

# Basic Well Completion Report rev1 OzBeta-1, EP127

South Georgina Basin  
Northern Territory, Australia



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<b>Basic Well Completion Report rev1 OzBeta-1, EP127</b>		

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**Document : Basic Well Completion Report rev1**

**Well:OzBeta-1 Date: November 18, 2014**

<b>SECTION/CHAPTER</b>	<b>REV. NO.</b>	<b>AUTHOR</b>	<b>VERIFIED BY</b>	<b>RECOMMENDED BY</b>
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**Enclosures to OzBeta-1 Basic Well Completion Report (DVD)**

**OzBeta-1 Core images, white and UV light**

**Mudlog and gas recording (pdf and LAS)**

**Openhole Wireline logs (pdf and LAS)**

**Sample Manifests**

**Cased Hole logs (pdf and LAS)**



## 1 General Data

### 1.1 Well Objective

The OzBeta-1 exploration well was drilled to de-risk the unconventional play in the middle Cambrian carbonate deposits; Arthur Creek Hot Shale and the Thornton Limestone (dolomitized) in the southern parts of EP 127. Permeabilities were expected to be too low for conventional methods of production therefore the formations 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.

The objectives of drilling the vertical exploration well OzBeta-1 well were to utilize a two casing string design, where 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" casing run and cemented to surface. The lower 7 7/8" section was designed to obtain continuous core through the basal Arthur Creek Hot Shale and underlying Thornton Limestone at an undisturbed location to assess the presence of hydrocarbons. Wireline logging was part of the objective to evaluate the hydrocarbon potential. The final objective of the drilling phase was to run and cement 4 ½" production casing from TD to surface, providing isolation for the hydraulic stimulation and testing planned in the next phase of operations.

The objective of the completions phase was to verify the well integrity for hydraulic fracturing operations and subsequently perform pre-fracture geomechanical diagnostic testing, single stage fracture stimulation, and production testing operations. Following production testing operations the well was to be plugged and abandoned as per the NT DME requirements.

### 1.2 Well Outcome


12 ¼" hole was drilled to 601m MD RKB and 9 5/8" surface casing run to the bottom and cemented to surface. Hence the aquifers were isolated and kick tolerance and well integrity were achieved with a leak-off at 12.7ppg EMW. 7 7/8" production hole was drilled down to coring point at 1226m MD RKB. 3 ½" continuous wireline retrievable coring was commenced using 18m barrels. 100% recovery as achieved through the lower Arthur Creek Formation and the Arthur Creek Hot Shale. Coring the vuggy dolomite of the Thornton Limestone was more challenging, as the cores broke up into small pieces and packed off the core barrels, giving only 0.5m to 2m of recovered core in some of the coring runs. Coring was suspended 1406.6m MD due to slow ROP and the well was rotary drilled with a conventional BHA to TD at 1442m MD.

Wireline logging was conducted and the 4 ½" production casing was run to TD and cemented to surface to provide isolation for the hydraulic stimulation planned in the completions phase.

OzBeta-1 was temporarily suspended for 2 months awaiting stimulation and production testing for potential hydrocarbon production.

Once the completions operations commenced, cased hole wireline logging and casing pressure testing was performed, which verified the well integrity. Pre-frac diagnostic testing was carried out followed by the primary fracture stimulation of the target formation. Production testing was performed using a coiled tubing deployed jet pump and swabbing using coiled tubing. After completing the production testing operations the well was plugged and abandoned using coiled tubing and the wellhead cut-off using an abrasive jet cutter.

### 1.3 Well Summary Table

WELL SUMMARY			
	WELL NAME		OzBeta-1
	OFFSET WELLS		Owen-2, Owen 3, Hacking 1, OzAlpha-1
	WELL CLASS		Exploration
LOCATION DETAILS			
BASIN	Southern Georgina Basin	NORTHING	7487648.2 S mS
LICENCE	EP 127	EASTING	753773.8 mE
LOCATION	Northern Territory	ZONE	53 S
SEISMIC SURVEY	PFC-12-107	LATITUDE	22° 41' 57.69"S
SEISMIC REF.	Trace 8693 // CDP 8824 / SP 5517	LONGITUDE	37° 28' 13.12" E
ELEVATIONS	260 mAHD (GL), 264.2 mAHD (RT)	GRID	GDA'94
OPERATION DETAILS			
OPERATOR	Statoil Australia Theta B. V.	DRILLING RIG /	EDA Rig # 2
PRIMARY OBJECTIVE	Arthur Creek Formation Hot Shale and Thornton Limestone	SPUD DATE	02/05/2014
STRUCTURE	Unconventional Stratigraphic	RIG RELEASE	22/05/2014
WELL TYPE	Vertical	TD DATE OzBeta-1	19/05/2014
DRILLER TD OzBeta-1	1442.0 m MD	OPERATION DAYS	20
COMPLETION SERVICES	Weatherford wireline unit, Halliburton hydraulic fracturing, Halliburton coiled tubing, Farley Riggs production testing	WELL DIAGNOSTIC	20 Jul – 3 Aug 2014 12 – 14 Aug 2014
		STIMULATION	15 Aug 2014
		WELL TESTING	16 – 26 Aug 2014
OPERATION DAYS	17 (well diagnostic) + 13 (stim and test), total 30 days	PERMANENT P&A	26 -28 Aug 2014

HOLE SUMMARY OzBeta-1				
HOLE SIZE	HOLE DEPTH	CASING SIZE	SHOE DEPTH	CASING TYPE
17 ½" (445mm)	15.0 mMD	13 3/8" (340mm)	15.0 mMD	J55, API5B BTC
12 ¼" (311mm)	601 mMD	9 5/8" (244mm)	601 mMD	J55, API5B BTC
7 7/8" (200mm)	1442.0 mMD	4 ½" (114mm)	1441.0 mMD	L-80, TSH Blue

MWD-LWD & LOGGING SUMMARY OzBeta-1				
RUN	IN (mMD)	OUT (mMD)	TOOLS STRING	REMARKS
1	1148	1442	MCG-MDN-MPD-SGS-MDL_R-MMR	High resolution pass: SCOMBO. Max BHT 62° at 1442m
2	4.2	1442	MCG-MDN-MPD-SGS-MDL_R-MMR	Main pass SCOMBO
3	1180	1437	MCG-CMI-CXD	Image log pass
4	601	1437	MCG-CMI-CXD	Sonic log pass

CORING: OzBeta-1			
RUN	INTERVAL (mMDRT)	RECOVERY m (%)	COMMENT
1 - 9	1226.3 – 1357	98.9%	Wireline retrieved coring
10 - 18	1362 – 1406.2	87.8% (Overall recovery) 96.2%	Started wireline coring again after 5 m of drilling with insert bit

<b>FORMATION TESTS</b>	Lower parts of Arthur Creek Hot Shale and upper parts of Thornton was stimulated and production tested
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The well is located in the south-eastern parts of the Southern Georgina Basin; see the map on the next page.

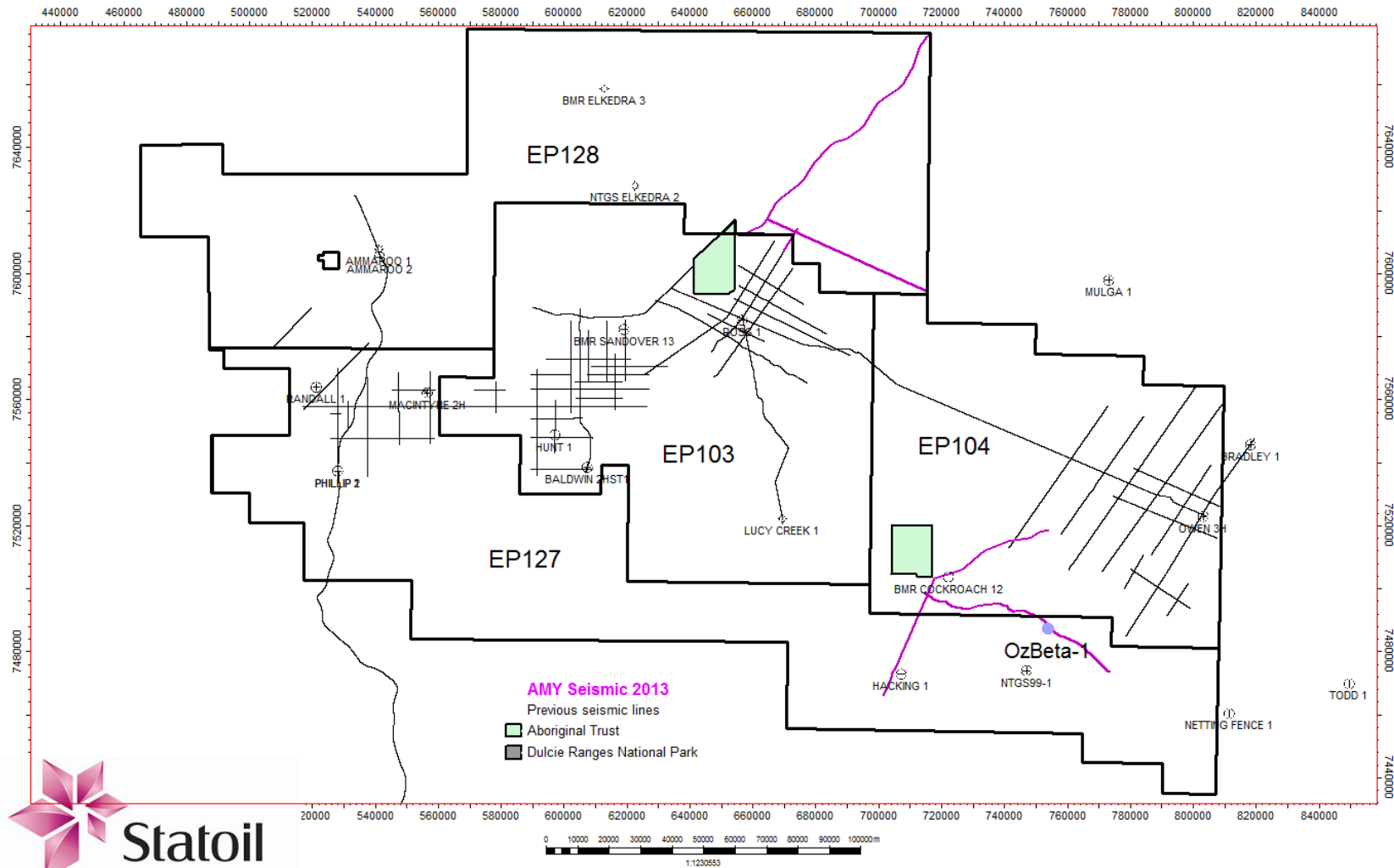


Figure 1-1 Map of the Statoil licenses area and position of the OzBeta-1 well location in EP127

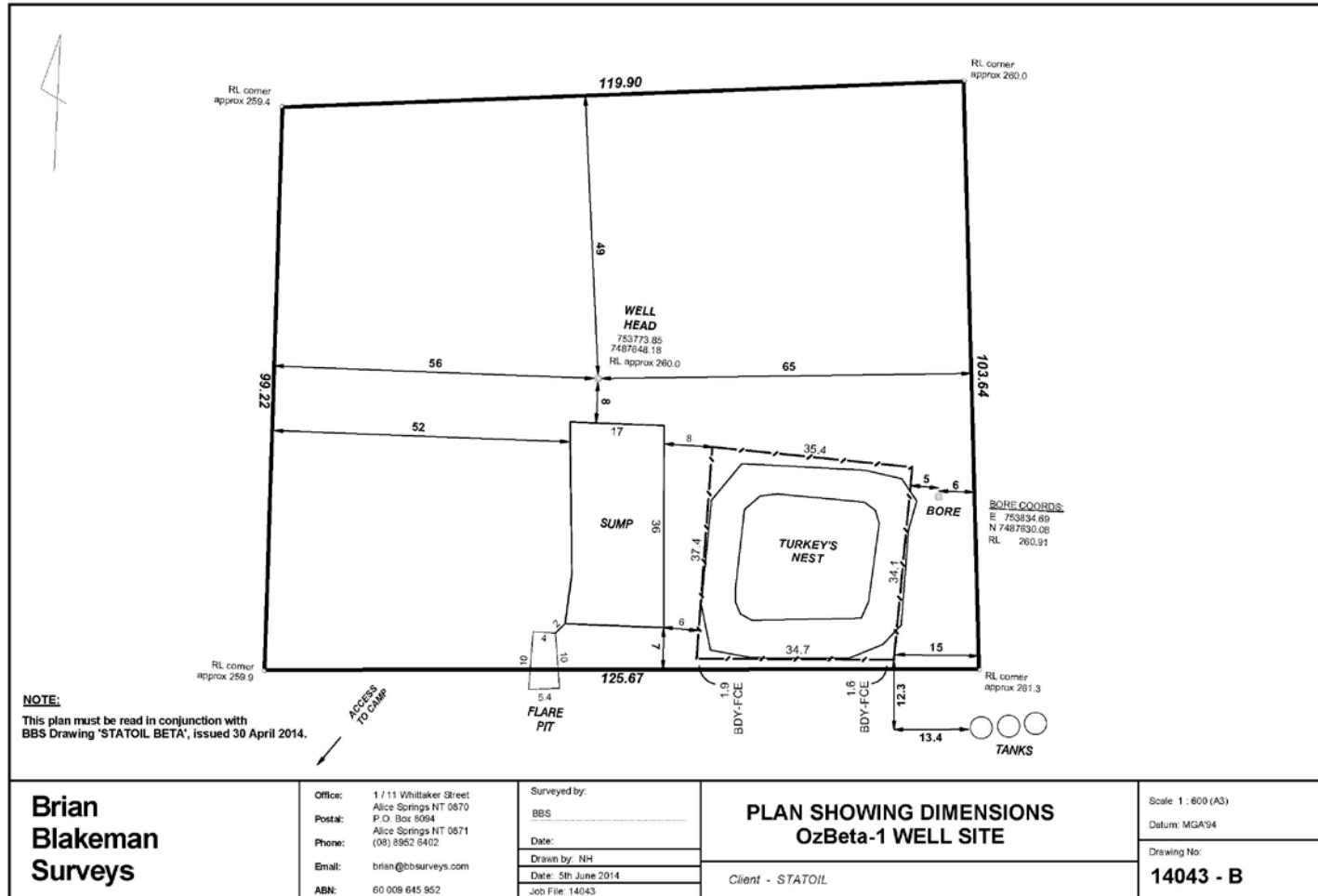


Figure 1-2: Survey certificate

## 2 Drilling

All depths in this report are meters measured depth relative to kelly bushing height (4.2m MD RKB), if not otherwise stated.

### 2.1 Drilling Summary

OzBeta-1 was spudded May 2<sup>nd</sup> 2014 and took a total of 20 days to complete drilling, logging and running/cementing production casing. The well was temporarily suspended awaiting stimulation and testing operations.

13 3/8" conductor was preset at 15 m and 12 1/4" surface hole was drilled from 15m to 601m using a spud mud system. Although there were minimal losses to the formation, exact volumes of losses or gains in the section were hard to quantify because the 1600bbl sump was incorporated into the active system.

At surface section TD, a lost circulation (LCM) pill was circulated to surface indicating that the well was in gauge. While flow checking at section TD the losses were estimated to 15bph static.

9 5/8" casing was run to 601m and cemented to surface with good returns. 22 hours of non-productive time were experienced installing the wellhead, due to difficulty with the welding and getting a successful pressure test. Prior to drill out, 29.5 hours of non-productive time were experienced due to trouble shooting the pipe rams.

7 7/8" production hole was drilled until core point was called at 1226m, 7 meters above the preselected core point. Coring commenced utilizing the wireline retrieved coring system from CorPro. 18m cored barrels were used for all coring runs. The core recovery was 100% in the lower Arthur Creek Formation and the Arthur Creek Hot Shale. After encountering the Thornton Limestone the coring runs became very short (0.3 - 2m), due to brittle rock, interconnected vugs or weak zones in the formation that caused the core barrel to pack off and unseat the core. At 1365m the corehead was pulled due to low ROP and changed. After numerous short core runs, the decision was made to drill with the insert bit in order to pass the zone of brittleness from 1357-1352m (5m) and from 1365.65 -1366.3m (0.65m). After a significant decrease in ROP and several short core runs to 1406.6m, the decision was made to trip for a conventional bottom hole assembly. The remaining production hole was then rotary drilled with a motor assembly and tooth bit to TD at 1442m, 35m into the granite basement. The well was flow checked prior to pulling out and no static losses were observed. A static flow check performed on the trip out at the casing shoe, also showed no losses.

Wireline logging was performed with 2 different logging strings in 4 runs.

4 1/2" L80 Tenaris Blue casing was run to 1441m and cemented with cement returns to surface. Initially the floats did not hold, they were pressured up again and the floats held on the second test. Casing slips were installed and seated, the BOP was nipped down, the wellhead adapter was installed and nipped up and the seals were pressure tested.

The well was temporarily suspended and the rig was released May 22<sup>nd</sup> 2014.

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

**Table 2-1** Summary of operations for OzBeta-1

Section	Start time	End time	Rig name
AU OZBETA-1 Move-In, Rig Up	27.Apr.2014 09:00	02.May.2014 11:00	EDA 2
AU OZBETA-1 Drilling, Surface	02.May.2014 11:00	04.May.2014 16:00	EDA 2
AU OZBETA-1 Casing, Surface	04.May.2014 16:00	07.May.2014 12:00	EDA 2
AU OZBETA-1 Drilling, Production	07.May.2014 12:00	20.May.2014 04:45	EDA 2
AU OZBETA-1 Formation evaluation, Production	20.May.2014 04:45	20.May.2014 22:30	EDA 2
AU OZBETA-1 Casing, Production	20.May.2014 22:30	22.May.2014 00:00	EDA 2
AU OZBETA-1 Rig Down	22.May.2014 00:00	22.May.2014 09:00	EDA 2

### 2.1.1 Non-productive time summary

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

**Table 2-2** Summary of the non-productive time for OzBeta-1

Hours	Well	Incident	Category	Company
10	OzBeta-1	Wait on cellar & conductor	Construction	Statoil
4.5	OzBeta-1	Loadsafes electrical failure	Operations	EDA
7	OzBeta-1	Loadsafes unable to pick up 8" DCs	Operations	EDA
1	OzBeta-1	Oil leak on top drive	Operations	EDA
22	OzBeta-1	Wait on welder to get successful P/T	Operations	Statoil
29.5	OzBeta-1	5 1/2" pipe ram rubber failure	Operations/ Logistics	EDA
18.5	OzBeta-1	POOH to retrieve lost core + retrieval tool	Operations	Corpro/Vause

## 2.1.2 Time versus Depth Curve

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

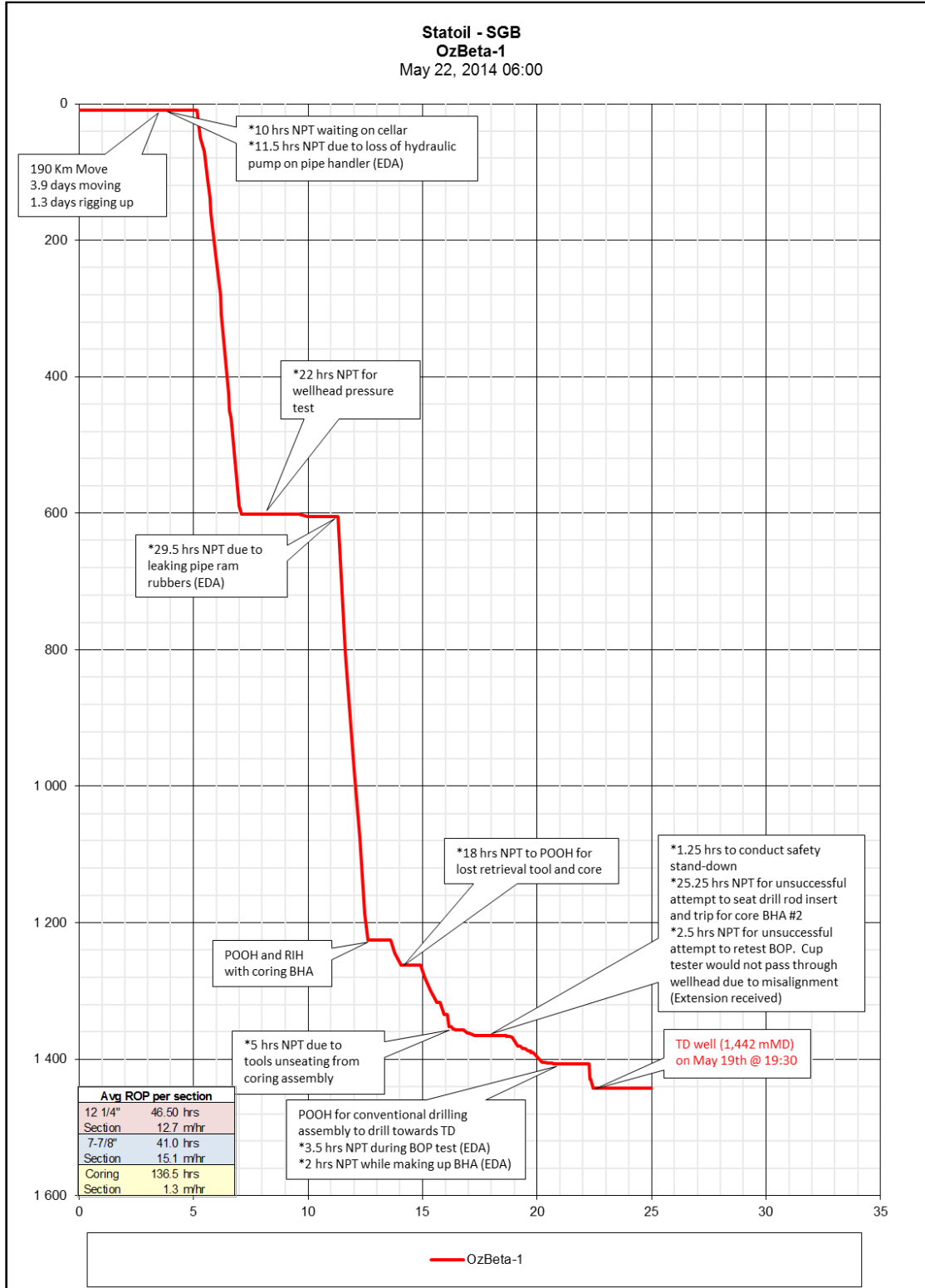


Figure 2-1 Time versus depth curve for OzBeta-1

## 2.2 Casings

The overview of the run casings in OzBeta-1 is presented in the table below.

**Table 2-3** Casing summary for OzBeta-1

Category/String type			Diameters	RKB hanger m MD	Air gap m MD	From depth m MD	To depth m MD	Date	Description
Conductor			13 3/8"	4.2	4.2	4.2	15.0	3/5/14	
Item type	No. of joints	Diam. inch	Grade	Coupling	Weight lbs/ft	From depth m MD	To depth m MD	Remarks	
Casing	1	13 3/8"	J55	API5B BTC	54.5	4.2	15.0	Pre-installed by Western Auger Drilling	
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"	4.2	4.2	4.2	601	4/5/14	
Item type	No. of joints	Diam. inch	Grade	Coupling	Weight lbs/ft	From depth m MD	To depth m MD	Remarks	
Casing	52	9 5/8"	J55	API5B BTC	36.0	4.2	601		
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 1/2"	4.2	4.2	4.2	1441.0	21/5/14	
Item type	No. of joints	Diam. inch	Grade	Coupling	Weight lbs/ft	From depth m MD	To depth m MD	Remarks	
Hanger	1	4 1/2"	L-80	TSH Blue	13.5	4.2	10.4		
Casing	121	4 1/2"	L-80	TSH Blue	13.5	10.4	1410.5		
Crossover	1	4 1/2"	L-80	TSH Blue	13.5	1410.5	1417.4		
Float Collar	1	4 1/2"	L-80	TSH Blue	13.5	1417.4	1417.7		
Casing	2	4 1/2"	L-80	TSH Blue	13.5	1417.7	1440.6		
Shoe	1	4 1/2"	L-80	TSH Blue	13.5	1440.6	1441.0		

## 2.3 Well Path - Directional Data

The well inclination was monitored with single shot surveys. See App A for 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 245deg approaching TD.

## 2.4 BHA Records

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

**BHA NO:** 1      **RUN TYPE:** Drilling run      **DESCRIPTION:** 12 1/4" surface hole      **RUN NAME:** 1

String component	OD in	ID in	Length m	Acc length m
BIT	12.250	2.750	0.36	0.36
BIT SUB	8.000	2.000	0.93	1.29
SHOCK SUB	8.125	2.500	2.92	4.21
DRILL COLLAR	8.000	3.000	9.04	13.25
STABILIZER	12.250	2.870	2.46	15.71
DRILL COLLAR	8.000	3.000	9.05	24.76
X-OVER	8.000	2.120	0.26	25.02
X-OVER	7.000	2.120	0.38	25.40
DRILL COLLAR	6.250	2.120	92.52	117.92
X-OVER	7.500	2.500	0.30	118.22



**BHA NO: 2**      **RUN TYPE:** Drilling run      **DESCRIPTION:** 7 7/8" Production hole      **RUN NAME:** 2

String component	OD in	ID in	Length m	Acc length m
BIT	7.875	2.250	0.26	0.26
MUD MOTOR	6.750	1.500	8.15	8.41
X-OVER	6.620	2.250	0.60	9.01
STABILIZER	7.750	2.870	1.86	10.87
X-OVER	6.500	2.250	0.38	11.25
DRILL COLLAR	6.250	2.250	101.79	113.04
JAR	6.250	2.250	9.07	122.11
X-OVER	6.250	2.500	0.30	122.41

**BHA NO: 3**      **RUN TYPE:** Coring run      **DESCRIPTION:** 7 7/8" core      **RUN NAME:** 1

String component	OD in	ID in	Length m	Acc length m
BIT	7.875	3.500	0.47	0.47
CORE BARREL		4.600	8.23	8.70
STABILIZER		4.600	0.91	9.61
CORE BARREL		4.600	8.23	17.84
STABILIZER		4.600	0.91	18.75
COREBARREL		4.600	0.73	19.48
COREBARREL		4.600	0.74	20.22
DRILL COLLAR		4.600	94.08	114.30

**BHA NO: 4**      **RUN TYPE:** Coring run      **DESCRIPTION:** 7 7/8" core      **RUN NAME:** 2

String component	OD in	ID in	Length m	Acc length m
BIT	7.875		0.47	0.47
CORE BARREL		4.600	8.23	8.70
STABILIZER		4.600	0.91	9.61
CORE BARREL		4.600	8.23	17.84
STABILIZER		4.600	0.91	18.75
COREBARREL		4.600	0.73	19.48
COREBARREL		4.600	0.74	20.22
DRILL COLLAR		4.600	94.08	114.30

**BHA NO: 5**      **RUN TYPE:** Drilling run      **DESCRIPTION:** 7 7/8" Production hole TD      **RUN NAME:** 3

String component	OD in	ID in	Length m	Acc length m
BIT	7.875		0.24	0.24
MUD MOTOR	6.750	1.500	8.16	8.40
DRILL COLLAR	6.250	2.250	9.28	17.68
DRILL COLLAR	6.250	2.250	9.29	26.97
X-OVER			0.60	27.57
STABILIZER	7.750	2.870	1.86	29.43
X-OVER	6.500	2.250	0.37	29.80
DRILL COLLAR	6.250	2.250	83.22	113.02
JAR	6.250	2.250	9.36	122.38
DRILL COLLAR	6.250	2.250	9.11	131.49
X-OVER			1.08	132.57
X-OVER	6.250	2.500	55.77	188.34
HW DRILL PIPE			1.21	189.55
X-OVER			0.60	190.15
X-OVER				190.15

## 2.5 Cementing Summary

### Cementing of the 9 5/8" surface casing:

Operation summary: Pumped 10bbls freshwater spacer. Pressure tested surface lines to 2471psi for 5 minutes. Pumped 8bbls of freshwater spacer. Dropped the bottom plug. Pumped 2bbls of freshwater spacer. Mixed and pumped 154bbls of 13.4 - 13.8ppg Class G slurry at 3 - 6bbls/min. Dropped top plug and displaced with 135bbls at 6bbls/min at 150-760psi, pumped final 14bbls at 2bbls/min at 560-620psi. Bumped plug at 149bbls @ 620psi and pressure tested casing to 1100psi/5min. Cement returns to surface at 118bbls into displacement, 31bbls to surface. Bled back 0.5bbls, floats held. Good returns throughout the cement job.

**Table 2-4** Cementing summary for OzBeta-1 Surface casing

OzBeta-1, Casing size: 9 5/8"						
Fluids pumped	Type	Density ppg	Volume bbl	Pump Rate bbl/min	Pump Press psi	Returns
Preflush	Fresh Water	8.33	20	5 -6.5	2364	Full
Tail	Lead	13.5	154	3 - 6	760	Full
Displacement	Drilling Mud	8.33	149	6	760	Full

### Cementing of the 4 1/2" production casing:

Operation summary: Pumped 10 bbl water spacer. Pressure tested surface lines to 810 and 5260psi for 5 minutes each. Pump 8bbl water spacer drop bottom plug. Pump 2 bbl water spacer. Mix and pump 203.7bbl x 11.9ppg lead cement slurry and 65.8bbl x 14.8ppg tail cement slurry. Dropped top plug and displace with 69.5bbl biocide water to bump plug at 1.6bpm and 1080psi. Increased pressure to 1580psi for 10min. Bled off 1bbl floats failed to hold. Pressure up to 3000psi and bled off 0.6bbl floats held. Good returns throughout the cement job with 5.5bbl cement to surface.

### Execution:

Recorded 1bph static losses. Job performed by batch mixing mix water 5hrs ahead of cement job, using 203.7bbl lead mix water and 65.8bbl tail. Spacer prepared and pumped by cement unit/tanks. No issues with cement mixing and cement bulk transfers. Displacement as per calculated volume. No overdisplacement. Good returns throughout the cement job with 5.5bbl cement to surface.

**Table 2-5** Cementing summary for OzBeta-1 Production casing

OzBeta-1, Casing size 4 1/2"						
Fluids pumped	Type	Density ppg	Volume bbl	Pump Rate bbl/min	Pump Press psi	Returns
Spacer	Fresh Water	8.33	20	4.5 - 5		
Lead	Class G	11.9	203.7	4.5	65	Full
Tail	Class G	14.8	65.8	3.5	48	Full
Displacement	Fresh Water	8.33	69.5	6		

## 2.6 Bit Records

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

Tables 2-6 Bit records for OzBeta-1

Run no	Bit size	Bit no	BHA no	Bit type	IADC code	Bit manufacturer
1	12 1/4"	1	1	MMD65DH	M324	Halliburton
2	7 7/8"	2	2	DSH616M		NOV
3	7 7/8"	3	3	RS910Q3S		Corpro
4	7 7/8"	4	4	DC813Q		Corpro
5	7 7/8"	5	5	EQH47		Halliburton

Run no	Bit size	Bit no	BHA no	Serial no	Nozzles (n/32")				Flow area (in2)
					no x n	no x n	no x n	no x n	
1	12 1/4"	1	1	12243842	9 x 24	x	x	x	3.977
2	7 7/8"	2	2	A154443	6 x 18	x	x	x	1.492
3	7 7/8"	3	3	1517	2 x 12	x	x	x	0.221
4	7 7/8"	4	4	1529	x	x	x	x	1.070
5	7 7/8"	5	5	11920839	3 x 28	x	x	x	1.804

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"	737.7	910.0	15.0	601.0	586.0	600.0	41.5		14.1
2	7 7/8"	483.3	1150.0	601.0	1226.05	625.05	639.05	16.1	30.0	38.8
3	7 7/8"	265.0	667.5	1226.05	1365.65	139.60	139.55	37.1	49.2	3.8
4	7 7/8"	207.0	319.5	1365.65	1406.20	40.55	40.60	21.7	36.7	1.9
5	7 7/8"	600.0	1186.0	1406.60	1442.0	35.40	35.40	7.5		4.7

Run no	Bit size	Min WOB kips	Max WOB kips	Min RPM	Max RPM	Torque Min ft*lbf	Torque Max ft*lbf
1	12 1/4"	17.66	28.66	60	100	5633	9500
2	7 7/8"	13.99	26.66	154	228	4133	7533
3	7 7/8"	3.17	9.69	54.75	71	4175	5300
4	7 7/8"	5.49	8.99	58	67	2600	5300
5	7 7/8"	29.00	29.99	49	50	3205	3394

Run no	Bit size	I	O	DC	L	B	G	OC	RP
1	12 1/4"	3	1	BT	C	X	I	CT	TD
2	7 7/8"	1	1	NO	A	X	I	NO	CP
3	7 7/8"	5	3	BT	C	X	0	LT	PR
4	7 7/8"	6	4	BT	A	X	0	WT	PR
5	7 7/8"	1	1	NO	A	E	0	NO	TD

Run no	Bit size	Remarks
1	12 1/4"	BHA #1 - Surface
2	7 7/8"	BHA #2 – Production hole
3	7 7/8"	BHA #3 - Core Assembly #1
4	7 7/8"	BHA #4 - Core Assembly #2
5	7 7/8"	BHA #5 - Production hole to TD

## 2.7 Drilling Fluids

The OzBeta-1 well was drilled with water based mud. The water was supplied from the turkeys nest that had been filled with water from the water bore drilled on the OzBeta-1 location (Beta water bore). There were minimal losses to the formation in the surface hole section although it was hard to quantify the losses or gains in the section due to the fact that the 1600bbl sump was being used. For the production section subsurface seepage losses to the formation of total 275bbl losses were reported in the end of well report from the drilling fluids company (**Error! Reference source not found.**). A short summary of the mud properties is given 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 <sup>2</sup> )	Fluid Loss (bbl/day)	pH
Surface	Polymer/water spud mud	8.4	26	1	1	0	8.0 – 9.5
Production	Polymer/water mud	8.6 - 8.8	26 - 28	1	1	21	8.0 – 9.0

### 3 Completions Operations

#### 3.1 Completions Summary

Two months after the drilling rig completed and suspended the OzBeta-1 exploration well, a completions unit consisting of a Weatherford wireline unit, a crane and a Halliburton coiled tubing unit returned to the OzBeta-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 OzBeta-1 well and tagged cement at 1363m MD, the float collar being at 1419m MD. A radial cement evaluation log was run and the casing was pressure tested to 7,500psi. The results of both the log and pressure test were successful and operations continued. 0.3m of perforations were shot in the Thornton formation at 1360m MD and a stress test performed in order to assess the geomechanical stress for input to the fracture design. As no breakdown was seen a second interval was perforated from 1359 to 1360m MD but this would not breakdown either. These 2 perforated intervals were isolated by a bridge plug and the main frac target in the Arthur Creek hot shale was then perforated from 1347 to 1350m MD and a diagnostic fracture injection test (DFIT) was attempted, without successfully breaking down the formation. The well was scraped and flushed clean using coiled tubing but injection could not be achieved. 15% HCl acid was spotted on the perforations using coiled tubing after which breakdown was achieved. The DFIT was pumped and after 8 days of monitoring the pressure falloff a retrievable bridge plug was set at 1334m MD, a 0.4m interval at 1325m MD was perforated and an upper barrier stress test was conducted. The first attempt at this stress test could not achieve breakdown, so acid was spotted, after which the stress test was completed successfully. After pulling the bridge plug, a single stage fracture stimulation was conducted. The well was then production tested for five days using a coiled tubing deployed jet pump for artificial lift followed by swabbing for two days followed by jet pump for the final four days. No hydrocarbons were produced and a total volume of 989.1 bbls of water were produced during production testing. The total load fluid accounts for 866 bbls of the total production. A cement plug was then spotted over and above the perforated interval using coiled tubing to abandon the zone. On 27/8/2014, a surface cement plug was set to complete the in-wellbore abandonment process in accordance with the NT DME requirements. Finally the wellhead was cut off using a hydraulic abrasive jet cutter and the lease restored to its original condition. These earthworks were completed in late October 2014.

**Table 3-1** Summary of completions operations for OzBeta-1

Section	Start time	End time	Rig name
AU OZBETA-1 Wellbore preparation	20.Jul.2014 00:00	13.Aug.2014 16:30	Weatherford wireline Halliburton Coiled Tubing
AU OZBETA-1 Stimulation	13.Aug.2014 16:30	15.Aug.2014 11:00	Weatherford wireline Halliburton Frac and Halliburton Coiled Tubing
AU OZBETA-1 Production testing	15.Aug.2014 11:00	26.Aug.2014 06:30	Farley Riggs Halliburton Coiled Tubing
AU OZBETA-1 Abandonment	26.Aug.2014 06:30	28.Aug.2014 18:00	Halliburton Coiled Tubing

#### 3.1.1 *Non-productive time summary*

A summary of the non-productive time for OzBeta-1 completions operation can be seen on the next page.

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

Date	Description	Company	Hours
29.07.2014	Data acquisition malfunction	Halliburton	2
10.08.2014	Tool failure setting plug	Weatherford	2
Total hours			4.0

### 3.2 Wellbore Preparation

The wellbore preparation operations consisted of ensuring well integrity through cement evaluation logging and casing pressure testing, as well as gathering accurate data and analysis for the stimulation operations. The pre-frac data acquisition operations included; lower boundary stress test, diagnostic fracture injection test (DFIT) in the target zone, and an upper stress test above the target interval.

The suspension cap that was installed at the completion of drilling was removed and the 4-<sup>1</sup>/<sub>2</sub>" 10,000psi FMC frac tree was installed and pressure tested to 7,500psi. The wireline unit rigged up and after confirming depth control against the openhole logs using gamma-ray, tagged cement at 1363m MD; the float collar being at 1419m MD. Radial cement evaluation logs were run at 0psi and 3000psi applied pressure after which the casing was pressure tested satisfactorily to 7,500psi. 0.3m of perforations were shot in the Thornton formation at 1360m MD and these perforations were subjected to an injectivity breakdown test in order to assess the rock stress for input to the fracture design. No breakdown was seen after three attempts, the maximum injection being 1.3bpm at 7,100psi. A second interval was perforated from 1359 to 1360m MD but this would not breakdown at 1.0bpm at 7,100psi. These 2 perforated intervals were isolated by a permanent bridge plug, which was pressure tested to 7,000psi. The main frac target in the Arthur Creek Hot Shale was then perforated from 1347 to 1350m MD at 6spf, good hole, 60 degrees phasing. A diagnostic fracture injection test (DFIT) was attempted several times without successfully breaking down the formation. Injection was at 1.0bpm at 7,100psi. The well was scraped and flushed clean with gel using coiled tubing, but injection could not be achieved. 15% HCl acid was spotted after which breakdown was achieved at 3,800psi; a total of 3.1bbbls was injected after achieving breakdown. The DFIT was pumped at an average pressure of 4,500psi with a total of 13.8bbbls of water injected during the DFIT. After eight days of monitoring the pressure falloff a retrievable bridge plug was set at 1334m MD, a 0.4m interval at 1325m MD was perforated with deep penetrating small hole charges at 120 degree phasing and an upper barrier stress test was conducted at 0.8bpm at 7,000psi. The first attempt at this stress test could not achieve breakdown so acid was spotted after which the stress test was completed successfully with an apparent breakdown at 3,300psi. The retrievable bridge plug was recovered using the coiled tubing.

### 3.3 Fracture Stimulation

After pulling the bridge plug, a single stage fracture stimulation was conducted. A step-down test was conducted at the end of the treatment.

**Table 3-3** Summary of the Fracture Stimulation on OzBeta-1

Surface Breakdown Pressure psi	Acid Spearhead Rate bbl/min	Avg Surface Treating Pressure psi	Max Surface Treating Pressure psi	Breakdown Rate bbl/min	Acid Qty bbl
4,179	5	4,447	5,602	3.2	12
Avg Treating Rate bbl/min	Max Treating Rate bbl/min	Clean Volume bbl	Slurry Volume bbl		
13.0	15.6	833	863		
100 Mesh Sand lb	20/40 Proppant lb	Total Proppant lb	Max Proppant Concentration lb/gal		
3,307	29,783	33,090	3.36		

Step down rate test

Slurry rate 15.6bbl/min at 4508psi, 10.7bbl/min at 3921psi, 5.4bbl/min at 3185psi.

ISIP – 3185psi

After 5min SI – 3142psi

After 10min SI – 3099psi

After 15min SI – 3076psi

### 3.4 Production Testing

After rigging aside the frac equipment the production tested commenced. The production testing package consisted of a 3-phase separator, manifold, H<sub>2</sub>S treatment unit, storage tanks, flare stack, light plants, air compressors and generators. Coiled tubing was RIH and tagged plug back depth at 1347m MD. The well was flowed and sand was circulated out to 1357m MD. Beginning on 17/8/14 the well was production tested for 4 days using a coiled tubing conveyed jet pump and packer assembly for artificial lift. The end of the coil tubing was at 1312m MD and the isolation packer was at 1310m MD. The power fluid, initially water from the water bore on site, was pumped using the Halliburton coiled tubing pump. On 19/8/2014 the jet pump was pulled and a coil tubing conveyed swab mandrel was RIH. Swabbing continued for 2 days. The deepest swab depth achieved was 914m MD, but swabbing operations were impeded by the swab cups hanging up in casing connections. A total of 13 swabs were pulled. The jet pump and packer assembly were run back in hole on 21/8/14 and jet pumping operations were resumed. After loading the well at a low pump rate the pump rate was increased to provide optimized bottomhole drawdown. The returned fluids changed color to a dark gray and a H<sub>2</sub>S reading of 200ppm was recorded. The returned water was sweetened and jet pumping was resumed. Jet pumping continued without detection of H<sub>2</sub>S until 24/8/14, at which time H<sub>2</sub>S was detected at 2ppm. Over the next 1-1/2 days H<sub>2</sub>S rose to a maximum of 300ppm, and on 26/8/14 the testing operations were ended. A total of 989.1 bbls of water were produced from the well. No hydrocarbons were produced and the load fluid for completion operations was 866.4 bbl.

The test results are summarized below.

**Table 3-4** Summary of the Production Testing on OzBeta-1

Cum gas Produced MMcf	Cum oil Produced bbl	Cum Water Net bbl	Cum Produced Water bbl
0	0	989.1	122.7
Total Load Fluid to Recover bbl	Calculated Load Fluid Left to Recover bbl	Calculated Load Fluid Production	Maximum H <sub>2</sub> S Reading ppm
866.4	0	114%	300

### 3.5 Permanent Plug and Abandonment

On 26/8/14, at the conclusion of the production testing, the coil tubing unit (CTU) commenced operations to permanently plug and abandon the well.

The well was flushed clean and a cement plug was spotted on the bridge plug that had been set at 1357m MD to isolate the perforations used for the lower stress test. The cement plug was tagged at 1275m MD after which the well was circulated over to water treated with Ancor 1 corrosion inhibitor. A surface cement plug was placed from 50m MD (45m below surface ground level) up to surface using a gel plug as a base. The plug was tagged and the wellhead was flushed clean. The CTU and testing package were then rigged down.

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 26/10/2014 and the lease was restored to original condition in accordance with the Environmental Management Plan.

The final well schematics after the permanent plug and abandonment operations can be seen in Appendix B and the final well barrier drawing as left is shown in Appendix D.

#### 3.5.1 Plugging

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

**Table 3-5** Lower cement plug

Plug top mMD	Plug bottom mMD	Company	Plug No.	Plug type	Job objective
1275	1357	Halliburton	1	Cement in Casing	Permanent P&A
Measured plug top MD	Measured by	Hole size	Casing size	Placement method	
1275	Tagging	3 <sup>13</sup> / <sub>16</sub> "	4 ½"	Spotted by coil tubing	
Remarks: Class G cement placed on EZ SV bridge plug					
Fluids pumped	Type	Density ppg	Volume bbl	Pump rate l/min	Pump pressure psi
Slurry	Blended cement	15.8	4.4	NA	NA

**Table 3-6** Surface abandonment cement plug

Plug top mMD	Plug bottom mMD	Company	Plug No.	Plug type	Job objective
6.0	50	Halliburton	2	Cement in Casing	Permanent P&A
Measured plug top MD	Measured by	Hole size	Casing size	Placement method	
6.0	Tagging	3 <sup>13</sup> / <sub>16</sub> "	4 ½"	Spotted by coil tubing	
Remarks: Spotted gel plug from 152 to 50 m MD then spotted cement surface plug on gel					
Fluids pumped	Type	Density ppg	Volume bbl	Pump rate l/min	Pump pressure psi
Slurry	Blended cement	15.8	2.2	NA	NA



## 4 Well Evaluation Logs

The openhole logging was designed to provide information on lithology, rock properties (poro/perm), fluid content, parameters to develop stress models and where to select the stress tests 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 ( $\sigma_{min}$ )

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

Run no	Logging Company	Logged Interval (m MD)	Tools	Temp at TD (°C)	Remarks
1	Weatherford	1180 - 1442	MCG-MDN-MPD-SGS-MDL_R-MMR	62	High resolution pass: SuperCombo: spontaneous potential, gamma, spectral gamma, neutron, density, laterolog, microres
2	Weatherford	4.2 - 1442	MCG-MDN-MPD-SGS-MDL_R-MMR	62	Main pass: SuperCombo: spontaneous potential, gamma, spectral gamma, neutron, density, laterolog, microres
3	Weatherford	1180 - 1437	MCG-CMI-CXD	62	Image(CMI) and sonic (CXD) on same tool string, CMI run first
4	Weatherford	601 - 1437	MCG-CMI-CXD	62	Sonic (CXD) from TD to surface 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 - 1361	CCL-GR-CBL-SBT	Not reported	Cement evaluation

## 5 Cores, Cuttings and Samples

### 5.1 Coring

The coring intervals were planned to cover the entire Arthur Creek Hot Shale and the Thornton Limestone. Logging while drilling (LWD) was not utilized to pick core point because there were insufficient formation markers close to the target intervals. Coring was called 7 meters shallower than the pre-defined depth, based on observations of increased organic content in the cuttings and elevated gas readings. For OzBeta-1, the decided core point depth was originally 50m above the estimated top Arthur Creek Hot Shale in order to be confident that this zone was not missed due to possible erroneous seismic depth conversion. As the top Thornton Limestone Formation was intersected 42m deep, the coring interval became longer than expected. As the target is an unconventional play, core material from the zones bounding the target interval is also important for rock mechanical testing. The bounding zones in an unconventional play will be the intervals that restrict the fractures growing in height and depth.

Because approximately 140m of coring was planned, a wireline retrieved coring system was utilized. Full recovery of the 18m intervals of 3<sup>1</sup>/<sub>2</sub>" core were retrieved until the Thornton Limestone was intersected. The upper meters of the Thornton Limestone, consisted of an interval with weak planes, either due to open vugs and/or fractures. In this interval, the core barrel experienced packing off after 1 – 2m of coring (run #8 and run #9). An insert was run into the core bit, and 5m of hole was rotary drilled before returning to coring mode. Another 9 coring runs were performed with mixed length and recovery.

The interval from start to stop coring covered 179m. Of this 174.5m was in coring mode, and 168.2m core was recovered. This gives a core recovery factor of 96.2%, and the OzBeta-1 coring operation must be deemed successful.

Preserve samples of approximately 20 – 30cm were taken every 9m in the Lower Arthur Creek Formation above the Arthur Creek Hot Shale, and every 4.5m in the Hot Shale and the Thornton, where core was sufficiently competent.

The list of cored intervals and the sample preserved for core analyses are presented in App F.

112.8m of the 174.5m of available core were slabbed and photographed in both white and ultraviolet light. The slabbed and photographed intervals are: 1288 - 1357m and 1362 – 1405.8m.

### 5.2 Cuttings

Samples for cuttings description were taken throughout the entire well. Cuttings samples were collected at 10m intervals from spud to the 9-5/8" casing shoe and at 5m intervals from the shoe to TD. Cuttings samples and core chip description can be seen in App G.

## **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 observed during the drilling of the well because the well was drilled in overbalance.

The formation integrity test at the surface casing shoe was tested to 12.7ppg, equivalent 0.66psi/ft or 1.52g/cm<sup>3</sup>.

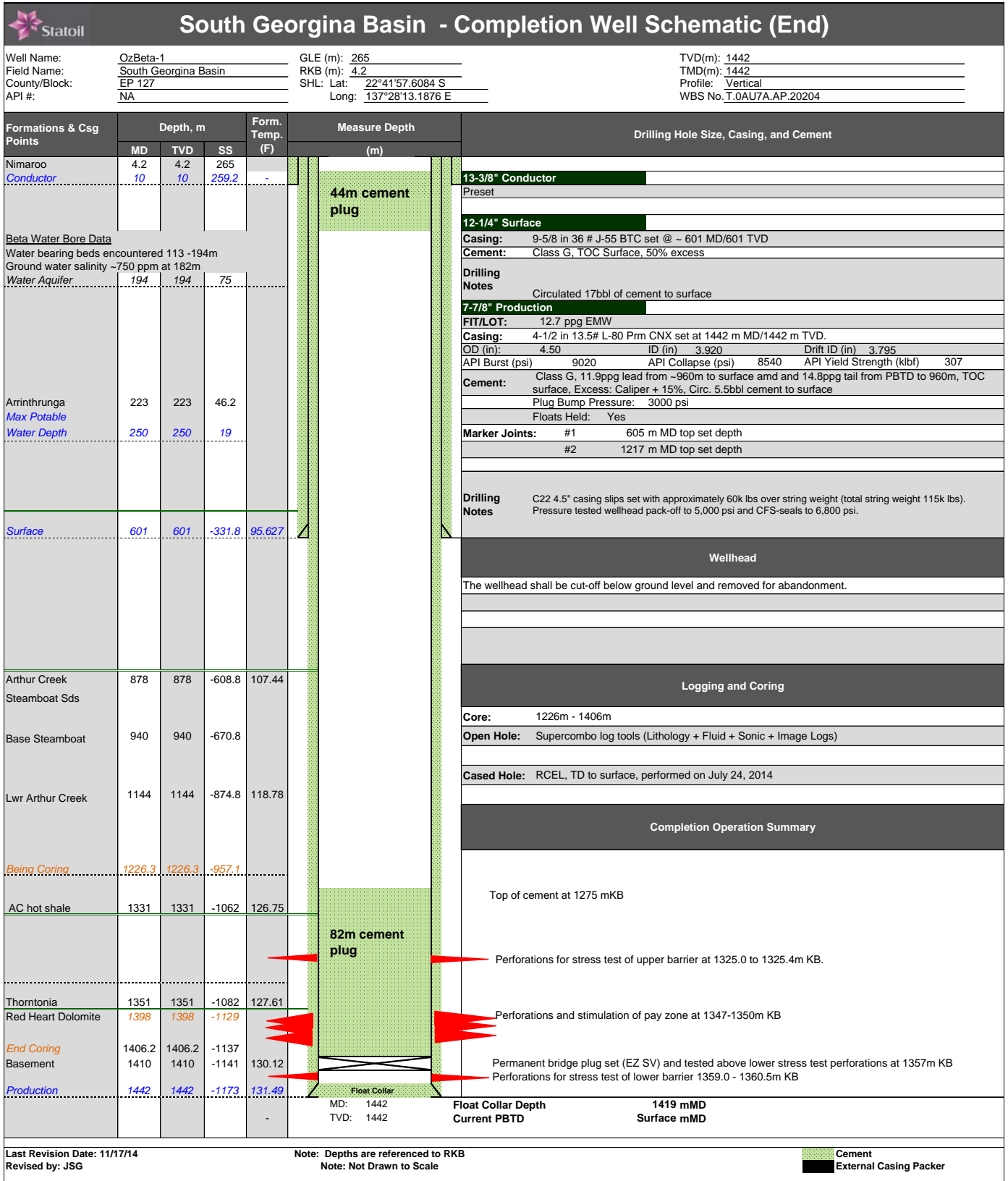
### **6.2 Formation temperature**

Formation temperature was obtained whilst openhole wireline logging and the temperature measured 62 °C at 1442m MD, which equals a temperature gradient of 43 °C/km.

## App A Directional Data – surveys

Depth m MD RKB	Inclination (deg)	Survey Instrument
192	0.5	Single Shot
392	1.0	Single Shot
585	1.5	Single Shot
784	1.2	Single Shot
984	1.5	Single Shot
1176	1.5	Single Shot
1214	1.0	Single Shot
1420	1.25	Single Shot
1432	1.25	Single Shot

## App B Well Schematics



**Basic Well Completion Report rev1**  
**OzBeta-1, EP127**



**South Georgina Basin - Drilling Well Schematic**

Well Name: OzBeta # 1 Azm: \_\_\_\_\_ GLE (m): 265 TVD(m): 1,442  
 Field Name: South Georgina Basin Op Area: \_\_\_\_\_ RKB (m): 4.2 TMD(m): 1,442  
 County/Block: \_\_\_\_\_ SHL: \_\_\_\_\_ Lat 22°41'57.6084 S Long 137°28'13.1876 E Profile: Vertical  
 API #: \_\_\_\_\_

Formations & Csg Points	Depth, m			Form. Temp. (F)	Pore Press. (EMW)	Frac Gradient (EMW)	Planned MW	Measure Depth (m)	Program	Details
	MD	TVD	SS							
Conductor	10	10	259	-	-	-	-	10	Preset	<b>13-3/8" Conductor</b>
							8.4			<b>12-1/4" Surface</b>
Water Zone: Surface to 80 m (1500 PPM Salinity)										
Arrintheta	279	279	-10				8.4			
							8.8			
Surface	601	601	-332	96	8.1		8.4	601		
							12.7			
Arthur Creek Steamboat Sds	919.2	919	-650	109			8.7			
Base Steam boat	939.2	939.2	-670				8.7			
Lwr Arthur Creek	1149.2	1149.2	-880	119			8.6			
Begin Coring	1,226	1,226	-957				8.7			
AC hot shale	1321	1321	-1,052	126			8.7			
Thorntonia	1351	1351	-1082	128			8.7			
Red Heart Dolomite	1,398	1,398	-1,129	130			8.7			
End Coring	1,406	1,406	-1,137							
Basement	1,408	1,408	-1,139	130	-	-	8.7			
Production	1,442	1,442	-1,173	131	-	-	8.7			

<b>Profile:</b>	Vertical
<b>Bit Type:</b>	12-1/4" PDC
<b>BHA:</b>	Rotary Assembly: - 616 PDC + Schock sub + 2 x 8" DC + 2 IBS + 10 6-1/4" DC
<b>Mud:</b>	Spud Mud, 8.6 ppg
<b>Surveys:</b>	192m: 0.5° - 392m: 1.0° - 585m: 1.5°
<b>Logging:</b>	none
<b>Casing:</b>	9-5/8 in 36 # J-55 BTC set @ ~ 601 MD/601 TVD
<b>Centralizers:</b>	1 every 4 joints Class: G
<b>Cement:</b>	TOC : Surface Excess: 50%
<b>Potential Drilling Problems:</b>	-Seepage losses
<b>Notes / Comments:</b>	Circulated 17 bbl of cement to surface

<b>FIT/LOT: 12.7 ppg EMW</b>	<b>7-7/8" Production</b>
<b>Profile:</b>	Vertical
<b>Bit Type:</b>	7-7/8" PDC
<b>BHA:</b>	- PDC - Straight PDM - IBS - 6-1/2" DC
<b>Mud:</b>	FW: 8.6 - 9.0 ppg
<b>Surveys:</b>	784m: 1.2° - 984m: 1.5° - 1176m: 1.5° - 1214m: 1.0° - 1420m: 1.25°
<b>Logging:</b>	Mud Logging the whole interval Coring: started 95 m above target and ends approx. at basement OH Logs: Lithology + Fluid + Sonic + Image Logs
<b>Casing/Liner:</b>	4-1/2 in 13.5# L-80 Prm CNX set at 1442 m MD/1442 m TVD.
<b>Liner Hanger:</b>	N/A
<b>Centralizers:</b>	1 centralizer on float shoe + float collar 1 every 4 joints until surface casing point 1 centralizer every 5 joints to cellar
<b>Cement:</b>	Class: G TOC: Surface Excess: Caliper + 15%. Circulated 5.5 bbl cement to surface.
<b>Potential Drilling Problems:</b>	- Hard rock abrasive formation
<b>Notes / Comments:</b>	Wireline retrievable Coring operations from 1226.3 m to 1398 m

MD: 1,442  
TVD: 1,442

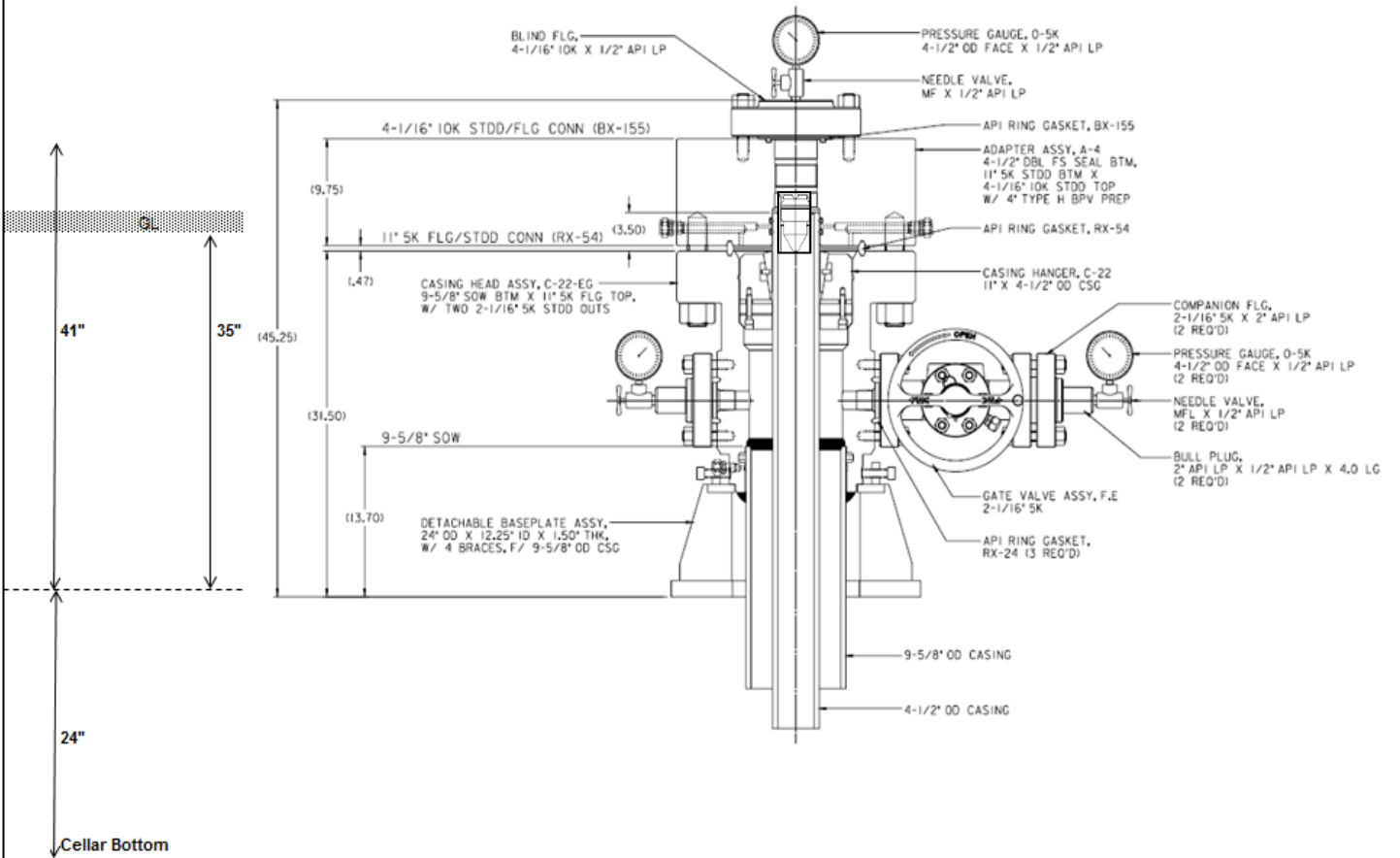
Last Revision Date: 27/05/14  
Revised by: AVT

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

Cement Outside Casing  
External Casing Packer

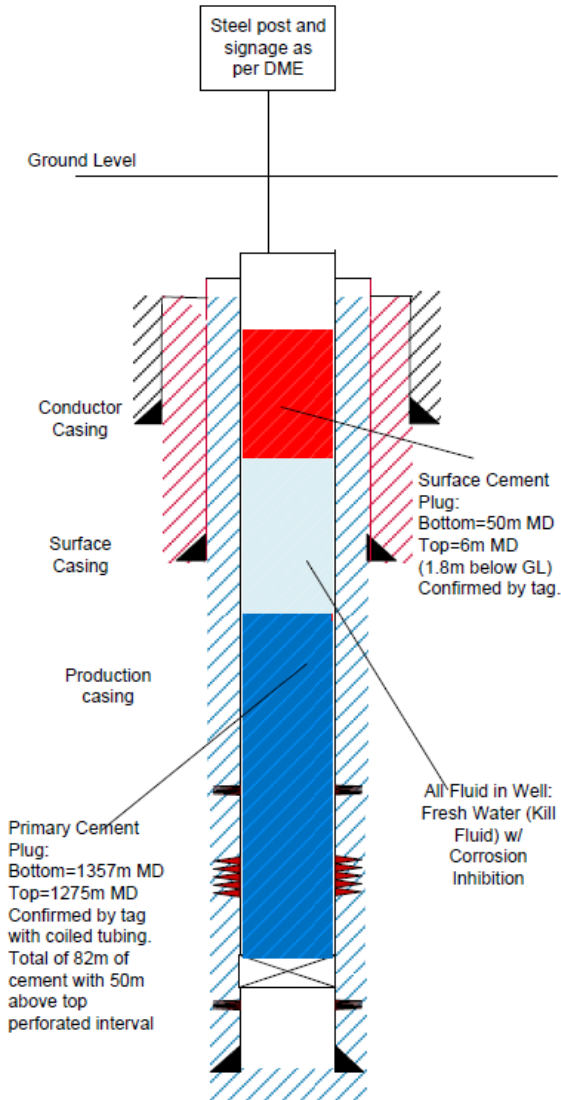
## App C Wellhead

### FMC Conventional Wellhead Completion Stack-up



## App D Well Barriers

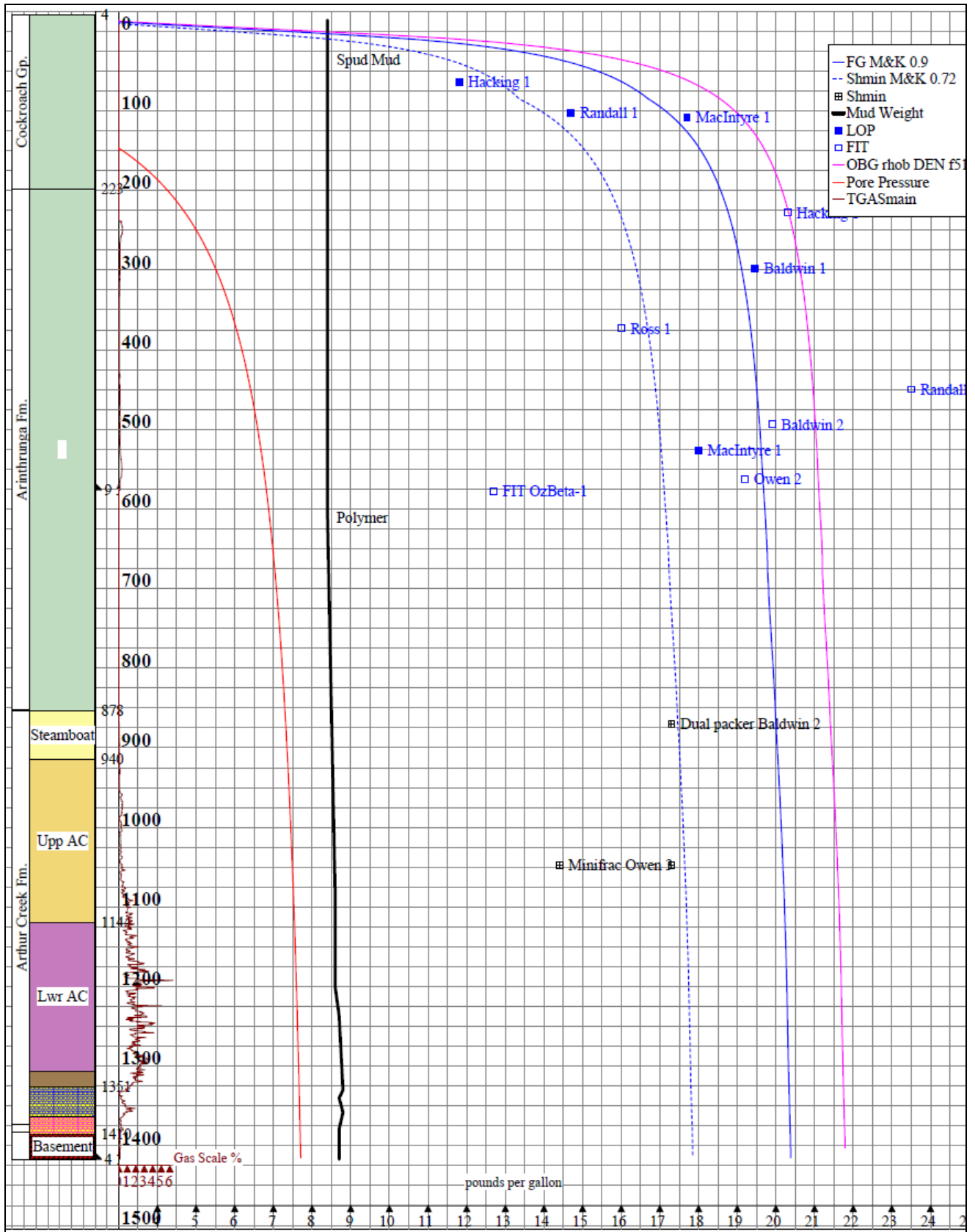
### Well Barrier Diagram: Abandonment



Well data		
Installation:	South Georgina Basin - Australia	
Well no:	OzBeta-1	
Well type:	SGB Exploration	
Revision no:	0	Date: 03.09.2014
Prepared:	Joel Gordon	
Verified:		
Well barrier elements		
Ref. WBEAC tables	Verification of barrier elements	
<b>PRIMARY</b>		
Production casing cement		TOC: TOC MD < Surf csg shoe Method: Wireline log
Primary Abandonment Cement Plug		Tagged with coiled tubing to verify integrity
<b>SECONDARY</b>		
Surface casing cement		TOC: TOC @ surface Method: volume control
Surface Cement Plug		Tagged to verify integrity
Kill Weight Fluid		Placed above lower cement plug to surface using coiled tubing
Production Casing		Pressure tested to 7,500 psi during stimulation
Pore Pressure ~0.42 psi/ft and the kill fluid (fresh water) has a hydrostatic gradient of 0.433 psi.		
Disp. no.	Comment	
well integrity issues		
None		



### App E Pore Pressure and Fracture Gradient Plot





## App F Core intervals and Preserved Samples

Core no	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	3	Lwr Arthur Crk	1226.3	1244.3	18.0	100.0	18.0	100.0	Aluminium	Corepro	Mylar	1226.73-1226.98 1235.90-1236.15
2	3	Lwr Arthur Crk	1244.3	1262.6	18.2	99.4	18.0	101.1	Aluminium	Corepro	Mylar	1244.53-1244.84 1254.68-1254.98
3	3	Lwr Arthur Crk	1262.6	1280.6	18.2	101.1	18.0	101.1	Aluminium	Corepro	Mylar	1263.34-1263.56 1272.49-1272.76
4	3	Lwr Arthur Crk	1280.6	1298.6	17.8	98.7	18.0	98.7	Aluminium	Corepro	Mylar	1281.33-1281.83 1287.34-1287.66 1291.98-1292.27 1296.70-1296.97
5	3	Lwr Arthur Crk	1298.6	1316.6	18.2	101.3	18.0	101.3	Aluminium	Corepro	Mylar	1300.57-1300.89 1305.70-1305.98 1310.60-1310.84 1315.47-1315.75
6	3	Lwr Arthur Crk	1316.6	1334.6	18.1	100.5	18.0	100.5	Aluminium	Corepro	Mylar	1319.74-1320.0 1324.30-1324.46 1329.24-1329.56 1333.59-1333.79
7	3	Arthur Crk Hot Shale	1334.6	1352.6	18.0	100.0	18.0	100.0	Aluminium	Corepro	Mylar	1338.14-1338.42 1342.18-1342.45 1347.35-1347.58 1349.53-1349.73
8	3	Thorntonia	1352.6	1356.0	1.7	50.6	18.0	9.6	Aluminium	Corepro	Mylar	Core fractured and in poor condition.
9	3	Thorntonia	1356.0	1357.0	1.1	111.0	18.0	6.2	Aluminium	Corepro	Mylar	1356.35-1356.68
10	3	Thorntonia	1362.0	1365.5	1.5	44.0	18.0	8.6	Aluminium	Corepro	Mylar	Core fractured and in poor condition
11	4	Thorntonia	1365.5	1365.7	0.3	206.7	18.0	1.7	Aluminium	Corepro	Mylar	Core fractured and in poor condition



Core no	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)
12	4	Thorntonia	1366.3	1367.4	0.7	66.4	18.0	4.1	Aluminium	Corepro	Mylar	Core fractured and in poor condition
13	4	Thorntonia	1367.4	1381.1	13.6	99.4	18.0	75.7	Aluminium	Corepro	Mylar	1368.55-1368.73 1373.99-1374.21 1379.18-1379.39
14	4	Thorntonia	1381.1	1384.4	3.3	100.6	18.0	18.4	Aluminium	Corepro	Mylar	1383.57-1383.90
15	4	Thorntonia	1384.4	1388.4	3.3	82.5	18.0	18.3	Aluminium	Corepro	Mylar	Broken core at base of run
16	4	Thorntonia	1388.4	1390.2	1.8	100.0	18.0	10.0	Aluminium	Corepro	Mylar	Broken nature of core
17	4	Thorntonia/ Red Heart	1390.2	1404.8	13.3	91.2	18.0	73.9	Aluminium	Corepro	Mylar	1393.53-1393.81 1398.50-1398.80 1402.80-1403.11
18	4	Red Heart	1404.8	1406.2	1.0	71.4	18.0	5.6	Aluminium	Corepro	Mylar	Broken core

## App G Cuttings and Core Chip Descriptions

From	To	OzBeta-1 Cuttings and Core descriptions
15	30	100% Dol: with surficial sands and minor clays
15	30	90% Dol: dk yel or, fxln, rexlzd, m hd, calc vns, nil vis intxln por, 10% Sd: clr, trnsl, mnr or brn stn gr, vf - f, pred pol, rnd - sbrnidd, mod wl srt, mnr yel cl mtz, pred lse - v fri, gd vis por, pot Cavings
20	30	90% Dol: dk yel or, mnr med - dk brn, fxln - microxln, tr slt and micromic, m hr - hd, nil vis intxln por, 10% Sd: slty - vf, v sli calc cmt, tr dol cmt, frm - lse, pr-mod vis por, pot Cavings
30	40	50% Dol: dk yel or - gry, calc, micro xln - microxln, rexlzd, mnr slt, hdpr-nil vis intxln por 40% Sltst: micromic, med gry, bcm arg, dol, mnr calc, hd, sbfiss, 10% Sst: mica, lt gry, qtz, vf-f, sbrnidd, mod wl srt, mnr gr & mnr yel cly mtz, calc & mnr dol cmt, frm - fri, sub mm lam, pr nil vis por,
40	50	50% Sst: mica, gry - lt gry, qtz, vf -f, grdg slty mica lams, sbrnd-sbang, mod-pr srt, sli sil, sli calc, sli dol, frm-mod fri, pr vis por, 30% Dol: med gry - yel gry, fxln-microxln, rexlzd, pr-nil vis intxln por, 20% Sltst: mica, dk-med gry, arg - aren, sil cmt w/ sli dol& calc cmt, sbfiss,
50	60	50% Sst: mica, dk gry - brn gry, incr blk spks, incr micromica, sil cmt w/ sli dol& calc cmt, mod hd, sbfiss, pr-nil vis por, 30% Sltst: a/a 20% Dol: a/a
60	70	70% Dol: lt gy - wh, microxln-fxln, rexlzd, mod hd, 20% Sst: med brn, lt gry, vf-f, grdg slty, sbrnidd-sbang, mod srt, sil cmt w/ sli dol cmt, hd 10% Sltst: grdg v arg,
70	80	40% Sltst: a/a grysh grn -gry, bcmg arg grdg clst, mod hd, sbfiss-fiss, 40% Sst: a/a lt brnsh gry, vf, wl srt, dol cmt,fri, lam, pr vis por, 20% Dol: a/a lt brnsh gry,
80	90	60% Lst: :lt brnsh gry, lt gry, bcmg grsh or, f-microxln, rexlzd, md-mod hd, nil vis intxln por, 30% Sst: lt brnsh gry, vf, sbrnd-sbang, mod wl srt, sil cmt, mnr dol cmt, mod hd, pr vis por 10% Sltst: a/a
90	100	80% Lst: a/a: occ grysh or 20% Sst: a/a: tr Sltst: a/a:
100	110	100% Lst: a/a tr Sst: a/a tr Lst: a/a
110	120	100% Lst: a/a

From	To	OzBeta-1 Cuttings and Core descriptions
120	130	70% Dol: lt gry, fxln- microxln, rexlzd, md hd, pr-nil intxln vis por, n/s.
		20% Slst: micromic, gnsh gry, dk gry, v arg, mod hd, sbfiss,
		10% Sst: lt br, lt gry, vf-f, clr-trnsl-opq wh, sbang-ang, sbelng, , mod wl srt, sil cmt w/ rr qtz ovghts, tr dol cmt, fri, tr micro blk lith grains in qtz ovghts, pr vis por
130	140	100% Dol: lt gry, fxln- microxln, rexlzd, md hd, pr-nil intxln vis por tr Slst: micromic, gnsh gry, dk gry, v arg, mod hd, sbfiss,
140	150	100% Dol: lt brn, bcm pa yel brn, fxln-microxln, rexlzd, mod hd, tr bit stn, pr vis intxln por
150	160	100% Dol: pa yel brn, fxln-micrxln, rexlzd, mod hd, tr bit stn, pr vis intxln por
160	170	100% Dol: pa yel brn, fxln-microxln, rexlzd, mod hd, tr bit stn, pr vis intxln por
170	180	100% Dol: ol gryfxln-microxln, rexlzd, mod hd, tr bit stn, pr vis intxln por
		tr Slst: gnsh gry, dk gry, v arg, micromic, mod hd, sbfiss
180	190	100% Dol: lt olv gry, fxln-microxln, rexlzd, pr vis intxln por
		tr Slst: gnsh gry, dk gry, v arg, micromic, mod hd, sbfiss
190	200	100% Dol: a/a
200	210	80% Dol: lt gry -med gryfxln-microxln, rexlzd, pr vis intxln por
		10% Sst: med gry, vf-f, sbang-sbrnd, mod wl srt, sil cmt w/ tr dol cmt, hd, pr-nil vis por
		10% Slst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
210	220	90% Dol: lt olv gry, fxln-microxln, rexlzd, mod hd, pr vis intxln por
		10% Slst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
		tr Sst: qtzose, lt gry, vf-f, sbang-sbrnd, mod wl srt, sil cmt, rr dol cmt, rr pyr nod, pr-nil vis por
220	230	80% Dol: lt gry, fxln-microxln, rexlzd, mod hd, nil vis intxln por
		20% Lst: wh, lt gry, vfxln-microxln, rexlzd, mod hd, nil vis intxln por
		tr Slst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
230	240	80% Dol: lt gry, fxln-microxln, rexlzd, mod hd, nil vis intxln por
		20% Lst: wh, lt gry, vfxln-microxln, rexlzd, mod hd, nil vis intxln por
		tr Slst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
240	250	90% Dol: wh, mod hd, nil vis intxln por
		10% Lst: wh, lt gry, micrxln-cryptoxln, rexlzd, mod hd, nil vis intxln por
		tr Slst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss,
250	260	90% Dol: lt gry, fxln-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: dk gry - bnsh gry
260	270	100% Dol: lt gry, fxln-microxln, rexlzd, mod hd, nil vis intxln por
		tr Slst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss

From	To	OzBeta-1 Cuttings and Core descriptions
270	280	100% Dol: lt gry, fxln-microxln, rexlzd, mod hd, nil vis intxln por
		tr Slstst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
280	290	100% Dol: lt gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		tr Slstst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
290	300	100% Dol: lt gry -med gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		tr Slstst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
300	310	100% Dol: lt gry -med gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		tr Slstst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
310	320	100% Dol: gn gry -med gry, fxln-microxln, rexlzd, mod hd,
		tr Slstst: dk gry, com arg, aren, mod hd, mica-micromic, sbfiss
320	330	100% Dol: lt gry, pa brn gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
330	340	80% Dol: lt gry- pa brn gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Lst: wh - lt gry, microxln, rexlzd, mod hd, nil vis intxln por
340	350	70% Dol: lt gry- pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		30% Lst: wh - lt gry, microxln, rexlzd, mod hd, nil vis intxln por, n/s.
350	360	80% Dol: lt gry- pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Lst: wh - lt gry, microxln, rexlzd, mod hd, nil vis intxln por
360	370	80% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Lst: wh - lt gry, microxln, rexlzd, mod hd, nil vis intxln por
370	380	70% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Lst: wh - lt gry, fxln-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slstst: dk gry, dk bl gry, arg-aren, micromic, hd, sbfiss.
380	390	50% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		30% Slstst: dk gry, dk bl gry, arg-aren, micromic, hd, sbfiss.
		20% Lst: wh - lt gry, bl gry, microxln, rexlzd, mod hd, nil vis intxln por
390	400	50% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		30% Slstst: dk gry, dk bl gry, arg-aren, micromic, mod hd, sbfiss
		20% Lst: wh - lt gry, bl gry, microxln, rexlzd, mod hd, nil vis intxln por
400	410	60% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Slstst: dk gry, dk bl gry, brn gry, arg-aren, micromic, mod hd, sbfiss.
		20% Lst: wh - lt gry, microxln, rexlzd, mod hd, nil vis intxln por

From	To	OzBeta-1 Cuttings and Core descriptions
410	420	40% Lst: wh - lt gry, dk yel or, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por, n/s.
		20% Slstst: dk gry, dk bl gry, brn gry, arg-aren, micromic, mod hd, sbfiss.
420	430	70% Lst: wh - lt gry, dk yel or, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		10% Slstst: dk gry, dk bl gry, brn gry, arg-aren, micromic, mod hd, sbfiss.
430	440	60% Lst: wh - lt gry, dk yel or, med brn, microxln, rexlzd, mod hd, nil vis intxln por
		30% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		10% Slstst: dk gry, dk bl gry, brn gry, arg-aren, micromic, mod hd, sbfiss.
440	450	40% Lst: wh - lt gry, dk yel or, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Slstst: dk gry, dk bl gry, brn gry, arg-aren, micromic, mod hd, sbfiss.
450	460	50% Dol: pa brn gry - dk gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por, n/s.
		40% Lst: wh - lt gry, dk yel or, microxln, rexlzd, mod hd, nil vis intxln por
		10% Slstst: dk gry, dk bl gry, brn gry, arg-aren, micromic, mod hd, sbfiss
460	470	50% Lst: wh - lt gry, dk yel or, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: pa brn gry - dk gry, lt gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		10% Slstst: dk gry, dk bl gry, brn gry, rdish brn, arg -aren, micromic, mod hd - hd, sbfiss
470	480	40% Lst: wh - lt gry, dk yel or, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: pa brn gry - dk gry, lt gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Slstst: dk gry, brn gry, rd brn, arg -aren mtx, micromic, tr-com calc, mod hd - hd, sbfiss
480	490	60% Lst: wh - lt gry, dk yel or, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: pa brn gry - dk gry, lt gry, fxln-microxln, rexlzd, mod hd, tr pyr, nil vis intxln por
		20% Slstst: dk gry, brn gry, rd brn, arg -aren mtx, micromic, tr-com calc, mod hd - hd, sbfiss
490	500	80% Lst: wh, lt gy, pa brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Slstst: dk gry, brn gry, rd brn, arg -aren mtx, micromic, tr-com calc, mod hd - hd, sbfiss
500	510	90% Lst: wh, lt gy, pa brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slstst: dk gry, brn gry, rd brn, arg -aren mtx, micromic, tr-com calc, mod hd - hd, sbfiss
510	520	80% Lst: wh, lt gy, pa yel brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Dol: lt gry, brn gry, dk gry, f-microxln, rexlzd, mod hd - hd, nil vis intxln por
		10% Slstst: med gry, dk gry, brn gry, rd brn, arg -aren mtx, micromic, tr-com calc, mod hd - hd, sbfiss
520	530	70% Lst: wh, lt gy, pa yel brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry, brn gry, dk gry, f-micrxln, rexlzd, mod hd - hd, nil vis intxln por
		10% Slstst: med gry, dk gry, brn gry, rd brn, arg -aren mtx, micromic, tr-com calc, mod hd - hd, sbfiss
530	540	70% Lst: wh, lt gy, pa yel brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry, brn gry, dk gry, f-microxln, rexlzd, mod hd - hd, nil vis intxln por
		10% Slstst: med gry, dk gry, arg -aren mtx, micromic, tr-com calc, mod hd - hd, sbfiss

From	To	OzBeta-1 Cuttings and Core descriptions
540	550	60% Lst: wh, lt gry, f-microxln, rexlzd, mod hd, nil vis intxln por 40% Dol: lt gry, brn gry, dk gry, f-microxln, rexlzd, mod hd - hd, nil vis intxln por 10% Slstst: med gry, dk gry, lt gry, arg -aren mtx, micromic, tr calc, mod hd - hd, sbfiss
550	560	60% Lst: wh, lt gry, f-microxln, rexlzd, mod hd, nil vis intxln por 30% Dol: lt gry, brn gry, dk gry, f-microxln, rexlzd, mod hd - hd, nil vis intxln por 10% Slstst: med gry, dk gry, brn gry, arg -aren mtx, micromic, tr calc, mod hd - hd, sbfiss
560	570	50% Lst: wh, lt gry, f-microxln, crptoxln, rexlzd, mod hd, nil vis intxln por 40% Dol: lt gry, med gry, f-micrxln, rexlzd, mod hd - hd, nil vis intxln por 10% Slstst: lt gry, med gry, dk gry, arg - aren mtx, micromic, tr calc, mod hd - hd, sbfiss
570	580	50% Dol: lt gry, med gry, f-microxln, rexlzd, mod hd, nil vis intxln por 40% Lst: wh, lt gry, f-microxln, crptoxln, rexlzd, nil vis intxln por 10% Slstst: lt gry, med gry, dk gry, arg - aren mtx, micromic, tr calc, mod hd - hd, sbfiss
580	590	60% Dol: lt gry, med gry, f-microxln, rexlzd, mod hd, nil vis intxln por 30% Lst: wh, lt gry, f-microxln, crptoxln, rexlzd, mod hd - hd, nil vis intxln por 10% Slstst: lt gry, med gry, dk gry, arg - aren mtx, micromic, tr calc, mod hd - hd, sbfiss
590	600	60% Dol: lt gry, med gry, f-microxln, rexlzd, mod hd, nil vis intxln por 30% Lst: wh, lt gry, f-microxln, crptoxln, rexlzd, mod hd - hd, nil vis intxln por 10% Slstst: lt gry, med gry, dk gry, arg - aren mtx, micromic, tr calc, mod hd - hd, sbfiss
601	601	a/a
Production hole cuttings from 601m		
601	605	a/a
605	610	50 - 80% Dol: lt gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por 20 - 40% Lst: wh - lt gry, f-microxln, rexlzd, mod hd, nil vis intxln por 10% Slstst: dk gry, brnsh gry, rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
610	620	50% Dol: lt gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por 20% Lst: wh - lt gry, f-microxln, rexlzd, mod hd, nil vis intxln por 10% Slstst: dk gry, brnsh gry, rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
620	630	60% Dol: lt gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por 30% Lst: wh - lt gry, f-microxln, rexlzd, mod hd, nil vis intxln por 10% Slstst: dk gry, brnsh gry, rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
630	640	80 - 70% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por 10 - 10% Lst: wh - lt gry, bcmg md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por 10 - 20% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
640	650	80% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por 10% Lst: wh - lt gry, bcmg md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por 10% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss



From	To	OzBeta-1 Cuttings and Core descriptions
650	660	70% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: wh - lt gry, bcmg md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
660	670	80% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: wh - lt gry, bcmg md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
670	680	20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
		10% Lst: pa grysh gn, dol, hd, blk
680	690	50% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por.
		20% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
		10% Lst: pa grysh gn, dol, hd, blk
690	700	60% Dol: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Lst: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
		10% Lst: pa grysh gn, dol, hd, blk
700	710	40 - 60% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		20 - 40% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10 - 20% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
		10 - 20% Lst: pa grysh gn, dol, hd, blk
710	720	40% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		30% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Slstst: med gry - dk gry - pa rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
		10% Lst: pa grysh gn, dol, hd, blk
720	730	60% Slstst: rdsh brn, arg mtx, mod hd, micrmic, sbfiss - fiss
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: pa grysh gn, dol, hd, blk
730	740	50% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		30% Slstst: rdsh brn - med gry, arg mtx, mod hd, micrmic, sbfiss - fiss
		20% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: pa grysh gn, dol, hd, blk
740	750	50% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		30% Slstst: rdsh brn - med gry, arg mtx, mod hd, micrmic, sbfiss - fiss
		20% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: pa grysh gn, dol, hd, blk

From	To	OzBeta-1 Cuttings and Core descriptions
750	760	40% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		30% Slst: rdsh brn - med gry, arg mtx, mod hd, micrmic, sbfiss - fiss
		20% Lst: md gry - drk gry, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Lst: pa grysh gn, dol, hd, blk
760	770	50% Lst: lt gry - whf-microxln, rexlzd, mod hd, nil vis intxln por
		30% Slst: med gry, arg mtx, mod hd, micrmic, sbfiss - fiss
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
770	780	70% Lst: lt gry - whf-microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: med gry, arg mtx, mod hd, micrmic, sbfiss - fiss
780	790	60% Lst: lt gry - whf-microxln, rexlzd, mod hd, nil vis intxln por
		30% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: med gry, arg mtx, mod hd, micrmic, sbfiss - fiss
790	800	60% Lst: lt gry - whf-microxln, rexlzd, mod hd, nil vis intxln por
		30% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: med gry, arg mtx, mod hd, micrmic, sbfiss - fiss
800	810	70% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: med gry, arg mtx, micrmic, mod hd, sbfiss - fiss
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
810	820	50% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: med gry, arg mtx, micrmic, mod hd, sbfiss - fiss
820	830	50 - 70% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: rdsh brn - med gry, arg mtx, micrmic, mod hd, sbfiss - fiss
		30 - 50% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		0 - 10% Lst: pa grysh gn, dol, hd, blk
830	840	70% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: rdsh brn - med gry, arg mtx, micrmic, mod hd, sbfiss - fiss
840	850	50% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Slst: rdsh brn - med gry, arg mtx, micrmic, mod hd, sbfiss - fiss
		10% Lst: pa grysh gn, dol, hd, blk
850	860	70% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: rdsh brn - med gry, arg mtx, micrmic, mod hd, sbfiss - fiss

From	To	OzBeta-1 Cuttings and Core descriptions
860	870	50% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Slst: rdsh brn - med gry, arg mtx, micrmic, mod hd, sbfiss - fiss
		10% Lst: pa grysh gn, dol, hd, blk
870	880	50% Lst: lt gry - wh, f-microxln, rexlzd, mod hd, nil vis intxln por
		30% Dol: lt - med gry - dk gry - med brn, f-microxln, rexlzd, mod hd, nil vis intxln por
		20% Slst: rdsh brn - med gry, arg mtx, micrmic, mod hd, sbfiss - fiss
880	890	50% Lst: lt gry - wh, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, blk
890	900	60% Lst: lt gry - wh, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
900	910	70% Lst: lt gry - wh, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, blk
910	915	50% Lst: lt gry - med gry -med brnsh gry, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, tr nod pyr, blk
915	920	70% Lst: lt gry - med gry -med brnsh gry, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, tr nod pyr, blk
920	925	60% Lst: lt gry - med gry -med brnsh gry, microxln, rexlzd, mod hd, nil vis intxln por
		30% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, tr nod pyr, blk
925	925	60% Lst: lt gry - med gry -med brnsh gry, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, tr nod pyr, blk
		10% Sst: wh, vf - v, ang-sbang, mod wl srt, sil cmt, dol cmt, v fri- lse, slty, fr por
925	930	60% Lst: lt gry - med gry -med brnsh gry, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, tr nod pyr, blk
		10% Sst: wh, vf - v, ang-sbang, mod wl srt, sil cmt, dol cmt, v fri- lse, slty, fr por
930	935	60% Lst: med gry, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, tr nod pyr, blk
		10% Sst: wh, clr, vf - v, ang-sbang, mod wl srt, sil cmt, dol cmt, v fri- lse, slty, fr por

From	To	OzBeta-1 Cuttings and Core descriptions
935	940	60% Lst: med gry, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: lt gry - med - pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, mod hd, tr nod pyr, blk
		10% Sst: wh, clr grns, vf - v, ang-sbang, mod wl srt, sil cmt, dol cmt, v fri- lse, slty, fr por
940	945	40% Slst: med -dk gry, blk gry, aren mtx, dol, tr nod pyr, mod hd, blk
		40% Lst: med gry, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: med-dl gry, med - pa brn, f-microxln, rexlzd, slty - v slty, hd, nil vis intxln por
945	950	50% Slst: med -dk gry, blk gry, aren mtx, dol, tr nod pyr, mod hd, blk
		30% Lst: med gry, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: med-dl gry, med - pa brn, f-microxln, rexlzd, slty - v slty, hd, nil vis intxln por
950	955	40% Lst: med gry, microxln, rexlzd, mod hd, nil vis intxln por
		40% Dol: med - pa brn, f-microxln, rexlzd, slty - v slty, hd, nil vis intxln por
		20% Slst: med -dk gry, blk gry, aren mtx, dol, tr nod pyr, mod hd, blk
955	960	60% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: pa brn, f-microxln, rexlzd, slty - v slty, hd, nil vis intxln por
		20% Slst: med -dk gry, blk gry, aren mtx, dol, mod hd, blk
960	965	70% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, micromic, dol, mod hd, blk
965	970	80% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		10% Dol: pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, micromic, dol, mod hd, blk
970	975	80% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		10% Dol: pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, micromic, dol, mod hd, blk
975	980	80% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		10% Dol: pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: med -dk gry, blk gry, aren mtx, micromic, dol, mod hd, blk
980	990	80% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		10% Dol: pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: dk gry, blk gry, aren mtx, v micromic, mod hd, blk - sbfis
990	995	70% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		20% Dol: pa brn, f-microxln, rexlzd, hd, nil vis intxln por
		10% Slst: dk gry, blk gry, aren mtx, v micromic, mod hd, sbfis
995	1000	90% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		10% Slst: dk gry, blk gry, aren mtx, v micromic, mod hd, sbfis
1000	1005	100% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		tr Slst: dk gry, blk gry, aren mtx, v micromic, mod hd, sbfis

From	To	OzBeta-1 Cuttings and Core descriptions
1005	1010	60% Lst: med gry - lt gry - pa brn, microxln, rexlzd, mod hd, nil vis intxln por
		40% Sst: wh, cl qtz, vf-f, silty, sbang-sbrndmod wl srt, calc cmt ip, lse, fri, gd-fr por.
		tr Slstst: dk gry, blk gry, aren mtx, v micromic, mod hd, sbfis
1010	1020	60% Lst: lt gry - pa brn, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		40% Slstst: dk gry -dk brn gry, arg - aren -v aren, sl calc, sl dol, tr micromic, sbfiss-blky
1020	1025	70% Lst: lt gry - pa brn, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		30% Slstst: dk gry -dk brn gry, arg - aren -v aren, sl calc, sl dol, tr micromic, sbfiss-blky
1025	1030	80% Lst: lt gry - pa brn, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		20% Slstst: dk gry -dk brn gry, arg - aren -v aren, sl calc, sl dol, tr micromic, sbfiss-blky
1030	1035	90% Lst: lt gry - pa brn, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		10% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, tr micromic, sbfiss-blky
1035	1040	80% Lst: lt gry - pa brn, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		20% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, tr micromic, sbfiss-blky
1040	1045	80% Lst: lt gry - pa brn, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		20% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, tr micromic, sbfiss-blky
1045	1050	60% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		30% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		10% Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, rr pyr, v fri- mod hd, pr vis por
1050	1055	70% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		20% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		10% Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, rr pyr, v fri- mod hd, pr vis por
1055	1060	80% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		10% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		10% Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, rr pyr, v fri- mod hd, pr vis por
1060	1065	90% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		10% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		tr Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, rr pyr, v fri- mod hd, pr vis por
1065	1070	70% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		30% Slstst: dk gry -dk brn gry- olv gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
1070	1075	80% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		20% Slstst: dk gry -dk brn gry- olv gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
1075	1080	90% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln po
		10% Slstst: dk gry -dk brn gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky

From	To	OzBeta-1 Cuttings and Core descriptions
1080	1085	90% Lst: med lt gry, microxln, rexlzd, sli silty, mod hd, nil vis intxln por
		10% Slstst: dk gry -dk brn gry- olv gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		tr Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, rr pyr, v fri- mod hd, pr vis por
1085	1090	80% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		20% Slstst: dk brn gry- olv gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		tr Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, v fri- mod hd, rr pyr, pr vis por
1090	1095	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		10% Slstst: dk brn gry- olv gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		rt% Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, v fri- mod hd, rr pyr, pr vis por
1095	1100	100% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		tr Slstst: dk brn gry- olv gry, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		tr Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, v fri- mod hd, rr pyr, pr vis por
1100	1105	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		10% Slststdk brn gry- olv gry, gry blk, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
		tr Sst: wh -v lt gry, vf-grdg slt, sbrnd, sbsph-sbelng, mod - pr srt, wh arg mtx, calc cmt, dol cmt ip, v fri- mod hd, rr pyr, pr vis por
1105	1110	100% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln po
		tr Slstst: dk brn gry- olv gry, gry blk, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
1110	1115	100% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		tr Slstst: dk brn gry- olv gry, gry blk, arg - aren -v aren, calc, sl dol, micromic, tr pyr, sbfiss-blky
1115	1120	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por.
		10% Slststdk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky.
1120	1125	80% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por.
		10% Slststdk brn gry- olv gry, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		10% Sstltf gry - wh, qtz,vf, sbrnd - rnd, wl srt, arg mtx, calc cmt, mod hd, no vis por
1125	1130	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		10% Slstst: dk brn gry- olv gry - dk gry, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		tr Sst: lt gry - wh, qtz,vf, sbrnd - rnd, wl srt, arg mtx, calc cmt, mod hd, no vis por
1130	1135	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		10% Slstst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1135	1140	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		10% Slstst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky

From	To	OzBeta-1 Cuttings and Core descriptions
1140	1145	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		10% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1145	1150	90% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		10% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1150	1155	80% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		20% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1155	1160	70% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		20% Dol: pa gry - med yel brn, microxln, rexlzd, hd, nil vis intxln por
		10% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1160	1165	80% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		20% Dol: pa gry - med yel brn, microxln, rexlzd, hd, nil vis intxln por
		tr Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1165	1170	70% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		20% Dol: pa gry - med yel brn, microxln, rexlzd, hd, nil vis intxln por
		10% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1170	1175	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln po
		30% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		10% Dol: pa gry - med yel brn, microxln, rexlzd, hd, nil vis intxln por
1175	1180	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		40% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		tr Dol: pa gry - med yel brn, microxln, rexlzd, hd, nil vis intxln por
1180	1185	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		40% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		tr Dol: pa gry - med yel brn, microxln, rexlzd, hd, nil vis intxln por
1185	1190	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		30% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		10% Sstlt gry - clr, qtz, f,sb ang, wl srt, calc cmt, fri - hd, pr vis por
1190	1195	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por, no fluor.
		40% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
1195	1200	60% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		40% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
1200	1205	70% Slst: dk brn gry- olv gry, gry blk, arg - aren -v aren, dol, micromic, tr pyr, sbfiss-blky
		30% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por

From	To	OzBeta-1 Cuttings and Core descriptions
1205	1210	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		40% Slst: olv gry, gry blk, arg - aren -v aren, calc, micromic, tr pyr, sbfiss-blky
1210	1215	70% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		30% Slst: olv gry, gry blk, arg - aren -v aren, calc, micromic, tr pyr, sbfiss-blky
1215	1220	70% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		30% Slst: olv gry, gry blk, arg - aren -v aren, calc, micromic, tr pyr, sbfiss-blky
1220	1225	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		40% Slst: olv gry, gry blk, arg - aren -v aren, calc, micromic, tr pyr, sbfiss-blky
<b>Core point</b>		
1125.7	1226.3	60% Lst: med lt gry, microxln, rexlzd, mod hd, sli silty, nil vis intxln por
		40% Slst: olv gry, gry blk, arg - aren -v aren, calc, micromic, tr pyr, sbfiss-blky
1226.3	1258.2	100% Lst: olv blk -brn gry, dk gry, med gry lams occ, f-microxln, rr cyptxln, hd, occ slty lams, rr wh calc lams, rr blk chrt, tr pyr nod & dissem pyr assoc w/ slty lams, rr blk blebs assoc w/ slty lams, wh 1cm calcite band @ 1243.3m w/ dissem pyr incl, pyr foss shell 1mm @ 1237m, pred sb mm - 3mm lam, tr wh calc lams <1mm, rr scour surf, nil vis intxln por
1258.2	1281.2	100% Lst: cht, olv blk -brn gry, dk gry, med gry lams occ, ab sb mm slt lam, ab >cm cht lams
1281.2	1282.9	100% Lst: v dk gry - brn gry, f-microxln, hd, cmn sb mm slt lam, rr lam filled w/ trnslet cypxln min, nil vis intxln por
1282.9	1284.3	100% Lst: v dk gry - brn gry, f-microxln, hd, ab sb mm slt lam, nil vis intxln por
1284.3	1285.4	100% Lst: dk gry, fxln, hd, ab sb mm slt lam, nil vis intxln por
1285.4	1292	100% Lst: v dk gry - brn gry, f-microxln, hd, ab sb mm slt lam, sps cm cht lam, nil vis intxln por
1292	1299.9	100% Lst: v dk gry - brn gry, f-microxln, hd, ab sb mm slt lam, cmn cm dk slt lam, nil vis intxln por
1299.9	1302.6	100% Slst: v dk gry, aren, v hd, cmn sb mm lam incr w/ dpth, nil vis por
1302.6	1306.1	100% Lst: v dk gry, f-microxln, hd, ab sb mm slt lam, cmn cm dk slt lam, nil vis intxln por
1306.1	1308.4	100% Lst: dk - med gry, f-microxln, hd, ab sb mm slt lam, cmn cm dk slt lam, nil vis intxln por
1308.4	1310.4	100% Lst: dk - med gry, f-microxln, hd, ab mm slt lam, cmn cm dk slt lam, nil vis intxln por
1310.4	1319.9	100% Lst: olv brn gry, microxln, v hd, nil vis intxln por



From	To	OzBeta-1 Cuttings and Core descriptions
1319.9	1323.8	100% Lst: dk - med gry, f-microxln, hd, ab sb mm slt lam, sps cm dk slt lam, nil vis intxln por
1323.8	1327	100% Lst: olv brn gry
1327	1330	100% Dol: dk gry, microxln, hds - v hd
1330	1350.8	100% Dol: v dk gry- blk gry, f-microxln, hds - v hd, cmn - tr dl gld fluor, no cut.
1350.8	1351.1	100% Dol Slstsv dk gry, arg, hd, ab pyr nods, sb mm lams lt slt, no vis por
1351.1	1352.5	100% Dol: med gry, fxln,v hd, r glauc - anhy, r cm lam dol grst, r sb vert frac anhy fld, nil - pr vis por
1352.5	1353.1	100% Dol: lt gry - wh brn, c-fxln, brit - hrd, sps sb mm - mm vugs, rr sb vert fracs, fr vis por
1353.1	1353.9	100% Dol: lt gry - wh brn, cxln, brit - hrd, sps sb mm - mm vugs, rr sb vert fracs, mnr anhy in fracs,fr vis por
1353.9	1357	100% Dol: lt gry, fxln, hrd, rr cm styl lam, nil - pr vis por
<b>Cuttings</b>		
1357	1362	70% Dol: lt gry, v f fxln, hd, r anhy, nil vis por
		20% Dol Slstst:dk gry, arg, hd, dol, nil vis por
		10% Cht: lt brn - med gry, crpxln, v hd, nil vis por
1362	1365.7	100% Dol: med - dk gry, fxln, v hd, r mm styl, r sb vrt fracs cht fld, pr vis por
1365.7	1366.3	90% Dol: lt gry, v f fxln, hd, r anhy, nil vis por
		10% Slstst: dk gry, arg, hd, dol, nil vis por
1366.3	1381.1	100% Dol: med - dk gry, fxln, v hd, rr mm styl, r cm vug anhy fld, pr vis vug por
1383.2	1386	100% Dol: dk gry,f-microxln,v hd, r cht bnd, rr sb mm styl
1386	1389.2	100% Dol: med gry, f-cxln, v hd, r sb mm styl, rr mm stylnod bd, r sb vert fracs anhy fld, r cm vug anhy - pyr fld, pr vis vug por
1389.2	1398.4	100% Dol: lt gry,fxln, v hd, r sb mm styl, cmn sb mm vugs open, rr mm vugs anhy fld, fr vis vug por
1398.4	1402.4	100% Dol: lt bl gry - med gry, lt brn gry, fxln, v hd, rr styl, cm dolomdst lam, no vis por

From	To	OzBeta-1 Cuttings and Core descriptions
1402.4	1405.1	100% Dol: med gry, vfxln, v hd, r cm cht lam, rr sb mm styl, no vis por
1405.1	1405.8	100% Dol: drk gry, fxln, v hd, r sb mm lam, rr cm grst lam, no vis por
1405.8	1406.2	100% Dol: drk gry, med gry, fxln, v hd, rr grst, pr inf por
1406.2	1407.5	100% Granite: lt-med gry,qtz, f-med, sbrnd-ang, elng, mod-pr srt, wh arg mtx, sli calc cmt, lse, abd mica, com pyr, com altd fspar, pr inf por
1407.5	1409	100% Granite: lt-med gry,qtz, f-mxln, ang, mod srt, abd biotite & musc, com pyr, com altd fspar
1409	1410	100% Granite: lt-med gry,qtz, f-mxln, ang, mod srt, abd biotite & musc, com pyr, com altd fspar,
1410	1415	100% Granite: lt-med gry, qtz, m - fxln, ang, pr srt, abd biotite & musc, com pyr, com frsh pnksh fspar,
1415	1420	100% Granite: as above
1420	1430	100% Granite: as above
1430	1441	100% Granite: as above