.0
 DH Temp Avg/Max : / FlowRate Avg/Max : 740 / 740 gpm Chloride Content : 25000 ppm
 Principle Formation Name(s) : Lithology :

BIT DATA

Make : SEC	Type : ERA	Serial # : 681061	Dull Grade	1	2	3	4	5	6	7	8
Prev Drilling Hrs : 0.00	Prev Reaming Hrs : 0.00	No of Runs This Bit : 1	In	1	1						
Jet Sizes (/32's) : 3x24	TFA : 1.325 in²	Gage Length : 12.250 in	Out	3	4	WT	A	E	4	F	CTD

PERFORMANCE COMMENTS

Problem Perceived : No Problem Date : Service Interrupt : No Service Interrupt Hrs :
 Performance Motor : Yes Tandem Motor : No LIH : No PPR Ref # :

Customer Representative's Signature (optional) : Date:

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DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 1 3/04/99

Total Depth (m) : 203	Casing Depth (m) : 5.00	Operator Reps : Wally Westman, Jack Lambert
Drilled last 24 hrs (m) : 203	Casing Diameter (in) : 20.000	SSDS Reps : Ron.Boisvert (1)
Hole Size (in) : 17.500	Casing ID (in) : 19.124	

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
0.00	0.00	0.00	0.00	0.00	N00.00E

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 1: Bit #1 (10.5 hrs), Sub, Stab, DC, Stab, 2x DC, Stab, 3x DC, Sub, Sub, HWDP, Jar, HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.0	39	8	14.0	5.0 / 12.0	13	8.5	3.60	2.50	

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	11:30	11.50	4.98	1	Trip In
11:30	15:00	3.50	41.00	1	Drilling
15:00	17:00	2.00	41.00	1	Miscellaneous
17:00	00:00	7.00	203.00	1	Drilling

COMMENTS

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DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 2 4/04/99

Total Depth (m) :	423	Casing Depth (m) :	5.00	Operator Reps :	Wally Westman
Drilled last 24 hrs (m) :	220	Casing Diameter (in) :	20.000	SSDS Reps :	Ron.Boisvert (2)
Hole Size (in) :	17.500	Casing ID (in) :	19.124		

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
395.00	0.80	152.20	394.99	2.76	S27.80E

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 1: Bit #1 (29. hrs), Sub, Stab, DC, Stab, 2x DC, Stab, 3x DC, Sub, Sub, HWDP, Jar, HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	47	10	19.0	8.0 / 18.0	12	8.3	38.40	0.75	

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	01:00	1.00	212.00	1	Drilling
01:00	01:30	0.50	212.00	1	Deviation Survey
01:30	02:00	0.50	218.00	1	Drilling
02:00	03:00	1.00	218.00	1	Rig Repair
03:00	03:30	0.50	218.00	1	Service Rig
03:30	04:00	0.50	232.00	1	Drilling
04:00	07:00	3.00	232.00	1	Rig Repair
07:00	22:30	15.50	414.00	1	Drilling
22:30	23:00	0.50	414.00	1	Deviation Survey
23:00	00:00	1.00	423.00	1	Drilling

COMMENTS

Take single shot surveys

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DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 3 5/04/99

Total Depth (m) :	497	Casing Depth (m) :	5.00	Operator Reps :	Wally Westman
Drilled last 24 hrs (m) :	74	Casing Diameter (in) :	20.000	SSDS Reps :	Ron. Boisvert (3)
Hole Size (in) :	17.500	Casing ID (in) :	19.124		

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
395.00	0.80	152.20	394.99	2.76	S27.80E

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 1: Bit #1 (52.5 hrs), Sub, Stab, DC, Stab, 2x DC, Stab, 3x DC, Sub, Sub, HWDP, Jar, HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.0	39	8	14.0	5.0 / 12.0	13	8.5	3.60	2.50	

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	09:00	9.00	471.00	1	Drilling
09:00	09:30	0.50	471.00	1	Service Rig
09:30	00:00	14.50	497.00	1	Drilling

COMMENTS

Drill 17½" hole to 630m TD (13 3/8" casing).

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DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 4 6/04/99

Total Depth (m) : 636	Casing Depth (m) : 633.00	Operator Reps : Wally Westman, Jack Lambert
Drilled last 24 hrs (m) : 139	Casing Diameter (in) : 13.375	SSDS Reps : Ron.Boisvert (4), Robert Wyche (1)
Hole Size (in) : 17.500	Casing ID (in) : 12.515	

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
621.50	1.75	172.20	621.43	7.68	S18.94E

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 1: Bit #1 (59.5 hrs), Sub, Stab, DC, Stab, 2x DC, Stab, 3x DC, Sub, Sub, HWDP, Jar, HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	55	10	27.0	15.0 / 28.0	12	8.3	38.40	0.50	

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	05:30	5.50	630.00	1	Drilling
05:30	06:00	0.50	630.00	1	Service Rig
06:00	07:00	1.00	632.00	1	Drilling
07:00	08:00	1.00	632.00	1	Circulate
08:00	08:30	0.50	636.00	1	Drilling
08:30	09:00	0.50	636.00	1	Circulate
09:00	09:30	0.50	636.00	1	Deviation Survey
09:30	10:00	0.50	636.00	1	Circulate
10:00	12:30	2.50	636.00	1	Trip Out
12:30	14:30	2.00	636.00	1	Trip In
14:30	16:00	1.50	636.00	1	Circulate
16:00	18:00	2.00	636.00	1	Trip Out (at Surface)
18:00	00:00	6.00	636.00		Run Casing / Cement

COMMENTS

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DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 5 7/04/99

Total Depth (m) :	636	Casing Depth (m) :	633.00	Operator Reps :	Wally Westman, Jack Lambert
Drilled last 24 hrs (m) :	0	Casing Diameter (in) :	13.375	SSDS Reps :	Ron.Boisvert (5), Robert Wyche (2)
Hole Size (in) :		Casing ID (in) :	12.515		

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
621.50	1.75	172.20	621.43	7.68	S18.94E

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	55	10	27.0	15.0 / 28.0	12	8.3	38.40	0.50	

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	12:00	12.00	636.00		Run Casing / Cement
12:00	16:30	4.50	636.00		Wait on Cement
16:30	00:00	7.50	636.00		Nipple Up BOP

COMMENTS

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DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 6 8/04/99

Total Depth (m) :	636	Casing Depth (m) :	633.00	Operator Reps :	Wally Westman, Jack Lambert
Drilled last 24 hrs (m) :	0	Casing Diameter (in) :	13.375	SSDS Reps :	Ron.Boisvert (6), Robert Wyche (3)
Hole Size (in) :		Casing ID (in) :	12.515		

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
621.50	1.75	172.20	621.43	7.68	S18.94E

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCI/Polymer	9.1	55	10	27.0	15.0 / 28.0	12	8.3	38.40	0.50	

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	10:00	10.00	636.00		Wait on Cement
10:00	18:00	8.00	636.00		Nipple Up BOP
18:00	23:00	5.00	636.00		Test BOP
23:00	00:00	1.00	636.00		Install wear bushing & csg pressure sensor

COMMENTS

sperry-sun

DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 7 9/04/99

Total Depth (m) :	707	Casing Depth (m) :	633.00	Operator Reps :	Wally Westman, Jack Lambert
Drilled last 24 hrs (m) :	71	Casing Diameter (in) :	13.375	SSDS Reps :	Ron.Boisvert (7), Robert Wyche (4)
Hole Size (in) :	12.250	Casing ID (in) :	12.515		

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
706.60	4.50	218.10	706.46	10.57	S09.60E

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 2: 316.27 m; Bit #2 (6. hrs), PDM #1 (7. hrs), Stab, Sub, MWD, DC, Sub, Sub, 24x HWDP, Jar, 6x HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lb/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	55	10	27.0	15.0 / 28.0	12	8.3	38.40	0.50	

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	01:30	1.50	636.00		Test BOP
01:30	05:00	3.50	636.00	2	PU/LD BHA Test motor & MWD
05:00	07:30	2.50	636.00	2	Trip In
07:30	08:00	0.50	636.00	2	Circulate
08:00	10:15	2.25	636.00	2	Drill Cement, Float & shoe
10:15	10:30	0.25	638.00	2	Drilling
10:30	11:00	0.50	638.00	2	Circulate
11:00	11:30	0.50	638.00	2	Leak-off Test
11:30	20:30	9.00	638.00	2	Rig Repair (Mud pump)
20:30	23:00	2.50	688.00	2	Drilling
23:00	00:00	1.00	707.00	2	Directional drilling

COMMENTS

sperry-sun

DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 8 10/04/99

Total Depth (m) : 960	Casing Depth (m) : 633.00	Operator Reps : Wally Westman, Jack Lambert
Drilled last 24 hrs (m) : 253	Casing Diameter (in) : 13.375	SSDS Reps : Ron.Boisvert (8), Robert Wyche (5)
Hole Size (in) : 12.250	Casing ID (in) : 12.515	

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
954.20	24.70	219.50	945.08	68.91	S33.30W

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 2: 316.27 m; Bit #2 (22. hrs), PDM #1 (23.5 hrs), Stab, Sub, MWD, DC, Sub, Sub, 24x HWDP, Jar, 6x HWDP, Sub
 BHA 3: 316.27 m; Bit #3rr1 (2. hrs), PDM #2 (25.5 hrs), Stab, Sub, MWD, DC, Sub, Sub, 24x HWDP, Jar, 6x HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	48	14	17.0	7.0 / 16.0	7	9.0	36.60	1.00	0.00

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	16:00	16.00	934.71	2	Drilling
16:00	16:30	0.50	934.71	2	Circulate
16:30	18:45	2.25	934.71	2	Trip Out
18:45	19:00	0.25	934.71	2	Trip Out (at Surface)
19:00	20:30	1.50	934.71	3	Trip In
20:30	21:00	0.50	934.71	3	Cut Drill Line
21:00	22:00	1.00	934.71	3	Trip In
22:00	00:00	2.00	960.00	3	Drilling

COMMENTS

Up = 115k
 Down = 75k
 Rot. = 93k

sperry-sun

DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 9 11/04/99

Total Depth (m) : 1316	Casing Depth (m) : 633.00	Operator Reps : Wally Westman, Jack Lambert
Drilled last 24 hrs (m) : 356	Casing Diameter (in) : 13.375	SSDS Reps : Ron.Boisvert (9), Robert Wyche (6)
Hole Size (in) : 12.250	Casing ID (in) : 12.515	

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
1315.40	33.20	218.70	1251.23	259.82	S35.59W

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 3: 316.27 m; Bit #3rr1 (25.5 hrs), PDM #2 (49. hrs), Stab, Sub, MWD, DC, Sub, Sub, 24x HWDP, Jar, 6x HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	48	14	17.0	7.0 / 16.0	7	9.0	36.60	1.00	0.00

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	09:30	9.50	1107.00	3	Drilling (with surveys)
09:30	10:00	0.50	1107.00	3	Service Rig
10:00	00:00	14.00	1316.00	3	Drilling

COMMENTS

sperry-sun

DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 10 12/04/99

Total Depth (m) :	1459	Casing Depth (m) :	633.00	Operator Reps :	Wally Westman, Jack Lambert
Drilled last 24 hrs (m) :	143	Casing Diameter (in) :	13.375	SSDS Reps :	Ron.Boisvert (10), Robert Wyche (7)
Hole Size (in) :	12.250	Casing ID (in) :	12.515		

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
1459.00	31.80	219.70	1372.51	336.58	S36.43W

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 3: 316.27 m; Bit #3rr1 (43.5 hrs), PDM #2 (68.5 hrs), Stab, Sub, MWD, DC, Sub, Sub, 24x HWDP, Jar, 6x HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	48	14	17.0	7.0 / 16.0	7	9.0	36.60	1.00	0.00

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	09:30	9.50	1401.00	3	Drilling
09:30	10:00	0.50	1401.00	3	Service Rig
10:00	10:30	0.50	1401.00	3	Rig Repair
10:30	19:00	8.50	1459.00	3	Drilling
19:00	20:30	1.50	1459.00	3	Circulate
20:30	00:00	3.50	1459.00	3	Short Trip to 635m

COMMENTS

sperry-sun

DRILLING SERVICES

Daily Drilling Report

Customer : Western Underground Gas Storage Pty Ltd
 Well : Iona 3
 Country : Australia
 Lease : PPL 2 Otway Basin
 Rig : Rig 30
 Job # : AU-DD-90009

CURRENT STATUS Report # 11 13/04/99

Total Depth (m) : 1459	Casing Depth (m) : 633.00	Operator Reps : Wally Westman, Jack Lambert
Drilled last 24 hrs (m) : 0	Casing Diameter (in) : 13.375	SSDS Reps : Ron.Boisvert (11), Robert Wyche (8)
Hole Size (in) : 12.250	Casing ID (in) : 12.515	

LAST SURVEY

Depth (m)	Inclination	Azimuth	TVD (m)	Displ (m)	Direction
1459.00	31.80	219.70	1372.51	336.58	S36.43W

LAST FORMATION TOP

Formation Name	MD Top (m)	TVD Top (m)

BHA SUMMARY

BHA 3: 316.27 m; Bit #3rr1 (43.5 hrs), PDM #2 (70.5 hrs), Stab, Sub, MWD, DC, Sub, Sub, 24x HWDP, Jar, 6x HWDP, Sub

MUD DATA

Type	Weight (ppg)	FV (sec)	PV (cp)	YP (lbf/100ft ²)	Gels	Fluid Loss	pH	Solids (%)	Sand (%)	Oil (%)
KCl/Polymer	9.1	48	14	17.0	7.0 / 16.0	7	9.0	36.60	1.00	0.00

TIME BREAKDOWN

From	To	Hours	TMD (m)	BHA #	Activity
00:00	00:30	0.50	1459.00	3	Short Trip
00:30	02:30	2.00	1459.00	3	Circulate
02:30	05:30	3.00	1459.00	3	Trip Out
05:30	07:00	1.50	1459.00	3	Trip Out (at Surface)

COMMENTS

APPENDIX 7

Drilling fluid recap by Baroid

**WESTERN UNDERGROUND GAS STORAGE
DRILLING FLUID RECAP
IONA - 3
PPL - 2 OTWAY BASIN, VICTORIA**



Prepared by : Gerald Lange
 : Alan Searle

Date : 20th April, 1999

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1.

WELL SUMMARY

1.1 Well Data

Well Name	: Iona - 3
Operator	: Western Underground Gas Storage Pty Ltd.
Well Type	: Directional
Maximum Deviation & Direction	: 31.8° / 219.7° relative to north
Horizontal Displacement at TD	: 336.9 m
Bottom Hole Temperature	: 55 °C
Location	: PPL2 Otway Basin, Victoria
Contractor/Rig	: OD & E Rig 30
Start Date (Rig move)	: 1 st April, 1999
Spud Date	: 3 rd April, 1999
RKB to Ground level	: 4.98 m
RKB to Wellhead	: 5.15 m
Total Depth MD and TVD	: MD 1459 m. TVD 1373.03 m.
Date TD Reached (Set 9 ^{5/8} " casing)	: 15 th April, 1999
Total Days Drilling	: 13 days
Date Released	: 19 th April, 1999
Total Days on Well	: 19 days

1.2 Formation Tops

Formation	MD (m) KB	TVD (m) KB	Inclination (deg)
Heytesbury Group (undifferentiated)	Surface	Surface	0
Narrawaturk Marl	201	201	0
Mepunga Formation	280	280	0
Dilwyn Formation	339.5	339.5	0
Pember Mudstone	547	546.9	0.8
Pebble Point Formation	624	623.9	1.75
Paaratte Formation	668	667.9	2.1
Skull Creek Member	1026	1007.9	33.2
Nullawarre Greensand	1182	1139.4	32.2
Belfast Mudstone	1287	1229.2	33.8
Waarre Formation			
D unit	1340	1270.2	33.0
C1 sand	1365	1293.7	32.7
C2 sand	1381.6	1307.2	32.3
B sand	1407.5	1355.8	31.8
Total Depth	1459	1373.0	31.8

1.3 Casing Program

20"	Conductor		@	5.0m
13 ³ / ₈ "	Intermediate Casing	K 55, 61.0 #	@	635.0m
9 ⁵ / ₈ "	Production Casing	L 80, 40.0 #	@	1459.0m
5 ¹ / ₂ "	Completion Tubing	L 80, 17.0 #	to	1331.5m

1.4 Personnel

Drilling Supervisors	:	Wally Westman	Jack Lambert
Baroid Field Service Reps.	:	Gerald Lange	Alan Searle

2.

COST SUMMARY**2.1 Drilling Fluid Costs**

	Drilling Fluid	Hole Size	MD From	MD To	Cost (AUD\$)
1.	KCI / EZ-MUD / Polymer	17 ¹ / ₂ "	4.8 m	636 m	21,628
2.	KCI / EZ-MUD / Polymer	12 ¹ / ₄ "	636 m	1459 m	37,822

Mud Materials Used For Drilling		Total AUD\$	
Mud Materials Not Used For Drilling: (Bentonite for 17 ¹ / ₂ " cement job)		AUD\$	1,647
Mud Materials Used For Completion (8.6 ppg KCI Brine)		AUD\$	6,239
Total Materials		AUD\$	67,336

2.2 Engineering Costs

Service Representatives	From (date)	To (date)	Days
Alan Searle	1/04/99	6/04/99	6
Gerald Lange	7/04/99	19/04/99	13

Total Days			19
Service Cost @	\$650.00 per day	Total AUD\$	12,350

Vehicle @ \$ 100.00 / day		19 days	1,900.00
Mileage @ \$ 1.00 / klm.	93,262 km to 94,118 km	856 km.	856.00

Total Costs		AUD\$	82,442
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3. PERFORMANCE SUMMARY

3.1 Comments

- Iona-3 was drilled utilising a KCl / EZ-MUD / Polymer fluid to provide optimal inhibition of the reactive clays in this area.
- 17¹/₂" hole was drilled trouble-free and 13³/₈" casing set at 635m.
- 12¹/₄" hole was drilled trouble-free.
- Schlumberger logs were successfully run.
- Extensive reaming was required when running a stiffer bottom hole assembly on the clean out trip prior to running 9⁵/₈" casing.
- Ran and set the 9⁵/₈" casing at 1459m.

3.2 Performance Indicators

Interval 1. 17 ¹ / ₂ " Surface Hole 5 m - 636 m (631 m drilled)	Program	Actual	Achieved (± 10 %)
• Salvaged Mud from Iona-4	450	400	Yes
• Volume Consumed	1560	1316	Yes
• Volume Used, bbl	1960	1716	Yes
• Dilution Rate, bbl/m	1.5	1.18	Yes
• Consumption Rate, bbl/m	2.47	2.08	Yes
• Mud Cost/bbl., A\$	22.16	16.43	Yes
• Mud Cost/m., A\$	54.80	34.28	Yes
• Interval Mud Cost, A\$	34,577	21,628	Yes

Interval 2. 12 ¹ / ₄ " Production Hole 636 m - 1459 m (823 m drilled)	Program	Actual	Achieved (± 10 %)
• Salvaged Mud from 17 ¹ / ₂ " section	400	989	Yes
• Volume Consumed	1408	1502	Yes
• Volume Used, bbl	1808	2491	No
• Dilution Rate, bbl/m	0.9	1.4	No
• Consumption Rate, bbl/m	1.79	1.83	Yes
• Mud Cost/bbl., A\$	34.16	25.18	Yes
• Mud Cost/m., A\$	61.27	45.96	Yes
• Interval Mud Cost, A\$	48,099.73	37,822	Yes

Completion Interval

- | | | | |
|------------------------------|----------|-------|-----|
| • Completion Fluid Cost, A\$ | 3,913.24 | 6,239 | Yes |
|------------------------------|----------|-------|-----|

Entire Well

- | | | | |
|---------------------------------|-----------|--------|-----|
| • Total Drilling fluid cost A\$ | 82,676.97 | 65,689 | Yes |
|---------------------------------|-----------|--------|-----|

Explanation of Non-Conformance

- The programmed mud cost for the 17¹/₂" and 12-1/4" came in well below programmed. This is due to running a lower 6 rpm value through most of the interval and saving on XCD Polymer consumption. Hole cleaning in the vertical and directional sections was not compromised by the lower rheology. Furthermore, maintaining the filtrate between 6-8 cc through the 12¹/₄" interval reduced the consumption of PAC-R.
- More dilution volume was required to drill the 12¹/₄" section.
- Iona 3 was drilled very quickly. Thus, the mud required less maintenance, thereby reducing mud costs.

4. INTERVAL - 1

4.1 SUMMARY

17¹/₂" Hole From 5 m To 636 m In 4 Days

Drilling Fluid KCl / EZ-MUD / Polymer

Formations Heytesbury Group; Narrawaturk Marl; Mepunga Fm.; Dilwyn Fm.; Pember Mudstone; Pebble Point Fm..

Operations Summary

Iona-3 was spudded in at 09:30 hours, 3rd April, 1999. No problems were encountered drilling the 17¹/₂" hole to interval TD of 635.8m. A LCM sweep was pumped prior to making a wiper trip, circulating the hole clean and pulling out to run casing. 13³/₈" casing was run and cemented at 635m.

Properties	Programmed		Actual (Typical)		Conformance
	Min	Max	Min	Max	
Mud Weight, ppg	N.C.	9.0	8.9	9.0	Yes
PV (cP) @ 120°F		< 30	8	11	Yes
6 rpm, lb/100 ft ²	8	12	6	15	No
API Filtrate		< 15	11.4	16.4	Yes
KCL Content	3	4	2.6	3.6	Yes
pH	8.5	9	8.3	8.5	No
LGS, % v/v		<10	3.8	4.2	Yes

Explanation of Non-Conformance

- Initial 6 rpm rheometer readings were well below specification, the salvaged mud had a 6 rpm reading of 0 (?). This was raised through the Narrawaturk Marl and Mepunga Formation, increasing to as much as 15 lb/100ft² as a result of polymer additions and the clays being drilled. 6 rpm values dropped back to 7 - 8 lb/100ft² while drilling the sandy Dilwyn formation, due to dilution required to replace losses over sand blinded shaker screens and the lack of any further contribution from formation clays. After drilling through the Pember Mudstone at approximately 530m, formation clays and increased polymer additions raised the 6 rpm values up to 15 lb/100ft² at interval TD. In the vertical 17¹/₂" hole, hole cleaning was never a problem, even when 6 rpm values were below specification.
- The pH was kept low to minimise dispersion of reactive clays, particularly the reactive Gellibrand clays.

Maintenance

- Approximately 400 bbls of mud from the Iona-4 well was salvaged and reused to commence drilling of Iona-3. The salvaged mud showed signs of bacterial degradation of the polymers - the viscosity was extremely low, API filtration was +/- 20 cc/30 minutes, KCl concentration of 2.5%.
- Prior to commencing drilling, and once the salvaged mud was back in the mud pits, the mud was treated with BARACIDE and caustic potash to eliminate bacteria and prevent further degradation.
- Mud properties were adjusted and controlled by addition of premix, the concentrations of chemicals in the premix were adjusted to achieve the required properties in the active.
- A combination of EZ-MUD DP at approximately 0.5 ppb and a KCl concentration of approximately 3.5% provided highly effective inhibition of the clays drilled in this interval.

- PAC-R was added as a filtration control agent and supplementary viscosifier. API filtrate was quickly reduced from an initial 20+, to be controlled in the range 11 - 12.5 cc/30 minutes. Filtration control was more relaxed than when drilling Iona-4, with no apparent deterioration in hole condition.
- Mud salvaged from Iona-4 started out with an MBT of 8 ppb equivalent, this increased while drilling the Narrawaturk Marl and Mepunga Formation, stabilising at 15 ppb equivalent.

Solids Control Equipment

- DFE linear motion shakers were fitted with flat 84 mesh screens.
- High ROP when drilling the Narrawaturk Marl and Mepunga Formation caused severe overloading of the screens. Cuttings were firm and discrete and did not stick to the screens, however, the volume of cuttings blanketed the screens and caused high mud losses over the shakers; the sump was regularly pumped back to the pits to maintain circulating volume.
- In the Dilwyn Formation, sand blinding of shaker screens became a problem. Shaker screens required frequent scrubbing with a wire brush to dislodge trapped sand grains and maintain mud flow.
- The 12-cone Harissburg desilter was run continuously. All cones operated efficiently, although generally in rope discharge through the Dilwyn Formation.
- The DFE centrifuge was run continuously and proved invaluable in controlling the low gravity solids and mud weight

4.2 EVALUATION

Comments

- The usage of PHPA proved to be successful in this area in the past and again the marls and clays were kept in check with EZ - MUD and KCl.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

- | | |
|------------|------------------------------|
| 1) Problem | No hole problems encountered |
| Cause | |
| Action | |

Drilling Fluid

- | | |
|------------|--------------------------|
| 1) Problem | No problems encountered. |
| Cause | |
| Action | |

Solids Control and Mud Mixing Equipment

- | | |
|------------|--|
| 1) Problem | Mud loss to sump over shaker screens. |
| Cause | Screens overloaded with cuttings through the Narrawaturk Marl and Mepunga Formation, sand blinding screens through Dilwyn Formation. |
| Action | Hosed screens, recycled mud from sump. Scrubbed screens with wire brush to clear trapped sand grains. |

4.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- The KCl / EZ-MUD / Polymer system provided excellent hole inhibition and no hole problems were encountered.
- During cementing operations an excess of 100% cement was pumped. Cement returns were observed soon after commencing the displacement, indicating that hole washout was minimal.

Drilling Fluid

- During the rig move from Iona-4 to Iona-3 the salvaged mud in the storage tank gelled up and water separation occurred, the mud pumped to the sump became diluted with rainwater and also gelled and separated. The fluid recovered to the pits was watery, had minimal filtration control, was undergoing bacterial degradation and started out with an MBT of 8 ppb equivalent. The only real (cost saving) advantage of recycling this fluid was the KCl content.
- Depending on the state of the salvaged mud, salvaging the mud between wells is probably of marginal benefit.
- With a good circulation rate, hole cleaning was adequate even though the 6 rpm rheometer values were frequently below the specified minimum of 10 lb/100ft². In future wells a range of 8 - 12 lb/100 ft² would be sufficient in the vertical 17¹/₂" hole section, saving on consumption of expensive XCD Polymer
- Relaxed filtration of +/- 12 cc/30 minutes did not cause and hole problems. Reduced consumption of PAC-R filtration control agent again helped to reduce mud cost.
- Addition of 0.5 ppb EZ MUD DP, via premix, was important in maintaining cuttings integrity and optimising solids control equipment efficiency.

Solids Control and Mud Mixing Equipment.

- Flat 84 mesh screens were used. Pyramid 84 mesh screens if available would have been less prone to blinding thus reducing mud loss at the shakers.
- Centrifuge operation was crucial to maintaining minimum low gravity solids content. To optimise centrifuge performance the return mud discharge should be realigned to active pit 2, rather than taking suction and returning to active pit 1 as it now does.

5. INTERVAL -2

5.1 SUMMARY

12¹/₄" Hole From 636 m To 1459 m In 4 Days

Drilling Fluid KCl / EZ-MUD / Polymer

Formations Pebble Point Fm, Paaratte Fm, Skull Creek Member, Nullawarre Greensand, Belfast Mudstone, Waare Formation D unit C1sand C2 sand B sand.

Operations Summary

RIH with bit and directional BHA, tagged cement at 608m, drilled out the shoe track and formation to 638m. Circulated bottoms up, treating for minor cement contamination at bottoms up, and ran Leak-Off Test; equivalent mud weight 10.1 ppg. Repair pump #1, changed module.

Drilling, swept the hole with 20 bbls each of 10 ppb Kwikseal Fine/Medium LCM pill at 793m, 821m, 910m and at 934m with a light to high increase in cuttings observed over the shakers when pill to surface.

Tripped for new bit at 934m, difficult to slide and drill with PDC bit.

Continued drilling, swept hole with 20 bbls of 10 ppb of Kwikseal LCM Fine/Medium pill at 1021m, 1250m and at TD of 1459m. Observed high increase in cuttings over the shakers. POOH, hole tight from 1458m to 990m, new hole. RIH with no problems, circulate until hole clean, high concentration of fines over shakers. POOH with no problems.

Ran Schlumberger PEX/HALS/BHC combo log, Schlumberger TD 1452m, soft fill on bottom.

RIH with a stiff bottom hole assembly for a wiper trip, washed/reamed from 705m - 1459m. Circulated hole clean. Pulled out of hole and rigged up to run 9⁵/₈" casing. Casing was successfully run and cemented at 1459m.

Properties	Programmed		Actual (Typical)		Conformance
	Min	Max	Min	Max	
Mud Weight, ppg	-	< 9.6	9.0	9.2	Yes
PV (cP) @ 120°F		< 30	10	20	Yes
6 rpm, lb/100 ft ²	10	15	7	11	No
API Filtrate	6	8	5.8	8.0	Yes
KCl Content	3	4	3.5	4.4	Yes
pH	8.5	9.2	8.3	9.5	No
LGS, % v/v		<10	3.8	5.3	Yes
HPHT Filtrate, 250 F		<15	14.8	19.6	No

Explanation of Non-Conformance

- Initial mud weight was 9.0 ppg. This gradually increased due to incorporation of low gravity solids as drilling progressed, however, at no time did the mud weight exceed specification. Maximum mud weight was 9.2 ppg, immediately after adding the sized BARACARB bridging agent.
- Most mud properties were maintained within the specified limits.
- Hole cleaning in deviated hole was optimised by maintaining a 6 rpm value of 10 - 12 while drilling. Centrifuge and desilter was run during trips, to minimise solids content, further reducing the clay content.
- API filtration remained steady in the range 6 - 6.5 ml/30 minutes. However, HPHT filtration showed a steadily decreasing trend with depth, stabilising in the range 14.8 - 15 ml/30 minutes. Low gravity solids remained well below the specified upper limit, but still exhibited an increasing trend to finally stabilise at 5.3%.
- A lower pH was maintained to minimise clay solids dispersion.

Maintenance

- Use of KCl / EZ-MUD / Polymer fluid was continued through this interval, with no major changes in formulation.
- 989 bbls of mud was salvaged from the 17¹/₂" section.
- The premix formulation was changed as required to maintain fluid properties.
- Maintaining the KCl content in the required range also required a treatment higher than programmed, due to adsorption of the K⁺ ion by the drilled formation clays.
- A combination of EZ-MUD DP at approximately 0.5 ppb and a KCl concentration of approximately 3.5% provided highly effective inhibition of the clays drilled in the Belfast Mudstone.
- Prior to logging and running casing the mud was treated with BARACIDE to prevent bacterial degradation.
- Extensive reaming was required to get to bottom after logging with a stiffer bottom hole assembly. When running a stiffer bottom hole assembly into a near gauge, deviated hole this is not unusual.

Solids Control Equipment

- The DFE linear motion shale shakers again proved effective in their solids removal in this section of the hole. A combination of 84 and 110 mesh screens was used initially, but as the newly mixed mud was sheared through the bit the screens were downsized to 3 x 110 mesh (pyramid screens) on each shaker.
- The DFE desilter operated effectively, with all 12 cones functional. Underflow discharge was < 1.5 bbl/minute, ranging from 10.2 - 14 ppg in weight.
- Ran the DFE centrifuge continuously while drilling or circulating, operating with a wet discharge to increase colloidal solids removal.

5.2 EVALUATION**Comments**

- The 12¹/₄" section was successfully drilled without hole or mud related problems. Wireline logs and 9⁵/₈" casing was run trouble-free. This section was drilled below the time curve.

Problems, Causes, Remedial Action Taken or Recommended**Hole Conditions**

- 1) Problem Tight hole between 1458 - 990m when wiper tripping out of hole at TD.
Cause First trip out of new hole, common problem with KCl/Polymer mud in new hole.
Action Pumped and worked out as required, no problems running logs.
- 2) Problem Extensive reaming between 705 - 1459m when tripping in the hole.
Cause Running stiffer bottom hole assembly in deviated near gauged hole.
Action Washed and reamed to bottom, no problems running 9⁵/₈" casing.

Drilling Fluid

- 1) Problem No problems encountered.
Cause
Action

Solids Control and Mud Mixing Equipment

- 1) Problem High sand content in the mud.
Cause Shaker screens (84 mesh) too coarse, desilter cones plugged.
Action Replaced screens with finer mesh and unplugged cones.

5.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- Hole problems in this interval were not mud related. Hole cleaning efficiency was good and there was no obvious formation of cuttings beds.
- Extensive reaming, required when changing to a stiffer bottom hole assembly, is not unusual in deviated holes drilled with KCl / EZMUD / Polymer fluids.

Drilling Fluid

- Generally the KCl / EZ-MUD / Polymer fluid performed well and under programmed cost. Addition of 2 - 5 ppb of prehydrated bentonite would assist in maintaining low-end rheology (and reduce consumption of expensive polymers), particularly through the sand sections. Filter cake quality would also be improved, presumably with some decrease in HPHT filtration values.

Solids Control and Mud Mixing Equipment.

- Solids control and mixing equipment were adequate

6

INTERVAL - 3 - COMPLETION

6.1 COMPLETION FLUID SUMMARY

Production Tubing 5¹/₂" Run to 1331.5 m

Completion Fluid Inhibited KCl Brine (8.6 ppg)

Operations Summary

Cut 9⁵/₈" casing and installed the B section. Nipped up BOP as per program and logged with Schlumberger, ran CBL log.

Made up a 9⁵/₈" scraper and run in to 1445m. Worked the scraper and displaced the hole with 8.6 ppg inhibited KCL brine. Displaced the inside of the drill pipe with 20 bbls of high viscosity KCl brine, drop Gyro and pumped Gyro down. Pulled out laying down drill pipe and running survey.

Picked up and made up perforating gun, packer and completion string, run in with 5¹/₂" tubing filling the string with brine every 5 stands, brine displaced from the hole was lost to the sump. Run Schlumberger logs and correlate with VDL/GR/CL. Spaced out and set packer at 1331.5m. Test tubing and packer.

Nipple down BOP, nipple up Xmas tree and pressure tested tree, separator and lines, repairing observed leaks. Rigged up wireline lubricator and equipment, retrieved plug. Opened SSD, pumped nitrogen into tubing and displaced 25 bbls of brine to the annulus. Closed SSD and test.

Load and dropped firing bar. Tested well as per program. Shut well in, set plug and bled well down. Set RET valve, laid down wireline tool, rigged down lubricator and wireline. Released rig.

Properties	Programmed		Actual (Typical)		Conformance
	Min	Max	Min	Max	
Brine Weight, ppg	8.6	8.6	8.6	8.6	Yes

Maintenance

- Mixed KCl, tech grade for a brine weight of 8.6 ppg as requested. Coat 2748 corrosion inhibitor was added as a corrosion inhibitor.
- Mixed 20 bbls of high viscosity 8.6 ppg inhibited KCl brine, displaced inside drill pipe and dropped Gyro.
- A total of 580 bbls of brine was prepared for the completion.

APPENDIX

DEVIATION DATA

Depth MD (m)	Depth TVD (m)	Inclination (deg)	Direction (deg)	Displacement (m) (Vertical Section)
0	0	0.0	0.0	-0.0
395	395.0	0.8	152.2	1.2
621.5	621.4	1.75	172.2	4.36
706.6	706.5	4.5	218.1	7.3
754.2	753.7	8.3	277.9	12.7
782.8	782.0	10.4	231.1	17.2
801.8	800.6	12.6	225.3	20.9
839.8	837.2	17.0	218.9	30.9
887.3	882.5	18.9	217.0	45.3
906.7	900.9	19.0	216.4	51.6
944.9	936.6	23.5	218.3	65.0
982.7	970.8	26.9	220.7	81.0
1001.7	987.6	29.9	220.3	90.0
1058.8	1035.7	33.3	214.5	120.6
1106.3	1075.5	32.9	214.6	146.5
1191.3	1147.3	31.8	214.8	192.0
1248.8	1195.7	33.7	216.7	223.0
1315.4	1251.4	33.2	218.7	259.8
1381.9	1307.1	32.3	219.2	295.8
1438.6	1355.2	31.8	219.7	325.8
1459.6	1373.0	31.8	219.7	336.9

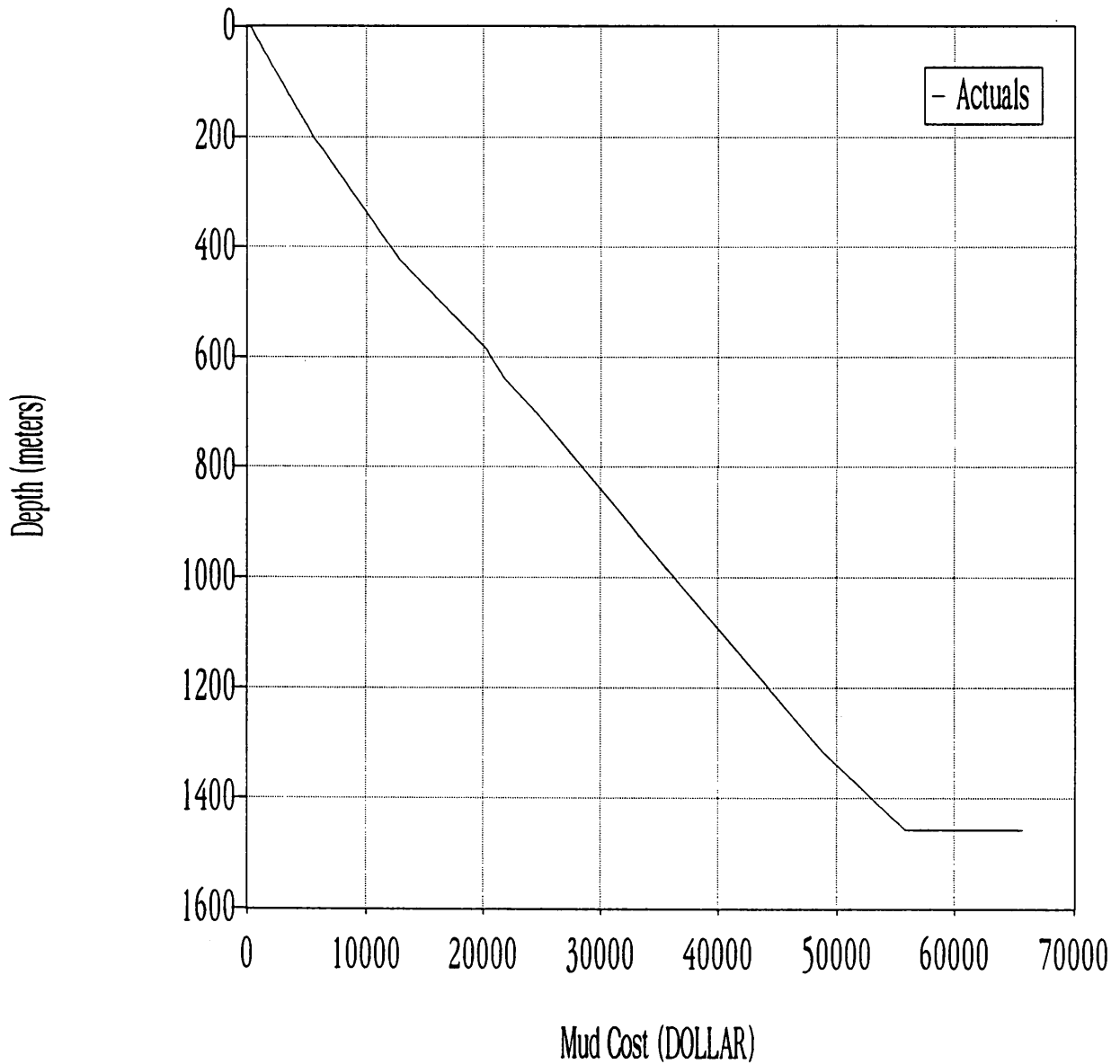
GRAPHS

Company: Western Underground Gas Storage Pty Ltd Entry: AUSTRALIA
 Well Name: IONA-3 Geo. Area: OTWAY BASIN
 Contractor: O.D. & E. Field: PPL 2
 Rig: Rig 30 Region: Victoria



Depth vs. Mud Cost

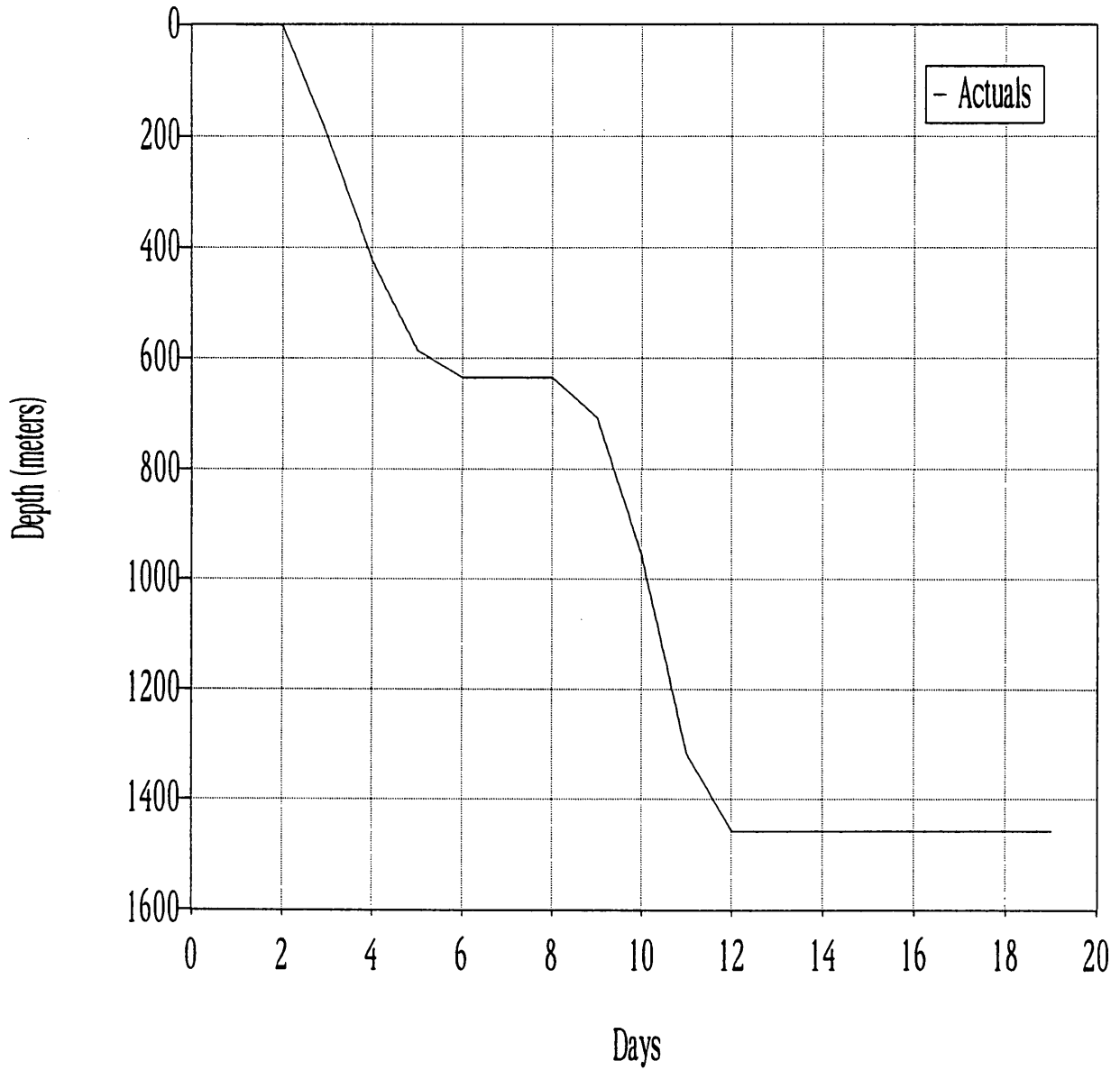
DOLLAR



Company: Western Underground Gas Storage Pty Ltd Entry: AUSTRALIA
Well Name: IONA-3 Geo. Area: OTWAY BASIN
Contractor: O.D. & E. Field: PPL 2
Rig: Rig 30 Region: Victoria



Depth vs. Days

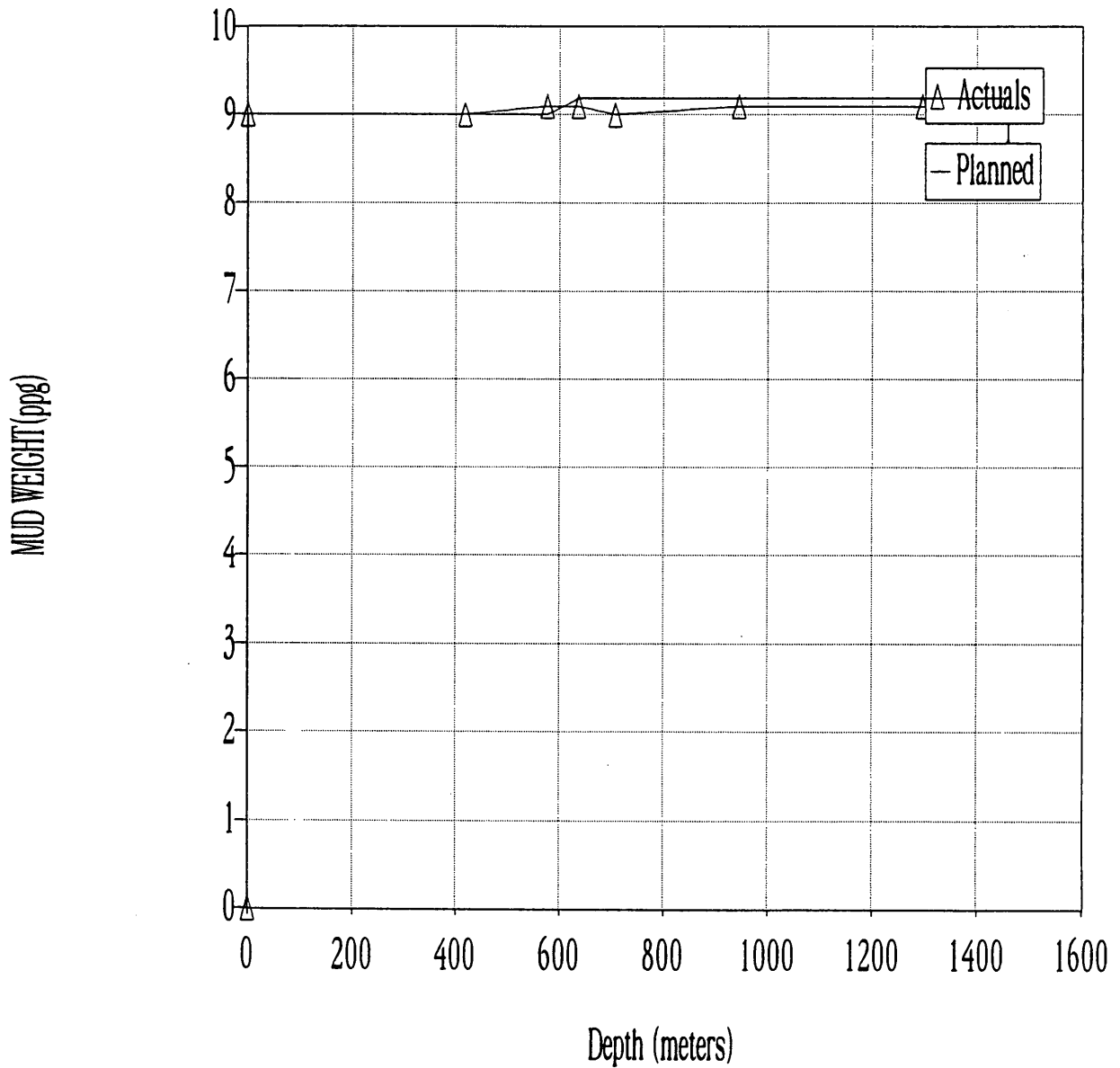


Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo. Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



MUD WEIGHT (ppg) vs Depth (meters)

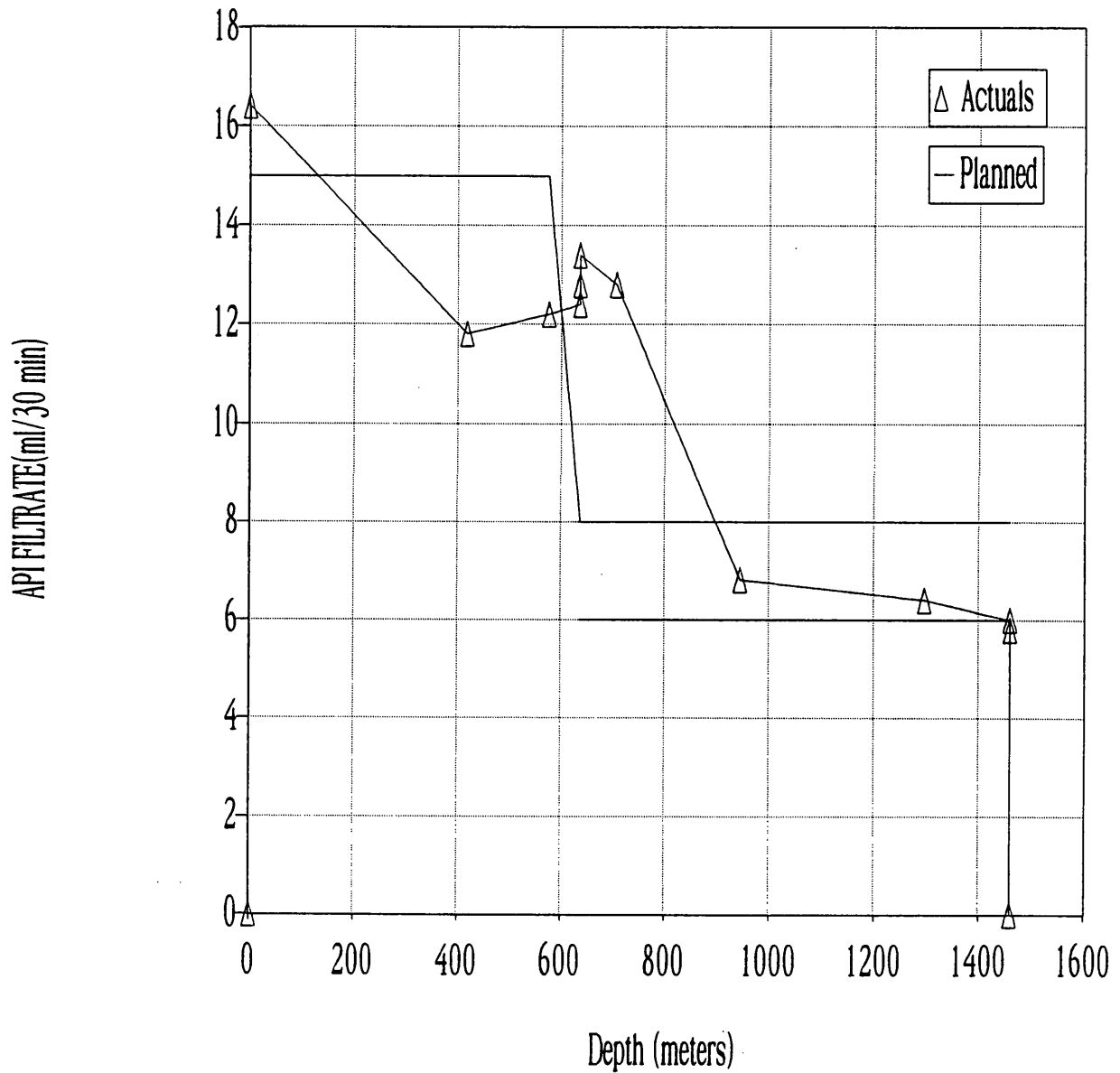


Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo. Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



API FILTRATE(ml/30 min) vs Depth (meters)

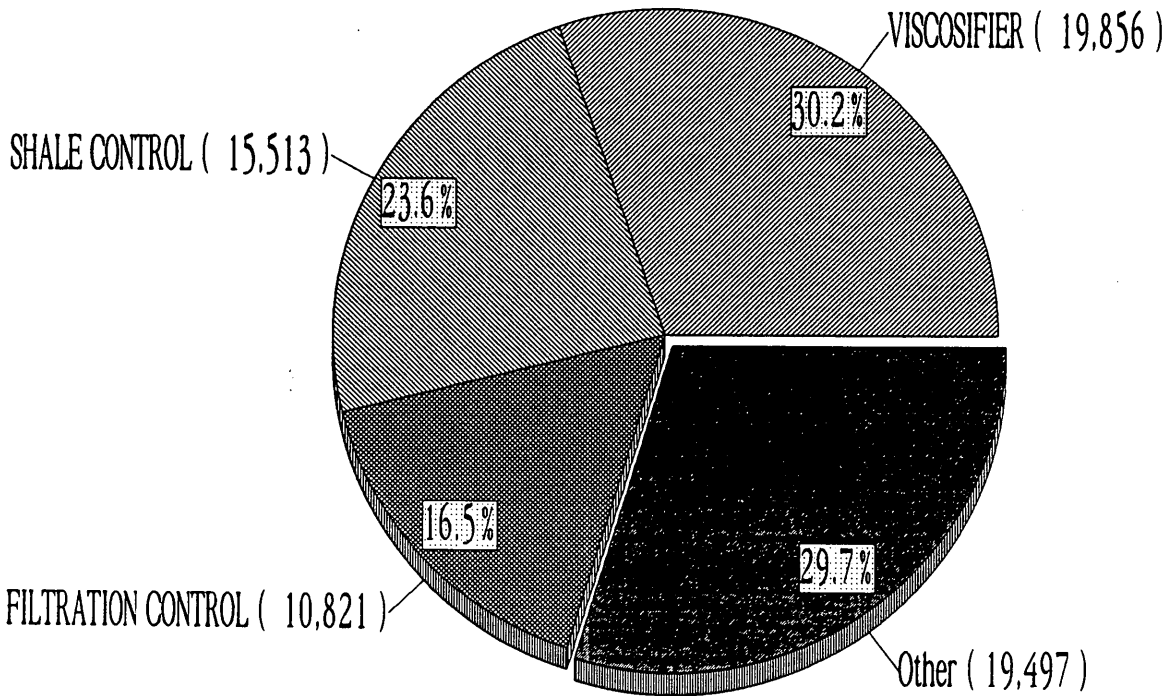


Company: Western Underground Gas Storage Pty Ltd Country: AUSTRALIA
Well Name: IONA-3 Geo. Area: OTWAY BASIN
Contractor: O.D. & E. Field: PPL 2
Rig: Rig 30 Region: Victoria



Usage by Function

DOLLAR



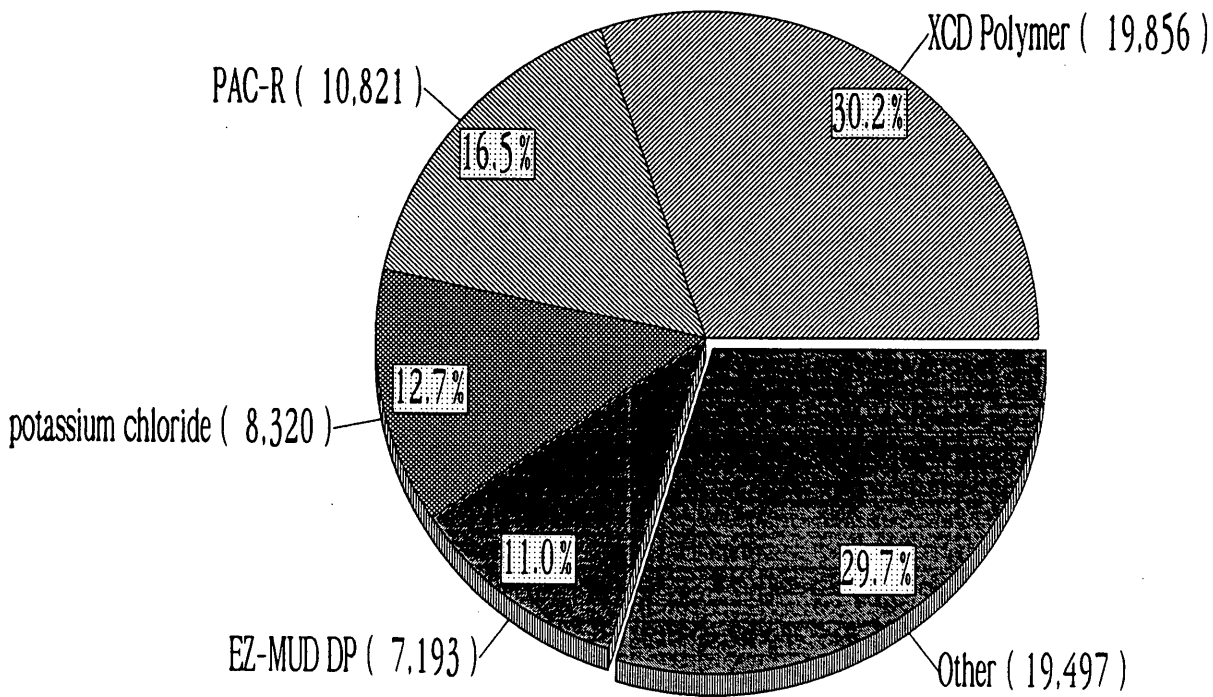
Total Mud Cost: 65,687

Company: Western Underground Gas Storage Pty Ltd Country: AUSTRALIA
 Well Name: IONA-3 Geo. Area: OTWAY BASIN
 Contractor: O.D. & E. Field: PPL 2
 Rig: Rig 30 Region: Victoria



Usage by Product

DOLLAR



Total Mud Cost: 65,687

POST WELL AUDIT



Postwell Audit

Western Underground Gas Storage Pty Ltd

IONA-3

Drilling Contractor	O.D. & E.
Rig	Rig 30
Prepared by	NICHOLAS DOUST
Date	10/05/99
Internal Well Number	M0300337

Company: Western Underground Gas Storage Pty Ltd
Well Name: IONA-3
Contractor: O.D. & E.
Rig: Rig 30

Country: AUSTRALIA
Geo Area: OTWAY BASIN
Field: PPL 2
Region: Victoria



Contents

Well summary

Total material consumption

Interval summary

Interval material consumption

Daily mud volume record

Mud program exceptions report

Mud property recap

Daily operations log

Bit and hydraulic record

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Total Material Consumption

Material	Unit size	Quantity	Total cost (\$A)
BARACARB 100	25 KG. BAG	147	1,747.83
BARACARB 25	25 KG. BAG	141	1,501.65
BARACIDE	25 KG. CAN	7	1,270.08
BARACOR 129	25 KG. CAN	13	844.74
barite	25 KG. SACK	209	1,496.44
BAROFIBRE	25 LB. BAG	8	462.32
citric acid	25 KG. BAG	8	496.40
Coat-2748	208 L. DRUM	2	1,700.00
EZ-MUD DP	25 KG. BAG	41	7,193.04
KCL - Tech.	25 KG. SACK	480	6,734.40
Kwikseal Fine	40 LB. BAG	20	874.20
Kwikseal Medium	40 LB. BAG	10	437.10
PAC-R	25 KG. BAG	57	10,820.31
potassium chloride	25 KG. BAG	200	2,600.00
potassium chloride	1000 KG. TON	11.000	5,720.00
potassium hydroxide	20 KG. PAIL	31	1,362.45
soda ash	25 KG. BAG	29	435.00
sodium bicarbonate	25 KG. BAG	8	137.28
XCD Polymer	25 KG. BAG	42	19,855.92
Miscellaneous Items			
A'gel Gold Seal			59.52
Mi-Gel			1,587.20

Total mud cost \$A 65,689.16

Total miscellaneous cost \$A 1,646.72

Total cost \$A 67,335.88

Programmed mud cost \$A 86,590.21

Variance \$A -20,901.05

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Interval Summary

Interval #	01
Bit Size	17.5 in.
Mud type(s)	KCl/Polymer
Top of interval	4.8 meters
Bottom of interval	636.0 meters
Maximum density	9.10 ppg
Interval start date	01/04/99
Interval end date	07/04/99
Interval days	7
Drilling days	4
Interval TD date	06/04/99
Rotating hours	59.50
Average penetration rate	10.6 meters
Bottomhole static temperature	0° Deg C
Maximum flowline temperature	50° Deg C
Casing size	13 3/8 in.
Major lithology	Marl, Claystone
Maximum deviation	1.75°
Interval mud cost	\$A 21,628.04
Mud cost per meters	\$A 34.27
Total Interval Cost	\$A 23,274.76

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Interval Summary

Interval #	02
Bit Size	12.25 in.
Mud type(s)	KCI/Polymer
Top of interval	636.0 meters
Bottom of interval	1,459.0 meters
Maximum density	9.20 ppg
Interval start date	08/04/99
Interval end date	15/04/99
Interval days	8
Drilling days	5
Interval TD date	12/04/99
Rotating hours	83.50
Average penetration rate	9.9 meters
Bottomhole static temperature	55° Deg C
Maximum flowline temperature	55° Deg C
Casing size	9 5/8 in.
Major lithology	CLaystone. Sandstone
Maximum deviation	33.30°
Interval mud cost	\$A 37,821.99
Mud cost per meters	\$A 45.96
Total Interval Cost	\$A 37,821.99

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Interval Summary

Interval #	03	
Bit Size		in.
Mud type(s)		Potassium Chloride brine KCl/Polymer
Top of interval		1,459.0 meters
Bottom of interval		1,459.0 meters
Maximum density		8.60 ppg
Interval start date		16/04/99
Interval end date		19/04/99
Interval days		4
Interval TD date		16/04/99
Bottomhole static temperature		55° Deg C
Maximum flowline temperature		0° Deg C
Casing size		9 5/8 in.
Maximum deviation		31.80°
Interval mud cost		\$A 6,239.13
Mud cost per meters		\$A 6,239.13
Total Interval Cost		\$A 6,239.13

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Interval Material Consumption

Interval #01 17.5 in. Hole Section

Top of Interval 5 meters
 Bottom of Interval 636 meters

Material	Unit size	Quantity	Total cost (\$A)
BARACIDE	25 KG. CAN	4	725.76
BARACOR 129	25 KG. CAN	7	454.86
barite	25 KG. SACK	57	408.12
BAROFIBRE	25 LB. BAG	8	462.32
EZ-MUD DP	25 KG. BAG	18	3,157.92
KCL - Tech.	25 KG. SACK	170	2,385.10
PAC-R	25 KG. BAG	13	2,467.79
potassium chloride	25 KG. BAG	200	2,600.00
potassium hydroxide	20 KG. PAIL	15	659.25
soda ash	25 KG. BAG	18	270.00
XCD Polymer	25 KG. BAG	17	8,036.92
Miscellaneous Items			
A'gel gold seal			59.52
Mi-Gel			1,587.20

Interval mud cost \$A 21,628.04

Interval miscellaneous cost \$A 1,646.72

Total interval cost \$A 23,274.76

Programmed mud cost \$A 34,577.24

Variance \$A -12,949.20

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Interval Material Consumption

Interval #02 12.25 in. Hole Section

Top of Interval 636 meters
 Bottom of Interval 1,459 meters

Material	Unit size	Quantity	Total cost (\$A)
BARACARB 100	25 KG. BAG	147	1,747.83
BARACARB 25	25 KG. BAG	141	1,501.65
BARACIDE	25 KG. CAN	3	544.32
BARACOR 129	25 KG. CAN	6	389.88
barite	25 KG. SACK	152	1,088.32
citric acid	25 KG. BAG	8	496.40
EZ-MUD DP	25 KG. BAG	23	4,035.12
Kwikseal Fine	40 LB. BAG	20	874.20
Kwikseal Medium	40 LB. BAG	10	437.10
PAC-R	25 KG. BAG	43	8,162.69
potassium chloride	1000 KG. TON	11.000	5,720.00
potassium hydroxide	20 KG. PAIL	16	703.20
soda ash	25 KG. BAG	11	165.00
sodium bicarbonate	25 KG. BAG	8	137.28
XCD Polymer	25 KG. BAG	25	11,819.00

Interval mud cost \$A 37,821.99

Programmed mud cost \$A 48,099.73

Variance \$A -10,277.74

908189 333

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Interval Material Consumption

Interval #03 in. Hole Section
 Top of Interval 1,459 meters
 Bottom of Interval 1,459 meters

Material	Unit size	Quantity	Total cost (\$A)
Coat-2748	208 L. DRUM	2	1,700.00
KCL - Tech.	25 KG. SACK	310	4,349.30
PAC-R	25 KG. BAG	1	189.83

Interval mud cost \$A 6,239.13

Programmed mud cost \$A 3,913.24

Variance \$A 2,325.89



Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria

Daily Mud Volume Record

HOLE SIZE: 17.5 in.

MUD TYPE: KCl/Polymer

DATE	INITIAL VOLUME	MUD RECEIVED	OIL ADDED	WATER ADDED	BARITE ADDED	CHEMICALS ADDED	DAILY TOTAL	CUMULATIVE TOTAL	MUD LOST SURFACE	MUD LOST DOWNHOLE	TOTAL DAILY LOSSES	CUMULATIVE LOSSES	MUD RETURNED	FINAL VOLUME	HOLE VOLUME	ACTIVE PITS	RESERVE PITS
01/04/89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/04/89	0	300	0	0	0	0	300	300	0	0	0	0	0	300	0	0	300
03/04/89	300	100	0	385	0	8	473	773	127	0	127	127	0	646	180	388	80
04/04/89	646	0	0	600	0	14	614	1,387	331	0	331	458	0	928	388	403	140
05/04/89	928	0	0	300	0	9	309	1,696	230	0	230	688	0	1,008	541	385	102
06/04/89	1,008	0	0	20	0	0	20	1,716	181	0	181	869	0	847	621	228	0
07/04/89	847	0	0	0	0	0	0	1,716	48	0	48	918	0	798	318	480	0



Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria

Daily Mud Volume Record

HOLE SIZE: 12.25 in.

MUD TYPE: KCI/Polymer

DATE	INITIAL VOLUME	MUD RECEIVED	OIL ADDED	WATER ADDED	BARITE ADDED	CHEMICALS ADDED	DAILY TOTAL	CUMULATIVE TOTAL	MUD LOST SURFACE	MUD LOST DOWNHOLE	TOTAL DAILY LOSSES	CUMULATIVE LOSSES	MUD RETURNED	FINAL VOLUME	HOLE VOLUME	ACTIVE PITS	RESERVE PITS
08/04/89	788	0	0	0	0	0	0	0	0	0	0	0	0	788	318	480	0
09/04/89	798	0	0	86	0	4	100	100	128	0	128	128	0	770	325	385	50
10/04/89	770	0	0	387	2	11	400	400	325	0	325	453	0	845	441	404	0
11/04/89	845	0	0	588	0	12	800	1,100	487	0	487	940	0	958	458	482	20
12/04/89	958	0	0	177	2	21	200	1,300	83	0	83	1,033	0	1,065	671	384	0
13/04/89	1,065	0	0	0	0	2	2	1,302	78	10	88	1,121	0	979	671	308	0
14/04/89	979	0	0	197	0	3	200	1,502	124	0	124	1,245	0	1,055	671	384	0
15/04/89	1,055	0	0	383	0	0	383	1,885	655	0	655	1,900	0	763	263	0	400



Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria

Daily Mud Volume Record

HOLE SIZE:in.

MUD TYPE:KCI/Polymer

DATE	INITIAL VOLUME	MUD RECEIVED	OIL ADDED	WATER ADDED	BARITE ADDED	CHEMICALS ADDED	CUMULATIVE TOTAL	MUD LOST SURFACE	MUD LOST DOWNHOLE	TOTAL DAILY LOSSES	CUMULATIVE LOSSES	MUD RETURNED	FINAL VOLUME	HOLE VOLUME	ACTIVE PITS	RESERVE PITS
	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf	bbf
18/04/89	783	0	0	0	0	20	520	420	0	420	420	0	883	363	100	400



Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria

Daily Mud Volume Record

HOLE SIZE:in.

MUD TYPE:Potassium Chloride brine

DATE	INITIAL VOLUME bbl	MUD RECEIVED bbl	OIL ADDED bbl	WATER ADDED bbl	BARITE ADDED bbl	CHEMICALS ADDED bbl	DAILY TOTAL bbl	CUMULATIVE TOTAL bbl	MUD SURFACE bbl	MUD LOST bbl	MUD LOST DOWNHOLE bbl	TOTAL DAILY LOSSES bbl	CUMULATIVE LOSSES bbl	MUD RETURNED bbl	FINAL VOLUME bbl	HOLE VOLUME bbl	ACTIVE PITS bbl	RESERVE PITS bbl
17/04/89	883	0	0	0	80	0	0	80	80	100	0	0	100	0	823	383	80	400
18/04/89	823	0	0	0	0	0	0	0	80	60	0	60	160	0	763	383	0	400
19/04/89	763	0	0	0	0	0	0	0	80	0	0	0	160	0	763	383	0	400



Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Mud Program Exceptions Report

DATE	TIME	DEPTH meters	PROPERTY	UNITS	EXCEPTION	PROGRAM MINIMUM	PROGRAM MAXIMUM	ACTUAL	PROBLEM
04/03/99	22:40	0	API FILTRATE	ml/30 min	HIGH		15.0	16.4	
		0	KCl Content	ppb	LOW	10.0	15.0	8.8	
	08:45	0	API FILTRATE	ml/30 min	HIGH		15.0	17.0	
		0	6 rpm		LOW	10.0		1.0	
04/04/99	23:30	418	6 rpm		LOW	10.0		6.0	
	15:20	345	MUD WEIGHT	ppg	HIGH		9.0	9.1	
		345	6 rpm		LOW	10.0		7.0	
	08:45	258	MUD WEIGHT	ppg	HIGH		9.0	9.1	
04/05/99	23:30	576	MUD WEIGHT	ppg	HIGH		9.0	9.1	
	16:45	524	6 rpm		LOW	10.0		8.0	
	10:15	480	6 rpm		LOW	10.0		7.0	
04/06/99	15:45	636	API FILTRATE	ml/30 min	HIGH	6.0	8.0	12.4	
		636	PH		LOW	8.5	9.0	8.3	
	09:30	636	API FILTRATE	ml/30 min	HIGH	6.0	8.0	12.2	
		636	PH		LOW	8.5	9.0	8.3	
04/07/99	20:00	636	API FILTRATE	ml/30 min	HIGH	6.0	8.0	12.8	
		636	PH		LOW	8.5	9.0	8.3	
	16:00	636	API FILTRATE	ml/30 min	HIGH	6.0	8.0	12.6	
		636	PH		LOW	8.5	9.0	8.3	
04/08/99	21:00	636	API FILTRATE	ml/30 min	HIGH	6.0	8.0	13.4	
		636	PH		LOW	8.5	9.0	8.3	
04/09/99	22:30	707	API FILTRATE	ml/30 min	HIGH	6.0	8.0	12.8	
		707	PH		HIGH	8.5	9.0	10.0	
		707	6 rpm		LOW	10.0		8.0	



Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Mud Program Exceptions Report

DATE	TIME	DEPTH meters	PROPERTY	UNITS	EXCEPTION	PROGRAM MINIMUM	PROGRAM MAXIMUM	ACTUAL	PROBLEM
	14:20	638	API FILTRATE	ml/30 min	HIGH	6.0	8.0	13.6	
		638	PH		HIGH	8.5	9.0	10.3	
		638	6 rpm		LOW	10.0		7.0	
04/10/99	23:00	945	KCl Content	ppb	HIGH	10.0	15.0	15.4	
	15:30	928	PH		HIGH	8.5	9.0	9.5	
		928	KCl Content	ppb	HIGH	10.0	15.0	15.4	
	09:30	852	PH		HIGH	8.5	9.0	9.8	
		852	6 rpm		LOW	10.0		9.0	
		852	KCl Content	ppb	HIGH	10.0	15.0	15.4	
04/13/99	22:00	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0	5.8	
	16:00	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0	5.8	
		1459	PH		LOW	8.5	9.0	8.3	
04/14/99	15:50	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0	5.8	
		1459	6 rpm		LOW	10.0		9.0	
	10:00	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0	5.8	
		1459	6 rpm		LOW	10.0		9.0	
04/16/99	10:00	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0		
		1459	PH		LOW	8.5	9.0		
		1459	KCl Content	ppb	HIGH	10.0	15.0	19.8	
04/17/99	21:28	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0		
		1459	PH		LOW	8.5	9.0		
		1459	KCl Content	ppb	HIGH	10.0	15.0	19.8	
04/18/99	14:00	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0		
		1459	PH		LOW	8.5	9.0		

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Mud Program Exceptions Report

DATE	TIME	DEPTH meters	PROPERTY	UNITS	EXCEPTION	PROGRAM MINIMUM	PROGRAM MAXIMUM	ACTUAL	PROBLEM
		1459	KCl Content	ppb	HIGH	10.0	15.0	19.8	
04/19/99	19:46	1459	API FILTRATE	ml/30 min	LOW	6.0	8.0		
		1459	PH		LOW	8.5	9.0		
		1459	KCl Content	ppb	HIGH	10.0	15.0	19.8	



Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rlg: Rlg 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria

Mud Property Recap: Water-Based Mud

DATE	DEPTH meters	FA TEMP Deg C	DENSITY ppg	RHEOLOGY @ 120°F			FILTRATION			FILTRATE ANALYSIS			SAND			RETORT ANALYSIS			MBT			RHEOMETER DIAL READINGS		
				PV cP	VP GELS	lbs/100 ft ²	API ml/30 ml	HTHP ml/30 min	Cake 32nd In	Temp Deg C	Fm ml	Pf ml	MI ml	Cl mg/L	Total Hardness mg/L	% by vol	Corr Solids % by vol	LGS % by vol	Oil % by vol	Water % by vol	me/hd mud		800/300	200/100
01/04/99			0.0	1.0	/	/				2/0	121											/	/	/
02/04/99			0.0	1.0	/	/				2/0	121											/	/	/
03/04/99	203	30	9.0	10.0	16.0	7.0/ 16.0	8.30	16.4		2/0	121	0.08	0.84	19,000	648.0	0.5	3.91	3.81		95.00	16.00	36 / 28	22 / 17	10 / 9
04/04/99	423	43	9.0	7.0	13.0	4.0/ 12.0	8.30	11.8		2/0	121	0.04	0.85	21,000	380.0	0.25	3.79	3.79		95.00	15.00	27 / 20	18 / 14	6 / 5
05/04/99	585	50	9.1	10.0	19.0	8.0/ 18.0	8.30	12.2		2/0	121	0.05	0.70	21,000	400.0	0.75	4.30	4.22		94.50	15.00	39 / 29	25 / 19	10 / 9
06/04/99	636	50	9.1	10.0	27.0	15.0/ 28.0	8.30	12.4		2/0	121	0.04	0.70	21,000	400.0	0.5	4.30	4.22		94.50	16.00	47 / 37	32 / 28	17 / 16
07/04/99	636		9.1	10.0	25.0	17.0/ 30.0	8.30	12.8		2/0	121	0.30	0.20	22,000	380.0	0.3	4.24	4.17		94.50	16.00	45 / 35	32 / 27	18 / 17
08/04/99	636		9.1	10.0	25.0	17.0/ 30.0	8.30	13.4		2/0	121	0.30	0.20	22,000	380.0	0.3	4.24	4.17		94.50	16.00	45 / 35	32 / 26	18 / 17
09/04/99	707	42	9.0	10.0	17.0	8.0/ 18.0	10.00	12.8		2/0	121	0.30	0.80	21,500	480.0	0.25	3.77	3.77		95.00	13.50	37 / 27	21 / 16	8 / 6
10/04/99	860	43	9.1	14.0	17.0	7.0/ 16.0	9.00	8.8	19.20	1/2	121	0.10	0.80	25,000	380.0	1.0	4.07	4.02		94.50	15.00	45 / 31	25 / 18	10 / 8
11/04/99	1316	52	9.1	16.0	33.0	9.0/ 21.0	8.50	6.4	16.80	1/2	121	0.40	0.50	22,000	380.0	0.75	4.24	4.17		94.50	14.50	85 / 49	41 / 29	11 / 8
12/04/99	1459	55	9.2	18.0	38.0	8.0/ 20.0	8.50	6.0	14.80	1/2	121	0.45	0.45	22,000	300.0	0.75	5.26	5.26		93.50	15.00	72 / 54	45 / 33	10 / 8
13/04/99	1459	43	9.2	17.0	28.0	8.0/ 19.0	8.50	5.8	15.20	1/2	121	0.40	0.50	21,500	320.0	0.5	5.28	5.28		93.50	15.00	62 / 45	38 / 28	10 / 8
14/04/99	1459	49	9.2	17.0	29.0	8.0/ 21.0	8.50	6.0	16.20	1/2	121	0.50	0.60	22,000	200.0	0.3	5.28	5.26		93.50	15.00	63 / 48	38 / 28	10 / 8
15/04/99	1459		9.2	17.0	29.0	8.0/ 21.0	8.50	6.0	15.20	1/2	121	0.45	0.60	22,000	200.0	0.3	5.28	5.26		93.50	15.00	63 / 46	38 / 28	10 / 8
16/04/99	1459		8.8	28	1.0	/	/	/	/	/	121			34,500								/	/	/
17/04/99	1459		8.8	28	1.0	/	/	/	/	/	121			34,500								/	/	/
18/04/99	1459		8.8	28	1.0	/	/	/	/	/	121			34,500								/	/	/
19/04/99	1459		8.8	28	1.0	/	/	/	/	/	121			34,500								/	/	/

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
 Geo Area: OTWAY BASIN
 Field: PPL 2
 Region: Victoria



Daily Operations Log

DATE	DEPTH meters	OPERATION
01/04/99	0	RIG MOVE Moving rig / rigging up on new location.
02/04/99	0	RIGGING UP Transferred 300 bbls of mud, salvaged from Iona-4, from reserve tank to active tanks. Remaining mud in reserve tank severely gelled and difficult to pump. Treated with BARACIDE and caustic potash to counteract bacterial degradation. Moved rig. Rigging up on Iona-3 location.
03/04/99	203	DRILLING 17.5" HOLE Transferred salvaged mud from sump to pits, low viscosity. Hole cleaning adequate, i despite low viscosity. Added EZ MUD/polymers i /KCl via premix tank. Raised viscosity. i Filtrate higher than spec. Ran centrifuge and desilter continuously. Shakers overloading with cuttings at high i ROP. Lost mud to sump. Pumped sump back to i pits, until started picking up solids. KCl % wt = 2.5 Formation : Clay Complete rig up. Drilled rathole and mousehole. Made up 17-1/2" bit and BHA. Drilled ahead to 41m. Pulled back, installed stabilizers in BHA. Drilled to 203m.
04/04/99	423	DRILLING 17.5" HOLE Adjusting premix to control mud properties. Lost mud over shakers; blinding with clay drilling Gellibrand Marl, then blinding with sand. Hose and scrub screens to minimize loss. Pump mud back from sump, over shaker screens to clean out sand/solids. Ran desilter and centrifuge to control solids. To add XCD Polymer and EZ MUD for low end rheology and inhibition. Sand in % : Trace / 0.5 / 0.5 KCL % wt. : 3.4 / 3.6 / 3.4 Drilled to 212m. Survey (1/4 deg). Drilled to 218m, repaired #2 pump. Drilled ahead to 232m, repaired #1 pump and serviced rig. Drilled to 419m. Survey (0.8 deg, 54 deg E). Drilling ahead at 423m.

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
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Daily Operations Log

DATE	DEPTH meters	OPERATION
05/04/99	585	<p>DRILLING 17.5" HOLE</p> <p>Recycled fluid from sump over shakers, to replace volume lost over shakers. Maintaining and adjusting properties by addition of premix. Increasing 6 rpm from 6-8 up to 10-12, hole cleaning has been okay but raising low end rheology to ensure good hole condition for casing. Adding soda ash via premix to control Ca++ <400 mg/l. Ran desilter and centrifuge continuously.</p> <p>Sand in % : 0.5 / 0.25 / 0.25 KCl % wt : 3.4 / 3.5 / 3.6</p> <p>Drilled 17-1/2" hole from 423 - 585m</p>
06/04/99	636	<p>RUN 13-3/8" CSG.</p> <p>Low end rheology increased due to polymer additions and formation clays. Treat with BARACIDE to condition mud against bacteria during setting of casing.</p> <p>KCl % wt = 3.5 / 3.6</p> <p>Drilled to 630m. Serviced rig. Drilled ahead to 632m. Pumped LCM sweep, circulated bottoms up. Drilled 4m to 636m. Circulated i hole clean. Ran wireline survey. Made wiper i trip back to surface, inspected stabilizers (worn) and bit; max. overpull 5K. RIH, washed 8m to bottom. Circulated hole clean. POOH. Rigged up and ran 13-3/8" casing.</p>
07/04/99	636	<p>NIPPLING UP BOP</p> <p>** Used MI-Gel and AQUAGEL GOLD SEAL for cement mix water. Cost \$1,641.72, not included in cumulative drilling mud cost.**</p> <p>Pumped 100 % excess cement. Cement returns to shakers soon after commencing displacement, indicating hole was near-gauge.</p> <p>KCL % wt = 3.63 / 3.6</p> <p>Ran and cemented 13-3/8" casing set at 635 m Nippling up BOP's.</p>
08/04/99	636	<p>TESTING BOP</p> <p>KCL % wt = 3.63</p> <p>WOC, Nippled up an test BOP's.</p> <p>Changed shaker screens on both shakers to 84/110/110 mesh.</p>

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
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Daily Operations Log

DATE	DEPTH meters	OPERATION
09/04/99	707	<p>DRILLING</p> <p>RIH to 608 m top of cement. Pre treat suction and conditioned mud with Citric acid and Bicarb. Adjusting premix to control mud properties. Running desilter and centrifuge to control solids. Mixed 40 bbls LCM pill of 10 ppb of Kwik Seal fine.</p> <p>KCL % wt : 3.6 / 3.5</p> <p>Layed down 8" drill collars. Make up bit and BHA, test MWD, RIH, wash down to 608 m top of cement. Drill out the shoe track and formation to 638 m. Ran FIT, 10.1 ppg EMW. Rig down to repair pump #1, changed mudule. Drilling ahead at 707 m.</p>
10/04/99	960	<p>DRILLING</p> <p>Adjusting premix to control mud properties. Ran desilter and centrifuge while drilling and tripping to control solids.</p> <p>Sand in % : 0.5 / 0.75 / 0.5 KCL % wt : 4.4 / 4.4 / 4.4</p> <p>Drilling, swept hole with 20 bbls each of Kwik seal LCM pill at 793 m, light increase in cuttings over shakers, 821 m, high increase in cuttings over shakers, 910 m, light increase in cuttings and at 934 m, light increase in cuttings. Drilled to 934 m, circ., slug pipe, tripped for NB #3. No hole problems tripping. Drilling ahead at 690 m, survey on each connection.</p>
11/04/99	1,316	<p>DRILLING</p> <p>Adjusting concentration of premix to control mud properties. Running desilter and centrifuge while drilling to control solids. Mixed 50 bbls of 10 ppb of Kwik Seal Medium LCM pill for sweeps.</p> <p>Sand in % : 0.3 / 0.3 / 1.0 KCL % wt : 3.5 / 3.6 / 3.7</p> <p>Drilling, swept hole with 10 bbls of Kwik seal LCM pill at 1021 m, high concentration of cuttings over shakers and 20 bbls at 1250 m, high concentration of cuttings over shakers. Drilling ahead at 1316 m.</p>

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
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 Field: PPL 2
 Region: Victoria



Daily Operations Log

DATE	DEPTH meters	OPERATION
12/04/99	1,459	<p>RUNNING IN HOLE</p> <p>Conditioned mud with BARACARB bridging agent (grades 25 and 100 as programmed). Weight increased to 9.2+ ppg. Sand content 1.25% = 0.5% drill solids and 0.75% BARACARB. Ran centrifuge and desilter while drilling and tripping. Treated with BARACIDE prior to logging and running casing. Swept hole with 25 bbls of LCM kwik seal pill, light increase in cuttings.</p> <p>Sand in % : 0.3 / 0.5 / 0.5 KCL % wt : 3.6 / 3.7 / 3.6</p> <p>Drilled to 1459 m TD, swept hole with 25 bbls LCM pill, slug pipe and made a wiper trip to the shoe. Hole tight at 1458 m to \bar{i} 990 m. Running in hole.</p>
13/04/99	1,459	<p>REAMING IN HOLE</p> <p>Ran centrifuge and desilter while circulating and tripping. Barite used for slug. Added KOH to the system to maintain pH. Lost 10 bbls of mud logging.</p> <p>KCL % wt : 3.5 / 3.6</p> <p>Completed wiper trip, circulate hole until clean, high increase in fines over shakers. Slug pipe, POOH. Ran Schlumberger logs, HALS, PECKS and BHC. RIH to 705 m, hole tight, wash and ream to \bar{i} 736 m, RIH to 800 m, wash and reaming at 889 \bar{i} m.</p>
14/04/99	1,459	<p>POOH</p> <p>Ran desilter and centrifuge while reaming \bar{i} and tripping. Mixed and added to the system 200 bbls of \bar{i} premix for volume.</p> <p>KCL % wt : 3.6 / 3.6 / 3.5</p> <p>Wash and reamed from 889 m to 1459 m. Circulate hole until clean, light amount of fines over shakers on bottoms up. Slug pipe and POOH. First two stands tight, work pipe, continued pulling with no problems.</p>
15/04/99	1,459	<p>NIPPLING DOWN BOP</p> <p>Transfer to storage 400 bbls of 9.2 ppg KCL/EZ-MUD/POLYMER mud conditioned with one pail of Biocide. Dumped the remainder of the mud, cleaning the mud pits to mix 8.6 ppg KCL brine \bar{i} completion fluid.</p> <p>KCL % wt : 3.6</p> <p>POOH, Ran 9-5/8" casing to 1459 m, circulate casing and cement casing set at 1459 ft. Displaced the cement in the casing with drill water. Nippling down BOP's. Dumped the mud in the pits, cleaning mud \bar{i} pits.</p>

Company: Western Underground Gas Storage Pty Ltd
 Well Name: IONA-3
 Contractor: O.D. & E.
 Rig: Rig 30

Country: AUSTRALIA
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 Field: PPL 2
 Region: Victoria



Daily Operations Log

DATE	DEPTH meters	OPERATION
16/04/99	1,459	<p>LAYING DOWN PIPE</p> <p>Mixed 520 bbls of 8.6 ppg Inhibited KCL Brine completion fluid with COAT 2748 inhibitor. Displaced the water in the hole with inhibited brine. Mixed and pumped in the drill string 20 bbls of inhibited brine with Pac R for a viscous fluid to drop the Gyro.</p> <p>Nipple up and test BOP's, RIH with scraper, displaced hole to inhibited brine. Pumped 20 bbls of viscous inhibited brine, dropped Gyro, pumped Gyro down, POOH, laying down i drill pipe.</p>
17/04/99	1,459	<p>SPACING OUT TUBING</p> <p>Mixed additional KCL brine to fill tubing i while RIH. Mud lost includes dead volume in pits and i mud displacement by tubing while running in. i Returns to cellar.</p> <p>POOH laying drill pipe down. Ran 5-1/2" tubing, NK-3SB 17#/ft. Log with Schlumberger, ran VDL/GR/CL to correlate packer setting. Spacing out tubing.</p>
18/04/99	1,459	<p>WAITING ON DAYLIGHT</p> <p>Set 9-5/8" packer at 1331.52m and land out i hanger. Retrived X-nipple, pressure test i annulus, hanger and packer seals. Nipple down BOP's, nipple up X-mas tree, i test surface equipment, open SSD, displace i with 25 bbls of brine, close SSD, pressure i test annulus. Load firing bar, wait on daylight.</p>
19/04/99	1,459	<p>MOVING RIG</p> <p>Test well as per program, shut well in, bled i off pressure and set plug on wireline. Released rig. Moving rig to next location.</p>



Company: Western Underground Gas Storage Pty Ltd
Well Name: IONA-3
Contractor: O.D. & E.
Rig: Rig 30

Country: AUSTRALIA
Geo Area: OTWAY BASIN
Field: PPL 2
Region: Victoria

Bit and Hydraulic Record

DATE IN	BIT NO.	BIT SIZE in.	BIT MAKE	BIT TYPE	JETS or TFA	DEPTH OUT meters	DRILLED meters	HOURS RUN	CUM HOURS	WEIGHT ON BIT lb/1000	BIT RPM	PUMP OUTPUT gpm	ANN. VEL DP/DC m/min	PUMP PRESSURE psig	MUD WEIGHT ppg	BIT GRADING	MUD TYPE, LITHOLOGY, REMARKS
03/04/99	1	17.50	VAREL	L135M	18, 18, 24	638	638	60	60	20	120	798	20/23	1550	9	7-7-WT-9-9	LC / EZ MUD / Polymer Mod. clay, sand Drilled to interval TD, set 13.3/8"
08/04/99	2	12.25	BBL	BB850SR	2 X 12, 4	834	288	20	79	20	140	730	19/81	2100	9	4-7-WT-A-N	LC / EZ MUD / Polymer Mod. Limestone and Clay Drilled to 834 m. BR change casing.
10/04/99	3	12.25	SECURITY	ERA-03D	3 X 24	1459	525	44	123	30	140	739	19/84	2050	9		LC / EZ MUD / POLYMER Sandstone and Claystone. Drilled to TD, 1459m. Run and casing 1 8-9/8" casing.

DAILY MUD REPORTS

Baroid Australia Pty Ltd
DRILLING MUD REPORT

REPORT NUMBER: 3

Date	03/04/99	Depth	203.0 m [MD]
Spud Date	03/04/99	Present Activity	DRILLING 17.5" HOLE

OPERATOR Western Underground Gas Stora	CONTRACTOR O.D. & E.	RIG NUMBER Rig 30
REPORT FOR Wally Westman / Jack Lambert	REPORT FOR James Murray	REGION Victoria
WELL NAME AND NUMBER IONA-3	FIELD OR BLOCK PPL 2	GEOGRAPHIC AREA Otway Basin
		COUNTRY Austral

BIT DATA		DRILLING STRING			CASING		CIRCULATION DATA		
Size 17.5 in.	Pipe OD	ID	Len.			Pump Make/Model	Gard-Denv.	PZ-8	
Type Varel L135M	Pipe OD	5	ID 3.000	Len. 140.1	in.	Size 6 X 8	Eff. 96.00	V/ft 0.067	
No. Jets	Pipe OD	ID	Len.		Set #	epm 140	bbl/min	9.4	
Jets 32nd inch	Collar OD	8	ID 3.000	Len. 62.9	Set #	Pump Make/Model	Gard-Denv.	PZ-8	
18 18 24	Collar OD	ID	Len.		Set #	Size 6 X 8	Eff. 96.00	V/ft 0.067	
	in. OPEN HOLE			m	Set #	epm 140	bbl/min	9.4	
Tot Noz Area	Size 17.5	Len. 203.0			Set #	Pump Make/Model			
TFA	Size	Len.			Set #	Size	Eff.	V/ft	
	Size	Len.			Set #	epm	bbl/min		
	Size	Len.			Set #	Tot. Vol./min	790 gpm	18.8 bbl	
	Size	Len.			Set #	BU Time	9	TC Time 30	

MUD PROPERTIES				MUD TREATMENTS			
		Primary	2	3			
Source		Pits, Circ	Pits, Uncr		Program Targets	Essential Program Properties	Transferred salvaged mud from sump to pits, low viscosity. Hole cleaning adequate, despite low viscosity. Added E2 MUD/polymers /KCl via premix tank. Raised viscosity. Filtrate higher than spec. Ran centrifuge and desilter continuously. Shakers overloading with cuttings at high ROP. Lost mud to sump. Pumped sump back to pits, until started picking up solids.
Time		22:40	08:45		*=Excep: P 2 3	< 635.8	
FL Temp	Deg C	30	0			< 9.0	
Depth	m	0.0	0.0				
Weight	ppg	9.0	8.9				
FV @ 20 Deg C	sec/qt	62	32				
PV @ 49 Deg C	cP	10	3			< 30	
YP	lbs/100 ft2	16	2				
Gels	lbs/100 ft2	7/16	0/1				
API Filtr.	ml/30 min	16.4	17.0		* *	< 15.0	
HTHP @ 121 Deg C	ml/30 min	0.0	0.0				
Cake API/HTHP	32nd in	2/0	2/0				
Corr.Solids % by vol		3.9	3.0				
Oil/Water % by vol		0.0/95.0	0.0/95.8				
Sand % by vol		0.5	0.75				
MBT		16.0	10.0				
pH STRIP		8.3	9.0			< 9.0	
Alk. Mud (Pm)		0.00	0.00				
Alk. Filtr. (PE/ME)		0.06/0.64	0.16/1.48				
Chlorides mg/l		19000	21000				
Hard. Ca mg/l		648	240				
Low Gravity Solids ppb		35.58	27.12			< 75.00	
6 rpm		10	1		*	10.00	
KCl Content ppb		8.8	10		*	10.00 15.00	

KCl % wt = 2.5
Formation : Clay

RIG ACTIVITY

Complete rig up. Drilled rathole and mousehole. Made up 17-1/2" bit and BHA. Drilled ahead to 41m. Pulled back, installed stabilizers in BHA. Drilled to 203m.

MATERIALS USED

MATERIALS USED				SOLIDS EQUIPMENT					
Product	Used	Cost	Product	Used	Cost	Device	Make	Sz/Scrn	HR
BARACIDE - 25 KG. CAN	1	181.44				Shkr #1	DFE-LM	84	13
BARACOR 129 - 25 KG. CAN	1	64.98				Shkr #2	DFE-LM	84	13
EZ-MUD DP - 25 KG. BAG	5	877.20				dSlt #1	Harrioburq	12 * 4	13
KCL - Tech. - 25 KG. SACK	40	561.20				Cent #1	DFE	Hi-Vol	11
PAC-R - 25 KG. BAG	2	379.66							
XCD Polymer - 25 KG. BAG	5	2363.80							
potassium chloride - 25 KG.	60	780.00							
potassium hydroxide - 20 KG.	3	131.85							

MUD MANAGEMENT			RHEOLOGY AND HYDRAULICS			FRACTURE GRADIENT			TIME	
MUD VOLUME	bbbl	MUD TYPE				Water Depth			DRLG	10.50
Hole	Pits	KCL/EZ MUD/POLYMER	600 rpm	36	8	Calc. F. Grad	0.0		CIRC	0.00
180	386	MUD CONSUMPTION	300 rpm	26	5	Leak Off Test	0.0		TRIPS	0.00
Active Volume		ADDITIONS	200 rpm	22	3	ECD	PPG		SERV. RIG	0.00
566		Oil	100 rpm	17	2	Cog. Shoe	0.0		SURVEY	0.00
Reserve	Total	Brine Water	6 rpm	10	1	TD	9.1		FISHING	0.00
80	646	Drill Water	3 rpm	9		Max. Diff. Press	0		LOGGING	0.00
Low Grav, vol %	3.9	Sea Water	0			Pressure Units:	psig		RUN CSG	0.00
ppb	35.58	Whole Mud	100			Press Drop. DP	477		CORE	0.00
High Grav, vol %	0.0	Barite	0			Press Drop. BIT	583		BACK REAM	0.00
ppb	0.00	Chemicals	8			Press Drop. ANN	5		REAMING	0.00
ASG	2.65	LOSSES	Actual Circ. Press	1180		AV, DP	m/min	21.0	TESTING	0.00
Drill Cuttings	198	Dumped	0			AV, DC	m/min	24.4	OTHER	13.50
Dilution Rate	1.66	Lost	127			Direction			AVERAGE ROP	19.33
Sids Control Eff	85.00	VOL GAIN/LOSS	346			Horiz. Displ	0.0	m		

BAROID REPRESENTATIVE	OFFICE/HOME	Melbourne	TELEPHONE	(03) 9621 3311	DAILY COST		CUMULATIVE COST	
Alan Searle	WAREHOUSE	Welshpool	TELEPHONE	(03) 5688 1445	\$	5340.13	\$	5565.52

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Baroid Australia Pty Ltd
DRILLING MUD REPORT

REPORT NUMBER: 5

Date	05/04/99	Depth	585.0 m [MD]
Spud Date	03/04/99	Present Activity	DRILLING 17.5" HOLE

OPERATOR Western Underground Gas Stora	CONTRACTOR O.D. & E.	RIG NUMBER Rig 30
REPORT FOR Wally Westman / Jack Lambert	REPORT FOR James Murray	REGION Victoria
WELL NAME AND NUMBER IONA-3	FIELD OR BLOCK PPL 2	GEOGRAPHIC AREA Otway Basin
		COUNTRY Austral

BIT DATA		DRILLING STRING			CASING		CIRCULATION DATA		
Size 17.5 in.	Pipe OD	4 1/2 ID	3.826 Len.	239.2			Pump Make/Model	Gard-Denv.	PZ-8
Type Varel L135M	Pipe OD	5 ID	3.000 Len.	282.9	in.	m	Size 6 X 8	Eff. 96.00	V/st 0.067
No. Jets	Pipe OD	ID	Len.		Set #		opm 135	bbl/min	9.1
Jets 2nd inch	Collar OD	8 ID	3.000 Len.	62.9	Set #		Pump Make/Model	Gard-Denv.	PZ-8
18 18 24	Collar OD	ID	Len.		Set #		Size 6 X 8	Eff. 96.00	V/st 0.067
	in. OPEN HOLE			m	Set #		opm 135	bbl/min	9.1
Tot Noz Area	Size 17.5	Len.	585.0		Set #		Pump Make/Model		
TFA	Size	Len.			Set #		Size	Eff.	V/st
	Size	Len.			Set #		opm	bbl/min	
	Size	Len.			Set #		Tot. Vol./min	762 gpm	18.1 bbl
	Size	Len.			Set #		BU Time	29	TC Time 50

MUD PROPERTIES		Primary	2	3	Program	Essential
Source	Flowline	Flowline	Flowline	Program	Targets	Program
Time	23:30	16:45	10:15	Targets		Properties
FL Temp Deg C	50	49	49	*=Excep		< 635.8
Depth m	576.0	524.0	480.0	P 2 3		< 9.0
Weight ppg	9.1	9.0	9.0			
FV @ 43 Deg C sec/qt	47	42	39			
PV @ 49 Deg C cP	10	8	8			< 30
YP lbs/100 ft ²	19	15	14			
Gels lbs/100 ft ²	8/18	5/13	5/12			
API Filt. ml/30 min	12.2	13.2	12.8			< 15.0
HTHP @ 121 Deg C ml/30 min	0.0	0.0	0.0			
Cake API/HTHP 32nd in	2/0	2/0	2/0			
Corr.Solids % by vol	4.3	3.8	3.8			
Oil/Water % by vol	0.0/94.5	0.0/95.0	0.0/95.0			
Sand % by vol	0.75	0.5	0.5			
HBT	15.0	0.0	15.0			
pH STRIP	8.3	8.5	8.5			< 9.0
Alk. Mud (Pm)	0.00	0.00	0.00			
Alk. Filt. (PF/MF)	0.05/0.70	0.06/0.68	0.04/0.70			
Chlorides mg/l	21000	21500	21000			
Hard. Ca mg/l	400	350	320			
Low Gravity Solids ppb	38.40	34.31	34.49			< 75.00
6 rpm	10	8	7			10.00 >
KCl Content ppb	11.9	12.25	12.6			10.00 15.00

MUD TREATMENTS	
Recycled fluid from sump over shakers, to replace volume lost over shakers.	
Maintaining and adjusting properties by addition of premix. Increasing 6 rpm from 6-8 up to 10-12, hole cleaning has been okay but raising low end rheology to ensure good hole condition for casing. Adding soda ash via premix to control Ca++ <400 mg/l.	
Ran desilter and centrifuge continuously.	
Sand in % : 0.5 / 0.25 / 0.25	
KCl % wt : 3.4 / 3.5 / 3.6	

RIG ACTIVITY	
Drilled 17-1/2" hole from 423 - 585m	

MATERIALS USED				SOLIDS EQUIPMENT					
Product	Used	Cost	Product	Used	Cost	Device	Make	Sz/Scrn	HR
BARACOR 129 - 25 KG. CAN	3	194.94				Shkr #1	DFE-LM	84	24
EZ-MUD DP - 25 KG. BAG	5	877.20				Shkr #2	DFE-LM	84	24
KCL - Tech. - 25 KG. SACK	88	1234.64				dSlt #1	Harrisburg	12 * 4	24
PAC-R - 25 KG. BAG	5	949.15				Cent #1	DFE	Hi-Vol	24
XCD Polymer - 25 KG. BAG	8	3782.08							
potassium hydroxide - 20 KG.	5	219.75							
soda ash - 25 KG. BAG	10	150.00							

MUD MANAGEMENT		RHEOLOGY AND HYDRAULICS			FRACTURE GRADIENT		TIME	
MUD VOLUME bbl	MUD TYPE				Water Depth			
Hole 541	Pits 365	KCL/EZ MUD/POLYMER	600 rpm	39 31 30	Calc. F. Grad	0.0	DRLG	23.50
Active Volume 906		MUD CONSUMPTION	300 rpm	29 23 22	Leak Off Test	0.0	CIRC	0.00
Reserve 102	Total 1008	Oil	200 rpm	25 20 19	ECG	ppg	TRIPS	0.00
Low Grav. vol % 4.2	ppb 38.40	Brine Water	100 rpm	19 15 14	Ceg. Shoe	0.0	SRV. RIG	0.50
High Grav. vol % 0.1	ppb 1.47	Drill Water	6 rpm	10 8 7	TD	9.3	SURVEY	0.00
ASG 2.73		Sea Water	3 rpm	9 7 6	Max. Diff. Press	0	FISHING	0.00
Drill Cuttings 571		Whole Mud	Pressure Units:	psig			LOGGING	0.00
Dilution Rate 0.00		Barite	Press Drop. DP	933			RUN CSG	0.00
Slide Control Eff 85.00		Chemicals	Press Drop. BIT	548			CORE	0.00
		LOSSES bbl	Press Drop. ANN	15			BACK REAM	0.00
		Dumped	Actual Circ. Press	1500			REAMING	0.00
		Lost	AV, DP m/min	19.9			TESTING	0.00
		VOL GAIN/LOSS	AV, DC m/min	23.5			OTHER	0.00
			AV, Riser m/min				AVERAGE ROP	24:89

BAROID REPRESENTATIVE	OFFICE/HOME	Melbourne	TELEPHONE	(03) 9621 3311	DAILY COST	CUMULATIVE COST
Alan Searle	WAREHOUSE	Welshpool	TELEPHONE	(03) 5688 1445	\$ 7407.76	\$ 20226.36

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Baroid Australia Pty Ltd
DRILLING MUD REPORT

REPORT NUMBER: 7

Date	07/04/99	Depth	636.0 m [MD]
Spud Date	03/04/99	Present Activity	NIPPLING UP BOP

OPERATOR	CONTRACTOR	RIG NUMBER
Western Underground Gas Stora	O.D. & E.	Rig 30
REPORT FOR	REPORT FOR	REGION
Wally Westman / Jack Lambert	James Murray	Victoria

WELL NAME AND NUMBER	FIELD OR BLOCK	GEOGRAPHIC AREA	COUNTRY
IONA-3	PPL 2	Otway Basin	Austral

BIT DATA		DRILLING STRING			CASING		CIRCULATION DATA					
Size	17.5 in.	Pipe OD	ID	Len.			Pump Make/Model	Gard-Denv. PZ-8				
Type		Pipe OD	ID	Len.	in.	m	Size	6 X 8	Eff.	96.00 V/st	0.067	
No. Jets		Pipe OD	ID	Len.	13 3/8	Set #	635.0	epm	0	bbl/min	0.0	
Jets 32nd inch		Collar OD	ID	Len.		Set #		Pump Make/Model	Gard-Denv. PZ-8			
		Collar OD	ID	Len.		Set #		Size	6 X 8	Eff.	96.00 V/st	0.067
		in. OPEN HOLE			m	Set #		epm	0	bbl/min	0.0	
Tot Noz Area	Size	17.5	Len.	1.0	Set #		Pump Make/Model					
TFA	Size		Len.		Set #		Size		Eff.		V/st	
	Size		Len.		Set #		epm		bbl/min			
	Size		Len.		Set #		Tot. Vol./min	0	gpm	0.0	bbl	
	Size		Len.		Set #		BU Time	0	TC Time	0		

MUD PROPERTIES		Primary		2	3	Program	Essential
Source		Pits, Uncr	Pits, Uncr			Targets	Program
Time		20:00	16:00			**Excep	Properties
FL Temp	Deg C	0	0			P 2 3	635.8 1560.6
Depth	m	636.0	636.0				< 9.2
Weight	ppg	9.1	9.1				< 30
FV # 26	Deg C sec/qt	55	55				< 8.0
PV # 49	Deg C cP	10	10				< 1.0
YP	lbs/100 ft2	25	27				< 75.00
Gels	lbs/100 ft2	17/30	15/28				>
API Filt.	ml/30 min	12.8	12.6				>
HTHP # 121	Deg C ml/30 min	0.0	0.0				>
Cake API/HTHP	32nd in	2/0	2/0				>
Corr.Solids % by vol		4.2	4.3				>
Oil/Water % by vol		0.0/94.5	0.0/94.5				>
Sand % by vol		0.3	0.3				>
MBT		16.0	16.0				>
pH STRIP		8.3	8.3				>
Alk. Mud (Pm)		0.30	0.00				>
Alk. Filtr. (Pf/Mf)		0.20/0.70	0.30/0.70				>
Chlorides mg/l		22000	21500				>
Hard. Ca mg/l		360	400				>
Low Gravity Solids ppb		37.95	38.22				>
6 rpm		18	17				>
KCl Content	ppb	12.7	12.6				>

MUD TREATMENTS	
** Used MI-Gel and AQUAGEL GOLD SEAL for cement mix water. Cost \$1,641.72, not included in cumulative drilling mud cost.**	
Pumped 100 % excess cement. Cement returns to shakers soon after commencing displacement, indicating hole was near-gauge.	
KCL % wt = 3.63 / 3.6	

RIG ACTIVITY	
Ran and cemented 13-3/8" casing set at 635 m Nippling up BOP'e.	

MATERIALS USED		SOLIDS EQUIPMENT			
NO INVENTORY USED ON THIS REPORT		Device	Make	Sz/Scrn	HR
		Shkr #1	DFE-LM	84	2
		Shkr #2	DFE-LM	84	2
		dSlt #1	Harrisburg	12 * 4	2
		Cent #1	DFE	H1-Vol	2

MUD MANAGEMENT		MUD TYPE		RHEOLOGY AND HYDRAULICS		FRACTURE GRADIENT		TIME	
MUD VOLUME	bbl								
Hole	Pits	KCL/EZ MUD/POLYMER		600 rpm	45 47	Water Depth		DRLG	0.00
318	480	MUD CONSUMPTION		300 rpm	35 37	Calc. F. Grad	0.0	CIRC	2.00
Active Volume		ADDITIONS		200 rpm	32 32	Leak Off Test	0.0	TRIPS	0.00
798		Oil	bbl	100 rpm	27 26	ECD	ppg	SERV. RIG	0.00
Reserve	Total	Brine Water	0	6 rpm	18 17	Ceg. Shoe	0.0	SURVEY	0.00
	798	Drill Water	0	3 rpm	17 16	TD	0.0	FISHING	0.00
Low Grav, vol %	4.2	Sea Water	0	Pressure Units:	poig	Max. Diff. Press	0	LOGGING	0.00
ppb	37.95	Whole Mud	0	Press Drop. DP	0	DEVIATION INFO		RUN CSG	8.00
High Grav, vol %	0.1	Barite	0	Press Drop. BIT	0	MD	636.0 m	CORE	0.00
ppb	1.47	Chemicals	0	Press Drop. ANN	0	TVD	636.0 m	BACK REAM	0.00
ASG	2.73	LOSSES	bbl	Actual Circ. Press	0	Angle	1.75	REAMING	0.00
Drill Cuttings	0	Dumped	49	AV, DP	m/min	Direction	S 20 E	TESTING	0.00
Dilution Rate	0.00	Lost	0	AV, DC	m/min	Horiz. Diopl	0.0 m	OTHER	14.00
Slds Control Eff	85.00	VOL GAIN/LOSS	-49	AV, Riser	m/min			AVERAGE ROP	0.00
BAROID REPRESENTATIVE		OFFICE/HOME		TELEPHONE		DAILY COST		CUMULATIVE COST	
Alan Searle		WAREHOUSE		Melbourne		(03) 9621 3311		\$ 0.00 \$ 21628.04	
				Welshpool		(03) 5688 1445			

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Baroid Australia Pty Ltd
 DRILLING MUD REPORT
 (Cost Modified)

REPORT NUMBER: 9

Date	Depth
09/04/99	707.0 m [MD]
Spud Date	Present Activity
03/04/99	DRILLING

OPERATOR	CONTRACTOR	RIG NUMBER
Western Underground Gas Stora	O.D. & E.	Rig 30
REPORT FOR	REPORT FOR	REGION
Wally Westman / Jack Lambert	Nick Horsburgh	Victoria

WELL NAME AND NUMBER	FIELD OR BLOCK	GEOGRAPHIC AREA	COUNTRY
IONA-3	PPL 2	Otway Basin	Austral

BIT DATA				DRILLING STRING				CASING				CIRCULATION DATA			
Size 12.25 in.	Pipe OD	4 1/2	ID 3.826	Len.	391.0							Pump Make/Model	Gard-Denv.	PZ-8	
Type	Pipe OD	5	ID 3.000	Len.	284.0	in.	m	Size 6 X 8	Eff.	96.00	V/st	0.067			
No. Jets	Pipe OD		ID	Len.		13 3/8	Set #	635.0	gpm	123	bbbl/min	8.3			
Jets 32nd inch	Collar OD	8	ID 3.000	Len.	32.0	Set #			Pump Make/Model	Gard-Denv.	PZ-8				
	collar OD		ID	Len.		Set #			Size 6 X 8	Eff.	96.00	V/st	0.067		
						Set #			gpm	124	bbbl/min	8.3			
Tot No: Area	Size	17.5	Len.	1.0		Set #			Pump Make/Model						
TFA	Size	12.25	Len.	71.0		Set #			Size			V/st			
	Size		Len.			Set #			gpm		bbbl/min				
	Size		Len.			Set #			Tot. Vol./min	697	gpm	16.6	bbbl		
	Size		Len.			Set #			BU Time	18	TC Time	43			

MUD PROPERTIES						MUD TREATMENTS					
		Primary	2	3							
Source		Pits, Circ	Pits, Uncr		Program	Essential		RIH to 608 m top of cement. Pre treat suction and conditioned mud with Citric acid and Bicarb. Adjusting premix to control mud properties. Running desilter and centrifuge to control solids. Mixed 40 bbls LCM pill of 10 ppb of Kwik Seal fine. KCL % wt : 3.6 / 3.5			
Time		22:30	14:20		Targets	Program					
FL Temp	Deg C	42	0		*-Excep	Properties					
Depth	m	707.0	638.0		P 2 3	635.8	1560.6				
Weight	ppg	9.0	9.1			<	9.2				
FV @ 32 Deg C	sec/qt	47	45								
PV @ 49 Deg C	cP	10	10			<	30				
YP	lbs/100 ft2	17	16								
Gels	lbs/100 ft2	8/18	7/16								
API Filt.	ml/30 min	12.8	13.6		* *	6.0	8.0				
HTHP @ 121 Deg C	ml/30 min	0.0	0.0								
Cake API/HTHP	32nd in	2/0	2/0								
Corr.Solids % by vol		3.8	4.3								
Oil/Water % by vol		0.0/95.0	0.0/94.5								
Sand % by vol		0.25	0.3			<	1.0				
MBT		13.5	15.0								
pH STRIP		10.0	10.3		* *	8.5	9.0				
Alk. Mud (Pm)		0.00	0.00								
Alk. Filtr. (PF/ME)		0.30/0.90	0.40/1.10								
Chlorides mg/l		21500	21000								
Hard. Ca mg/l		480	520								
Low Gravity Solids ppb		34.31	38.40			<	75.00				
6 rpm		8	7		* *	10.00	>				
KCl Content	ppb	12.6	12.3			10.00	15.00				

MATERIALS USED						RIG ACTIVITY					
		Used	Cost	Product							
BARACOR 129 - 25 KG.	CAN	1	64.98			Layed down 8" drill collars. Make up bit and BHA, test MWD, RIH, wash down to 608 m top of cement. Drill out the shoe track and formation to 638 m. Ran FIT, 10.1 ppg EMW. Rig down to repair pump #1, changed mudule. Drilling ahead at 707 m.					
EZ-MUD DP - 25 KG.	BAG	1	175.44								
Kwikseal Fine - 40 LB.	BAG	10	437.10								
PAC-R - 25 KG.	BAG	4	759.32								
Pottassium Chloride - 1000 KG		1.000	520.00								
XCD Polymer - 25 KG.	BAG	1	472.76								
citric acid - 25 KG.	BAG	8	496.40								
soda ash - 25 KG.	BAG	2	30.00								
sodium bicarbonate - 25 KG.		8	137.28								

MATERIALS USED						SOLIDS EQUIPMENT					
		Used	Cost	Product							
BARACOR 129 - 25 KG.	CAN	1	64.98			Device	Make	Sz/Scrn	HR		
EZ-MUD DP - 25 KG.	BAG	1	175.44			Shkr #1	DFE-LM	84/110	7		
Kwikseal Fine - 40 LB.	BAG	10	437.10			Shkr #2	DFE-LM	84/110	7		
PAC-R - 25 KG.	BAG	4	759.32			dSlt #1	Harrisburg	12 * 4	7		
Pottassium Chloride - 1000 KG		1.000	520.00			Cent #1	DFE	Hi-Vol	6		
XCD Polymer - 25 KG.	BAG	1	472.76								
citric acid - 25 KG.	BAG	8	496.40								
soda ash - 25 KG.	BAG	2	30.00								
sodium bicarbonate - 25 KG.		8	137.28								

MUD MANAGEMENT				RHEOLOGY AND HYDRAULICS				FRACTURE GRADIENT TIME			
MUD VOLUME		MUD TYPE		MUD CONSUMPTION		Pressure Units		Water Depth		DRLG	
Hole	Pits	KCL/EZ MUD/POLYMER		600 rpm	37 36	psi/g		Calc. F. Grad	0.0	CIRC 1.50	
325	395			300 rpm	27 26			Leak Off Test	10.1	TRIPS 7.00	
Active Volume		ADDITIONS		200 rpm	21 21			ECD	ppg	SERV. RIG 8.50	
720		Oil		100 rpm	16 15			Ceg. Shoe	9.2	SURVEY 0.00	
Reserve	Total	Brine Water		6 rpm	8 7			TD	9.2	FISHING 0.00	
50	770	Drill Water		3 rpm	6 5			Max. Diff. Press	0	LOGGING 0.00	
Low Grav, vol %	3.8	Sea Water		0						RUN CSC 0.00	
ppb	34.31	Whole Mud		0						CORE 0.00	
High Grav, vol %	0.0	Barite		0						BACK REAM 0.00	
ppb	0.00	Chemicals		4						REAMING 0.00	
ASG	2.64	LOSSES		Actual Circ. Press	1900					TESTING 0.50	
Drill Cuttings	0	Dumped		AV, DP	m/min	18.5		MD	707.0 m	OTHER 0.00	
Dilution Rate	0.00	Lost		AV, DC	m/min	60.6		TVD	706.5 m	AVERAGE ROP 0.00	
Slide Control Eff	85.00	VOL GAIN/LOSS		AV, Riser	m/min			Angle	4.50		
								Direction	S 20 E		
								Horiz. Displ	7.4 m		

BAROID REPRESENTATIVE	OFFICE/HOME	Melbourne	TELEPHONE	(03) 9621 3311	DAILY COST	CUMULATIVE COST
Gerald Lange	WAREHOUSE	Welshpool	TELEPHONE	(03) 5688 1445	\$A 3093.26	\$A 24721.32

NOTE: ALL COSTS ARE REPORTED IN AUSTRALIA'S DOLLAR

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Baroid Australia Pty Ltd
DRILLING MUD REPORT
(Cost Modified)

REPORT NUMBER: 11

Date	11/04/99	Depth	1316.0m [MD]
Spud Date	03/04/99	Present Activity	DRILLING

OPERATOR	CONTRACTOR	RIG NUMBER
Western Underground Gas Stora	O.D. & E.	Rig 30
REPORT FOR	REPORT FOR	REGION
Wally Westman / Jack Lambert	Nick Horsburgh	Victoria

WELL NAME AND NUMBER	FIELD OR BLOCK	GEOGRAPHIC AREA	COUNTRY
IONA-3	PPL 2	Otway Basin	Austral

BIT DATA		DRILLING STRING		CASING		CIRCULATION DATA			
Size 12.25 in.	Pipe OD	4 1/2 ID	3.826 Len. 1000.0			Pump Make/Model	Gard-Denv. PZ-8		
Type Sec ERA 03D	Pipe OD	5 ID	3.000 Len. 284.0	in.	m	Size 6 X 8	Eff.	96.00	V/st 0.067
No. Jets	Pipe OD	ID	Len.	13 3/8 Set #	635.0	apm	139	bbl/min	9.3
Jets 32nd inch	Collar OD	8 ID	3.000 Len. 32.0	Set #		Pump Make/Model	Gard-Denv. PZ-8		
24	24	24	Collar OD	ID	Len.	Set #	Size 6 X 8	Eff.	96.00 V/st 0.067
			in.	OPEN HOLE		m	Set #	apm	136 bbl/min 9.1
Tot' Noz Area	Size	17.5	Len.	1.0		Set #	Pump Make/Model		
TFA	Size	12.25	Len.	324.0		Set #	Size	Eff.	V/st
	Size	Len.				Set #	apm	bbl/min	
	Size	Len.				Set #	Tot. Vol./min		776 gpm. 18.5 bbl
	Size	Len.				Set #	BU Time	22	TC Time 51

MUD PROPERTIES					MUD TREATMENTS					
	Primary	2	3							
Source	Flowline	Flowline	Flowline	Program	Essential					
Time	21:30	15:30	09:50	Targets	Program					
FL Temp	Deg C	52	52	50	Properties					
Depth	m	1296.0	1184.0	1108.0	P 2 3	635.8 1560.6				
Weight	ppg	9.1	9.1	9.1		< 9.2				
FV @ 50	Deg C sec/qt	58	54	48						
PV @ 49	Deg C cP	16	17	15		< 30				
YP	lbs/100 ft2	33	27	25						
Gels	lbs/100 ft2	9/21	8/18	8/17						
API Filt.	ml/30 min	6.4	6.6	6.6		6.0 8.0				
HTHP @ 121	Deg C ml/30 min	16.8	17.0	17.4						
Cake API/HTHP	32nd in	1/2	1/2	1/2						
Corr. Solids % by vol		4.2	4.2	4.1						
Oil/Water % by vol		0.0/94.5	0.0/94.5	0.0/94.5						
Sand % by vol		0.75	0.75	1.5		< 1.0				
MBT		14.5	13.6	14.0						
pH STRIP		8.5	8.5	8.7		8.5 9.0				
Alk. Mud (Pm)		0.40	0.60	0.80						
Alk. Filt. (Pf/ME)		0.10/0.50	0.08/0.50	0.10/0.75						
Chlorides mg/l		22000	23000	24000						
Hard. Ca mg/l		360	380	360						
Low Gravity Solids ppb		37.95	37.49	37.04		< 75.00				
6 rpm		11	10	11		10.00 >				
KCl Content	ppb	12.1	12.6	13.0		10.00 15.00				

Adjusting concentration of premix to control mud properties.
Running desilter and centrifuge while drilling to control solids.
Mixed 50 bbl of 10 ppb of Kwik Seal Medium LCM pill for sweeps.
Sand in % 0.3 / 0.3 / 1.0
KCL % wt 3.5 / 3.6 / 3.7

RIG ACTIVITY
Drilling, swept hole with 10 bbls of Kwik seal LCM pill at 1021 m, high concentration of cuttings over shakers and 20 bbl at 1250 m, high concentration of cuttings over shakers.
Drilling ahead at 1316 m.

MATERIALS USED

Product	Used	Cost
BARACOR 129 - 25 KG. CAN	3	194.94
EZ-MUD DP - 25 KG. BAG	12	2105.28
Kwikseal Medium - 40 LB. BAG	10	437.10
PAC-R - 25 KG. BAG	20	3796.60
Potassium Chloride - 1000 KG	4.000	2080.00
XCD Polymer - 25 KG. BAG	11	5200.36
potassium hydroxide - 20 KG.	9	395.55

SOLIDS EQUIPMENT

Device	Make	Sz/Scrn	HR
Shkr #1	DFE-LM	3 x 110	24
Shkr #2	DFE-LM	3 x 110	24
dSlt #1	HarrisoBURG	12 * 4	24
Cent #1	DFE	Hi-Vol	24

MUD MANAGEMENT		RHEOLOGY AND HYDRAULICS			FRACTURE GRADIENT		TIME	
Hole	Pits	600 rpm 65 61 55			Water Depth	DRLG 23.50		
456	482	300 rpm 49 44 40			Calc. F. Grad	CIRC 0.00		
Active Volume	MUD TYPE	200 rpm 41 36 32			Leak Off Test	TRIPS 0.00		
938	KCL/EZ MUD/POLYMER	100 rpm 29 26 24			BCD	SERV. RIG 0.50		
Reserve	ADDITIONS	6 rpm 11 10 11			Ceg. Shoe	SURVEY 0.00		
20	Oil	3 rpm 8 8 8			TD	FISHING 0.00		
Total	Brine Water	Pressure Units: paig			Max. Diff. Press	LOGGING 0.00		
958	Drill Water	0 Press Drop. DP 754				RUN CSG 0.00		
Low Grav. vol %	Sea Water	0 Press Drop. BIT 285				CORE 0.00		
4.2	Whole Mud	Press Drop. ANN 68			DEVIATION INFO			
ppb	Barite	Actual Circ. Press 1800			MD	BACK REAM 0.00		
37.95	Chemicals	30 AV, DP m/min 20.3			TVD	REAMING 0.00		
High Grav. vol %	LOSSES	457 AV, DC m/min 0.0			Angle	TESTING 0.00		
0.1	Dumped	AV, Riser m/min			Direction	OTHER 0.00		
ppb	Loot				Horiz. Displ	AVERAGE ROP 15.15		
1.47	VOL GAIN/LOSS							
ASG	113							
2.73								
Drill Cuttings								
170								
Dilution Rate								
0.37								
Sids Control Eff								
85.00								

BAROID REPRESENTATIVE	OFFICE/HOME	Melbourne	TELEPHONE	(03) 9621 3311	DAILY COST	CUMULATIVE COST
Gerald Lange	WAREHOUSE	Welshpool	TELEPHONE	(03) 5688 1445	\$A 14209.83	\$A 48841.03

NOTE: ALL COSTS ARE REPORTED IN AUSTRALIA'S DOLLAR

The recommendations made hereon shall not be construed as authorizing the infringement of any valid patent, and are made without assumption of any liability by BAROID DRILLING FLUIDS, INC. or its agents, and are statements of opinion only.

Date	Depth
13/04/99	1459.0m [MD]
Spud Date	Present Activity
03/04/99	REAMING IN HOLE

OPERATOR	CONTRACTOR	RIG NUMBER	
Western Underground Gas Stora	O.D. & E.	Rig 30	
REPORT FOR	REPORT FOR	REGION	
Wally Westman / Jack Lambert	Nick Horsburgh	Victoria	
WELL NAME AND NUMBER	FIELD OR BLOCK	GEOGRAPHIC AREA	COUNTRY
IONA-3	PPL 2	Otway Basin	Austral

BIT DATA		DRILLING STRING		CASING		CIRCULATION DATA			
Size 12.25 in.	Pipe OD	4 1/2 ID	3.826 Len. 1143.0			Pump Make/Model	Gard-Denv. PZ-8		
Type Sec ERA 03D	Pipe OD	5 ID	3.000 Len. 284.0	in.	m	Size 6 X 8	Eff. 96.00	V/st 0.067	
No. Jets	Pipe OD	ID	Len.	13 3/8 Set @	635.0	spm	130	bbl/min 8.7	
Jets 32nd inch	Collar OD	8 ID	3.000 Len. 32.0	Set @		Pump Make/Model	Gard-Denv. PZ-8		
24	24	24	Collar OD	ID	Len.	Set @	Size 6 X 8	Eff. 96.00 V/st 0.067	
		in. OPEN HOLE		m		Set @	spm	bbl/min 8.7	
Tot Noz Area	Size	17.5	Len. 1.0	Set @		Pump Make/Model			
TFA	Size	12.25	Len. 823.0	Set @		Size	Eff.	V/st	
	Size	Len.		Set @		spm	bbl/min		
	Size	Len.		Set @		Tot. Vol./min	734	gpm 17.5	bbl
	Size	Len.		Set @		BU Time	35	TC Time	56

MUD PROPERTIES		Primary		2		3		Program		Essential	
Source		Pits, Circ	Pits, Uncr					Targets	Program		
Time		22:00	16:00					*=Excep	Properties		
FL Temp	Deg C	43	0					P	2	3	635.8 1560.6
Depth	m	1459.0	1459.0								
Weight	ppg	9.2	9.2								< 9.2
FV @ 32 Deg C	sec/qt	68	65								
PV @ 49 Deg C	cP	17	17								< 30
YP	lbs/100 ft ²	28	28								
Gels	lbs/100 ft ²	8/19	8/24								
API Filt.	ml/30 min	5.8	5.8					*	*		6.0 8.0
HTHP @ 121 Deg C	ml/30 min	15.2	15.0								
Cake API/HTHP	32nd in	1/2	1/2								
Corr.Solids % by vol		5.3	5.3								
Oil/Water % by vol		0.0/93.5	0.0/93.5								
Sand % by vol		0.5	0.5								< 1.0
MBT		15.0	15.0								
pH STRIP		8.5	8.3					*			8.5 9.0
Alk. Mud (Pm)		0.40	0.45								
Alk. Filtr. (P/F/MF)		0.10/0.50	0.70/0.50								
Chlorides mg/l		21500	22000								
Hard. Ca mg/l		320	280								
Low Gravity Solids ppb		48.05	47.87								< 75.00
6 rpm		10	10								10.00 >
KCl Content	ppb	12.4	12.6								10.00 15.00

MUD TREATMENTS	
Ran centrifuge and desilter while circulating and tripping.	
Barite used for slug.	
Added KOH to the system to maintain pH.	
Lost 10 bbls of mud logging.	
KCL % wt : 3.5 / 3.6	

RIG ACTIVITY	
Completed wiper trip, circulate hole until clean, high increase in fines over shakers.	
Slug pipe, POOH.	
Ran Schlumberger logs, HALS, PECKS and BHC.	
RIH to 705 m, hole tight, wash and ream to 736 m, RIH to 800 m, wash and reaming at 889 m.	

MATERIALS USED			
Product	Used	Cost	Product
barite - 25 KG. SACK	60	429.60	
potassium hydroxide - 20 KG.	3	131.85	

SOLIDS EQUIPMENT			
Device	Make	Sz/Scrn	HR
Shkr #1	DFE-LM	3 x 110	5
Shkr #2	DFE-LM	3 x 110	5
dSlt #1	Harrioburg	12 * 4	10
Cent #1	DFE	Hi-Vol	17

MUD MANAGEMENT		RHEOLOGY AND HYDRAULICS		FRACTURE GRADIENT		TIME	
MUD VOLUME	bbbl	MUD TYPE		Water Depth		DRLG	0.00
Hole	Pits	KCL/EZ MUD/POLYMER	600 rpm 62 62	Calc. P. Grad	0.0	CIRC	2.00
671	308	MUD CONSUMPTION	300 rpm 45 45	Leak Off Test	10.1	TRIPS	7.00
Active Volume		ADDITIONS	200 rpm 38 37	ECD	PPG	SRV. RIG	0.00
979		Oil	100 rpm 28 27	Cog. Shoe	9.5	SURVEY	0.00
Reserve	Total	Brine Water	0 6 rpm 10 10	TD	9.6	FISHING	0.00
	979	Drill Water	0 3 rpm 8 8	Max. Diff. Press	0.0	LOGGING	10.50
Low Grav. vol %	5.3	Sea Water	0 Pressure Units: ppig			RUN CSG	0.00
ppb	48.05	Whole Mud	0 Press Drop. DP 1564	DEVIATION INFO		CORE	0.00
High Grav. vol %	0.0	Barite	0 Press Drop. BIT 258	MD	1459.0 m	BACK REAM	0.00
ppb	0.00	Chemicals	2 Press Drop. ANN 91	TVD	1373.0 m	REAMING	2.00
ASG	2.63	LOSSES	Actual Circ Press 1100	Angle	31.80	TESTING	0.00
Drill Cuttings	0	Dumped	AV, DP. m/min 19.2	Direction	219.7	OTHER	1.50
Dilution Rate	0.00	Lost	AV, DC. m/min 63.7	Horiz. Diapl	336.9 m	AVERAGE ROP	0.00
Slids Control Eff	85.00	VOL GAIN/LOSS	AV, Riser m/min				
BAROID REPRESENTATIVE	OFFICE/HOME	Melbourne	TELEPHONE	(03) 9621 3311	DAILY COST	CUMULATIVE COST	
Gerald Lange	WAREHOUSE	Welshpool	TELEPHONE	(03) 5688 1445	\$A	561.45	\$A 56371.53

NOTE: ALL COSTS ARE REPORTED IN AUSTRALIA'S DOLLAR
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PE908198

This is an enclosure indicator page.
The enclosure PE908198 is enclosed within the
container PE908189 at this location in this
document.

The enclosure PE908198 has the following characteristics:

ITEM_BARCODE = PE908198
CONTAINER_BARCODE = PE908189
NAME = Iona-3 Mudlog
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = MUD_LOG
DESCRIPTION = Iona-3 Formation Evaluation Log
(Mudlog), Scale 1:200 Enclosure 1
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Western Underground Gas Storage Pty Ltd
WELL_NAME =
CONTRACTOR = Western Underground Gas Storage Pty Ltd
AUTHOR =
ORIGINATOR = Western Underground Gas Storage Pty Ltd
TOP_DEPTH =
BOTTOM_DEPTH = 1459
ROW_CREATED_BY = DN07_SW

Iona-3

0

(Inserted by DNRE - Vic Govt Mines Dept)

PE908199

This is an enclosure indicator page.
The enclosure PE908199 is enclosed within the
container PE908189 at this location in this
document.

The enclosure PE908199 has the following characteristics:

ITEM_BARCODE = PE908199
CONTAINER_BARCODE = PE908189
NAME = Iona-3 Composite Well Log
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = COMPOSITE_LOG
DESCRIPTION = Iona-3 Composite Well Log, Enclosure 2
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED =
RECEIVED_FROM = Western Underground Gas Storage Pty Ltd
WELL_NAME =
CONTRACTOR =
AUTHOR =
ORIGINATOR = Western Underground Gas Storage Pty Ltd
TOP_DEPTH =
600
BOTTOM_DEPTH = 1459
ROW_CREATED_BY = DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

