

Form MMS 123A/123S - Electronic Version

Application for Bypass

Lease G23018 **Area/Block** AT 138 **Well Name** 001 **ST** 00 **BP** 01 **Well Type** Exploration
Application Status Approved **Operato** 00078 **Operator** Chevron U.S.A. Inc.

General Well Information

API Number 608184006801	Approval Date 06/07/2008	Approved By David Trocquet
Date of Request 05/29/2008	Req Spud Date 05/30/2008	Kickoff Point 22190.0
Water Depth (ft.) 3490	Drive Size (in) 36	Mineral Code Hydrocarbon
RKB Elevation 72	Drive Depth 3880	Subsea BOP Yes
Verbal Approval Date 05/28/2008	Verbal Approval By David Trocquet	

Proposed Well Location

SURFACE LOCATION

LEASE (OCS) G23018	Area/Block AT 138	Authority Federal Lease
Entered NAD 27 Data	Calculated NAD 27 Departures	Calculated NAD 27 X-Y
Lat: 27.80131333	S 7744.0	X 786387.024469
Lon: -89.64208444	E 5613.0	Y 1.0097824014533E7
Surface Plan	Plan Lease (OCS)	Area/Block null

BOTTOM LOCATION

LEASE (OCS) G23018	Area/Block AT138	
Entered NAD 27 Data	Calculated NAD 27 Departures	Calculated NAD 27 X-Y
Lat: 27.80103389	S 7642.0	X 786402.800796
Lon: -89.64202889	E 5597.0	Y 1.009772201523E7
Bottom Plan	Plan Lease (OCS)	Area/Block null

Approval Comments

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Geologic Information

H2S Designation Absent	H2S TVD
Anticipated Geologic Markers	
Name	Top MD
Base of Salt	20404

Rig Information

RIG SPECIFICATIONS		ANCHORS No	
Rig Name	ENSCO 7500		
Type	SEMISUBMERSIBLE	ID Number	99908
Function		Constructed Year	2000
Shipyard		Refurbished Year	
RATED DEPTHS			
Water Depth	8100	Drill Depth	30000
CERTIFICATES			
ABS/DNV	12/31/2010	Coast Guard	02/10/2011
SAFE WELDING AREA			
Approval Date	10/31/2000	District	4.0
Remarks			

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Question Information

Number	Question	Response	Response Text
1	Will you maintain quantities of mud and mud material (including weight materials and additives) sufficient to raise the entire system mud weight 1/2 ppg or more?	YES	
2	If hydrocarbon-based drilling fluids were used, is the drilling rig outfitted for zero discharge, and will zero discharge procedures be followed?	N/A	
3	If drilling the shallow casings strings riserless, will you maintain kill weight mud on the rig and monitor the wellbore with an ROV to ensure that it is not flowing?	YES	
4	If requesting a waiver of the conductor casing, have you submitted a log to MMS G&G that is within 500 feet of the proposed bottom hole location for the proposed surface casing point?	N/A	
5	Will the proposed operation be covered by an EPA Discharge Permit? (please provide permit number in comments for this question)	YES	GMG290132
6	Will all wells in the well bay and related production equipment be shut-in when moving on to or off of an offshore platform, or from well to well on the platform? If not, please explain.	N/A	

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Permit Attachments

File Type	File Description	Status
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Required Attachments

pdf	Drilling prognosis and summary of drilling, cementing, and mud processes	Attached
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Optional/Supplemental Attachments

pdf	Directional Program	Attached
pdf	Bottom Hole Location Plat	Attached
pdf	Wellbore Schematic	Attached
pdf	Engineering Calculations	Attached

Contacts Information

Name	John Connor
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Well Design Information

Interval Number 1			Type Casing		Name Conductor		
Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
1	28.0	218.0	X-52	2437.0	952.0	4310. 4310.	8.6
GENERAL INFORMATION			PREVENTER INFORMATION			TEST INFORMATION	
Hole Size (in)	32.0		Type	No Preventers		Annular Test (psi)	0.0
Mud Weight (ppg)	0.0		Size (in)	N/A		BOP/Diverter Test	0.0
Mud Type Code	Gelled Sea		Wellhead Rating (psi)	0		Test Fluid Weight	0.0
Fracture Gradient	0.0		Annular Rating (psi)	0		Casing/Liner Test	0.0
Liner Top Depth (ft)	0.0		BOP/Diverter Rating	0		Formation Test (ppg)	0.0
Cement Volume (cu ft)	1031.0						

Interval Number 2			Type Casing		Name Conductor		
Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
1	23.0	448.0	X-80	12170.0	12700.0	3590. 3590.	8.6
2	22.0	328.3	X-80	9545.0	9457.0	3630. 3630.	8.6
3	22.0	224.3	X-80	6360.0	3870.0	4434. 4434.	8.6
4	22.0	170.2	X-60	3668.0	1853.0	6287. 6287.	11.2
GENERAL INFORMATION			PREVENTER INFORMATION			TEST INFORMATION	
Hole Size (in)	26.0		Type	Blowout		Annular Test (psi)	7500.0
Mud Weight (ppg)	11.6		Size (in)	18.75		BOP/Diverter Test	11000.0
Mud Type Code	Water Base		Wellhead Rating (psi)	15000		Test Fluid Weight	8.6
Fracture Gradient	11.9		Annular Rating (psi)	10000		Casing/Liner Test	2500.0
Liner Top Depth (ft)	0.0		BOP/Diverter Rating	15000		Formation Test (ppg)	11.9
Cement Volume (cu ft)	2867.0						

Interval Number 3			Type Liner		Name Surface		
Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
1	18.0	117.0	P-110	6680.0	2110.0	6300. 6300.	11.2
2	17.875	93.5	P-110	5380.0	1270.0	7782. 7782.	11.5

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Well Design Information

GENERAL INFORMATION		PREVENTER INFORMATION		TEST INFORMATION	
Hole Size (in)	21.0	Type	Blowout	Annular Test (psi)	7000.0
Mud Weight (ppg)	11.6	Size (in)	18.75	BOP/Diverter Test	11000.0
Mud Type Code	Synthetic	Wellhead Rating (psi)	15000	Test Fluid Weight	11.3
Fracture Gradient	14.5	Annular Rating (psi)	10000	Casing/Liner Test	2000.0
Liner Top Depth (ft)	5800.0	BOP/Diverter Rating	15000	Formation Test (ppg)	14.5
Cement Volume (cu ft)	1126.0				

Interval Number 4		Type Liner		Name Intermediate			
Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
1	16.04	109.6	HCQ-	10385.0	4160.0	7094. 7094.	11.1
2	16.0	97.0	HCQ-125	7860.0	2990.0	15466 15466	14.0

GENERAL INFORMATION		PREVENTER INFORMATION		TEST INFORMATION	
Hole Size (in)	19.0	Type	Blowout	Annular Test (psi)	7000.0
Mud Weight (ppg)	14.2	Size (in)	18.75	BOP/Diverter Test	11000.0
Mud Type Code	Synthetic	Wellhead Rating (psi)	15000	Test Fluid Weight	13.6
Fracture Gradient	16.4	Annular Rating (psi)	10000	Casing/Liner Test	6100.0
Liner Top Depth (ft)	3602.0	BOP/Diverter Rating	15000	Formation Test (ppg)	16.3
Cement Volume (cu ft)	286.0				

Interval Number 5		Type Liner		Name Intermediate			
Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
1	13.625	88.2	HCQ-125	10030.0	5930.0	20666 20666	15.4

GENERAL INFORMATION		PREVENTER INFORMATION		TEST INFORMATION	
Hole Size (in)	16.5	Type	Blowout	Annular Test (psi)	7000.0
Mud Weight (ppg)	15.5	Size (in)	18.75	BOP/Diverter Test	11000.0
Mud Type Code	Synthetic	Wellhead Rating (psi)	15000	Test Fluid Weight	15.8
Fracture Gradient	16.7	Annular Rating (psi)	10000	Casing/Liner Test	1900.0
Liner Top Depth (ft)	15200.0	BOP/Diverter Rating	15000	Formation Test (ppg)	16.7
Cement Volume (cu ft)	236.0				

Interval Number 6		Type Liner		Name Intermediate			
Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)

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Well Design Information

1	11.875	71.8	HCQ125	10720.0	7190.0	22190 22190	15.8
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GENERAL INFORMATION			PREVENTER INFORMATION			TEST INFORMATION	
Hole Size (in)	13.5		Type	Blowout		Annular Test (psi)	7000.0
Mud Weight (ppg)	15.6		Size (in)	18.75		BOP/Diverter Test	11000.0
Mud Type Code	Synthetic		Wellhead Rating (psi)	15000		Test Fluid Weight	15.8
Fracture Gradient	17.2		Annular Rating (psi)	10000		Casing/Liner Test	2100.0
Liner Top Depth (ft)	20436.0		BOP/Diverter Rating	15000		Formation Test (ppg)	16.4
Cement Volume (cu ft)	112.0						

Interval Number 7			Type Liner			Name Intermediate	
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Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
1	9.625	36.0	SET	4550.0	1570.0	24674 24670	16.0

GENERAL INFORMATION			PREVENTER INFORMATION			TEST INFORMATION	
Hole Size (in)	12.25		Type	Blowout		Annular Test (psi)	7000.0
Mud Weight (ppg)	15.9		Size (in)	18.75		BOP/Diverter Test	11400.0
Mud Type Code	Synthetic		Wellhead Rating (psi)	15000		Test Fluid Weight	16.0
Fracture Gradient	16.8		Annular Rating (psi)	10000		Casing/Liner Test	1600.0
Liner Top Depth (ft)	22050.0		BOP/Diverter Rating	15000		Formation Test (ppg)	16.8
Cement Volume (cu ft)	104.0						

Interval Number 8			Type Liner			Name Intermediate	
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Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
1	9.375	39.0	HCQ-125	9330.0	4850.0	27004 27000	16.3

GENERAL INFORMATION			PREVENTER INFORMATION			TEST INFORMATION	
Hole Size (in)	11.375		Type	Blowout		Annular Test (psi)	7000.0
Mud Weight (ppg)	16.3		Size (in)	18.75		BOP/Diverter Test	11400.0
Mud Type Code	Synthetic		Wellhead Rating (psi)	15000		Test Fluid Weight	16.3
Fracture Gradient	17.2		Annular Rating (psi)	10000		Casing/Liner Test	1200.0
Liner Top Depth (ft)	21950.0		BOP/Diverter Rating	15000		Formation Test (ppg)	17.0
Cement Volume (cu ft)	113.0						

Interval Number 9			Type Open Hole			Name Open Hole	
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Section Number	Casing Size (in)	Casing Weight (lb/ft)	Casing Grade	Burst Rating (psi)	Collapse Rating (psi)	Depth (ft) MD TVD	Pore Pressure (ppg)
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Well Design Information

1						31150	31150	16.3
GENERAL INFORMATION			PREVENTER INFORMATION			TEST INFORMATION		
Hole Size (in)	8.5		Type	Blowout		Annular Test (psi)	7000.0	
Mud Weight (ppg)	16.3		Size (in)	18.75		BOP/Diverter Test	11400.0	
Mud Type Code	Synthetic		Wellhead Rating (psi)	15000		Test Fluid Weight	0.0	
Fracture Gradient	0.0		Annular Rating (psi)	10000		Casing/Liner Test	0.0	
Liner Top Depth (ft)	0.0		BOP/Diverter Rating	15000		Formation Test (ppg)	0.0	
Cement Volume (cu ft)	0.0							

PAPERWORK REDUCTION ACT OF 1995 (PRA) STATEMENT: The PRA (44 U.S.C. 3501 et seq. Requires us to inform you that we collect this information to obtain knowledge of equipment and procedures to be used in drilling operations. MMS uses the information to evaluate and approve or disapprove the adequacy of the equipment and/or procedures to safely perform the proposed drilling operation. Responses are mandatory (43 U.S.C. 1334). Proprietary data are covered under 30 CFR 250.196. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB Control Number. Public reporting burden for this form is estimated to average 2? hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to the

**Application For
Permit to Drill**

DRILLING PROGRAM

**OCS-G-23018 #1
Atwater Valley 138
“Sturgis North Prospect”**

ENSCO 7500

**CHEVRON USA
DEEPWATER EXPLORATION AND PROJECTS**

December 2007

TABLE OF CONTENTS

- I. BLOWOUT PREVENTION
- II. WELL CONTROL
- III. DRILLING NOTES
- IV. CEMENTING
- V. CEMENTING SHALLOW WATER FLOW ZONES
- VI. POLLUTION PREVENTION AND CONTROL
- VII. MINIMUM MUD QUANTITIES
- VIII. DRILLING MUD COMPONENTS
- IX. MMS APD INFORMATION SHEET (MMS-123S Form)
- X. DRILLING PROCEDURE
- XI. REQUESTED WAIVERS
- XII. WELLBORE SCHEMATIC
- XIII. PORE PRESSURE
- XIV. CASING DESIGN
- XV. TESTING OF CASING STRINGS
- XVI. GEOLOGIC PROGRAM LETTER
- XVII. RIG AND BOP SPECIFICATIONS

BLOWOUT PREVENTION

1. Applicable Federal and State regulations will be adhered while drilling of this well.
2. Drilling Contractor will have BOP test procedures on file. Test BOPs at low pressure (200-300 psi) and at high pressure as listed on APD Info Sheet at least every fourteen (14) days. BOP's will not be tested prior to drilling out each casing shoe unless the 14 day test requirement is due. This is provided the previously approved test pressure meets the approved test pressure for the next hole section. The blind rams will be tested initially and such that no more than 30 days shall elapse between tests. Blind ram test pressure will be that of the last casing string set at that time. BOP test pressures will be recorded on pin recorder and put in file. Each test and pressure will be noted in IADC Report. BOP's will be functioned weekly per MMS requirements and documented on the Tour Report.
3. Well control drills (pit drills) shall be performed weekly with each crew (well conditions permitting) on-board in accordance with current MMS Regulations. Results will be recorded on Tour Reports. A copy of the well control procedure will be posted on the rig floor
4. Prior to drilling out, all casing will be tested as shown on APD cover sheet (Form: MMS-123S), adjusted for current mud weight. Results of these tests will be recorded on IADC Report.
5. Separate full opening safety valves and inside BOPs are required for each size drill pipe in use and are to be tested bi-weekly with BOPs.
6. No ported floats shall be run if the lower manual kelly valve on the top drive is not strippable.
7. The maximum casing pressure which can be used during well killing operations will be posted near the driller.
8. Use drill pipe floats at all times during normal drilling operations. Check with your supervisor before leaving a float out, if such becomes necessary.
9. Prior to spud, be sure all toolpushers, drillers and crews are thoroughly familiar with and understand Chevron procedures for handling well kicks and possible blowouts. A list of personnel on board the rig who have completed approved well control courses will be maintained. The list will show names, job titles, specific training, names and dates of courses completed.
10. Before a trip, mud shall be properly conditioned by circulating bottoms up, or if circulating is not considered necessary, document on the IADC Report as required in 30 CFR Part 250.60.
11. On trips, the annulus shall be filled before the change in the mud level decreases the hydrostatic pressure 75 psi or every 5 stands of drill pipe, whichever gives a lower decrease in hydrostatic pressure. Post the number of stands of drill pipe and drill collars to be pulled and the equivalent fill-up requirements. Driller will constantly observe PVT and trip tank volume to ensure safe hole conditions. A trip book showing amount pulled and fill-up required will be maintained.
12. Keep continuous record of amounts used to fill hole on trips.
13. Conduct and document Pre-Operations Safety Meetings at the beginning of drilling operations.

WELL CONTROL

The diverter system and BOP stack will be installed as shown in this program document. The rig will have a hydraulic accumulator system which is supplied by electric pumps. Well Control procedures to be utilized are as follows:

Well control procedure while drilling below 22" casing (hard shut-in/choke closed).

At first indication of a kick the Driller will:

1. Sound the alarm.
2. Pick up off bottom and shut down the pumps.
2. Shut the well in using the Driller's Chair WELL CONTROL BUTTON.
 - The WELL CONTROL BUTTON closes annular and opens both bleed valves.
 - Verify the well is shut in (check riser and choke manifold set-up)
3. Record pressures.
4. Notify the Ensco 7500 DP control room, the Ensco OIM and Chevron Drilling Representative of Alert Drilling Status.
5. Space out drill pipe for potential hang-off on the middle pipe ram.
6. If deemed necessary, close middle pipe ram and hang-off. Ensure that EDS (Emergency Disconnect System) is properly configured.
7. Open annular and close bleed valves if hang off procedures are followed.
 - If influx is near stack, displace stack gas by pumping down kill line through upper kill valves out bleed off valves and up choke line before opening annular preventer.
8. Open lower inner and outer choke line valves.
9. Bump float and record SIDPP. Bleed off any trapped pressure.
10. The kick will be circulated out using a constant bottomhole pressure method based on the surface pressure, and the size of the influx.

Well control procedures while tripping below 22" casing (hard shut-in/choke closed).

At the first indication the well is flowing the Driller will:

1. Sound the alarm.
2. Install a full opening safety valve in the open position and spaceout for potential hang off on the middle pipe rams. Close the safety valve.
3. Shut the well in using the Driller's Chair "WELL CONTROL BUTTON"
 - The WELL CONTROL BUTTON closes the annular and opens both bleed valves.
 - Verify the well is shut in (check riser and choke manifold set-up)
4. Record pressures.
5. Notify the Ensco 7500 DP control room, the Ensco OIM and Chevron Drilling Representative of Alert Drilling Status.
6. Appropriate action to kill the well depends on surface pressure, depth of bit, and size of influx.

DRILLING NOTES

1. When necessary to work pipe, keep pipe moving up and down. Rotating alone is not considered sufficient.
2. While drilling, use steel rotary hose or 7500 psi test rubber hose.
3. Fully describe damaged or lost equipment on Tour Reports.

CEMENTING

1. Have lab test all cement slurries designed for use in well.
2. Record number of hours circulating and conditioning mud prior to pumping cement on all casing strings on Morning and IADC Report.
3. Record on IADC Report if pipe was reciprocated and/or rotated during cement job.
4. Based on actual depths the cement volumes will be recalculated and adjusted.

CEMENTING SHALLOW WATER FLOW ZONES IN DEEP WATER WELLS

The cementing program for the conductor and surface casings for this well has been evaluated and designed considering the best practices contained in API RP 65. Best practices utilized are included in the procedures section.

1. The location was selected to minimize drilling of formations which could trap shallow pressure in the riserless interval, by interpreting shallow seismic and offset information. However, a shallow water flow (SWF) potential has been identified on seismic at +/-4473' RKB. All fluids pumped during the cementing operations are designed to keep a pressure overbalance in the openhole at all times. Volumes of pad mud and cement at the rigsite are sufficient to cover contingencies due to mechanical problems or higher than expected pore pressures to avoid displacing the wellbore to seawater.
2. A 28" conductor string is set to prevent losses while drilling and cementing with weighted fluids in the next conductor hole section, where 22" casing is run.
3. The ROV will be on bottom to monitor throughout the riserless drilling and cementing of the 28" and 22" casing strings. The ROV will remain on bottom after the cement jobs to ensure there is no flow.

POLLUTION PREVENTION AND CONTROL

1. Pollution and waste disposal in drilling operations shall follow guidelines established in 30 CFR Part 250.40. Additionally we will follow guidelines concerning discharges that are spelled out in NPDES General Permit No. GMG290132, or as stated in permit.

MINIMUM MUD QUANTITIES

CHEMICAL

Barite

BELOW SURFACE HOLE

sufficient to raise mud density 0.5 ppg

- *Gel 200 sacks
- * During water-based mud use only

DRILLING MUD COMPONENTS

The drilling mud will contain some or all of the following:

Fresh Water	Polysaccharide	Defoamer
Bentonite	Pregelatinized Starch	Sodium Bicarb
Barite	Xanthum Gum	Lime
Sodium/Potassium Hydroxide	Gilsonite	Sapp
Lignite	Ground Nut Hulls/Mica	Polyacrylamide
Chrome Lignosulfonate	Calcium Carbonate	Polyacrylate
Detergent	Ultra Seal (cellulose fiber)	Lime/Gypsum
PAC	IO (Synthetic Oligomer)	Polymerized Fatty Acids
Blended Acids (proprietary)	Calcium Chloride	Olic Acid
Organophillic Clay	1618 Olefin	NaCl (sodium chloride)
PHPA	amphoteric polymer (Clay Seal or Clay Trol)	
Graphite	Diatomaceous Earth	

Supplemental APD Information Sheet

1. OPERATOR NAME Chevron U.S.A.			5. WELL NAME (Proposed) OC S-G 23018 #1			6. TYPE OF WELL ☒ EXPLORATORY ☐ DEVELOPMENT			11. WATER DEPTH 3,480'			12. ELEVATION AT KB 72'											
2. API WELL NO. (Proposed) (12 Digits) TBD			7. SIDETRACK NO. (Proposed)			8. BYPASS NO. (Proposed)			13. H2S DESIGNATION ☐ KNOWN ☐ UNKNOWN ☒ ABSENT														
4. TOTAL DEPTH (Proposed) MD: XPC TVD: 24,670'			9. RIG NAME Enasco 7500			10. RIG TYPE Semi-Sub			14. H2S ACTIVATION PLAN DEPTH FT (TVD) NA														
15. ENGINEERING DATA																							
Hole Size (in.)	Casing (Indicate if Liner)	Casing Size (in.)	Weight	Burst Rating	Type of Connection	MASP (psi) / MAWP (psi)	Safety Factors				Casing		Shoe	Well-head Rating (psi)	BOP Size (in)	Rated BOP Working Pressure Annular Ram (psi)	Test Pressures			Drilling Fluid Type (oil base, water base, synthetic)			
							B	C	T	TVD	Top of Liner MD	Casing Depth					BOP Annular Ram (psi)	Casing Test Casing (psi)	Shoe Test (ppg)		Cement #3		
36	Structural Casing	36	728.24	5330	RL-4HC							3,660									Seawater		
		36	X-60 5270		RL-4F							3,870											
			373.80	2527																			
			X-52 1050																				
32	Conductor Casing	28	218	2,440	RL-4SL							4,350						n/a	n/a	1045	Seawater		
			X-52 950									4,350											
26	Conductor Casing	23	448	12,170	none	10,889						3,602											
			X-80 12,700			11,416	1.23	14.93	7.02			3,602											
		22	328	9,545	H-900	4,533						3,640											
			X-80 8,457			5,004	2.55	11.93	3.23			3,640											
		22	224.28	6,364	S-90 MIT	4,533						4,442											
			X-80 3,073			5,004	1.70	3.62	2.34			4,442											
		22	170.2	3,580	S-80NT	4,533						6,300											
			X-60 1,816			5,004	1.10	1.00	1.33			6,300	11.2	11.6	11.9	15,000	18 3/4	10M	7,500	2,600	11.9	2878	Water Base
			X-60 1,816			5,004	1.10	1.00	1.33			6,300	11.2	11.6	11.9	15,000	18 3/4	10M	7,500	2,600	11.9	2878	Water Base
21	Surface Liner	18	117.0	6,680	Hydri 511	4,533						5,800	6,300										
			P-110 2,110			5,004	2.30	2.60	6.01			6,300	7,800										
		17 7/8	93.50	5,380	Hydri 521	4,533						6,300	7,800										
			P-110HC 1,270			5,004	1.97	1.33	6.39			11.5	11.6	14.5									
19	Intermediate Liner	16	109.61	10,385	SLSF	10,889						3,592	7,000										
			HQ-125HP 4,160			11,416	1.05	3.13	2.11			7,000	15,500										
		16	97.0	8,733	SLSF	10,889						7,000	15,500										
			HQ-125 2,990			11,416	1.23	1.05	2.19			13.5	13.6	16.4									
16 1/2	Intermediate Liner	13 5/8	88.2	10,030	SLSF	10,889						15,200	20,890										
			Q-125HC 5,930			11,416	3.01	1.33	3.20			15,200	20,890										
13 1/2	Intermediate Liner	11 7/8	71.8	10,720	Hydri 513	10,889						20,450	22,841										
			HQ-125 7,190			11,416	4.89	2.01	4.40			20,450	22,841										
12 1/4	Intermediate Liner	9 5/8	36	4,600		10,553						22,050	24,674										
			EX-80 1,370		XPC	11,075	2.74	1.01	10.99			22,050	24,674										
11 3/8	Intermediate Liner	9 3/8	39.0	9,670	SLF	10,889						21,950	27,004										
			HQ-125 4,850			11,416	4.53	1.89	5.88			21,950	27,004										
16. CONTACT NAME Christine Beirger						17. CONTACT PHONE NO. 832-854-4012						18. CONTACT E-MAIL ADDRESS cbeirger@chevron.com											
19. Will you maintain quantities of mud and mud material (including weight materials and additives) sufficient to raise entire system mud weight 1/2 ppg or more?															☒ YES		☐ NO						
20. REMARKS: Choke/kill tested to minimum of MASP +500 psi. *Equal or better casing may be substituted, pending availability																							

PAPERWORK REDUCTION ACT OF 1995 (PRA) STATEMENT: The PRA (44 U.S.C. 3501 et seq. requires us to inform you that we collect this information to obtain well status, well and casing test, and well casing configuration data. MMS uses this information to have accurate data and information on the wells under their jurisdiction and to ensure compliance with approved plans. Responses are mandatory (43 U.S.C. 1334). Proprietary data are covered under 30 CFR 250.118. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB Control Number. Public reporting burden for this form is estimated to average 1-1/2 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to the Information Collection Clearance Officer, Mail Stop 4230, Minerals Management Service, 1849 C Street, NW, Washington, DC 20240.

DRILLING PROCEDURE

1. MOL with the ENSCO 7500 semisubmersible rig. Make up jetting BHA and 36" structural casing with Vetco RL-4HC and RL-4F connectors with low pressure wellhead housing. Run subsea and tag mudline at +/- 3562' RKB.
2. Jet in 36" structural casing and low pressure WH housing with 30" mill tooth bit, motor, and 32" sidewinder to +/- 318' BML at 3880' RKB using seawater. Allow casing to soak. Release CADA tool to drill ahead.
3. Drill ahead with seawater and gel sweeps to 4350' RKB with 30" mill tooth bit, motor, and 32" sidewinder. Spot pad mud and POOH.
4. Run 788' of 28", 218 ppf, X-52 casing with Vetco RL-4SL connectors to 4350'. Land hanger in LPWHH and cement casing with nitrogen foamed cement to the mud line using an inner string, taking returns through the 28" supplemental adapter ball valves on the low pressure WH housing. POOH with running tool and inner string. No shallow water flows are expected in this interval, but the ROV will remain on bottom to observe for flow after cement job. Ball valves will be closed by the ROV.
5. Make up 26" mill tooth bit and motor, RIH, drill out approximately 120' of cement inside the 28" casing, and drill float shoe. Drill ahead to 6300'. Use DKD mud to control shallow water flow as expected at +/- 4473' RKB. At 6300', spot pad mud as required for POOH to run and cement 22" casing. POOH with BHA.
6. RIH with 2738' of 22", 170 ppf, X-60, and 224 ppf, X-80 casing with Dril-Quip MT S-60 and S-90 connectors and high pressure wellhead housing, and set at 6300'. Cement casing with foamed nitrogen slurry to the mud line using an inner string, taking returns through the 28" supplemental adapter ball valves on the LPWHH. ROV will remain on bottom to observe for flow after cement job. Ball valves will be closed by the ROV.
7. At the conclusion of the 22" cement job, pre-load HPWHH to the LPWHH using the Mechanical Rigid Lock Down running tool. Release tool and POOH with inner string.
8. Run BOP and riser and latch to HPWHH with Vetco SHDH4 connector. RIH and set BOP test plug. Test WH connector and BOP's to 250/11,000 psi. Test annulars to 250/7500 psi. POOH with test plug. Test 22" casing to 250 psi for 5 minutes and 2500 psi for 30 minutes with seawater against blind shear rams.
9. RIH with 18 1/8" x 21" drilling assembly on rotary steerable system. Drill out approximately 120' of cement inside 22" casing while displacing seawater to 11.3 ppg SBM. Drill float shoe and 10' of new formation and conduct leakoff test at 22" shoe to achieve 11.9 ppg EMW. Drill ahead to 7800'. POOH with BHA.
10. RIH with 1500' of 17.875", 93.5 ppf, P-110HC casing with Hydril 521 connectors, and 500' of 18", 117 ppf, P-110 casing with Hydril 511 connectors to place the shoe at 7800'. Cement the casing using an inner string, and bringing the TOC to 6100'. Set and test seal on the 18" hanger to 2000 psi with 11.3 ppg SBM and POOH with inner string.
11. Make up 16 1/2" x 19" drilling assembly on rotary steerable system. Test 18" casing to 250 psi for 5 minutes and 2000 psi for 30 minutes with 11.3 ppg SBM against blind shear rams. RIH and drill out cement and float equipment plus 10' of new formation. Perform FIT at 18" shoe to 14.5 ppg EMW. Drill ahead to 15,500'. POOH with BHA.
12. Run 8500' of 16", 97 ppf, HCQ-125, SLSF casing, and 3400' of 16.040", 109.61 ppf, HCQ-125HP, SLSF casing. Set shoe at 15,500'. Cement casing using dual liner wiper plugs, with a minimum of 500' of cement above the shoe. After cementing, set seal on the 16" hanger and test to 6400 psi with 13.6 ppg SBM. POOH with landing string.
13. Make up 14 1/2" x 16 1/2" drilling assembly on rotary steerable system. Test 16" casing to 250 psi for 5 minutes and 6100 psi for 30 minutes with 13.6 ppg SBM against blind shear rams. RIH and drill out shoe track and 10' of new formation. Perform FIT to 16.3 ppg EMW with 13.6 ppg SBM. Drill ahead to 20,900'. POOH with BHA.

14. Run 5600' of 13 5/8", 88.2 ppf, HCQ-125, SLSF casing and set shoe at 20,890'. Set liner hanger and cement liner bringing the top of cement a minimum of 500' above the shoe. Set liner top packer and test to 2000 psi with 15.8 ppg SBM. POOH with landing string.
15. Make up 12 1/4" x 13 1/2" drilling assembly on rotary steerable system. Test 13 5/8" casing to 250 psi for 5 minutes and 1900 psi for 30 minutes with 15.8 ppg SBM against blind shear rams. RIH and drill out shoe track plus 10' of new formation and conduct leak off test at 13 5/8" shoe to 16.7 ppg EMW. Drill ahead to +/- 23,000'. POOH with BHA. R/U wireline and conduct formation evaluation program for 12 1/4" x 13 1/2" hole.
16. RIH with 2400' of 11 7/8", 71.8 ppf, HCQ-125 casing with Hydril 513 connectors. Cement liner bringing the top of cement a minimum of 500' above the shoe, or 500' above any hydrocarbon bearing sands. Set liner hanger and liner top packer at the conclusion of the cement job. Test liner top packer to 2200 psi with 15.8 ppg SBM. POOH with landing string.
17. Make up 10 5/8" x 12 1/4" drilling assembly on rotary steerable system. Test 11 7/8" casing to 250 psi for 5 minutes and 2100 psi for 30 minutes with 15.8 ppg SBM against blind shear rams. RIH and drill out cement and float equipment plus 10' of new formation. Conduct LOT at 11 7/8" shoe to 17.0 ppg EMW with 15.8 ppg SBM. Drill ahead to 24,853'. POOH with BHA. RIH with hole-opening BHA to open up +/-150' 10 5/8" pilot hole to 12 1/4". POOH.
18. RIH with 2500' of 9 5/8" Solid Expandable Tubular (SET) EX-80, 36 ppf with XPC connections. Cement to bring the TOC a minimum of 500' above a gas bearing sand. Expand casing as per Enventure procedure, resulting in final expanded OD of 10.576". POOH with landing string while expanding. Test liner top to 1600 psi with 16.1 ppg SBM after expanding liner top at 22,350'. Continue to POOH. **Expansion failed.**
19. As per previously approved APM (5-28-08), abandon failed 9-5/8" SET with 11-7/8" EZSV set at 22,224' and 100 bbls 17.0 ppg Class "H" cement (561 ft3) bullheaded below. Cut mud weight from 16.1 ppg to 15.8 ppg.
20. Test 11 7/8" casing to 250 psi for 5 minutes and 2100 psi for 30 minutes with 15.8 ppg SBM against blind shear rams (Casing/BSR ram test due 5-31-08).
21. RIH with Smith Track Master on DP and tag EZSV at 22,224'. Pick up to set bottom of anchor at 22,201' (Casing Collar @ 22,161' and 22,201'). Hydraulically set the whipstock. Orientation of the whipstock is not critical.
22. Shear the whipstock carrying bolt. Mill the window from 22,171' - 22,190'.
23. Check window condition (slack off and p/u without pumping and rotating). Ream window as necessary until drag reduce to 4-5 K lbs. Drill +/-25 feet of new formation to 22,215'. Circulate B/U. Perform LOT to 16.4 ppg. POOH with milling assembly.
24. M/U 10 5/8" rotary steerable assembly. RIH to top of window. Wash to bottom at 22,215' and build angle away from window at 2 deg/100' as per plan. Build to 7 degrees while drilling to +/-22,450'. Circulate bottoms up, check for flow and pull drilling assembly.
25. Add 12 1/4" Anderreamer to BHA and trip back to window. Once reamer exits window, open hole to 12 1/4" and continue drilling 10 5/8" x 12 1/4" hole to 24,670' TVD per directional plan (hold 7° to ~22,700' MD and drop back to vertical at 1.5 deg/100'). POOH with BHA. RIH with hole-opening BHA to open up +/-150' 10 5/8" pilot hole to 12 1/4". POOH.
26. RIH with +/-2620' of 9 5/8" Solid Expandable Tubular (SET) EX-80, 36 ppf with XPC connections. Cement to bring the TOC a minimum of 500' above the shoe. Expand casing as per Enventure procedure, resulting in final expanded OD of 10.576". POOH with landing string while expanding. Test liner top to 1700 psi with 16.0 ppg SBM after expanding liner top at 22,050'. Continue to POOH.
27. Make up 9.75" x 11 3/8" BHA with rotary steerable assembly. Test 9 5/8" SET to 250 psi for 5 minutes and 1600 psi for 30 minutes with 16.0 ppg SBM against blind shear rams. RIH

- and drill out cement and shoe plus 10' of new formation. Conduct LOT to 16.8 ppg EMW. Drill ahead to 27,000' TVD. POOH with BHA.
28. RIH with +/- 5050' of 9 3/8" 39 ppf HCQ-125 SLF casing. Cement liner bringing the top of cement a minimum of 500' above the shoe, or 500' above any hydrocarbon bearing sands. Set liner hanger and liner top packer at the conclusion of the cement job. Test liner top packer to 1300 psi with 16.3 ppg SBM. POOH with landing string.
29. Make up 8 1/2" rotary steerable BHA. Test 9 3/8" casing to 250 psi for 5 minutes and 1200 psi for 30 minutes with 16.3 ppg SBM against the blind shear rams. RIH and drill out cement plus 10' of new formation and conduct LOT to 17.0 ppg EMW at the 9 3/8" shoe with 16.3 ppg mud. Drill ahead to TD of 31,150' TVD. POOH with BHA. R/U wireline and conduct formation evaluation of 8 1/2" hole if necessary.
30. At the conclusion of the above operations, an application will be submitted to either T&A or P&A the well.

REQUESTED WAIVERS

1) 30 CFR 250.402 Securing the Well for Hurricane Evacuation

In order to secure the well for hurricane evacuation, a Dril-Quip subsea drill string hang off tool landed in the subsea wellhead may be used instead of a cement plug, bridge plug or packer. This tool is designed to accommodate closure of the upper VBR rams on a 5-1/2" mandrel with the blind shear rams closed above it. A drill pipe float valve will be run to secure the inside of the drill pipe during evacuation.

2) 30 CFR 250.414 (c) Safe Drilling Margin

Drilling margin between leak-off test and mud weight shall be a minimum of 0.2 ppg from below the 22" shoe through the setting of the 16" liner. The drilling margin shall be a minimum of 0.5 ppg while drilling below the 16" liner.

3) 30 CFR 250.433 (b) Diverter Function

Partial closing of the diverter sealing element shall be considered to be an actuation test. Once movement of the diverter element is observed, the diverter will be reopened. A full closure actuation will be conducted prior to drilling out of all casing shoes and in conjunction with regularly scheduled BOPE function testing operations. Drilling mud will not be circulated through the diverter lines when synthetic based muds are in use.

4) 30 CFR 250.445 (g) Safety Valve for Running Casing

For casing strings where casing lengths are less than the length of the riser, safety valves will not be assembled with crossovers to casing threads.

A safety valve will not be on the rig floor for the casing being run unless the casing string length results in the casing being across the blind/shear rams prior to crossing over to the drill pipe running string.

5) 30 CFR 250.447 (c) BOP Test at Casing or Liner Points

The subsea BOP will not be tested before drilling out each casing string, unless the 14 day test is due or the test pressures for the next hole section are greater than the test pressures for the previous BOP test.

6) 30 CFR 250.448 (b) High Pressure Test for Ram Type BOPs, Choke Manifold and Other BOP Components.

Sweep valves and upper kill line valves (located above the top-most pipe rams, as per stack diagram) shall be tested to the same test pressure as the annular preventers.

7) 30 CFR 250.449 (d and e) Blind Ram Pressure Test

The (upper) blind shear rams will be pressure tested after running casing, to the casing test pressure as stated on the APD Information Sheet. This blind shear ram test will be done

concurrently with the casing test when possible. The first five minutes of the casing test will demonstrate the pressure integrity of the blind shear rams. The interval between pressure tests on the upper blind shear ram will not exceed 30 days. The lower blind ram cavity is equipped with casing shear rams and are not designed to hold pressure, therefore will not be pressure tested.

8) 30 CFR 250.449 (b) BOP Stump Test Information

The initial BOP stack stump test will be tested to 250/15,000 psi for the rams and 250/10,000 psi for the annulars. Any subsequent BOP stack stump tests will be conducted to the same pressures. The rams and annular preventers will be tested on 5 7/8" pipe as this is the only size pipe planned to be used for this well.

9) 30 CFR 250.449 (h) BOP Function Test

The upper (Hydril) blind shear ram and lower (Hydril) casing shear ram will be function tested on a (14) day cycle between the required 30 day pressure tests.

Required 7-day function test of annular preventers will be alternated between the two (2) annular preventers on the Ensco 7500. A single annular preventer will be function tested during each function test required between the normal 14 day pressure tests to reduce the number of closures on the annular rubber. During pressure testing, both annulars will be function tested.

10) 30 CFR 250.449 BOP Pressure Test

The ENSCO 7500 BOP stack is equipped (from top down) with 2 annular preventers, 1 blind shear ram, 1 casing shear ram (not pressure sealing), 1 – 7" x 4-1/2" variable bore ram, 1 - 5 7/8" fixed ram, 2 – 7" x 4 -1/2" variable bore rams. The lower most VBR ram (fourth ram) is an inverted test ram. Therefore, only the first, second and third pipe rams will be available for well control purposes.

- After latch-up of the stack, the initial BOPE pressure test will be conducted with a BOPE test plug in order to pressure test the wellhead connector and the pipe rams to the maximum test pressure (250 / 11,000 psi) for the well. The annular preventer will be pressure tested to 250 low and 7500 psi high on this initial pressure test. Subsequent BOPE pressure tests will be performed using the lower most BOPE Test Ram to the test pressures stated on the APD sheet for each individual hole section.
- In the event of tapered string operations, the VBRs will be pressure tested to the pressures stated on the APD information sheet (for each hole section) against the largest drill pipe size in use. The smallest drill pipe size in use will be tested against one (1) VBR. The annular will be pressure tested against the smallest size pipe in use, only.

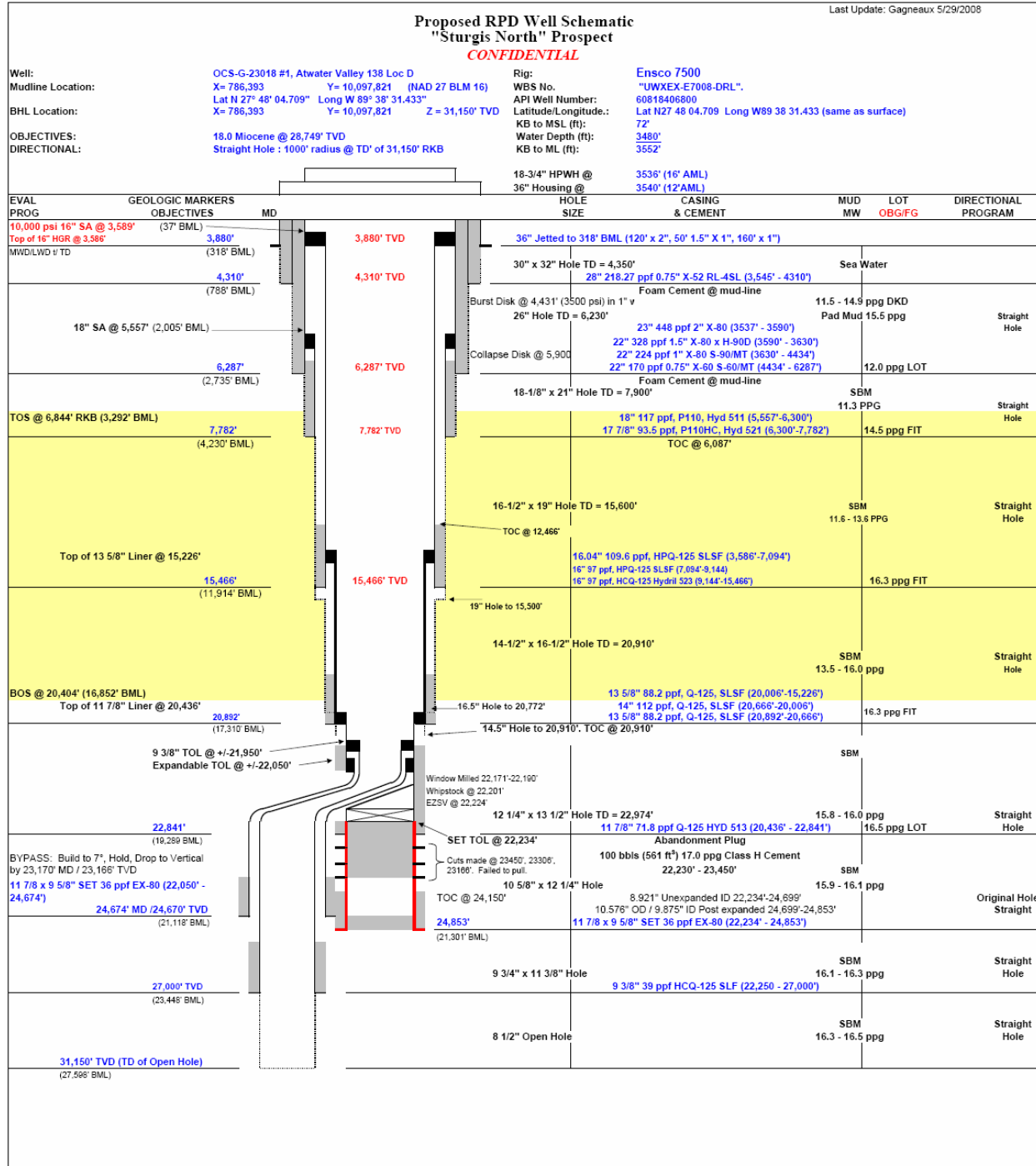
11) 30 CFR 250.461 (c) Measurement while Drilling

In the event a composite MWD survey is run and is valid, a multi-shot (or single shot) survey shall not be required at casing points or TD.

12) NTL No. 2005-G05 Deepwater Ocean Current Monitoring on Floating Facilities

Chevron owns six (6) – 75 kHz Acoustic Doppler Current Profile (ADCP) units all of which were purchased prior to September 2004. A waiver is requested to continue the use of this 75 kHz ADCP system for the duration of this well. This system monitors ocean currents to a depth of 603 meters / 1,978'. In addition we will install an on bottom current meter at this location as per Section A (2) of this NTL.

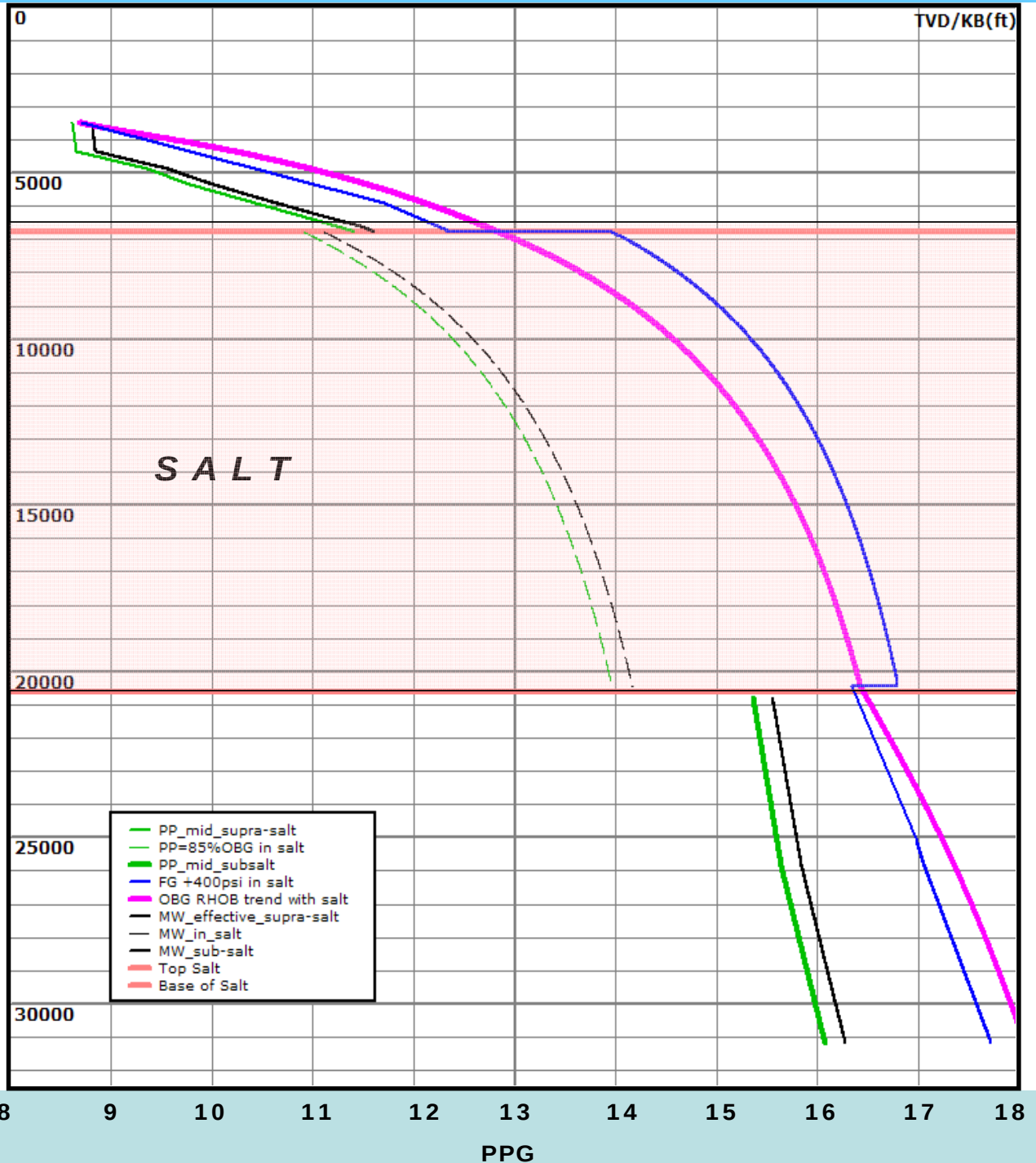
WELLBORE SCHEMATIC



Sturgis North AT138-1

OCS-G_23018 #1

Pore Pressure Model





CASING DESIGN

Casing Design Criteria Deepwater Gulf of Mexico APD

String	Conductor & Surface Casing				Intermediate Casing/Liner		
Criteria	Loading	Tubular strength	Design factor		Loading	Tubular strength	Design factor
Burst	1. Gas kick Internal: 80% gas column on top of 20% mud column calculated from OH TD to RKB. If OH > 10,000' a 50/50 gradient will be used. (gas gradient 0.10 psi/ft) External: Formation pressure 2. Pressure test Internal: Test pressure plus test fluid column (see Casing & Liner Test Pressure Calculations.doc) External: formation pressure	1. Sweet-service* API burst rating or Heavy-wall burst rating 2. Sour-service** API burst rating or VME burst rating	1. Sweet-service 1.10 2. Sour-service 1.20		1. Gas Kick Internal: 50% gas column on top of 50% mud column calculated from OH TD to RKB (gas gradient by Young-Nagy equation) External: formation pressure 2. Pressure test Internal: Test pressure plus test fluid column (see Casing & Liner Test Pressure Calculations.doc) External: formation pressure 3. Shoe fracture Internal: Frac. Pressure at shoe with mud to surface External: formation pressure	1. Sweet-service* API burst rating or Heavy-wall burst rating 2. Sour-service** API burst rating or VME burst rating	1. Sweet-service 1.10 2. Sour-service 1.20
Collapse	1. Lost return Internal: Full seawater column to surface, a gradient higher than SW may be used (equivalent to the drilling MW column drop to balance the lowest exposed pore pressure). External: Drilling mud 2. Cementing Internal: Drilling mud External: Cement slurry in place	API collapse rating or approved high collapse rating	1.00 or 0.85 for good cement section		1. Lost return Internal: Full seawater column to surface, a gradient higher than SW may be used (equivalent to the drilling MW column drop to balance the lowest exposed pore pressure). External: Drilling mud 2. Cementing Internal: Drilling mud External: Cement slurry in place	API collapse rating or approved high collapse rating	1.00 or 0.85 for good cement section
Tension	1. Running in hole : Buoyant weight	The lesser of API pipe tension rating or connection tension rating	1.60		1. Running in hole : Buoyant weight	The lesser of API pipe tension rating or connection tension rating	1.60

- H₂S partial pressure < 0.05 psi ** H₂S partial pressure >= 0.05 psi



Casing Design Criteria Deepwater Gulf of Mexico APD

String	Production Casing/Liner				Tubing		
Criteria	Loading	Tubular strength	Design factor		Loading	Tubular strength	Design factor
Burst	1. Tubing leak near surface Internal: Tubing leak pressure from production shut-in External: Open hole - formation pressure. Cased hole - mud weight the production liner/casing was run in.	1. Sweet-service* API burst rating or Heavy-wall burst rating 2. Sour-service** API burst rating or VME burst rating	1. Sweet-service 1.10 2. Sour-service 1.20		1. Service Load Internal: Max. pressure from production shut in (equal to initial flowing pressure) External: Packer fluid	1. Sweet-service* API burst rating or Heavy-wall burst rating 2. Sour-service** API burst rating or VME burst rating	1.20
Collapse	1. Fluid Drop Internal: Fluid drop equivalent to abandonment pressure. Internal fluid gradient equal to produced oil or gas gradient. External: Drilling mud 2. Cementing Internal: Drilling mud External: Cement slurry in place	API collapse rating or approved high collapse rating	1.00 or 0.85 for good cement section		1. Full void pipe Internal: Fluid drop equivalent to abandonment pressure. Internal fluid gradient equal to produced oil or gas gradient. External: Packer fluid	API collapse rating or approved high collapse rating	1.00
Tension	1. Running in hole: Buoyant weight	The lesser of API pipe tension rating or connection tension rating	1.60		1. Running in hole: Buoyant weight	The lesser of API pipe tension rating or connection tension rating	1.60

- H₂S partial pressure < 0.05 psi ** H₂S partial pressure >= 0.05 psi

TESTING OF CASING STRINGS

CHEVRON DEEPWATER WEO

Casing and Liner Test Pressure Calculations

There are 5 possible test pressures that need to be calculated for casing and liner test pressures. The first is based on the MMS regulations (see Appendix 1). The second test pressure is the Maximum Anticipated Wellhead Pressure (MAWP). The MAWP is calculated from the Maximum Anticipated Surface Pressure (MASP). The third and fourth test pressures deal with running liners. The fifth test pressure is based on the expected shoe strength of the casing/ liner being drilled out.

When there are stacked or nested liners in a well, it is extremely important to reconfirm that all future test pressures are recalculated to determine the exact pressure on the lapped shoes. This is called Step #6. The actual pressure the shoe will see must then be reduced by the "drill-out-mud-weight" hydrostatic pressure of that string and determine the equivalent surface pressure.

1. 70 % of Casing API Burst Rating: Account for differential between mud weight inside casing and backup pore pressure, typically calculated at top and bottom of string as well as at point of lowest back-up pore pressure. Minimum value calculated governs.
2. MAWP: For subsea wells, calculation of MAWP (internal) resulting from voiding the entire wellbore 50% to gas and 50% to drilling fluid from hole interval TD to rig floor. This may need to be calculated for a number of hole intervals if the casing is not lapped to determine highest MAWP. The surface applied pressure required for the casing pressure test, to match the calculated maximum MAWP (internal) would be calculated by subtracting the hydrostatic of the drilling mud in the choke line from the calculated MASP.
3. Liner Lap – Initial: The pressure test for a liner must be to a surface pressure that exceeds the calculated fracture pressure of the previous casing or liner shoe set, before the liner was run by 500 psi. This is the initial calculation.
4. Liner Lap – Future: This surface pressure will have to be recalculated at each liner setting depth where the casing in consideration will still be exposed. This calculation should start at the deepest set liner and the corresponding surface pressure (P_A) required when testing the deepest liners shoe. This pressure (P_A) should be used to calculate the necessary test pressure (P_B) of the previously set liner. This pressure (P_B) should be used to calculate the necessary test pressure (P_C) of the previously set line. This continues until the casing in consideration is exposed. The current mud weight utilized for pressure testing the casing/liner must be compared to the future mud weight required during deeper liner lap tests to derive an equivalent surface pressure.
5. Formation Integrity / Leak Off Tests: The casing/liner pressure test must be to a value that exceeds the surface pressure, considering mud weight in use, required to perform a FIT or LOT of the deepest shoe exposed prior to the casing being lapped. The casing pressure test must exceed this surface pressure by 200 psi. The current mud weight utilized for pressure testing the casing/liner must be compared to the future mud weight required during deeper shoe tests to derive an equivalent surface pressure.

6. Recheck of All Calculated Test Pressures – A complete recheck of all final liner test pressures calculated for the well must be made. Each final liner test pressure, starting at the bottom, must be checked against any previously set liners or complete casing strings exposed to the planned liner test pressures. This is to ensure that any exposed liners/ casing strings are properly tested prior to drilling out.

Notes:

- If the final calculated test pressure is higher than 70% of the casing burst, supervisor approval must be obtained.
- If final calculated test pressure is less than 70%, the approved APD (Application for Permit to Drill) acts as a waiver to this governmental requirement.

REQUIREMENTS

The testing requirement for a full string of casing (non liner) back to the wellhead is as follows:

Calculate the test pressure for each step above. The minimum pressure calculated in #1 and #2 is compared to the pressures calculated in #3, #4 and #5. The maximum of these pressures is the required Casing Test Pressure.

The testing requirement for a liner is as follows:

Calculate the test pressure for Steps #3, #4 and #5. The maximum these pressures is the required Liner Test Pressure.

GEOLOGIC PROGRAM LETTER

The OCS-G-23018 #1 WELL should be drilled in accordance with the following:

1. **API NUMBER:** TBD
2. **AFE NUMBER:** UWXEX-E7008-DRL
3. **PROJECT GEOLOGIST:** Tonya Bordenave
4. **SURFACE LOCATION:** 7744' FSL & 5613' FEL of Atwater Valley 138
X = 786,387 Y = 10,097,824 (UTM 16)
Latitude: N 27 deg 48' 04.7279"
Longitude: W 89 deg 38' 31.5042" (NAD-27)
5. **BOTTOM HOLE LOCATION:** 7744' FSL & 5613' FEL of Atwater Valley 138
X = 786,387 Y = 10,097,824 (UTM 16)
Latitude: N 27 deg 48' 04.7279"
Longitude: W 89 deg 38' 31.5042" (NAD-27)
(same as surface location)
6. **TARGETS:** 1) Middle Miocene @ 26,000' TVD
2) Lower Miocene @ 28,840' TVD
7. **TOTAL DEPTH:** 31,150' MD / 31,150' TVD
8. **TOLERANCES:** 1000' radius from Lower Miocene target @ 28,840' TVD
9. **WATER DEPTH:** 3490'
10. **PRESSURE:** Hydrostatic pressures are anticipated from the mudline at 3490' to top of salt at approximately 6735', gradually increasing from 8.6 ppg to 11.3 ppg. A more gradual increase is expected through the salt beginning at 11.0 ppg and increasing to 13.9 ppg at the base of salt at 20,395' TVD. A sharp increase is anticipated as we come out of salt to 15.3 ppg. The gradient then levels off with a gradual increase from the base of salt to TD with a maximum pore pressure of approximately 16.0 ppg expected at 31,150' TVD. Within the interval from 25,000' to 31,000' TVD there is a possible regression of pore pressure based on some of the offset wells with a maximum regression to 14.5 ppg possible.
11. **DRILLING CONTRACTOR:** Ensco 7500
12. **PARTNERS:**

CHEVRON (OPER.)
ANADARKO
DEVON
STATOIL

CHEVRON CONTACTS

John Connor – Office: 832-854-3659, Cell: 713-515-4217
(Drilling Superintendent)

Christine Beiriger - Office: 832-854-4012, Cell: 281-841-2288
(Drilling Engineer)

Jim Hawkins – Office: 832-854-4869, Home: 281-491-2140
(Operations Geologist)

Tonya Bordenave - Office: 832-854-3612, Cell: 713-264-2410
(Project Geologist)

- 13. SECURITY CLASSIFICATION:** CLASSIFIED SPECIAL from Surface to TD
- 14. GEOLOGIC CLASSIFICATION:** Exploration
- 15. GEOLOGIC CONCEPT:** Middle-Early Miocene section of sand rich turbidites deposited within localized salt withdrawal mini-basins on a 3-way salt/fault closure
- 16. ESTIMATED SPUD DATE:** January 10, 2008
- 17. CRITICAL DATES:** None
- 18. EVALUATION PROGRAM:**
- a. Mud Log: SPERRY-SUN** 6,300' TVD to TD (below 22" casing) Standard Services
 - b. LWD: SCHLUMBERGER** 3,880' TVD to TD (below 36" casing) GR/RES/PWD
15,500' TVD to TD GR/RES/PWD/SonicVision
 - c. Wireline Logging: SCHLUMBERGER** 21,000'TVD to 26,000' TVD: Optional: GR, CNL, LDT, AIT, DSI, MDT (pressure w/ optional samples), CMR+ , MSCT and OBMI.

26,000' TVD to TD': Optional: GR, AIT, CNL, LDT, CMR and MDT (pressure w/ optional samples), MSCT, DSI, OBMI .
 - d. Velocity Survey:** Zero Offset VSP, Optional: Salt Proximity VSP
 - e. Directional Services: SCHLUMBERGER** Bent Housing Motor to 6300' MD then Rotary Steerable to TD.
 - f. Wellsite Geologist: CHEVRON** 3,880' TVD to TD (below 22" casing)
 - g. Wellsite Paleontologists: TBS** On site for 14.5x16.5" hole section (15,500' TVD to TD)
 - h. Sidewall Core Analysis: TBA** Optional wireline run in 10 5/8" hole section only.

RIG AND BOP SPECIFICATIONS

ENSCO

ENSCO 7500

GENERAL INFORMATION

Flag U.S.A.
Owner ENSCO Offshore Company
Manager ENSCO Offshore Company
Previous Name(s)
Year Built 2000 **Builder** TDI Halter Marine - Orange, Texas
Design DPS-2
Classification A. B. S. Maltese Cross A1 Column Stabilized Drilling Unit

MAIN DIMENSIONS

Length 240'
Breadth 228'
Pontoons 50' x 24' x 290'
Moon Pool 20' x 80'
Columns 50' x 35'
Keel to Main Deck 93' 0"
Main Deck Area 240' W x 220' L

MACHINERY

Main Power (6) EMD 20-10G7B/EMDEC – 5,000 HP/each; (6) Baylor 8855YNB – 506, 3,580 KW generator
Power Distribution SCR: Thrusters, (8) DW3000-6, 3,400 ADC, 750 VDC; SCR: Drilling, (12) DW1400-6, 1,500 ADC, 750 VDC
Emergency Power (1) Cat 3512B, 1,476 HP
Thrusters (8) Schottel SRP2020, 3,000 HP/each

OPERATING PARAMETERS

Water Depth 8,000'
Maximum Drilling Depth 30,000'
Air Gap 33' @ 60' drilling draft
Transit Speed 3.5 knots @ 45' draft
Variable Drilling Loads:
Operating Conditions 8,700 s. tons @ 60'
Survival Condition 7,620 s. ton @ 40'
Transit Conditions 3,940 s. ton @ 24'

DRILLING EQUIPMENT

Derrick Drecto 170' x 46' x 40'; 1,928,000 lb gross nominal capacity; 1,500,000 lb static hook load
Drawworks National 1625-UBDE, 3,000 HP; Drectech 15050 Elmagco brake
Rotary Varco RST 605 hydraulic, 60 1/2" opening, 1,000 ton, driven by (4) HT hydraulic motors 10-950
Top Drive: VARCO TDS 8 SA, Rated Capacity: 750 tons, Rated WP: 7,500 psi, Driven by: GEB20 AC Motor, Output Power: 1200 HP, Drilling Torque: 65,500 ft/lbs, Max RPM: 270, Make up/Break out Torque: 100,000 ft/lbs
Drill String Compensator Maritime hydraulic, 1000K CMC
Travelling Block Drecto, 7-60TB-750, 750 ton
Pipe Handling Varco PRS-3i pipe-racker, AR4000 iron roughneck, PS30 slips, BX4 & BX5 elevators
Cementing Dowell Schlumberger
Mud Pumps (3) National 14-P-220, triplex, GE 752; (1) Lewco W446, 320 HP AC riser booster

HOISTING EQUIPMENT

Cranage (1) Drecto 72DNS 140, (1) Drecto 72DNS 160; (1) 106' span, 32 ton gantry crane



CAPACITIES

Active Mud Pits 3,625 bbls
Reserve Liquid Mud Storage 8,550 bbls
Bulk Mud/Cement 20,118 cu. ft.
Sacks 4,000 sacks
Drill Water 8,334 bbls
Potable Water 1,066 bbls
Fuel Oil 16,414 bbls

WELL CONTROL SYSTEMS

BOP (6) Ram Hydriil 18 3/4" 15 M; dual Hydriil annular 18 3/4" 10M GX; (1) Cameron HC 18 3/4" 10 M LMRP; (1) Vetco HD 18 3/4" 15M BOP connect
BOP Handling 700,000 lb BOP cart and elevator, 650,000 lb Xmas tree cart
Control System 5,000 psi BOP connector Hydriil MUX
Riser Details Drill-Quip 21" 2.5 m flanged – 85% Bouyant; 4 1/2" ID C/K lines – 4" ID Booster line; Dual 2 7/8" ID hydraulic conduit lines
Riser Tensioner (8) Retasco, 250 kips / each
Diverter Drill-Quip FDS, 60", 500 psi
Drillpipe 5 7/8" - 26.41 ppf, S-135, XT 57, Range 2 .361wt, 5 7/8" – 27.8 ppf, S-135, XT57, Range 3 .415wt
Landing String: 5 7/8" 46.4 ppf, S-135, XT 57 Range 2 .750wt, H-Weight: 5 7/8" 57.42 ppf, HW-95, XT 57
Drillcollars 9 1/2"; 8 1/4", 6 3/4"
TV System
Choke and Kill Manifold 3 1/16" x 15 M psi WOM with power choke dual hydraulic chokes

MOORING

Winches (8) Skagit WMD-52, 3 1/4"
Wire/Chain K4 chain – 1,000' chain
Anchors (4) Vryhof Stevpris MK5, 10 MT

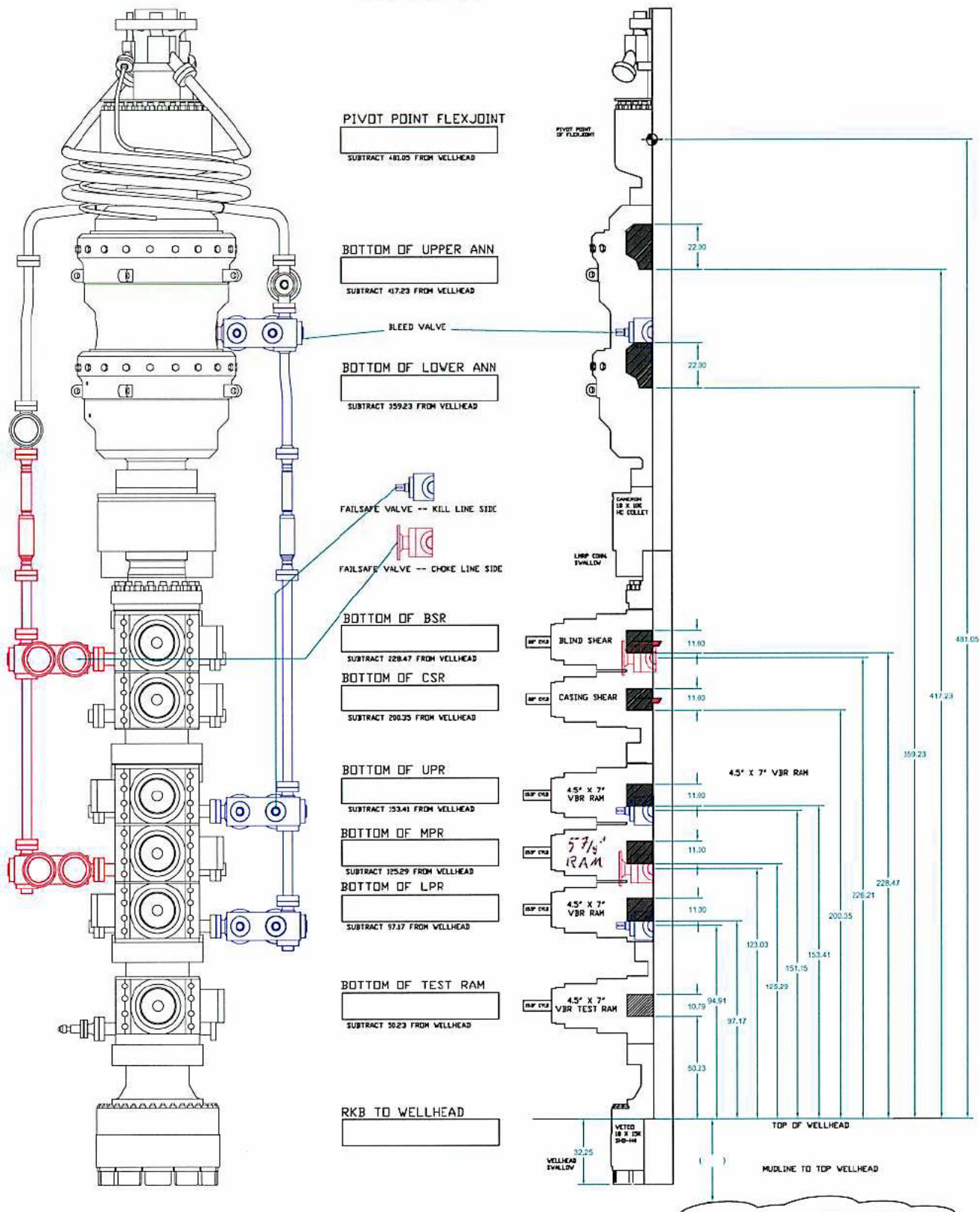
HELIDECK Sikorsky S-61 or S-92, 73' diameter

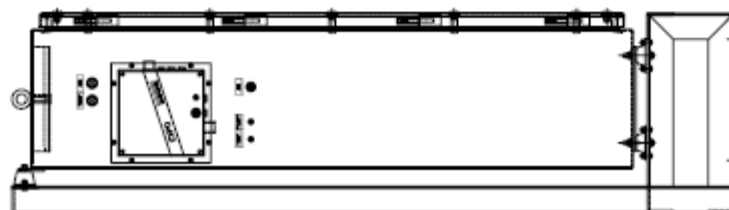
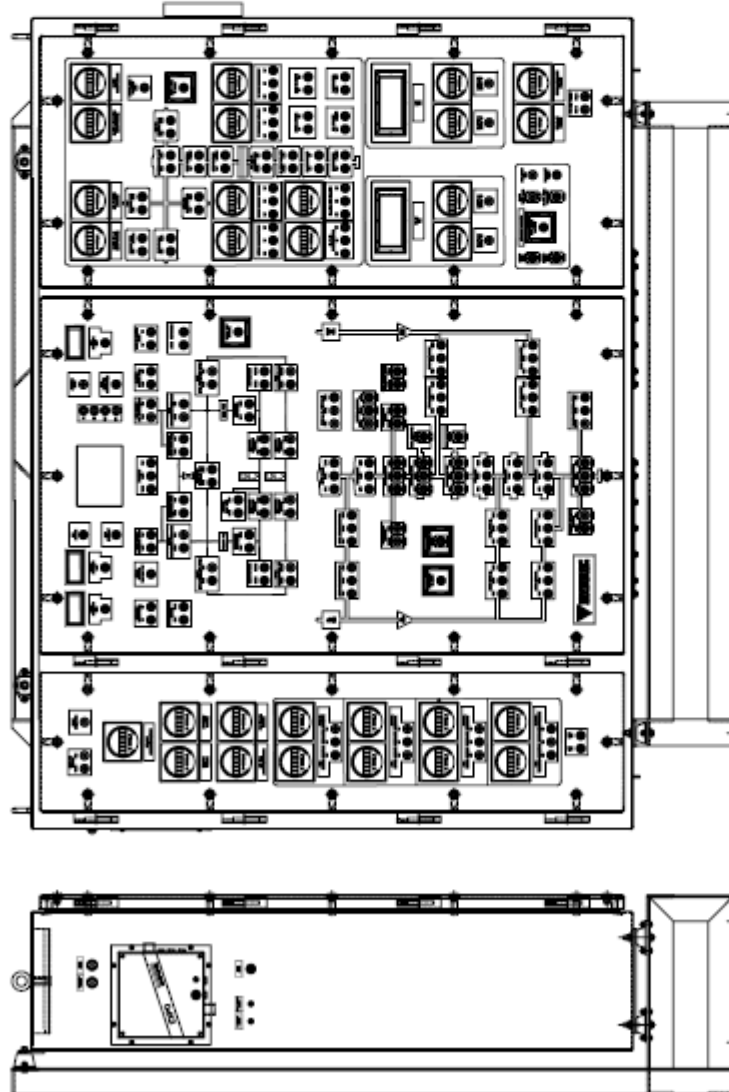
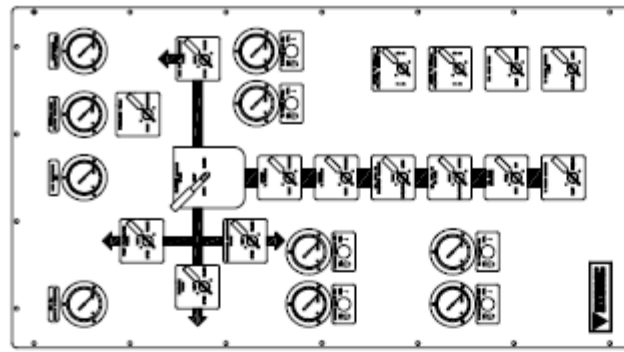
ACCOMMODATION 118 berths

ADDITIONAL DATA

Mud cleaning facilities: (5) Brandt LCM-3D Cascade, 5.9 G's; (1) Brandt King Cobra 24/3 Mud Conditioner; (2) Brandt DG-10 vacuum type
Sewage treatment: (2) Omnipure units: (1) MX12 and (1) MX15; single point discharge

CHEVRON





SUBSTRUCTURE PANEL

TOOLPUSHER/DRILLER PANEL
FRONT VIEW

SIDE VIEW

**ENSCO 7500**

DIVERTER CONTROL PANEL

SEARCH BY:	Joseph D. Singer
REVISION NUMBER:	00
REVISION DATE:	04/26/97
FILE NAME:	00000000-0000-0000-0000-00000000
CORRELATION NUMBER:	00000000-0000-0000-0000-00000000
PAGE:	01 of 01

9 5/8" SET" LINER TEST CALCULATIONS

Size	Wt/ft	Grade	Conn	Burst
9.625	36.0	EX-80	XPC	4600
16	97.0	Q-125	SLSF	8733

70% Internal Yield of 9.625" Casing =	3220
70% Internal Yield of 16" Casing =	6113.1

Considering Internal Yield Test @ Mudline

Top of casing TVD=	3,592
Test mud weight=	16.00
Pore pressure=	8.60
Differential pressure= (16 - 8.6) * 0.052 * 3592=	1382
Test pressure= 6113.1 - 1382=	4731

Considering Internal Yield Test @ Shoe

Btm of casing TVD=	24,670
Test mud weight=	16.00
Pore pressure=	15.90
Differential pressure= (16 - 15.9) * 0.052 * 24670=	128
Test pressure= 3220 - 128=	3092

However, Considering the MAWP surface:

MAWPsurf + 500 psi=	9519 + 500 =	10019	psi
SET Liner top test=(16.4 - 16)*.052*22050+500=		959	psi

Therefore:

Plan test pressure is lesser of the above=	959
--	-----

SET Shoe Test pressure=(16.8 - 16)*.052*24670+200=	1226
---	------

Future Liner pressure tests

Test 9.375 liner to	1183	psi for 30 min. with	16.3	ppg mud
Equates to 9.625 liner test to	1568	psi for 30 min. with	16.0	ppg mud

Therefore:

Test casing to be greater than minimum test pressure or shoe or future liner top testing

Plan test pressure =	1568	psi
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Test casing to	1600	psi for 30 min. with	16.0	ppg mud
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- Notes: 1. Casing test pressures are based on the lower of MAWP + 500 psi,
70% internal casing yield less differential of test mud weight and
pore pressure behind casing, or liner top plus 500 psi.
Test pressure will be **200 psi greater than shoe test**
2. Actual test pressure will be calculated based on actual mud weight

9 5/8" SET Liner

9.375" LINER TEST CALCULATIONS

<u>Size</u>	<u>Wt/ft</u>	<u>Grade</u>	<u>Conn</u>	<u>Burst</u>
9.375	39.0	HCQ-125	SLF	9870
16	97.0	Q-125	SLSF	7860

70% Internal Yield of 9.375" Casing =	6909
70% Internal Yield of 16" Casing =	5502

Considering Internal Yield Test @ Mudline

Top of casing TVD=	3592
Test mud weight=	16.3
Pore pressure=	8.6
Differential pressure= (16.3 - 8.6) * 0.052 * 3592=	1438
Test pressure= 6909 - 1438=	4064

Considering Internal Yield Test @ Shoe

Btm of casing TVD=	27000
Test mud weight=	16.3
Pore pressure=	16.3
Differential pressure= (16.3 - 16.3) * 0.052 * 27000=	0
Test pressure= 6909 - 0=	6909

However, Considering the MAWP surface:

MAWPsurf + 500 psi= 9860 + 500 psi=	10360
Liner top test= (16.4 - 16.3)*.052*21950+500=	614

Therefore:

Plan test pressure is lesser of the above=	614
--	-----

Shoe Test pressure= (17 - 16.3)*.052*27000+200 psi =	1183
---	------

Test casing to be greater than minimum test pressure or shoe or future liner top testing

Plan test pressure =	1183
----------------------	------

Test casing to	1200	for 30 min. with	16.3	ppg mud
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- Notes:
1. Casing test pressures are based on the lower of MAWP + 500 psi, or 70% internal yield less differential of test mud weight and pore pressure behind casing, or liner top plus 500 psi.
 2. Actual test pressure will be calculated based on actual mud weight

9.375" Liner



Sturgis North AT 138#1 ST00BP01 Surface & BH Location Coordinates - Lease Line
OCS-G 23018 #1 ST00BP01, Atwater Valley Block 138

Lease Line Coordinates

Well Surface Location

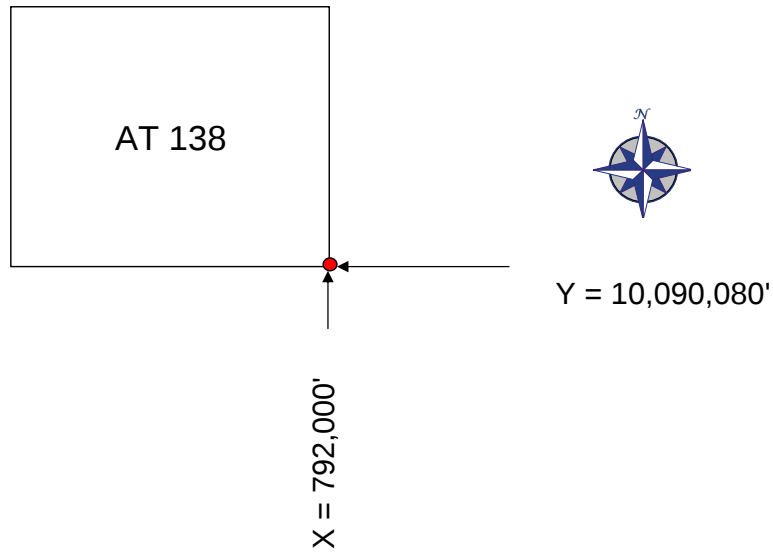
Well TD Location

AT 138

SE Corner Reference

			AT 138 #1 SHL	SHL to Leaseline		AT 138 #1 BHL	BHL to Leaseline	
X	792,000.00	X	786,393.37	-5,606.63	FWL	786,402.83	-5,597.17	FEL
Y	10,090,080.00	Y	10,097,821.93	7,741.93	FNL	10,097,721.99	7,641.99	FSL

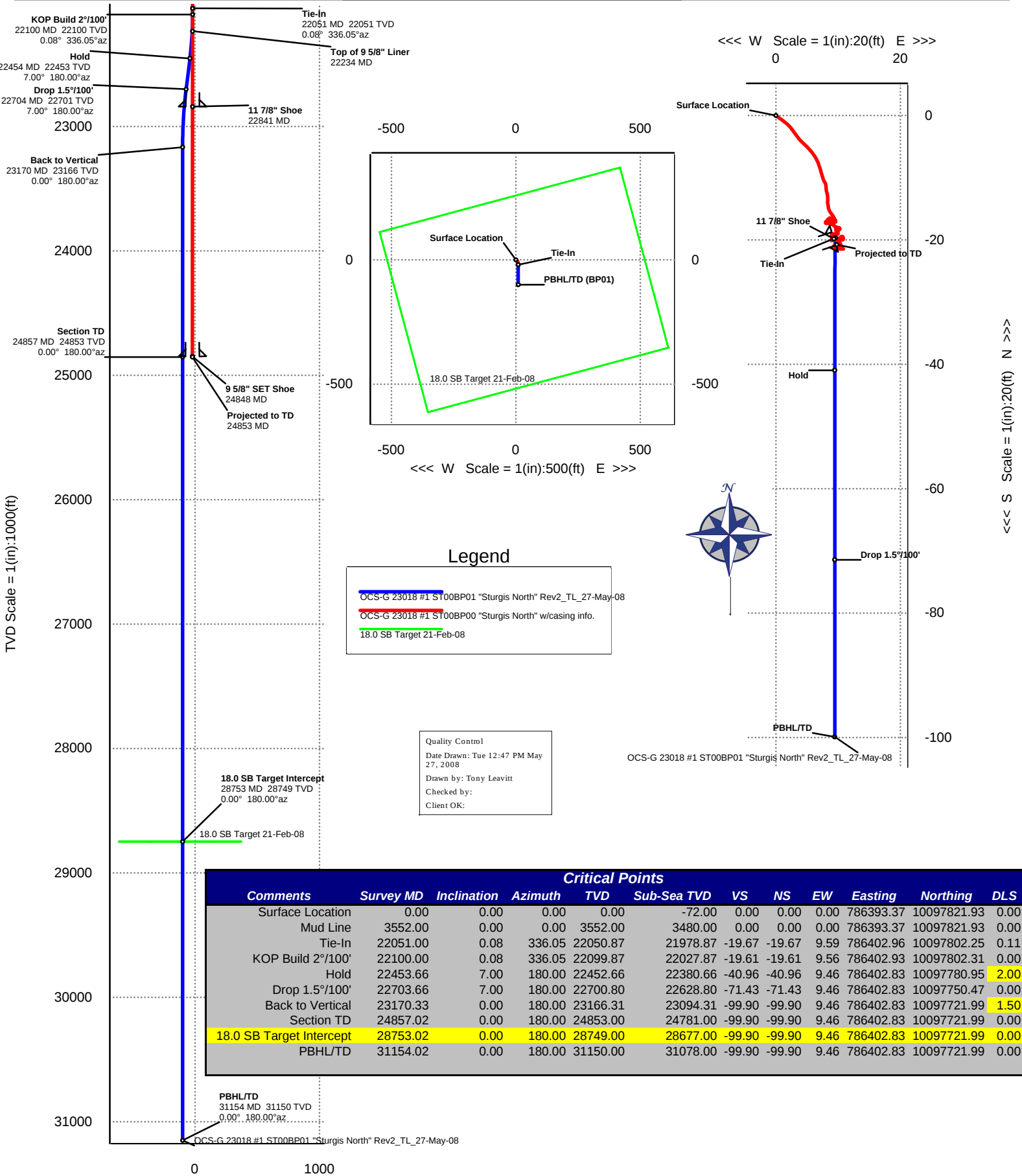
Coordinates based on NAD27 UTM Zone 16N (US Feet)



Schlumberger OCS-G 23018 #1 ST00BP01 "Sturgis North" Rev2



WELL	OCS-G 23018 #1 ST00BP01	FIELD	Atwater Valley Block 138	STRUCTURE	Ensco 7500
Magnetic Parameters	Model: BGGM 2007	Dip: 57.800° Mag Dec: +0.240°	Date: May 27, 2008 FS: 46890.3 nT	Surface Location	Lat: N27 48 4.709 Lon: W89 38 31.433
				NAD27 UTM Zone 16N, US Feet	Northing: 10097821.93 ftUS Easting: 786393.37 ftUS Grid Conv: -1.23297178° Scale Fact: 1.0004364638
				Miscellaneous	Slot: Sturgis North Plan: ST00BP01Rev2
					TVD Ref: Rotary Table (72.00 ft above MSL) Srvy Date: May 27, 2008



Last Update: Gagneaux 5/29/2008

18-3/4" HPWH @ 3536' (16' AML)
36" Housing @ 3540' (12' AML)

Wellbore Sturgis North Revised Subsalt.xls