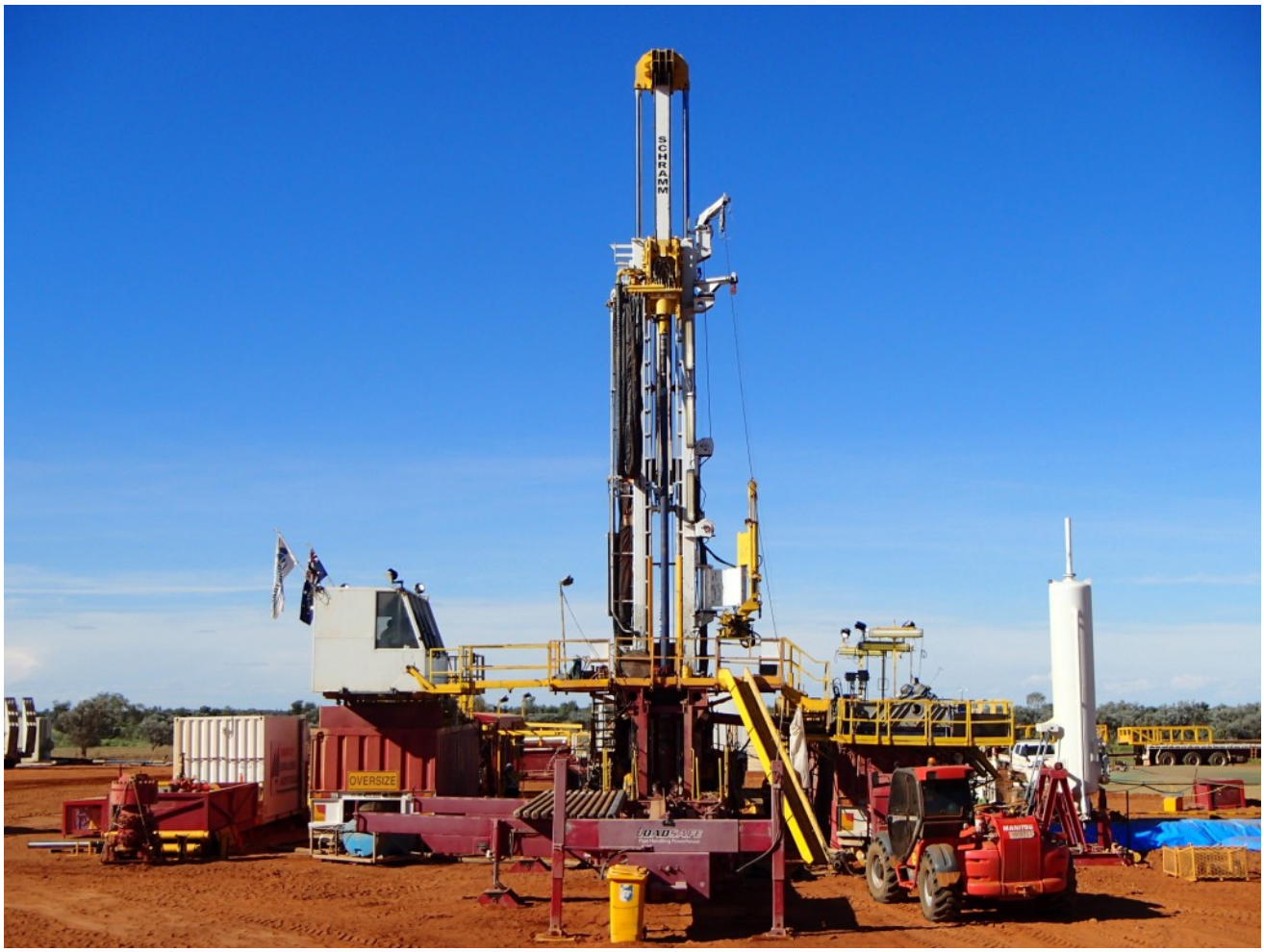
Basic Well Completion Report rev2
OzAlpha-1, EP104

South Georgina Basin
Northern Territory, Australia



(this page intentionally left blank)

Statoil

Title:
Basic Well Completion Report rev2 **OzAlpha-1, EP104**

Document no. :	Contract no.:	Project: **South Georgina Basin**

Classification:	Distribution: **Corporate Statoil, Petrofrontier Corp, Department of Mines and Energy**
Expiry date:	Status **Final**

Distribution date: **2014-11-20**	Rev. no.: **2**	Copy no.:

Author:: **Linn Arnesen, Griffiths Weste, Rolf Smedal, Luis Tarazona, Joel Gordon**
Subjects: **Basic Well Completion Report rev2 for the OzAlpha-1 drilling and completion operations**
Remarks:

Valid from:	Updated: 2014-11-18
Responsible publisher: **Expl Manager**	**Jens-Petter Kvarstein**

Responsible (Organisation unit): **Leader well project**	Responsible (Name): **Alv Sigve Teigen**	Date/Signature: 18.11.2014
Recommended by (Organisation **D&W Manager**	Recommended by (Name): **Luis Tarazona**	Date/Signature: Nov 20 - 2014
Approved by (Organisation unit): **Expl Manager**	Approved by (Name): **Jens-Petter Kvarstein**	Date/Signature: 19/11-14

(this page intentionally left blank)

QUALITY ASSURANCE MATRIX FOR MILESTONE DOCUMENTS Document : Basic Well Completion Report rev2 Well:OzDelta-1 Date: November 18, 2014				
SECTION/CHAPTER	**REV. NO.**	**AUTHOR**	**VERIFIED BY**	**RECOMMENDED BY**
1	2	Linn Arnesen	Griffiths Weste	Alv Sigve Teigen
2	2	Luis Tarazona	Brad Ahlquist	
3	2	Joel Gordon	Greg Halliday	
4-6	2	Linn Arnesen/Joel Gordon	Griffiths Weste/Greg Halliday	

(this page intentionally left blank)

Table of contents

Enclosures to OzAlpha-1 Basic Well Completion Report (DVD)

OzAlpha-1 Core images, white and UV light

Mudlog and gas recordings (pdf and LAS)

Openhole Wireline logs (pdf and LAS)

Core and Cuttings Sample Manifests

Cased Hole logs (pdf and LAS)

1 General Data

1.1 Well Objective

The OzAlpha-1 exploration well was drilled to de-risk the unconventional play in the middle Cambrian Arthur Creek Hot Shale and Thorntonia Limestone (dolomitized) in the southern part of EP 104. Permeabilities in these formations were expected to be too low for conventional methods of production and the most prospective wells are planned to be stimulated through hydraulic fracturing. No commercial production rates are planned with the chosen well design; the aim being to prove movable hydrocarbons, obtain samples of the hydrocarbons and to derive enough data to optimize future well designs and completion strategies. OzAlpha-1 was drilled and originally prepared as one of the candidates for stimulation and testing, but was later decided not to be tested. The well is now permanently plugged and abandoned.

The drilling objectives of exploration well OzAlpha-1 included two hole sections. The upper section was designed to be cased and cemented to surface to isolate the aquifers, achieve kick tolerance and maintain well integrity towards underlying potential hydrocarbon bearing zones. 12 ¼" hole was to be drilled and 9 5/8" surface casing run and cemented to surface.

The lower 7 7/8" hole section was designed to obtain continuous core through the target basal Arthur Creek Hot Shale and underlying Thorntonia Limestone at an undisturbed location to assess presence of hydrocarbons. Wireline logging was part of the objective in order to evaluate the hydrocarbon potential. The last objective of the drilling phase was to run and cement 4 1/2" production casing from TD to surface, providing isolation for the hydraulic stimulation and testing planned in the next phase of operations.

As the well was not chosen for stimulation and testing operations, the well was plugged and abandoned. The abandonment objectives were to isolate any water and hydrocarbon bearing formations with cement plugs, cut-off the existing wellhead and install a marker rod with well name as per the NT DME requirements. Rehabilitation of the site could then be completed as per the approved EMP.

1.2 Well Outcome

12 ¼" hole was drilled to 507.5 m MD RKB and 9 5/8" surface casing run to 507 m MD RKB and cemented to surface. Hence the aquifers were isolated and kick tolerance and well integrity were achieved with a leak-off at 11.4 ppg EMW. 7 $^{7}/_{8}$" production hole was then drilled to the coring point at 926 m MD RKB. $3^{1}/_{2}$" wireline retrieved coring was conducted using 9m core barrels. 100% recovery was achieved through the lower Arthur Creek Formation and the Arthur Creek Hot Shale. The coring of the Thorntonia Limestone was more challenging, with broken core packing off the core barrels, resulting in 0.5 m to 2 m of recovered core per run. In an attempt to pass the broken up zone, 12.8 m of the Thorntonia were rotary drilled with a drill bit insert in the coring BHA. Hence, no core was obtained from the middle parts of Thorntonia. Coring resumed through the lower portion of the Thorntonia and continued 17 m into granite basement where TD was called at 1250 m MD RKB.

The formation tops were encountered within the uncertainties of the prognosed depths. Red Heart Dolomite was penetrated instead of the prognosed Sun Hill Arkose.

Wireline logging was conducted and the production casing was run and cemented to surface to provide isolation for the hydraulic stimulation planned in the completions phase.

OzAlpha-1 was temporarily suspended awaiting further stimulation and production testing operations for 3 months; 22 April to 28 July 2014.

The well preparations for stimulation and testing operations commenced 28 July 2014. A wireline unit rigged up on the OzAlpha-1 well and tagged cement at a shallower depth than expected. A cement evaluation log was run and the cement was drilled out in the bottom of the well with coiled tubing in order to access the target intervals for diagnostic stress testing. The well was again suspended 10 August 2014 to await a decision whether the well would be stimulated and tested.

OzAlpha-1 was not selected for further testing operations and was permanently plugged and abandoned according to the requirements of the Department of Mines and Energy with a wireline unit 22 – 26 September 2014.

1.3 Well Summary Table

WELL SUMMARY			
Statoil	WELL NAME	OzAlpha-1	
	OFFSET WELLS	Owen-2, Owen 3, Hacking 1	
	WELL CLASS	Exploration	
LOCATION DETAILS			
BASIN	Southern Georgina Basin	NORTHING	768840mN
LICENCE	EP 104	EASTING	7518300mE
LOCATION	Northern Territory	ZONE	53 S
SEISMIC SURVEY	GBE-10-18	LATITUDE	22° 25’ 13.49 S
SEISMIC REF.	Trace 3012 / / CDP 2112 / SP 250292	LONGITUDE	137° 36 ’41.89 E
ELEVATIONS	189m AHD (GL), 193.2m AHD (KB), 4.2m (KB)	GRID	GDA’94
OPERATION DETAILS			
OPERATOR	Statoil Australia Theta B. V.	DRILLING RIG /	EDA Rig # 2
PRIMARY OBJECTIVE	Arthur Creek Formation ‘Hot Shale’ and Thorntonia Limestone	SPUD DATE	01/04/2014
STRUCTURE	Unconventional Stratigraphic	RIG RELEASE	22/04/2014
WELL TYPE	Vertical	TD DATE OzAlpha-1	19/04/2014
DRILLER TD OzAlpha-1	1250.3m MD	OPERATION DAYS Drilling	19
COMPLETION OPERATIONS Wellbore preparations	Tag top of cement, pressure test casing, cement bond log, and drill out cement.	OPERATION DAYS Wellbore preparations	14
PERMANENT P&A	Performed with a wireline unit.	P&A DATE	25/09/2014
		OPERATION DAYS Permanent P&A	4

HOLE SUMMARY OzAlpha-1				
HOLE SIZE	**HOLE DEPTH**	**CASING SIZE**	**SHOE DEPTH**	**CASING TYPE**
17 ½” (445mm)	7.7m MD	14”	6.7m MD	Conductor
12 ¼” (316mm)	507.5m MD	9 5/8” (244mm)	507.0m MD	36 ppf J-55 BTC
7 7/8” (200mm)	1250.3m MD	4 ½”	1240m MD	13.5 ppf L-80 Tenaris Blue

WIRELINE LOGGING SUMMARY OzAlpha-1 (no MWD/LWD run)				
RUN	**IN (mMD)**	**OUT (mMD)**	**TOOLS STRING**	**REMARKS**
1	1250 507.0	507.0 Surface	MCG-SGS-MDN-MPD-MLE-MMR MCG only	Weatherford open hole wireline: Max. BHT 49° at TD
2	1250	1040	MCG-CMI (image log)-DXD (sonic)	Open hole wireline. Image log run separately
3	1250	480	MCG-CMI (image log)-DXD (sonic)	Open hole wireline. Separate sonic from TD to csg shoe
1	1190	Surface	CCL-GR-CBL-SBT	Weatherford cased hole services, cement bond log

CORING: OzAlpha-1			
RUN	**INTERVAL (mMDKB)**	**RECOVERY m (%)**	**COMMENT**
1-23	1040 – 1175.5	100%	Wireline retrieved coring
24 -30	1188 – 1249.9	100%	Started wireline coring again after 11.5 m of drilling with insert bit

FORMATION TESTS	The well was not stimulated or production tested.

The well is located in the southeastern part of the Southern Georgina Basin; refer to Figure 1-1 and Figure 1-2 on the following pages.

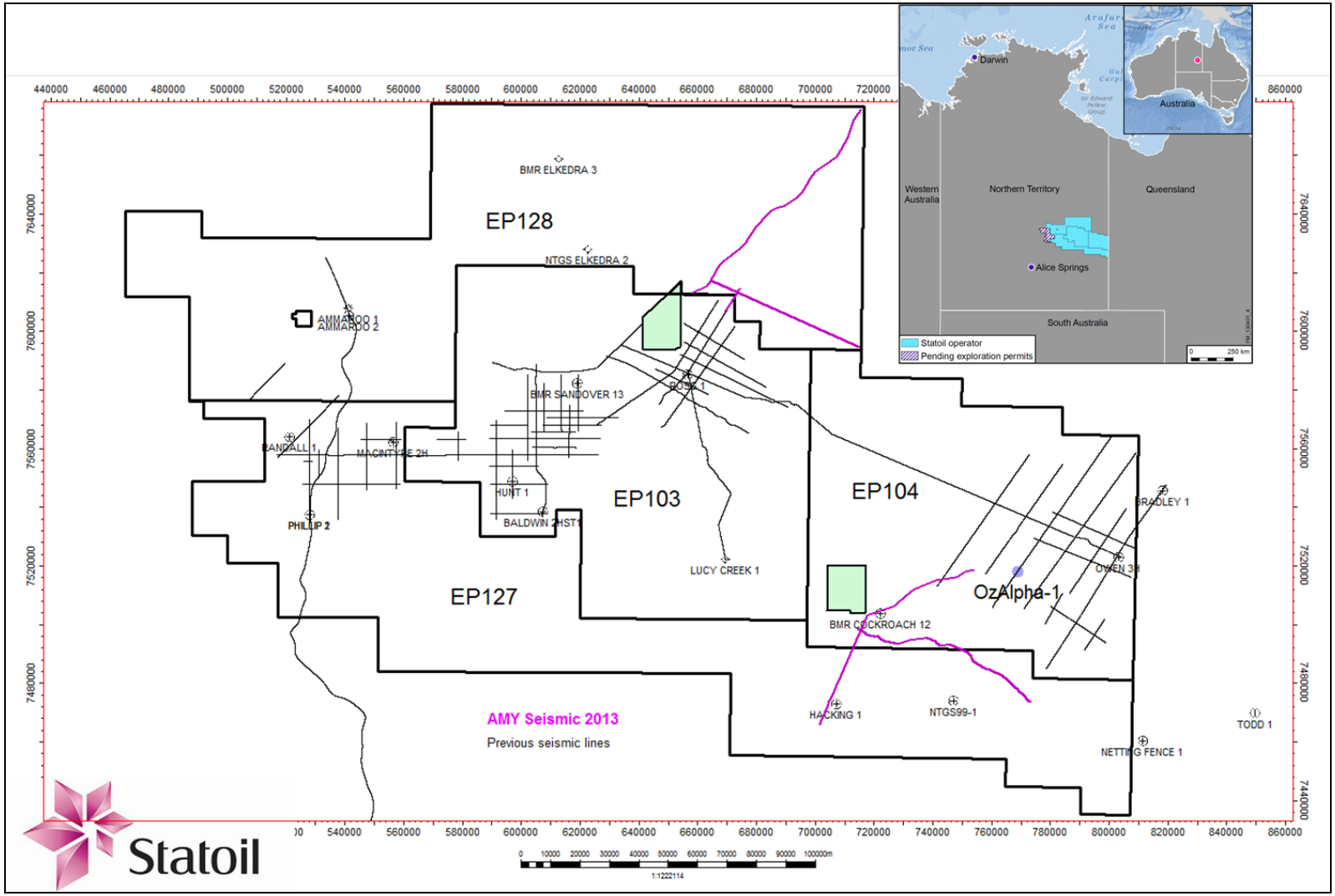


Figure 1-1 Map of the Statoil licenses area and position of the OzAlpha-1 well location in EP104

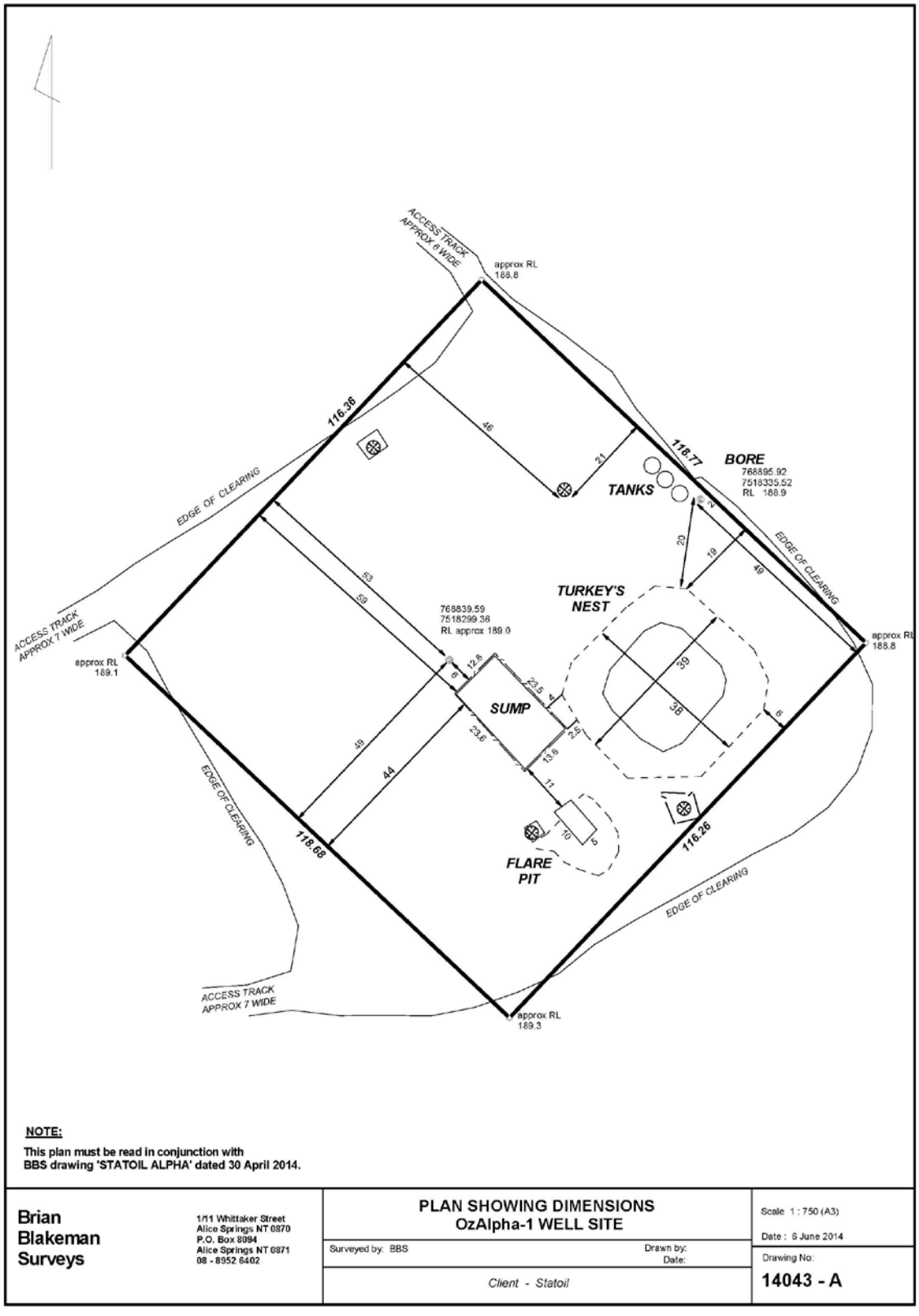


Figure 1-2 Survey certificate

2 Drilling

All depths in this report are measured depths related to Kelly bushing height (4.2 m MD KB), if not otherwise stated.

2.1 Drilling Summary

OzAlpha-1 was spudded April 1st 2014 and took a total of 20 days to complete drilling, logging and cementing. The well was temporarily suspended awaiting stimulation and testing operations.

Very hard surface rock resulted in the 14" conductor being pre-set at 6.7 m depth, only 2.5 meters below ground level.

12 ¼" hole was drilled from 7.7 m to 507.5 m. Due to the shallow set conductor, the cellar washed out around the conductor. LCM was pumped and the washout was reduced. At 224 m a bit trip was performed to open up bit nozzles and improve hydraulics. ROP then increased and section TD was reached in the Arrinthrunga Formation. During the drilling of the surface hole the mud weight increased due to build-up of fines in the mud system as the mud pit was too small for sufficient settling out of the cuttings. The increased mud weight resulted in partial lost circulation through the entire section, this was hard to quantify due to the washout under the conductor and the mud pit limitation. During flow checking at section TD, the losses were estimated to 20bph static. A lost circulation (LCM) pill was spotted and losses reduced to 10bph before tripping out of the hole.

9 5/8" J55 BTC casing was run to 507 m and cemented to surface. Difficulties were encountered installing the wellhead, resulting in 16.75 hours of non-productive time, mainly due to over 14 hours waiting on a welder to weld on the well head.

The FIT at the surface casing shoe leaked off at 11.4 ppg, still within kick tolerance for the production hole.

7 $^{7}/_{8}$" production hole was drilled to 926 m. It was decided to trip early to pick up the CorPro wireline retrieved coring system. Drilling continued to the pre-determined core point at 1040 m utilising the coring assembly with a drill bit insert. The drill bit insert was recovered after trying for 7 hours to retrieve with wireline. Coring commenced and 9 m lengths were cored on each coring run. The core recovery was 100% in the lower Arthur Creek Formation and the Arthur Creek Hot Shale. After encountering the Thorntonia Limestone the coring runs became very short; 1-2 m, due to brittle rock, interconnected vugs or weak zones in the formation that caused the coring barrel to pack off and unseat the inner core barrel. After numerous short core runs, 12.8 m was drilled with the insert bit in order to pass the zone of brittleness. Coring was resumed at 1189.3 m MD KB until TD 17 m into the granite basement. The well was flow checked prior to pulling out and static losses were recorded at 2.4bph.

Wireline logging was performed with two logging strings in 3 runs.

4 ½" L80 Tenaris Blue casing was run to 1240 m MD KB and cemented to surface. Casing slips were installed and seated, the BOP was nippled down, the well head adapter was installed and nippled up and the seals were pressure tested.

The well was temporarily suspended and the rig was released April 21st 2014.

A time overview for the OzAlpha-1 activities can be seen in Table 2-1.

Table 2-1 Summary of drilling operations for OzAlpha-1

Section	Start time	End time	Rig name
AU OZALPHA-1 Move-In, Rig Up	01.Apr.2014 00:00	01.Apr.2014 16:00	EDA 2
AU OZALPHA-1 Drilling, Surface	01.Apr.2014 16:00	05.Apr.2014 08:00	EDA 2
AU OZALPHA-1 Casing, Surface	05.Apr.2014 08:00	08.Apr.2014 16:00	EDA 2
AU OZALPHA-1 Drilling, Production	08.Apr.2014 16:00	19.Apr.2014 15:30	EDA 2
AU OZALPHA-1 Formation evaluation	19.Apr.2014 15:30	20.Apr.2014 04:30	EDA 2
AU OZALPHA-1 Casing, Production	20.Apr.2014 04:30	21.Apr.2014 03:30	EDA 2
AU OZALPHA-1 Rig Down	21.Apr.2014 03:30	21.Apr.2014 17:30	EDA 2

2.1.1 Non-productive time summary

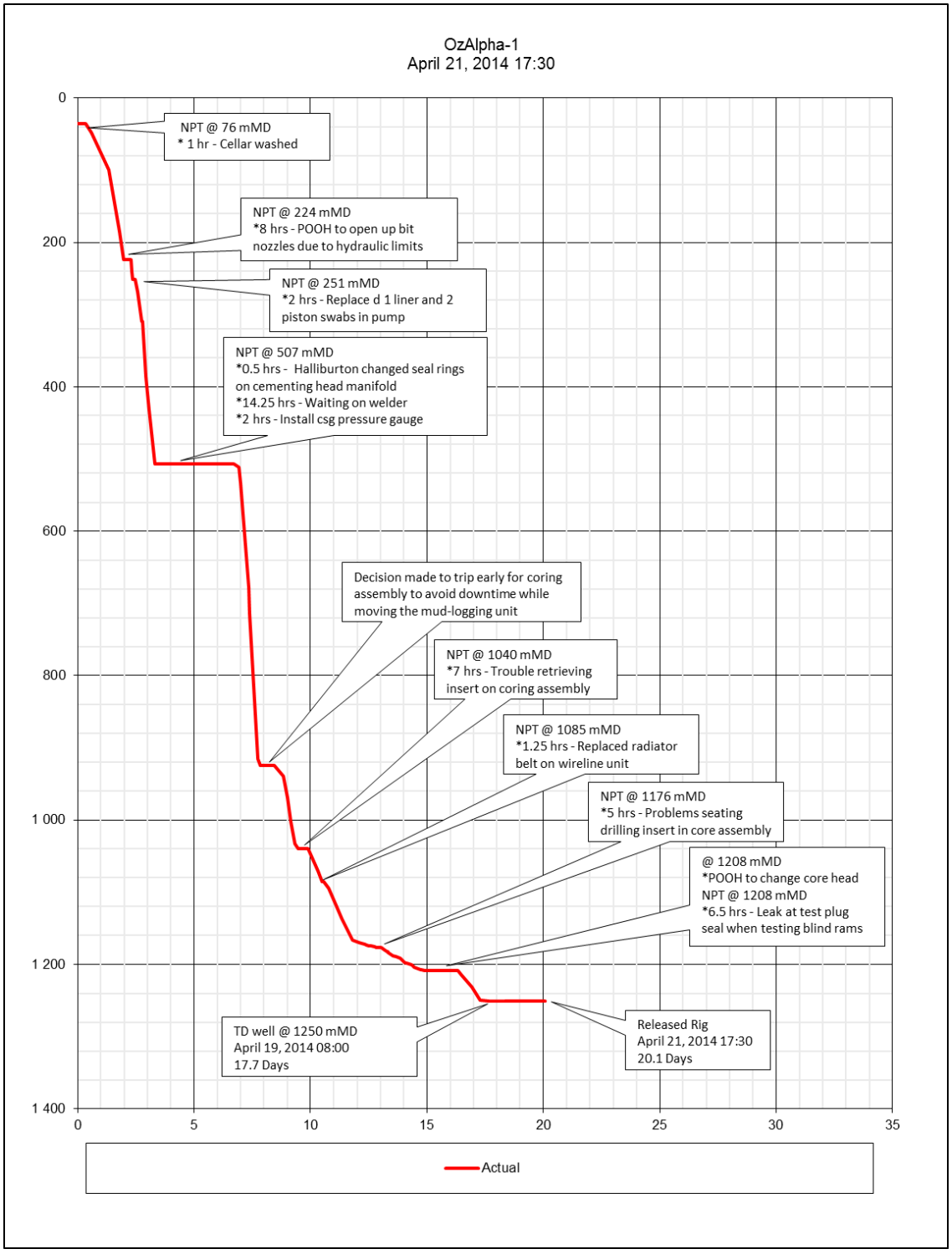
A summary of the non-productive time for OzAlpha-1 drilling operation can be seen in the table below.

Table 2-2 Summary of the non-productive time for OzAlpha-1 drilling

Hours	Depth	Description	Company
1	76	Cellar washed	Statoil
8	224	POOH to open up bit nozzles due to hydraulic limits	Statoil
2	251	Replaced 1 liner and 2 piston swabs in pump	EDA
0.5	507	Changed seal rings on cementing head manifold	Halliburton
14.25	507	Wait on welder	Statoil
2	507	Casing pressure gauge not installed on wellhead	EDA
7	1040	Unable to retrieve drilling insert in core assembly	Corpro
1.25	1085	Replaced radiator belt on wireline unit	Corpro
5	1176	Problems seating drilling insert in core assembly	Corpro
6.5	1208	Leak at test plug seal when testing blind rams	Statoil

2.1.2 Time versus Depth Curve

The time versus depth illustration with explanatory remarks can be seen in the figure below.



The overview of the casings that were run in OzAlpha-1 is presented in the table below.

Table 2-3 Casing summary for OzAlpha-1

Category/String type			Diameters	RKB hanger m MD	Air gap m MD	From depth m MD	To depth m MD	Date	Description
Conductor			14”	4.2	4.2	4.2	6.7	01/04/14	Pre-installed
Category/String type			**Diameters**	**RKB hanger m MD**	**Air gap m MD**	**From depth m MD**	**To depth m MD**	**Date**	**Description**
Casing, surface			9 5/8”	4.7	4.2	4.2	507	05/04/14	
Item type	**No. of joints**	**Diam. inch**	**Grade**	**Coupling**	**Weight lbs/ft**	**From depth m MD**	**To depth m MD**	**Remarks**	
Hanger	1	9 5/8”	J55	API5B BTC	36.0	4.7	10.2		
Casing	41	9 5/8”	J55	API5B BTC	36.0	10.2	483.5		
Float Collar	1	9 5/8”	J55	API5B BTC	36.0	483.5	483.8		
Casing	2	9 5/8”	J55	API5B BTC	36.0	483.8	506.6		
Shoe	1	9 5/8”	J55	API5B BTC	36.0	506.6	507.0		
Category/String type			**Diameters**	**RKB hanger m MD**	**Air gap m MD**	**From depth m MD**	**To depth m MD**	**Date**	**Description**
Casing, production			4 ½”	4.2	4.2	4.2	1240.0	19/04/14	
Item type	**No. of joints**	**Diam. inch**	**Grade**	**Coupling**	**Weight lbs/ft**	**From depth m MD**	**To depth m MD**	**Remarks**	
Hanger	1	4 ½”	L-80	TSH Blue	13.5	4.2	10.0		
Casing	42	4 ½”	L-80	TSH Blue	13.5	10.0	499.3		
Pup joint	1	4 ½”	L-80	TSH Blue	13.5	499.3	505.1		
Casing	46	4 ½”	L-80	TSH Blue	13.5	505.1	1040.0		
Pup joint	1	4 ½”	L-80	TSH Blue	13.5	1040	1045.9		
Casing	15	4 ½”	L-80	TSH Blue	13.5	1045.9	1220.9		
Crossover	1	4 ½”	L-80	TSH Blue	13.5	1220.9	1227.8		
Float Collar	1	4 ½”	L-80	TSH Blue	13.5	1227.8	1228.1		
Casing	1	4 ½”	L-80	TSH Blue	13.5	1228.1	1239.6		
Shoe	1	4 ½”	L-80	TSH Blue	13.5	1239.6	1240.0		

2.3 Well Path - Directional Data

The well inclination was monitored with single shot surveys. See App A for the inclination measured from the single shot surveys. The verticality analysis from the dipole sonic run shows that the well was turning towards an azimuth of 149 deg towards TD.

2.4 BHA Records

All the bottom hole assemblies utilized in the OzAlpha-1 can be viewed on the next pages.

BHA NO: 1 **RUN TYPE:** Drilling run **DESCRIPTION:** BHA #1 – Surface **RUN NAME:** 1

String component	OD in	ID in	Length m	Acc length m
BIT	12.250	2.750	0.320	0.320
BIT SUB	8.000	2.000	0.920	1.240
SHOCK SUB	8.125	2.313	2.920	4.160
DRILL COLLAR	8.000	3.000	9.050	13.210
STABILIZER	12.250	2.625	1.470	14.680
DRILL COLLAR	8.000	3.000	9.050	23.730
X-OVER	8.000	2.875	0.250	23.980
X-OVER	7.000	2.313	0.370	24.350
DRILL COLLAR	6.250	2.250	92.510	116.860
HW DRILL PIPE	6.375	2.870	57.290	174.150
X-OVER	7.500	2.500	0.880	175.030

BHA NO: 2 **RUN TYPE:** Drilling run **DESCRIPTION:** BHA #2 - Surface (same bit as BHA #1) **RUN NAME:** 2

String component	OD in	ID in	Length m	Acc length m
BIT	12.250	2.750	0.330	0.330
BIT SUB	8.000	2.000	0.920	1.250
SHOCK SUB	8.125	2.313	2.920	4.170
DRILL COLLAR	8.000	3.000	9.050	13.220
STABILIZER	12.250	2.625	1.470	14.690
DRILL COLLAR	8.000	3.000	9.050	23.740
X-OVER	8.000	2.875	0.250	23.990
X-OVER	7.000	2.313	0.370	24.360
DRILL COLLAR	6.250	2.250	92.510	116.870
HW DRILL PIPE	6.375	2.870	57.290	174.160
X-OVER	7.500	2.500	0.880	175.040

BHA NO: 3 **RUN TYPE:** Drilling run **DESCRIPTION:** BHA #3 – Production **RUN NAME:** 3

String component	OD in	ID in	Length m	Acc length m
BIT	7.88	2.25	0.26	0.26
MUD MOTOR	6.75	1.50	8.16	8.42
DRILL COLLAR	6.25	2.25	9.38	17.80
STABILIZER	6.25	2.75	1.71	19.51
DRILL COLLAR	6.25	2.25	92.73	112.24
JAR	6.25	2.87	9.07	121.31
X-OVER	6.25	2.87	0.80	122.11

BHA NO: 4 **RUN TYPE:** Drilling run **DESCRIPTION:** BHA #4 - Core Assembly #1 **RUN NAME:** 4

String component	OD in	ID in	Length m	Acc length m
BIT	7.875	3.50	0.46	0.46
CORE BARREL	6.50	4.60	8.25	8.71
STABILIZER	6.50	4.60	0.91	9.62
CORE BARREL	6.50	4.60	8.24	17.86
STABILIZER	6.50	4.60	0.91	18.77
COREBARREL	6.25	4.60	0.74	19.51
COREBARREL	6.25	4.60	0.74	20.25
DRILL COLLAR	6.25	4.60	94.09	114.34

BHA NO: 5 **RUN TYPE:** Drilling run **DESCRIPTION:** BHA #5 - Core Assembly #2 **RUN NAME:** 5

String component	OD in	ID in	Length m	Acc length m
BIT	7.88		0.46	0.46
CORE BARREL	6.50	4.60	8.25	8.71
STABILIZER	6.50	4.60	0.91	9.62
CORE BARREL	6.50	4.60	8.24	17.86
STABILIZER	6.50	4.60	0.91	18.77
COREBARREL	6.25	4.60	0.74	19.51
COREBARREL	6.25	4.60	0.74	20.25
DRILL COLLAR	6.25	4.60	94.09	114.34

2.5 Cementing Summary

Cementing of the 9 $^{5}/_{8}$" surface casing:
Operation summary: Pumped 5.4bbl (total 18.3bbl) water. Pressure tested surface lines 600/247psi. Pumped 9.9bbl (total 28bbl) spacer. Dropped bottom plug, pumped 1.8 (total 30bbl) spacer. Mixed and pumped 149.4bbl x 13.5ppg cement slurry @ 3.5/6.5bpm. Dropped top plug and displaced cement with 123.5bbl of mud @6/2bpm. Bumped with 360psi. Pressured casing to 860psi. Held static for 5min. Bled back 0.75bbl and confirmed static. Total of 51.5bbl cement circulated to surface. Good returns throughout the cement job.

Table 2-4 Cementing summary for OzAlpha-1 surface casing

OzAlpha-1, Casing size: 9 $^{5}/_{8}$"						
Fluids pumped	**Type**	**Density (ppg)**	**Volume (bbl)**	**Pump Rate (gal/min)**	**Pump Pressure (psi)**	**Return**
Preflush	Fresh Water	8.40	30.0	8		Full
Tail	Blended Cement	13.50	149.4	7		Full
Displacement	Drilling Mud	9.20	123.5	6	350	Full

Cementing of the 4 ½" production casing:
Operation summary: Pumped 5bbl of 8.3ppg fresh water spacer. Pressure tested surface lines 250/3000psi. Pumped 25bbl water spacer behind. Dropped bottom plug. Mixed and pumped 185.1bbl (413 sx) x 11.9ppg Lead cement slurry, 5bpm. Mixed and pumped 47bbl (198 sx) x 14.8ppg Tail cement slurry, 2/4 bpm. Full returns observed. Dropped top plug.

Displaced cement with 60.3bbl of freshwater/biocide @ 4.2bbl/min for 45bbls, water spacer identified after 18.2bbl of displacement, cement traces identified after 41.4bbl of displacement, good quality cement identified from 42.7bbl, with 17.6bbls good quality returned to surface, reduced rate to 1.5bpm from 50bbls, reduced to 0.5bpm from 60bbl with final circulating pressure of 1267psi. Pressure tested casing to 2000psi x 10 minutes. Good test. Bled off 0.5bbl and confirmed floats holding.

Table 2-5 Cementing summary for OzAlpha-1 production casing

OzAlpha-1, Casing size 4 ½"						
Fluids pumped	**Type**	**Density (ppg)**	**Volume (bbl)**	**Pump Rate (gal/min)**	**Pump Pressure (Psi)**	**Return**
Spacer before	Fresh Water	8.33	30	5	60	Full
Lead	Cement Slurry	11.90	185	5	350	Full
Tail	Cement Slurry	14.80	47	3	317	Full
Displacement	Fresh Water	8.30	60	1	1267	Full

2.6 Bit Records

OzAlpha-1 bit records can be seen in the tables below.

Tables 2-6 Bit records for OzAlpha-1 bit runs

Run no	**Bit size**	**Bit no**	**BHA no**	**Bit type**	**IADC code**	**Bit manufacturer**
1	12 1/4"	1	1	TD507X		Baker Hughes
2	12 1/4"	1	2	TD507X		Baker Hughes
3	7 7/8"	2	3	DSH616M-T1		NOV
4	7 7/8"	3	4	DC613Q		Corpro
5	7 7/8"	4	5	DC813Q		Corpro

					Nozzles (n/32")				
Run no	**Bit size**	**Bit no**	**BHA no**	**Serial no**	**no x n**	**no x n**	**no x n**	**no x n**	**Flow area in2**
1	12 1/4"	1	1	7149857	7 x 12	x	x	x	0.7740
2	12 1/4"	1	2	7149857	7 x 20	x	x	x	2.1480
3	7 7/8"	2	3	A154444	6 x 18	x	x	x	1.4920
4	7 7/8"	3	4	1520	6 x 12	x	x	x	0.6140
5	7 7/8"	4	5	1528	8 x 10	x	x	x	0.6140

Run no	Bit size	Pump rate gal/min	Pump press psi	Depth in mMD	Depth out mMD	Form drld m	Total drld m	Drld hrs	Circ hrs	ROP m/hr
1	12 1/4"	242.3	450.0	7.70	224.20	216.50	208.80	44.5	2.5	4.9
2	12 1/4"	725.0	1023.0	224.20	507.50	283.30	283.30	21.5	3.5	13.2
3	7 7/8"	550.0	1450.0	507.50	924.60	417.10	417.10	9.5	11.5	43.9
4	7 7/8"	332.7	440.8	924.60	1208.20	283.60	283.60	131.5	18.8	2.2
5	7 7/8"	331.0	900.0	1208.20	1250.30	42.10	41.70	12.8	0	3.3

Run no	Bit size	I	O	DC	L	B	G	OC	RP
1	12 1/4"	1	2	CT	S	X	I	NO	PP
2	12 1/4"	2	2	BT	S	X	0	CT	TD
3	7 7/8"	0	1	WT	G	X	I	NO	CP
4	7 7/8"	5	1	LT	N	X	I	BT	PR
5	7 7/8"	8	2	LT	N	X	I	CT	TD

2.7 Drilling Fluids

The OzAlpha-1 well was drilled with water based mud. The water was supplied from the No. 5 bore from April 1st to April 10th. From this date, the water source filling the turkeys nest was from the Alpha water bore on the OzAlpha-1 well site location. A short summary of the drilling fluids properties can be seen in the table below:

Table 2-7 Drilling fluids summary

Hole Section	Fluid Type	Mud Weight (ppg)	Viscosity (sec/qt)	PV (cp)	YP (lb/100 ft^2)	Fluid Loss (ml/30 min)	pH
Surface	Spud Mud	8.7-10.2	27-68	2-13	3-28	20	8.0 – 9.0
Production	LSND	8.5-9.0	35-36	10-12	15 - 20	15	9.0 – 9.5

3 Completions Operations

3.1 Completions Summary

Three months after the drilling rig completed and suspended the OzAlpha-1 exploration well, a completions unit consisting of a Weatherford wireline unit, crane, and pump unit returned to the OzAlpha-1 site to commence the planned well completions activities. These operations included: well integrity and pre-frac geomechanical diagnostics, stimulation and production testing designed to demonstrate movable hydrocarbons.

The wireline unit rigged up on the OzAlpha-1 well and tagged cement at 1188m MD, which was shallower than expected. A radial cement evaluation log was then run. Due to encountering plug back depth shallower than planned a coiled tubing unit was mobilized to site, which was used to drill out cement in order to access the target intervals for diagnostic stress testing. The results of both the log and cement drill out were successful and operations continued. The well was again suspended 10 August 14 to await a decision whether the well would be stimulated and tested.

OzAlpha-1 was not selected for further testing operations and was permanently plugged and abandoned according to the requirements of the Department of Mines and Energy with a wireline unit 22 – 26 September 2014.

Table 3-1 Summary of completions operations for OzAlpha-1

Section	Start time	End time	Rig name
AU OZALPHA-1 Wellbore preparation	27.Jul.2014 00:00	10.Aug.2014 00:00	Weatherford wireline Halliburton Coiled Tubing
AU OZALPHA-1 Stimulation	22.Sep.2014 00:00	26.Sep.2014 00:00	Weatherford wireline

3.1.1 Non-productive time summary

A summary of the non-productive time for OzAlpha-1 completions operation can be seen below.

Table 3-2 Summary of the non-productive time for completions operations on OzAlpha-1

Date	Description	Company	Hours
04-06.08.2014	CT –E01 Drive line to hydraulics pumps failed	Halliburton	17.5
05.08.2014	EWL-E03 Communication problem with RBCL tool	Weatherford	1.5
24-25.09.2014	RIG 01 Waiting on equipment from other location	Statoil	5.0
		Total hours	24.0

3.2 Wellbore Preparation

The wellbore preparation operations consisted of ensuring well integrity through cement bond log and drilling out cement in the well to access the depth in the well required for the target formations.

The suspension cap that was installed at the completion of drilling was removed and the wireline unit rigged up. A gauge ring run was performed and after confirming depth control against the openhole logs using gamma-ray, tagged cement at

1188m MD; the float collar being at 1227.8m MD. The 4-$^{1}/_{2}$" 10,000 psi FMC frac tree was then installed and pressure tested to 7,500psi.

A radial cement evaluation log was run at 3,000 psi applied pressure with a 0 psi repeat pass. The logging was successful and operations continued.

Following the logging operation a Halliburton coiled tubing unit was rigged up to drill out cement to access the interval where the lower stress test was planned to be executed. The cement in the casing was encountered at 1195m MD and was milled out to 1225m MD. The well was circulated and gel sweeps were pumped to clean out the hole. The well was then displaced to fresh water based fluids for diagnostic testing. Due to simultaneous operations in the South Georgina Basin, the well was suspended again on 09 August 2014.

3.3 Permanent Plug and Abandonment

After approximately six weeks of suspension, the Weatherford wireline unit returned to OzAlpha-1 on 22 September 2014 to permanently plug and abandon the well.

The wireline unit and a crane were rigged up and a lower cement plug was placed at 1225 – 1195m MD. Once the cement had set, the cement top was verified by tagging with a 3.70" gauge ring. Corrosion inhibitor was added to the well using the wireline unit and dump bailer. A 4 ½" EZ-drill bridge plug was then set at 25m. A cement plug was then placed from 25m to ground level.

The cellar was excavated and removed and the wellhead and cemented casing strings were cut off using a hydrajet abrasive cutter. A sign post was installed on 25/09/2014. The lease was restored to original condition in accordance with the Environmental Management Plan in October 2014.

The final wells schematics after the permanent plug and abandonment operations can be seen in App B and the final well barriers as left is shown in App D.

3.4 Plugging

The details of the cement plugs for the permanent plug and abandonment can be seen in the tables below.

Table 3-3 Lower cement plug

Plug top MD	Plug bottom MD	Company	Plug No.	Plug type	Job objective
1195	1225	Weatherford	1	Casing	Permanent P&A
Measured plug top MD	**Measured by**	**Hole size**	**Casing size**	**Placement method**	
1195	Tagging	3 $^{13}/_{16}$""	4 ½" and 4 ½"	Pump and pull	
Remarks: Place cement plug using dump bailer over 4 runs of wireline					
Fluids pumped	**Type**	**Density ppg**	**Volume bbl**	**Pump rate l/min**	**Pump pressure psi**
Slurry	Blended cement	15.8	2	NA	NA

Table 3-4 Surface abandonment cement plug

Plug top MD	Plug bottom MD	Company	Plug No.	Plug type	Job objective
6.0	24.5	Weatherford	2	Casing	Permanent P&A
Measured plug top MD	**Measured by**	**Hole size**	**Casing size**	**Placement method**	
6.0	Tagging	3 $^{13}/_{16}$"	4 ½" and 4 ½"	Pump and pull	
Remarks: Surface abandonment plug mixed and spotted on top of the EZ drill packer running tool					
Fluids pumped	**Type**	**Density ppg**	**Volume bbl**	**Pump rate l/min**	**Pump pressure psi**
Slurry	Blended cement	15.8	1	NA	NA

4 Well Evaluation Logs

Openhole logging was carried out to provide information on lithology, rock properties (por/perm), fluid content, parameters to develop stress models, selection of stress test depths and perforation intervals, and imaging of stress directions (breakouts, drilling induced fractures) and natural fracturing.

Lithology and fluid identification tools:

- Spectral-GR
- High Resolution Resistivity
- Density
- Neutron

These logs will provide measurements for clay volume estimation, porosity and saturation calculation and identifying the TOC level (SGR).

The following logs will provide input for stress modelling, stress direction and for the seismic tie/calibration:

- Multiple P&S (waveforms) sonic tool
- Image Scanning Tool combined with Multi-arm caliper for bore hole ovality to estimate the direction of the minimum horizontal stress (σmin)

Table 4-1 Logging runs with Weatherford's open hole wireline tools

Run no	Logging Company	Logged Interval (m MD)	Tools	Temp tool (m MD)	Remarks
1	Weatherford	1250 - 0	MCG-SGS-MDN-MPD-MLE-MMR	49	SuperCombo: spontaneous potential, gamma, spectral gamma, neutron, density, laterolog, microres
2	Weatherford	1250 - 1040	MCG-CMI-CXD	49	Image(CMI) and sonic (CXD) on same tool string, but CMI run first, then down to TD to log CXD
3	Weatherford	1250 - 480	MCG-CMI-CXD	50	Sonic (CXD) from TD to casing shoe

The following log was run to evaluate the quality of the cement sheath around the 4-1/2" casing:

Table 4-2 Cased Hole Logging run with Weatherford's wireline tools

Run no	Logging Company	Logged Interval (m MD)	Tools	Temp at TD (°C)	Remarks
1	Weatherford	Surface - 1190	CCL-GR-CBL-SBT	Not reported	Cement evaluation

The cased hole log was reviewed by Statoil Engineers, and QC'd by the Weatherford cased hole log analyst located in Brisbane, Australia.

In general, the log indicated that there is hydraulic isolation over the planned target zone perforated interval (Arthur Creek Hot Shale and Thorntonia) and there is cement to surface. Therefore, the expected proper annular isolation was in place and it was determined that the fracturing program would proceed as planned.

Good cement returns were observed on the cement job, pressures were as expected, and the floats were bumped and held. The cement evaluation log verifies these operational results.

5 Cores, Cuttings and Samples

5.1 Coring, cores and samples

A coring interval of up to 230 m was planned, therefore a wireline retrieved coring system was utilized. Coring commenced at the set depth of 1040 m MD and 9 m intervals of 3.5" core were retrieved by wireline through the lower portion of the Arthur Creek, the Hot Shale and the top Thorntonia Limestone.

The upper meters of the Thorntonia Limestone were very difficult to core because of vugginess and fracturing. The core barrel repeatedly packed off after 0.5 – 2 m of coring. 10 core runs averaged only 1 m each, and the cores retrieved were 2 - 10 cm discs and gravel sized pieces. After 15 meters of Thorntonia and 8 unsuccessful core runs, 12.8 meters were drilled with the insert bit in place in order to pass the weak zone and enter a more homogeneous interval. An additional 4 runs were then performed with the same coring bit, before the decision was made to pull out of hole to change the corehead due to very low rate of penetration, (0.5 – 1 m/hrs).

An 18 m core barrel was run for the new coring assembly and the new coring bit achieved better coring rates (3-10 m/hrs). Basement was seen at 1233 m MD, in a coring run that retrieved core down to 1249.9 m. The drill bit insert was run, but due to very low rate of penetration TD was declared at 1250 m.

20 – 30 cm long preserved samples were taken every 9m above the Arthur Creek Hot Shale, and every 4.5 m in the Arthur Creek Hot Shale and in the Thorntonia, where core competency was sufficient to enable collection of a suitable sample. As the preserved samples had to be chosen prior to receiving any logs or interpretation of potential target zones, not all preserved samples were analyzed for core analyses.

183.2 m of the 197.5 m of available core were slabbed and photographed in both normal- and fluorescence light. The slabbed and photographed intervals are: 1040.0-1175.3 m and 1188.1-1236m. The bottom 14.m of core was not slabbed because it was all basement granite.

The list of cored intervals and the samples preserved for core analyses are presented in App F. The core chip descriptions can be seen in App G.

5.2 Cuttings

Cuttings samples were collected at 10m intervals from surface to the 9-5/8" casing shoe and at 5m and 10m intervals depending on ROP from the surface casing shoe to core point and from cessation of coring to TD. The list of cuttings sampled and described can be seen in App H.

6 Pore Pressures and Temperature

See the update pore pressure and stress plot in parts per gallon (ppg) in App E.

6.1 Pore pressure and stress

No indications on pore pressure were given during the drilling of the well as the well was drilled in overbalance.

The formation integrity test at the surface casing shoe leaked off at 11.4 ppg, equivalent 0.59 psi/ft or 1.37 g/cm3. New kick tolerance calculations were performed and the formation integrity at the shoe was still within acceptance for the remaining of the well.

6.2 Formation temperature

Formation temperature was obtained whilst openhole wireline logging and the temperature measured 49 ^{o}C at 1249.6 m MD, which equals a temperature gradient of 23 ^{o}C/km (assuming approximately 20 ^{o}C at surface).

App A Directional Data – surveys

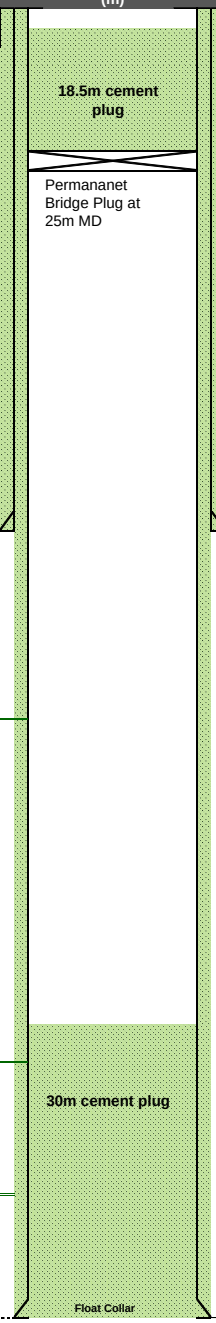
Depth m MD RKB	Inclination (deg)	Survey Instrument
108	0.00	Single Shot
297	0.75	Single Shot
500	0.75	Single Shot
685	0.75	Single Shot
884	0.80	Single Shot
1032	0.90	Single Shot
1222	1.70	Single Shot

App B Well Schematics

South Georgina Basin - Completion Well Schematic (End)

Well Name:	OzAlpha-1	GLE (m):	189.0			TVD(m):	1,250
Field Name:	South Georgina Basin	RKB (m):	4.2			TMD(m):	1,250
County/Block:	EP 104	SHL: Lat:	22° 25' 13.49 S			Profile:	Vertical
API #:	NA	Long:	137° 36 '41.89 E			WBS No.	T.0AU4A.AP.20204

Formations & Csg Points	Depth, m MD	Depth, m TVD	Depth, m SS	Form. Temp. (F)
Conductor	*7*	*3*	*191*	*-*
Alpha Water Bore Data				
Water bearing beds encountered 50 -107m				
Ground water salinity ~3000 ppm at 104m				
Water Aquifer	*107*	*107*	*86*	
Arrinthrunga	243	243	-50	
Max Potable Water Depth	*250*	*250*	*-57*	
Surface	*507*	*507*	*-314*	*92*
Arthur Creek / Steamboat Sds	728	728	-535	101
Base Steam boat	n/a	n/a	n/a	0
Lwr Arthur Creek	963	963	-770	111
Begin Coring	*1,040*	*1,040*	*-847*	*0*
AC hot shale	1137	1137	-944	118
Thorntonia	1160	1160	-966.8	119
Sunn Hill Arkose	0	0	0	0
Basement	1,233	1,233	-1,040	123
End Coring	*1,233*	*1,233*	*-1,040*	
Production	*1,240*	*1,240*		
				-



OH MD: 1,250
OH TVD: 1,250

Drilling Hole Size, Casing, and Cement

14" Conductor
Preset

12-1/4" Surface
Casing: 9-5/8 in 36 # J-55 BTC set @ ~ 507 MD/507 TVD
Cement: Class G, 13.5ppg, TOC surface
Drilling Notes Circulated 20bbl of cement to surface.

7-7/8" Production
FIT/LOT: 11.4 ppg EMW
Casing: 4-1/2 in 13.5# L-80 Prm CNX set at 1250 m MD/1250 m TVD.

OD (in):	4.50	ID (in)	3.920	Drift ID (in)	3.795
API Burst (psi)	9020	API Collapse (psi)	8540	API Yield Strength (klbf)	307

Cement: Class G, 11.9ppg lead and 14.8ppg tail, TOC surface, lead/tail interface at ~880mKB
Plug Bump Pressure: 2000 psi for 10 minutes
Floats Held: Yes
Marker Joints: #1 499 m MD top set depth
#2 1040 m MD top set depth

Drilling Notes C22 4.5" casing slips set with approximately 100k lbs tension (60k lbs over string weight).

Wellhead
The wellhead has been cut-off below ground level and removed for abandonment.

Logging and Coring
Core: 1040m - 1233 mMD
Open Hole: In general: Supercombo, CMI, & Sonic
Cased Hole: RCBL, TD to surface performed during completion

Completions Operation Summary
No perforating or testing activities were carried out prior to abandonment.

Top of cement 1195m MD.

Float Collar Depth 1,227.8 m MD
Current PBTD Surface

Last Revision: 11/19/2014
Revised by: JSG

Note: Depths are referenced to RKB
Note: Not Drawn to Scale

Cement Outside Casing
External Casing Packer

South Georgina Basin - Drilling Well Schematic

Well Name: OzAlpha-1
Field Name: South Georgina Basin
County/Block: EP 104
API #: NA

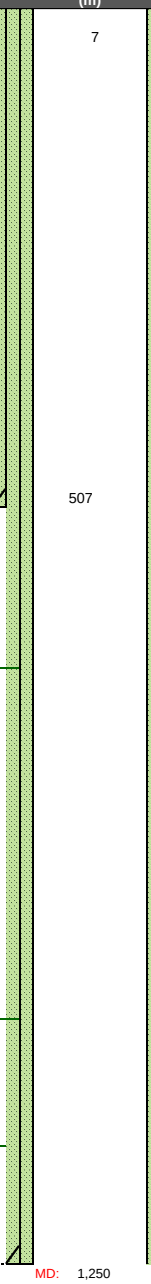
Azm:
Op Area:
SHL: LAT = 22° 25' 13.49 S LONG= 137° 36 '41.89 E

GLE (m): 189
RKB (m): 4.2
Profile: Vertical
WBS No.

TVD(m): 1,250
TMD(m): 1,250

Formations & Csg Points	Depth, m MD	TVD	SS	Form. Temp. (F)	Pore Press. (EMW)	Frac Gradient (EMW)	Planned MW
Conductor	*6.7*	*2.5*	*191*	-	-	-	-
							8.5
							8.5
Water Zone: Surface to 109 m (1500 PPM Salinity)							
							9
Arrinthrunga	243	*243*	*-50*				
							9.2
						-	10.0
Surface	*507*	*507*	*-314*	*92*	- *8.1*	-	*8.9*
						11.4	8.9
Arthur Creek	728	*728*	*-535*	101			9
Steamboat Sds							
Base Steam boat	n/a	*n/a*	*n/a*				9
Lwr Arthur Creek	963	*963*	*-770*	111			9
Begin Coring	*1,040*	*1,040*	*-847*				*9.0*
AC hot shale	1137	*1137*	*-944*	118			9
Thorntonia	1160	*1160*	*-966.8*	119			9.0
Basement	1,233	1,233	*-1,040*	123	-	-	9.0
End Coring	*1,233*	*1,233*	*-1,040*				9
Production	*1,250*	*1,250*	*-1,057*	*123*	-	*17.7*	*9.0*
				-	-	-	-

Measure Depth (m)



Program: Preset — 14" Conductor

12-1/4" Surface

Profile:	Vertical
Bit Type:	12-1/4" PDC
BHA:	Rotary Assembly: - 716 PDC + Shock sub + 2x8" DC + 2 IBS + 10x61/4" DC's
Mud:	Spud Mud, 9.0 ppg
Surveys:	108m: 0° - 297m: 0.75° - 500m: 0.75°
Logging:	none
Casing:	9-5/8 in 36 # J-55 BTC set @ ~ 507 MD/507 TVD
Centralizers:	1 every 4 joints
Cement:	Class: G, TOC : Surface, Excess: 50%
Drilling Problems:	- Loss circulation potential approx 450 m (Pumped LCM)
Notes / Comments:	Circulated 20 bbl of cement to surface

FIT/LOT: 11.4 ppg EMW

7-7/8" Production

Profile:	Vertical
Bit Type:	7-7/8" PDC
BHA:	- PDC - Straight PDM - IBS - 6-1/2" DC
Mud:	LSND: 8.9 - 9.0 ppg
Surveys:	685m: 0.75° - 884m: 0.80° - 1032m: 0.90° - 1222:1.7°
Logging:	Mud Logging the whole interval Coring: starts 100 m above target and ends below top of basement OH Logs: Lithology + Fluid + Sonic + Image Logs
Casing/Liner:	4-1/2 in 13.5# L-80 Prm CNX set at 1250 m MD/1250 m TVD.
Liner Hanger:	N/A
Centralizers:	1 centralizer on float shoe + float collar 1 every 4 joints until surface casing point 1 centralizer every 5 joints to cellar
Cement:	Class: G, TOC: Surface, Excess: Caliper + 15%
Potential Drilling Problems:	- Hard rock abrassive formation
Notes / Comments:	Wireline retrievable Coring operations from 1040 m to 1233 m

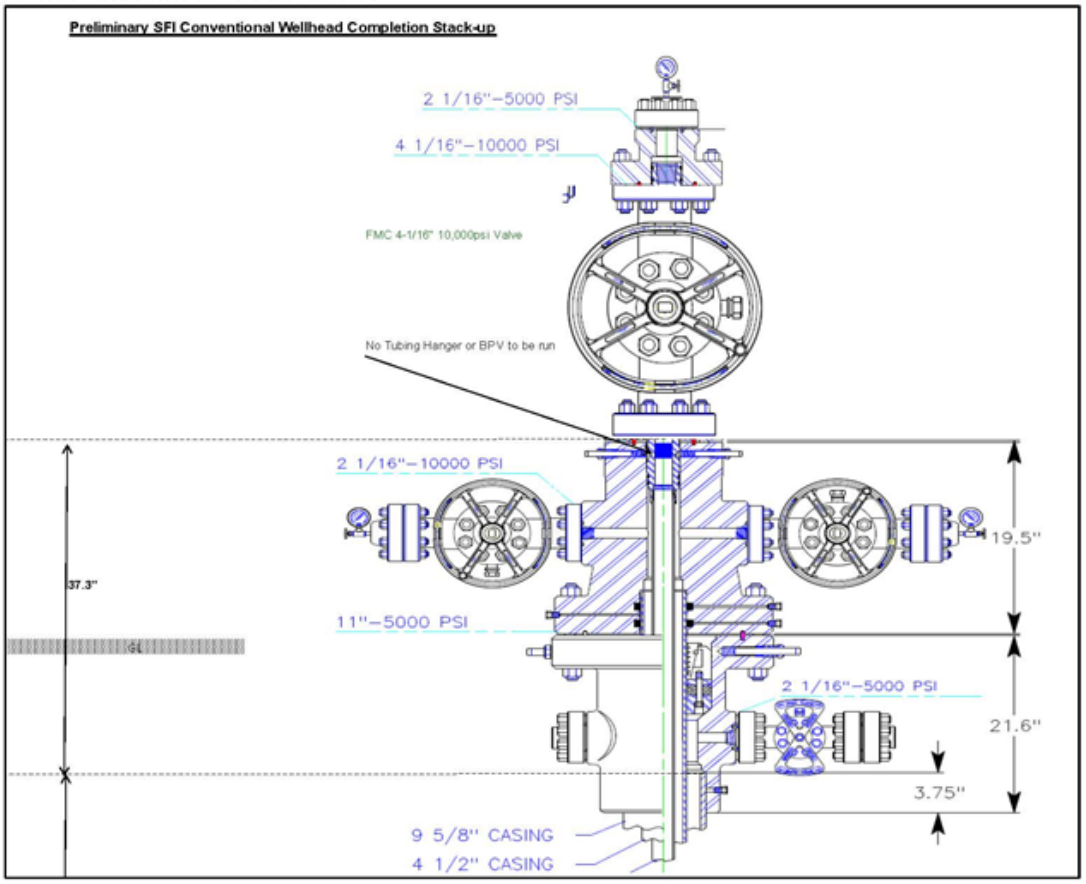
Last Revision Date: 2/01/14
Revised by: LDT

Note: Depths are referenced to RKB
Note: Not Drawn to Scale

Cement Outside Casing
External Casing Packer

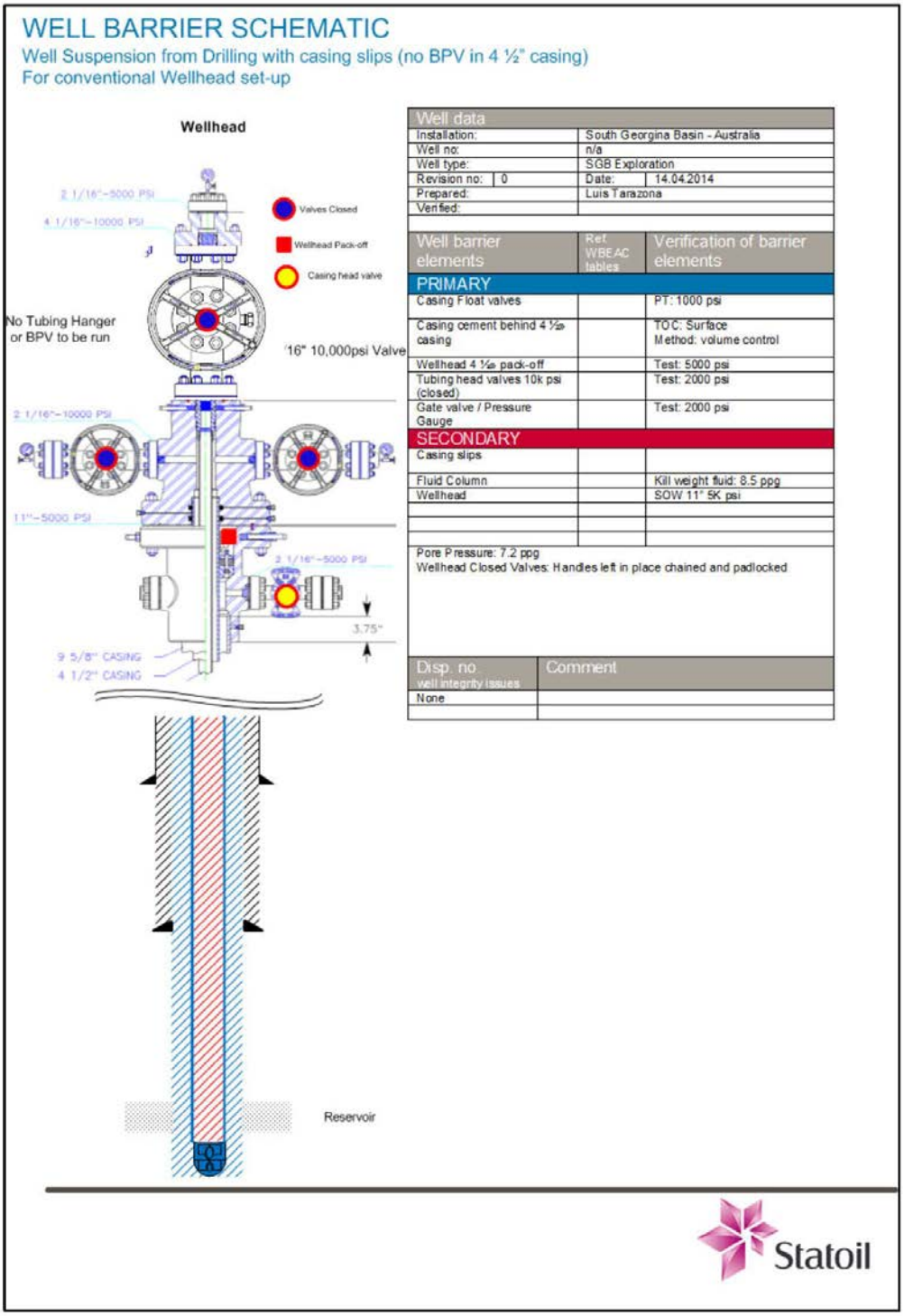
App C Wellhead

2. Final Wellhead Schematic



App D Well Barriers

D.1 Well barriers while OzAlpha-1 was suspended



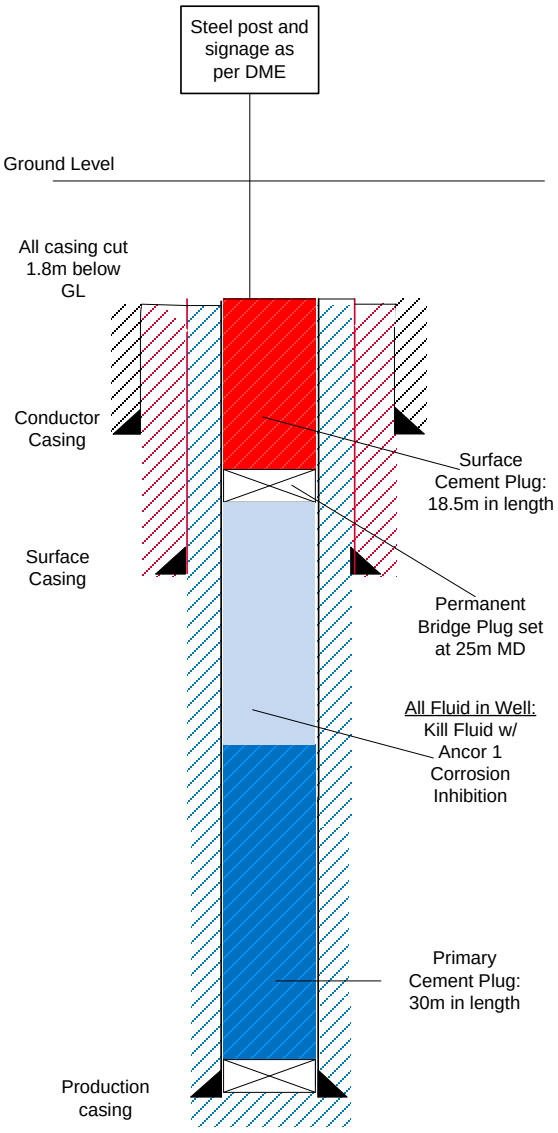
Well data		
Installation:	South Georgina Basin - Australia	
Well no:	n/a	
Well type:	SGB Exploration	
Revision no: 0	Date:	14.04.2014
Prepared:	Luis Tarazona	
Verified:		

Well barrier elements	Ref WBEAC tables	Verification of barrier elements
PRIMARY		
Casing Float valves		PT: 1000 psi
Casing cement behind 4 ½" casing		TOC: Surface Method: volume control
Wellhead 4 ½" pack-off		Test: 5000 psi
Tubing head valves 10k psi (closed)		Test: 2000 psi
Gate valve / Pressure Gauge		Test: 2000 psi
SECONDARY		
Casing slips		
Fluid Column		Kill weight fluid: 8.5 ppg
Wellhead		SOW 11" 5K psi

Pore Pressure: 7.2 ppg
Wellhead Closed Valves: Handles left in place chained and padlocked

Disp. no well integrity issues	Comment
None	

D.2 Well Barriers after final plug and abandonment



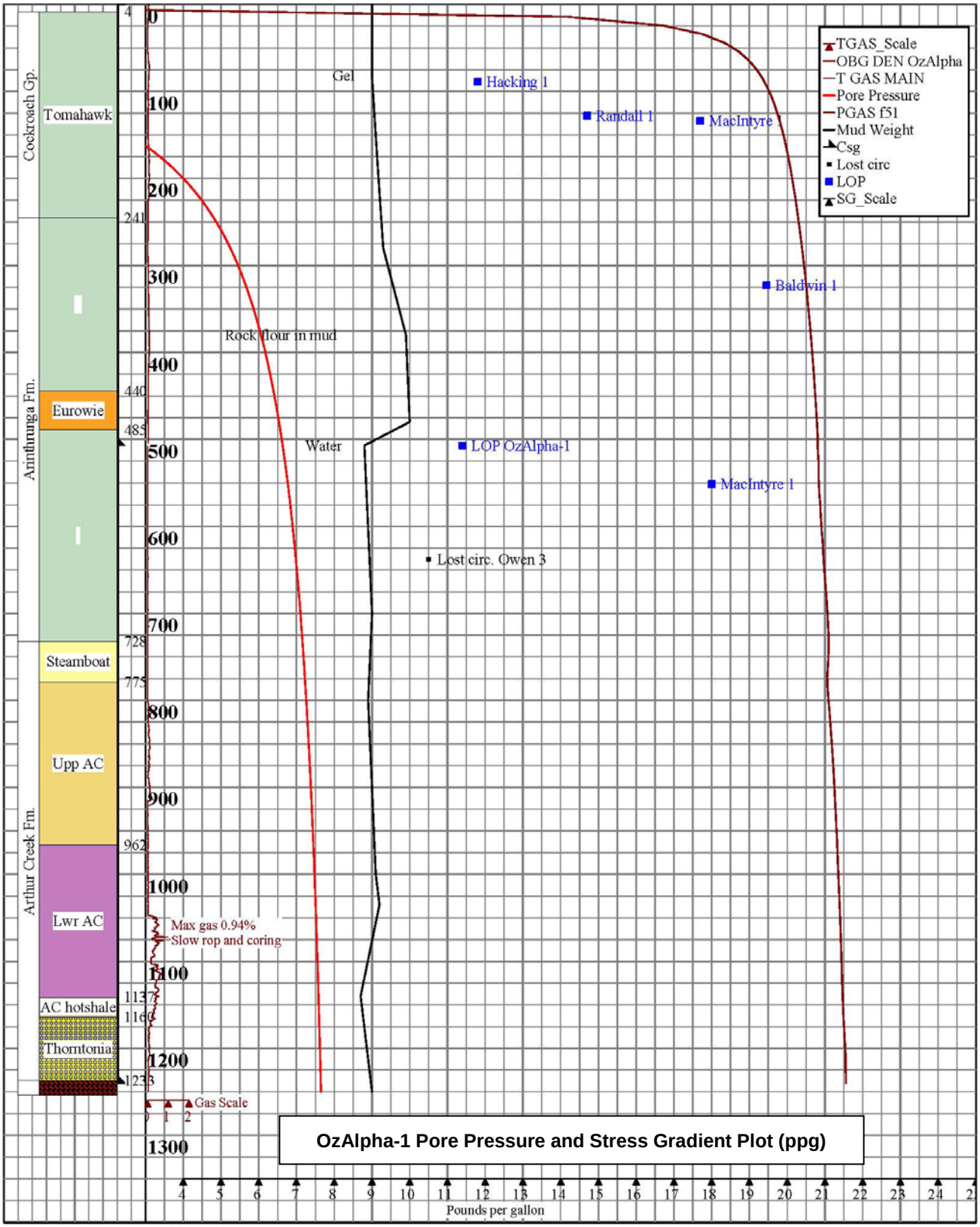
Well data			
Installation:		South Georgina Basin - Australia	
Well no:		OzAlpha-1	
Well type:		SGB Exploration	
Revision no:	1	Date:	26.09.2014
Prepared:		Joel Gordon	
Verified:		Luis Tarazona	

Well barrier elements	Ref. WBEAC tables	Verification of barrier elements
PRIMARY		
Production casing cement		Confirmed at surface with wellhead cut off
Primary Abandonment Plug		Tagged to verify integrity
SECONDARY		
Surface casing cement		TOC: TOC @ surface Method: volume control
Surface Cement Plug		Tagged to verify
Kill Weight Fluid		8.33ppg (0.433 psi/ft) in place above lower cement plug to surface.
Production Casing		Pressure Tested to 3,000 psi.

Pore Pressure ~0.42 psi/ft
Well remains full of inhibited water with a pressure gradient of 0.433 psi/ft thus this is a kill weight fluid.

Disp. no. well integrity issues	Comment
None	

App E Pore Pressure and Fracture Gradient Plot



App F Core Intervals and Preserved Samples

Core nr	Bit no	Formation	Interval from MD [m]	Interval to MD [m]	Recovery [m]	Recovery %	Barrel length [m]	Barrel utilization %	Barrel type	Core company	Preserv. method	Preserved Samples (m)
1	4	Lwr Arthur Crk	1040.0	1049.0	8.9	99.3	9.0	99.3	Aluminium	Corepro	Mylar	
2	4	Lwr Arthur Crk	1049.0	1057.0	9.1	114.3	9.0	101.6	Aluminium	Corepro	Mylar	1056.69 - 1056.91
3	4	Lwr Arthur Crk	1057.0	1067.0	9.1	90.5	9.0	100.6	Aluminium	Corepro	Mylar	
4	4	Lwr Arthur Crk	1067.0	1076.0	8.9	99.3	9.0	99.3	Aluminium	Corepro	Mylar	1075.30 - 1075.60
4	4	Lwr Arthur Crk	1067.0	1076.0	8.9	99.3	9.0	99.3	Aluminium	Corepro	Mylar	
5	4	Lwr Arthur Crk	1076.0	1085.0	9.0	100.0	9.0	100.0	Aluminium	Corepro	Mylar	1084.40 - 1084.68
6	4	Lwr Arthur Crk	1085.0	1094.0	8.9	99.3	9.0	99.3	Aluminium	Corepro	Mylar	1093.44 - 1093.69
7	4	Lwr Arthur Crk	1094.0	1103.0	9.0	100.0	9.0	100.0	Aluminium	Corepro	Mylar	1102.42 - 1102.61
8	4	Lwr Arthur Crk	1103.0	1112.0	8.9	98.9	9.0	98.9	Aluminium	Corepro	Mylar	1109.49 - 1109.69
9	4	Lwr Arthur Crk	1112.0	1121.0	9.1	101.1	9.0	101.1	Aluminium	Corepro	Mylar	1118.66 - 1118.92
10	4	Lwr Arthur Crk	1121.0	1130.0	9.0	99.8	9.0	99.8	Aluminium	Corepro	Mylar	1129.38 - 1129.63
11	4	Lwr Arthur Crk	1130.0	1139.0	9.0	100.0	9.0	100.0	Aluminium	Corepro	Mylar	1137.57 - 1137.80
12	4	Lwr Arthur Crk	1139.0	1148.0	9.0	100.0	9.0	100.0	Aluminium	Corepro	Mylar	1140.48 - 1140.75
13	4	Arthur Crk Hot Shale	1148.0	1157.0	8.9	99.2	9.0	99.2	Aluminium	Corepro	Mylar	1149.61 - 1149.82 1155.07 - 1155.42
14	4	Arthur Crk Hot Shale	1157.0	1166.0	9.0	100.0	9.0	100.0	Aluminium	Corepro	Mylar	1159.30 - 1159.53 1161.45 - 1161.64 1165.40 - 1165.73
15	4	Thorntonia	1166.0	1166.8	0.8	100.0	9.0	8.9	Aluminium	Corepro	None	No preserved samples
16	4	Thorntonia	1166.8	1169.0	2.2	100.0	9.0	24.4	Aluminium	Corepro	None	No preserved samples

Core nr	Bit no	Formation	Interval from MD [m]	Interval to MD [m]	Recovery [m]	Recovery %	Barrel length [m]	Barrel utilization %	Barrel type	Core company	Preserv. method	Preserved Samples (m)
17	4	Thorntonia	1169.0	1169.5	0.5	100.0	9.0	5.6	Aluminium	Corepro	None	No preserved samples
18	4	Thorntonia	1169.5	1170.4	0.9	100.0	9.0	10.0	Aluminium	Corepro	None	No preserved samples
19	4	Thorntonia	1170.4	1171.5	1.1	100.0	9.0	12.2	Aluminium	Corepro	None	No preserved samples
20	4	Thorntonia	1171.5	1173.0	1.5	100.0	9.0	16.7	Aluminium	Corepro	None	No preserved samples
21	4	Thorntonia	1173.0	1173.8	0.8	100.0	9.0	8.9	Aluminium	Corepro	None	No preserved samples
22	4	Thorntonia	1173.8	1174.9	1.1	100.0	9.0	12.2	Aluminium	Corepro	None	No preserved samples
23	4	Thorntonia	1174.9	1175.9	0.5	45.0	9.0	5.0	Aluminium	Corepro	None	No preserved samples
24	4	Thorntonia	1188.0	1189.2	1.2	100.0	9.0	13.3	Aluminium	Corepro	None	No preserved samples
25	4	Thorntonia	1189.2	1198.2	8.8	97.2	9.0	97.2	Aluminium	Corepro	Mylar	1192.62 – 1192.90 1197.7 - 1197.95
26	4	Thorntonia	1198.2	1207.2	8.8	98.0	9.0	98.0	Aluminium	Corepro	Mylar	1201.38 - 1201.74 1206.37 - 1206.73
27	4	Thorntonia	1207.2	1208.2	1.1	110.0	9.0	12.2	Aluminium	Corepro	None	No preserved samples
28	5	Thorntonia	1208.5	1213.9	5.2	99.0	18.0	28.9	Aluminium	Corepro	Mylar	1211.83 – 1212.05
29	5	Thorntonia	1213.9	1231.9	18.3	101.7	18.0	101.7	Aluminium	Corepro	Mylar	1216.21-1216.44 1222.41-1222.74 1230.18-1230.42
30	5	Thorntonia/basement	1231.9	1249.9	17.6	97.8	18.0	97.8	Aluminium	Corepro	Mylar	1248.43 – 1248.73

App G Core Chip Descriptions

Top	Base	Lithology from OzAlpha-1 core chip descriptions
1040.00	1042.69	Ls, olv gry, f - crs xln, hd, <1mm - cm flat lam, rr styl, mnr calc sltst/clst lam, nil vis por, n/s.
1042.69	1043.08	Sltst, v drk gry blk, mic, dol cmt, hd, lam, nil vis por.
1043.08	1043.87	Ls, gry ol grn - l gry - dk gry - blk gry occ brn gry, crs - f xln, sb mm l gry lam, occ abd mica, spln occ, hd, no vis por, n/s.
1043.87	1046.03	Ls, l gry, f xln, hd, sub mm lam, no vis por.
1046.03	1046.03	Ls, dk gry, c - fxln, hd, lam, no vis por
1046.03	1049.75	Ls, dk gry, lam, hd, no vis por
1049.75	1051.70	Ls, dk gry- blk gry, f xln, f lam ip [<1mm], hd, spln to blky brk, no vis por, n/s.
1051.70	1051.90	Ls, dk gry- dk brn gry, f xln, altg lams [<1mm] dk gry to dk brn, hd.
1051.90	1052.70	Calc Sltst, blk gry- blk brn, arg, micromic, mod hd-hd, sbfis.
1052.70	1053.45	Ls, dk gn gry, f xln, sbconch frac- spln brk, v hd.
1053.45	1054.45	Calc Sltst, olv gry, v calc, micromic, hd, lam, sbfis-fiss.
1054.45	1059.08	Ls, dk gry- gry blk, f xln- crypxln, pred mass w/ occ-r med gry lams [<2mm], tr wh blebs occ, tr-r dissem pyr, v hd, blky - spln brk ip.
1059.08	1059.35	Ls w/ Calc Sltst lams: Ls, dk gn gry, f xln, sbconch frac, spln, hd; Calc Sltst, blk gry-brn blk,v calc, arg, micromic, mod hd, sbfis-fis.
1059.35	1071.08	Ls, blk gry-brn blk to dk gry lams [<2mm], f xln, hde, irreg blk Calc Slst lams, sb fis, no vis por, n/s.
1071.08	1072.25	Ls w/ thn Calc Sltst interlams: Ls, olv gry, fxln, sbconch frac, spln, hd, no por, n.s.; Calc Sltst lam [0.5-2cm], v dk gry,v calc, arg, micromic, mod hd, sbfis-fis, no vis por, ptchy flour, w/ minor oil stain & oil bleed @ 1071.55m and very strong petroliferrous odour 1070.4m to 1070.6m in fresh breaks.
1072.25	1076.00	Ls, dk gry, fxln, sb mm flat lam, hd, no vis por, n/s
1076.00	1080.01	Ls, dk gry, fxln, hd, sb mm lam, no vis por, n/s

Top	Base	Lithology from OzAlpha-1 core chip descriptions
1080.01	1080.38	Ls, lt olv gry, dk gry, f xln, flat lam, no vis por, n/s.
1080.38	1081.15	Ls, dk gry, fxln, hd, sb mm lam, no vis por, n/s
1081.15	1082.57	Ls, lt olv gry, f xln, hd, sb mm lam, r cht bnds, mnr sft sed dfm, nil vis por, wk dll yel gld fluor.
1082.57	1085.00	Ls, dk gry, m gry, fxln, sb mm flat lam, hd, no vis por, n/s.
1085.00	1094.00	Ls, lt olv gry, f xln, hd, sb mm lam, mnr dk gry - blk arg sltst, v mnr cht bnds, mnr sft sed dfm, no vis por, ab wk dll yel gld fluor, no cut.
1094.00	1103.00	Ls, lt olv gry, f xln, hd, sb mm lam, mnr dk gry - blk Sltst, arg, mnr sft sed dfm, no vis por, ab wk dll yel gld fluor.
1103.00	1109.52	Ls, lt olv gry, f xln, hd, sb mm lam, dk gry - blk arg sltst, no vis por, ab wk dll yel gld fluor, no cut .
1109.52	1110.59	Ls, lt gry, fxln, hd, mm-sbmm flat lams, mnr cm - sb mm blk sltst lams, v mnr 4cm vugs, anhy fld with ab chrt wth poss macro foss (chrt rplcd), pr vis por, brt yel grn fluro ip.
1110.59	1120.00	Ls, lt olv gry, fxln, hd, sb mm flat lams; ab dk gry - blk arg Sltst interlams, sft sed dfm , rr blk cht nod, no vis por, ab wk dll yel gold fluor, no cut, mod strg pet odour @ 1113.4m, 1114.05m, 1120.5m on frsh frac.
1120.00	1133.00	Ls, brn - brn blk, fxln, hd-v hd, lam, com l olv gry 1cm crpxln bands, tr chrt nod, no vis por, n/s. Sltst, dk gry - blk - dsky yel brn, hd, f lam, calc l p, com micromic, no vis por, n/s.
1133.00	1134.00	Ls, dk gry- dk olv gry, f - microxln, hd-v hd, sb mm lams, no vis por. Mnr Dol, dk brn gry, v hd, as interlams, no vis por, n/s. Slst/Clst, blk brn, arg-v arg, dol cmt, no vis por, n/s.
1134.00	1138.00	Ls, dk gry-blk, f xln, hd, slty, n mr Dol,no vis por, n/s.
1138.00	1139.60	Ls, brn blk, f - micro xln, hd-v hd, sbconch frac, flat lam sb 1mm, r sft sed defm, tr chert nod & mm lams, no vis por, n/s.
1139.60	1141.18	Clyst, blk, hd, fis, noncalc, mic, sl petrf odour, nil vis por, n/s.

Top	Base	Lithology from OzAlpha-1 core chip descriptions
1141.18	1142.40	Ls, dk gry, f -micr xln, hd, r sft sed defm, tr chert nod, mnr Dol interlam, brn gry, v hd, ab slt,no vis por, n/s
1142.40	1143.10	Dol, gn blk - tr sptd lt gry, micro-f xln, hd-v hd, sl arg, no vis por, n/s.
1143.10		Dol, olv gry, fxln, conch frac, mm flt lams, no vis por, n/s. interlam w/ Sltst, gry blk, hd, fis-sbfis, sl calc, sl mic, no vis por, n/s
0.00	1146.00	Dol, grn blk, f xln, hd-v hd, fis-sbfis, no vis por, n/s.
1146.00	1148.03	Dol a/a
1148.03	1148.42	Dol, lt olv gry, micro-vfxln, hd, sb mm fl lam. Mnr Sltst, drk gry sltst, hd, dol cmt, fis, tr pyr, no vis por, cmn dl gld fluor, no cut.
1148.42	1149.29	Dol, dk olv gry, f-mxln, hd, r mic, r pyr, sb mm fl lam. Cmn Sltst interlams, dk gry, hd, fis, dol cmt, pr interxln por, cmn dl gld fluor, cut fluor.
1149.29	1149.41	Calc Slst, drk brn gry - blk, arg, mn mic, calc cmt, hd, mm-cm vugs, anhy fld, fr vugy por, mnr dl gld fluor on anhy, petrfs odr, cut fluor.
1149.41	1160.32	Dol, lt olv gry, fxln, hd, sub mm flat lams, r mic, r pyr, no vis por, cmn dl gld fluor, r pl yel grn fluro, no cut. Ab Calc Sltst interlams, dk brn gry - blk, arg, hd, mic, calc cmt, no vis por, mnr dl gld fluor, cut fluor, petrfs odr.
1160.32	1163.42	Dol, m olv gry, fxln, hd, ab mm-cm vugs fld anhy, cmn chrt nod, r bit on frac srfc, mnr intr xln por, mnr dull yel fluor, v slw cut
1163.42	1169.00	Dol, pl yel brn, fxln, hd, com mm-cm vug anhy and calc fld, r anhyd & calc filled discont vert fracsf, cmn bit stn vugs, fr-good vugy por, r mod yel grn fluor.
1169.00	1173.80	Dol, pl yel brn, fxln, com vug anhy fld, r O blds frac surf, cmn bit stn vugs, no vis por grad to fr vis por @ bse, r mod yel grn fluor.
1173.80	1175.90	Dol, pl yel brn, microxln-vfxln bcm xln/depth, hd, r cren styl, com vug anhy fld, r pin-pt non-flour O on frac surf, cmn bit stn vugs, no vis por grad to fr vis por @ bse, r mod yel grn fluor, no cut.
		Break in coring for rotary drilling 1175.90m-1189.00m
1189.00	1189.20	Dol, m olv gry, f-cxln, hd, com anhy fld vugs, r styl, cmn chrt, cmn bit on fracs, rr hor frac, fair vugy por, com dl gld fluor.

Top	Base	Lithology from OzAlpha-1 core chip descriptions
1189.20	1189.75	Dol, dk olv gry - blk gry, fxln, v hd, rbl intvls,mnr styl, tr calc, tr crs xln & fibr xln anhyd, cmm anhyd fld vugs, fair-good vugy por, n/s
1189.75	1192.65	Dol, dk-med gry, f-m xln, hd-v hd, com anhyd fld vugs 1-2cm, com styl w/ thn bit fill, rr calc, fair vugy por, com dl gld fluor, n/s.
1192.65	1194.55	Dol, med gry, hd-v hd, f xln, com styl r bit fill, tr anhyd, rr calc, poor vis por, com dl gld fluor, n/s.
1194.55	1196.15	Dol, dk gry - blk gry, f -m xln, v hd, cmn styl, com dk gry chrt nod, com mm-cm anhyd fld vugs - xln & fibr, com dl gld fluor, n/s .
1196.15	1196.55	Dol, med gry - brn gry, f xln, hd, com rbl intvl, com styl, com dk gry chrt nod, sl calc, tr anhyd fil vug, fair vugy por , com pchy yel fluor, dll or fluor bnds 1cm, n/s.
1196.55	1197.95	Ls, mdst, hd, v calc, no vis por, sps dl gld fluor, n/s.
1197.95	1208.30	Ls, mdst, drk gry, m gry, stylo nod bdg, rexlzd ip, v hd, sb cnch fra, cmn mm calc vns, r cm vugs anhy fld, mnr mm lam, no vis por, cmn dl gld & brt blsh gn fluor, cut,
1208.30	1208.85	Ls, mdst, drk gry, m gry, tr-com calc,stylo nod bdg, mxln, v hd, r mm calc vns, r mm-cm vugs anhy fld, com styl, pr vugy por, no vis intxln por,sps dl gld fluor, no cut.
1208.85	1209.90	Ls, mdst, drk gry, m gry, tr calc, stylo nod bdg, f-mxln, v hd, mm calc vns, r mm-cm vugs pt anhy fld, r styl, no vis por, .
1209.90	1214.00	Dol, mdst, olv gry, brn gry, v hd, tr-rr calc, mxln, mnr stylonod incr @ bse, r mm calc vns, mnr mm-cm vugs anhy fld, pr vugy por, nil vis intxln por.
1214.00	1220.97	Dol, mdst, lt olv gry, tr calc, fxln, v hd, com mm-cm vugs prt opn-prt anhy fld, poss shl frag, mnr micro fracs calc fld, mnr styl, gd vis por, no fluor, no cut,
1220.97	1221.71	Dol, mdst, dk gry, fxln, hd, r calc, com cm mdst wvy lam, r cm vugs anhy fld, stylonod bdg, pr vugys por, ptchy dl yel - mod bri or yel flour, cut.
1221.71	1224.86	Dol, mdst, v drk gry-blk, mic, fxln, com cm lam drk gry dol clst, com cm vugs @ bse, anhy fld frac, pr-nil vis por,dl-br yel fluor, cut.
1224.86	1228.13	Dol, mdst, lt gry, lt grysh bl, mic, fxln, v hd, prly wispy lam, com cm blsh gry wxy ?dol clyst lam, rr mm vugs anhy fld, no vis por, no fluor, no cut,
1228.13	1229.54	Dol, mdst, lt brn, olv brn, f-m xln, v hd, ab sb mm faint wispy lam, com cm vugs & fracs anhy fld, no fluor, no cut,

Top	Base	Lithology from OzAlpha-1 core chip descriptions
1229.54	1231.58	Dol, mdst, lt gry, lt grysh bl, fxln, v hd, cmn dissem qtz, rr mm vugs anhy fld, nil vis por, n/s.
1231.58	1232.60	Dol,mdst, lt brn, fxln, v hd, cmn dissem f-m qtz snd, ab sb mm faint lam, com cm vugs & fracs anhy fld, tr sb mm blk clyst lams, nil vis por, n/s
1232.60	1232.90	Dol, mdst, med blsh gry, ab f-crs dissem qtz, mnr gran clast, mnr pyr nod, nil vis por, n/s,
1232.90	1232.94	Granite, weathered, med gry, qtz, m xln, no vis por.
1232.94	1233.20	Granite, lt pnk gry, fspr, qtz, c xln, v hd, wthd zn @ tp grad w/dpth to frsh, nil vis por, n/s,

App H Cuttings Descriptions

From	To	OzAlpha-1 Cuttings Description	Fluorescence
0	10	70% Sst, or brn, qtz, trnsl, m-cs, pr srt, sb ang-sb rnd, fri, fr vis por, n/s. 20% Cht, or wh, crpxln, v hd, n/s. 10% Dol, wh, v hd, nil vis por, n/s.	N/S
10	20	60% Sst, or brn, qtz, trnsl, m-f, pr srt, sb ang-sb rnd, calc cmt, pr vis por, n/s. 40% Cht, or wh, cprxln, v hd, r bit stn.	N/S
20	30	80% Sst, or brn, qtz, trnsl, m-f, sb ng-sb rnd, pr srt, gr mtrx, sil cmt, pr vis por, n/s. 20% Cht, or wh, crplxn, hrd, r bit stn.	N/S
30	40	70% Sst, or brn, qtz, trnsl, m-f, sb ang-sb rnd, pr srt, gy mtrx, sil cmt, pr vis por, n/s. 30% Cht, or wh, crpxln, hrd, r bit stn.	N/S
40	50	80% Sst, wh gy, qtz,trnsl, m-f, sb ang sb rdd, pr srt, strg sil cmt-mnr dol cmt, pr vis por. 20% Cht, or wh, calc, crpxln, hrd.	N/S
50	60	60% Sst, wh gy, qtz, trnsp-fros, m-f, ang sb rnd, mod srt, l gy mtrx, sil cmt, hd-fri, pr-fr vis por, r bit stn. 30% Dol, l gy, fn xln, hd, pr vis por, n/s. 10% Cht, l gy wh, crpxln, hd, n/s.	N/S
60	70	60% Sst, l gy, qtz, trnsp-fros, m-f, sb rnd-rnd, mod-pr srt, l gy mtrx, dom dol cmt, hd, pr-fr vis por, r bit stn. 40% Dol, l gy, microxln-fxln, hd, pr vis por, n/s.	N/S
70	80	70% Dol, l gy wh, qtz, fxln-microxln, hrd, pr vis por, r bit stn, n/s. 30% Sst, wh gy, qrtz, trnsp-fros, m-f, sb rnd-rnd, mod -pr srt, l gy mtrx, dom dol cmt-sub sil cmt, hd, pr-fr vis por, n/s.	N/S
80	90	80% Dol, l gy wh, qtz, fxln-microxln, hd, pr vis por, n/s. 20% Sst, wh gy, qtz, trnspt-fros, m-f, sb rnd-rnd, mod-pr srt, l gy mtrx, dom dol cmt-sub sil cmt, hd, pr-fr vis por, n/s.	N/S
90	100	70% Dol, l gy to wh, qtz, fxln-microxln, hrd, pr vis por, n/s. 30% Sst, wh-gy, qtz, trnsl-op, vf, sb rnd, wl srt, wh mtrx, dom dol cmt, hd, pr vis por, n/s.	N/S
100	110	80% Dol, l gy - wh, f-microxln, calc, hd, pr vis por, n/s. 20% Sst, wh gy, qrtz, trnsl-op, vf, sb rnd, wl srt, wh mtrx, dom dol cmt, hd, pr vis por, n/s.	N/S
110	120	80% Dol, l gy, f-microxln, hd, pr vis por, n/s. 20% Sst, wh-gy, qrtz, trnsl-op, vf, sb rnd, wl srt, wh mtrx, dom dol cmt, hd, pr vis por, n/s.	N/S
120	130	80% Dol, l gy wh, f-microxln, hd, pr vis por, n/s. 20% Sst, wh gy, qtz, trnsl-op, vf, sb rnd, wl srt, wh mtrx, hd, pr vis por, n/s.	N/S
130	140	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S
140	150	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S
150	160	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S
160	170	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S
170	180	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S
180	190	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S
190	200	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S
200	210	100% Dol, l gy wh, f-microxln, calc, hd, pr vis por, n/s.	N/S

From	To	OzAlpha-1 Cuttings Description	Fluorescence
210	220	80% Dol, l gy wh, f-microxln, hd, pr vis por, n/s. 20% Ls, dk gy, fxln, acc pyr, hd, pr vis por, n/s.	N/S
220	230	80% Dol, l gy wh, f-microxln, hd, pr vis por, n/s. 20% Ls, dk gy, fxln, acc pyr, hd, pr vis por, n/s.	N/S
230	240	80% Dol, l gy wh, f-microxln, hd, pr vis por, n/s. 20% Ls, dk gy, fxln, acc pyr, hd, pr vis por, n/s.	N/S
240	250	80% Dol, l gy wh, f-microxln, hd, pr vis por, n/s. 20% Ls, dk gy, fxln, acc pyr, hd, pr vis por, n/s.	N/S
250	260	60% Dol, l gry wh, f-microxln, hd, nil vis por, n/s. 40% Ls, wh gry, vf-fxln, hd, nil vis por, n/s.	N/S
260	270	50% Dol, l gry wh, f-microxln, hd, nil vis por, n/s. 50% Ls, wh gry, vf-fxln, hd, nil vis por, n/s.	N/S
270	280	50% Dol, l gry wh, f-microxln, hd, nil vis por, n/s. 50% Ls, wh gry, vf-fxln, hd, nil vis por, n/s.	N/S
280	290	70% Dol, l gry wh, f-microxln, hd, nil vis por, n/s. 30% Ls, wh gry, vf-fxln, hd, nil vis por, n/s.	N/S
290	300	60% Dol, l gry wh, f-microxln, hd, nil vis por, n/s. 40% Ls, wh gry, vf-fxln, hd, nil vis por, n/s.	N/S
300	310	60% Dol, l gry wh, f-microxln, hd, nil vis por, n/s. 40% Ls, wh gry, vf-fxln, hd, nil vis por, n/s.	N/S
310	320	60% Ls, wh, crpxln, hd, n/s. 30% Dol, med gry, f-microxln, hd, nil vis por, n/s. 10% Sltst,br rd, arg, hd, nil vis por, n/s.	N/S
320	330	60% Ls, wh, crpxln, hd, n/s. 30% Dol, med gry, f-microxln, hd, nil vis por, n/s. 10% Sltst,br rd, arg, hd, nil vis por, n/s.	N/S
330	340	60% Dol, med gry, f-microxln, hd, nil vis por, n/s. 20% Ls, wh, crpxln, hd, nil vis por, n/s. 10% Sltst, br rd, arg, hd, nil vis por, n/s. 10% Clst, gn, calc, micromic, hd, nil vis por, n/s.	N/S
340	350	40% Sltst,br rd, arg, hd, nil vis por, n/s. 20% Dol, med gry, f-microxln, hd, nil vis por, n/s. 20% Ls, wh, crpxln, hd, nil vis por, n/s. 20% Clst, gn, calc, micromic, hd, nil vis por, n/s.	N/S
350	360	80% Ls, wh, crpxln, hd, nil vis por, n/s. 10% Sltst, br rd, arg, hd, nil vis por, n/s. 10% Clst, gn, calc, micromic, hd, nil vis por, n/s.	N/S
360	370	70% Dol, l br gry, f-vfxln, hd, nil vis por, n/s. 30% Ls, wh, fxln, calc, hd, nil vis por, n/s.	N/S
370	380	80% Ls, wh, vf-mircoxln, hd, nil vis por, n/s. 20% Dol, l br gry, f-vfxln, hd, nil vis por, n/s.	N/S
380	390	80% Ls, wh, vf-mircoxln, hd, nil vis por, n/s. 20% Dol, l br gry, f-vfxln, hd, nil vis por, n/s.	N/S
390	400	80% Ls, wh, vf-mircoxln, hd, nil vis por, n/s. 20% Dol, l br gry, f-vfxln, hd, nil vis por, n/s.	N/S
400	410	80% Ls, wh, vf-mircoxln, hd, nil vis por, n/s. 20% Dol, l br gry, f-vfxln, hd, nil vis por, n/s.	N/S
410	420	70% Ls, wh, microxln, hd, nil vis por, n/s. 20% Dol, l br gry, hd, nil vis por, n/s. 10% Sst, wh, qtz, trnsl, vf, rnd, wl srt, wh mtrx, dol cmt, hd, nil vis por, n/s.	No test

From	To	OzAlpha-1 Cuttings Description	Fluorescence
420	430	60% Ls, wh, microxln, hd, nil vis por, n/s. 30% Dol, l br gry, hd, nil vis por, n/s. 10% Sst, wh, qtz, trnsl, vf, rnd, wl srt, wh mtrx, dol cmt, hd, nil vis por, n/s.	No test
430	440	70% Ls, wh, crpxln, hd, nil vis por, n/s. 30% Dol, l br gry, f-vfxln, hd, nil vis por, n/s.	No test
440	450	60% Dol, wh l gry, micro-vfxln, hd, nil vis por, n/s. 40% Sltst, d gry, aren, mod calc, occ arg, hd, nil vis por, n/s	No test
450	460	60% Slst, d gry, aren, mod calc, occ arg, hd, nil vis por, n/s. 40% Dol, lt gry, micro-vfxln, hd, nil vis por, n/s.	No test
460	470	100% Dol, lt gry, micro-vfxln, hd, nil vis por, n/s.	No test
470	480	60% Dol, lt gry, microxln-vfxln, hd, nil vis por, n/s. 20% Clst, med br, aren, hd, n/s. 20% Slst, d gry, aren, mod calc, occ arg, hd, nil vis por, n/s.	No test
480	490	70% Dol, lt gry, microxln-vfxln, hd, nil vis por, n/s. 20% Clst, med br, aren, hd, n/s. 10% Slst, d gry, aren, mod calc, occ arg, hd, nil vis por, n/s.	No test
490	500	70% Dol, lt gry, microxln-vfxln, hd, nil vis por, n/s. 20% Clst, med br, aren, hd, n/s. 10% Slst, d gry, aren, mod calc, occ arg, hd, nil vis por, n/s.	No test
500	507	70% Dol, lt gry, microxln-vfxln, hd, nil vis por, n/s. 20% Clst, med br, aren, hd, n/s. 10% Slst, d gry, aren, mod calc, occ arg, hd, nil vis por, n/s.	No test
510	515	100% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s.	No show
515	520	70% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 20% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
520	525	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
525	530	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
530	535	80% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 10% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
535	540	40% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 20% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
540	545	80% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 10% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
545	550	80% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 10% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
550	555	80% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 20% Slst, rd brn, aren, lith, hd, nil vis por, n/s.	No show
555	560	90% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 10% Slst, rd brn, aren, lith, hd, nil vis por, n/s.	No show
560	565	90% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 10% Slst, rd brn, aren, lith, hd, nil vis por, n/s.	No show
565	570	90% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 10% Slst, rd brn, aren, lith, hd, nil vis por, n/s.	No show

From	To	OzAlpha-1 Cuttings Description	Fluorescence
570	575	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
575	580	50% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 50% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
580	585	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
585	590	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
590	595	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
595	600	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
600	605	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
605	610	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
610	615	60% Ls, lt gry, c - fxln, r acc calc, hd, pr vis por, n/s. 30% Slst, rd brn, aren, lith, hd, nil vis por, n/s. 10% Dol, l gry, microxln, hd, nil vis por, n/s.	No show
615	620	80% Dol, lt gry, crpxln, v hd, pr vis por, n/s. 20% Slst, gry, aren, lith, hd, nil vis por, n/s.	No show
620	625	80% Dol, lt gry, crpxln, v hd, pr vis por, n/s. 20% Slst, gry, aren, lith, hd, nil vis por, n/s.	No show
625	630	100% Dol, lt gry, crpxln, v hd, pr vis por, n/s.	No show
630	635	100% Dol, lt gry, crpxln, v hd, pr vis por, n/s.	No show
635	655	100% Dol, lt gry, crpxln, v hd, pr vis por, n/s.	No show
655	660	60% Dol, lt gry, crpxln, v hd, pr vis por, n/s. 30% Ls, lt brn, cxln, hd, pr vis por, n/s. 10% Slst, gry, aren, lith, hd, nil vis por, n/s.	No show
660	665	60% Dol, wh gry, lut, fxln, calc ip, brit. 30% Ls, lt brn, crpxln, calc, brit. 10% Slst,gry, aren, lith, fis.	No show
665	670	60% Dol, wh gry, lut, fxln, calc ip, brit. 30% Ls, lt brn, crpxln, calc, brit. 10% Slst,gry, aren, lith, fis.	No show
670	675	60% Dol, wh gry, lut, fxln, calc ip, brit. 30% Ls, lt brn, crpxln, calc, brit. 10% Slst,gry, aren, lith, fis.	No show
675	680	60% Dol, wh gry, lut, fxln, calc ip, brit. 30% Ls, lt brn, crpxln, calc, brit. 10% Slst,gry, aren, lith, fis.	No show
680	685	70% Dol, wh gry, lut, fxln, calc ip, brit. 20% Ls, lt brn, crpxln, calc, brit. 10% Slst,gry, aren, lith, fis.	No show
685	690	80% Dol, wh gry, lut, fxln, calc ip, brit. 10% Ls, lt brn, crpxln, calc, brit. 10% Slst,gry, aren, lith, fis.	No show
690	695	80% Dol, wh gry, mxln, hd, nil vis por, n/s. 20% Sst, clr wh, f.q.g, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s.	No show
695	700	60% Dol, wh gry, mxln, hd, nil vis por, n/s. 30% Slst ,gry, aren, lith, hd, nil vis por, n/s. 10% Sst, clr wh, f.q.g, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s.	No show

From	To	OzAlpha-1 Cuttings Description	Fluorescence
700	705	80% Dol, wh gry, mxln, hd, nil vis por, n/s. 20% Slst, gry, aren, lith, hd, nil vis por, n/s.	No show
705	710	70% Dol, wh gry, mxln, hd, nil vis por, n/s. 20% Slst ,gry, aren, lith, hd, nil vis por, n/s. 10% Sst, clr wh, f.q.g, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s.	No show
710	715	90% Dol, wh gry, mxln, hd, nil vis por, n/s. 10% Slst, gry, aren, lith, hd, nil vis por, n/s.	No show
715	720	90% Dol, wh gry, mxln, hd, nil vis por, n/s. 10% Slst, gry, aren, lith, hd, nil vis por, n/s.	No show
720	725	80% Dol, wh gry, mxln, hd, nil vis por, n/s. 20% Sst, clr wh, f.q.g, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s.	No show
725	730	80% Dol, wh gry, mxln, hd, nil vis por, n/s. 20% Sst, clr wh, f.q.g, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s.	No show
730	735	80% Dol, wh gry, mxln, hd, nil vis por, n/s. 20% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s.	No show
735	740	80% Dol, wh gry, mxln, hd, nil vis por, n/s. 20% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s.	No show
740	745	60% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s. 40% Dol, wh gry, mxln, hd, nil vis por, n/s.	No show
745	750	60% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s. 40% Dol, wh gry, mxln, hd, nil vis por, n/s.	No show
750	755	80% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s. 20% Dol, wh gry, mxln, hd, nil vis por, n/s.	No show
755	760	80% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s. 20% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
760	765	80% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s. 20% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
765	770	80% Sst, clr wh, trnsl, vf, sb rnd, wl srt, dol cmt, prtl rexlzd, hd, pr vis por, n/s. 20% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
770	775	50% Sst, l gry, qtz, trnsl, f, rnd, wl srt, gry mtrx, dol cmt, hd, pr vis por, n/s 40% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s. 10% Dol, pa l yel brn, mxln crpxln, calc ip, brit, acc chrt.	No show
775	780	50% Sst, l gry, qtz, trnsl, f, rnd, wl srt, gry mtrx, dol cmt, hd, pr vis por, n/s 40% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s. 10% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
780	785	50% Sst, l gry, qtz, trnsl, f, rnd, wl srt, gry mtrx, dol cmt, hd, pr vis por, n/s 40% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s.10% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
785	790	50% Sst, l gry, qtz, trnsl, f, rnd, wl srt, gry mtrx, dol cmt, hd, pr vis por, n/s 40% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s. 10% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
790	795	50% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s. 40% Dol, pa l yel brn, mxln crpxln, calc ip, brit, acc chrt. 10% Slst, aren, mnr lmn vis, sil cmt, sb blky.	No show

From	To	OzAlpha-1 Cuttings Description	Fluorescence
795	800	50%Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s. 40% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Slst, aren, hd, nil vis por, n/s.	No show
800	805	80% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 20% Slst, aren, hd, nil vis por, n/s.	No show
805	810	80% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 20% Slst, aren, hd, nil vis por, n/s.	No show
810	815	70% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 20% Slst, aren, hd, nil vis por, n/s. 10% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s.	No show
815	820	70% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 20% Slst, aren, hd, nil vis por, n/s. 10% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s.	No show
820	825	50% Slst, aren, hd, nil vis por, n/s. 40% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s.	No show
825	830	50% Slst, aren, hd, nil vis por, n/s. 40% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s.	No show
830	835	50% Slst, aren, hd, nil vis por, n/s. 40% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s.	No show
835	840	50% Slst, aren, hd, nil vis por, n/s. 40% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Sst, clr wh, trnsl, vf c, sb rnd, pr srtd, dol cmt, hd, nil vis por, n/s.	No show
840	845	60% Slst, aren, hd, nil vis por, n/s. 40% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
845	850	60% Slst, aren, hd, nil vis por, n/s. 40% Dol, pa yel-gry, mxln, hd, nil vis por, n/s.	No show
850	855	60% Slst, aren, mnr lmn vis, sil cmt, sb blky. 30% Dol, pa l yel brn, mxln crpxln, calc ip, brit, acc chrt. 10% Ls, lt brn, crpxln, acc chrt, hrd.	No show
855	860	60% Slst, aren, hd, nil vis por, n/s. 30% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s.	No show
860	865	60% Slst, aren, hd, nil vis por, n/s. 30% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s.	No show
865	870	70% Slst, aren, hd, nil vis por, n/s. 30% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s.	No show
870	875	60% Slst, aren, hd, nil vis por, n/s. 30% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s.	No show
875	880	60% Slst, aren, hd, nil vis por, n/s. 30% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s.	No show
880	885	90% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Slst, aren, hd, nil vis por, n/s.	No show
885	890	90% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 10% Slst, aren, hd, nil vis por, n/s.	No show

From	To	OzAlpha-1 Cuttings Description	Fluorescence
890	900	60% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 30% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s. 10% Slst, aren, hd, nil vis por, n/s.	No show
900	905	60% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 30% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s. 10% Slst, aren, hd, nil vis por, n/s.	No show
905	910	60% Dol, pa yel-gry, mxln, hd, nil vis por, n/s. 30% Ls, lt brn, microxln, acc chrt, hd, nil vis por, n/s. 10% Slst, aren, hd, nil vis por, n/s.	No show
910	925	No sample - mudlogging unit offline	
925	935	70% Sst, wh - lt gry, trnsl, vf, rnd, wl srt, calc cmt, hd, pr vis por, n/s. 20% Sst, l gry, qtz, trnsp, vf, rnd, wl srt, dol cmt, fri-hd, pr vis por, n/s. 10% Dol, yel - brn, crpxln, hd, no vis por, n/s, .	Poor
935	945	60% Sst, wh - l gry, trnsl, vf, rnd, wl srt, calc cmt, fri-hd, pr vis por, n/s. 30% Sst, l gry, qtz, trnsp, vf, rnd, wl srt, dol cmt, fri-hd, pr vis por, n/s. 10% Slst, d gry - grn, aren, vf qtz, hd, n/s.	Poor
945	950	30% Sst, wh - lt gry, trnsl, vf, rnd, wl srt, calc cmt, fri-hd, pr vis por, n/s. 30% Sst, lt gry, qtz, trnsp, vf, rnd, wl srt, dol cmt, fri-hd, pr vis por, n/s. 20% Slst, dk gry - gn, aren, r vf qtz, hd, nil vis por, n/s. 20% Dol , yel - brn, crpxln, mod hd, nil vis por, n/s.	No show
950	955	70% Dol , yel - brn, crpxln, mod hrt, nil vis por, n/s. 20% Sst, wh - l gry, trnsl, vf, rdd, wl srt, calc cmt, mod hrt, pr vis por, n/s. 30% Sst, lt gry, qtz, trnsp, vf, rdd, wl srt, dol cmt, mod hd, pr vis por, n/s. 10% Slst, dk gry - gn, aren, r vf qtz, mod hd blky, n/s.	No show
955	960	60% Ls, wh-gry, micro-cxln, hd, nil vis por. 20% Dol, yel - brn gry, microxln, hd, nil vis por, n/s. 20% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s.	No show
960	965	60% Ls, wh-gry, micro-cxln, hd, nil vis por, n/s. 30% Dol, yel - brn gry, microxln, hd, nil vis por. 10% Sltst, d gry, aren, micromic, dol cmt, hd, nil vis por, n/s.	No show
965	970	60% Ls, wh-gry, microxln, hd, nil vis por, n/s. 30% Dol, yel - brn gry, microxn, hd, nil vis por, n/s. 10% Sltst, d gry, aren, micromic, dol cmt, hd, nil vis por, n/s.	No show
970	975	60% Ls, wh-gry, microxln, hd, nil vis por, n/s. 30% Sst, wh, - lt gry, vf, sb rnd, wl srt, calc/dol cmt, hd, nil vis por, n/s. 10% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s.	No show
975	980	80% Ls, wh-gry, microxln, hd, nil vis por, n/s. 20% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s.	No show
980	985	80% Ls, wh-gry, microxln, hd, nil vis por, n/s. 20% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s.	No show
985	990	70% Ls, wh-gry, microxln, hd, nil vis por, n/s. 20% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s. 10% Sst, clss -wh - lt gry, vf, wl srt, ang-sbrnd, calc cmt, tr pyr, hd, pr vis por, n/s.	No show
990	995	60% Ls, wh-gry, microxln, hd, nil vis por, n/s. 40% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s.	No show
995	1000	70% Ls, wh-gry, microxln, hd, nil vis por, n/s. 20% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s. 10% Sst, clss -wh - lt gry, vf, wl srt, ang-sbrnd, calc cmt, tr pyr, hd, pr vis por, n/s.	No show

From	To	OzAlpha-1 Cuttings Description	Fluorescence
1000	1005	70% Ls, wh-gry, microxln, hd, nil vis por, n/s. 20% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s. 10% Sst, clss -wh - lt gry, vf, wl srt, ang-sbrnd, calc cmt, tr pyr, hd, pr vis por, n/s.	No show
1005	1010	50% Ls, wh-gry, microxln, hd, nil vis por, n/s. 40% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s. 10% Sst, clss -wh - lt gry, vf, wl srt, ang-sbrnd, calc cmt, tr pyr, hd, pr vis por, n/s.	No show
1010	1015	50% Ls, wh-gry, microxln, hd, nil vis por, n/s. 40% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s. 10% Sst, clss -wh - lt gry, vf, wl srt, ang-sbrnd, calc cmt, tr pyr, hd, pr vis por, n/s.	No show
1015	1020	60% Ls, wh-gry, microxln, hd, nil vis por, n/s. 30% Sltst, dk gry, aren, micromic, dol cmt, hd, nil vis por, n/s. 10% Sst, clss -wh - lt gry, vf, wl srt, ang-sbrnd, calc cmt, tr pyr, hd, pr vis por, n/s.	No show
1020	1025	90% Ls, pa yel brn - yel brn, lt - dk gry, mott, hd, microxln, hd, nil vis por, n/s. 10% Sltst, dk brn - gry, sl dol, sl micromic, sl aren, hd, nil vis por, n/s.	No show
1025	1030	40% Sst, wh - clr, vf, wl srt, sbrnd, com wh arg mtx, com calc cmt, tr dol cmt ip, hd, pr vis por, n/s. 40% Ls, pa yel brn - yel brn, lt - dk gry, mott, hd, microxln, hd, nil vis por, n/s. 20% Sltst, dk brn - gry, mnr dol, mnr micromic, hd, nil vis por, n/s.	No show
1176	1180	Dol, pl yel brn to med gry, med-f xln, hd-v hd, sbconch-flt plty brk, com calc, tr anhy, rr pyr, pr vis por, n/s.	No Show
1180	1185	Dol, dk gry, dk brn gry-pa brn, f-med xln mnr micrxln, hd, brit, tr-com calc,tr bit mat, rr pyr, pr vis por, n/s. Dol [2] brn blk-blk gry, microxln, nil vis por, n/s. Calc slst, dk gry, arg - calc ip, hd, mnr bit stn, r sb mm lam vis, nil vis por, no fluor, n/s.	No Show
1185	1186	Calc Dol, yel brn, f-med xln, hd, brit, com-v calc calc, rr pyr, poor vis por, n/s	No Show
1186	1189	Calc Dol, yel brn, f-med xln, hd, brit, com vf-c lse euhd calc xls, tr bit frags, tr bit ctd calc xls, poor vis por, n/s	No Show