Operational Review

Prepared for:

Nexen Petroleum USA Inc.

For the:

Green Canyon Block 504 #1 ST00 BP01
OCS-G 22968

By:

Jerry Friedman
Randal Garrett
Ronald D. Thomas, P.E.
December 29, 2011

Green Canyon Block 504 #1 ST00 BP01
OCS-G 22968
Offshore, Louisiana

Overview

The Green Canyon Block 504 #1 ST00 BP01 is a new well being drilled to 29,084' TVD / 30,039' MD (see enclosed directional plan). The surface location is X = 2,312,024' and Y = 9,977,480' using NAD27-UTM15 (North) coordinates. Water depth at this location is 3,637' and RKB is 86'.

After moving the rig to location, the 36" conductor casing was jetted in to 4,039' TVD/MD (327' below mudline "BML"). A 26" hole was drilled riserless and 22" 224.28 ppf X-80 casing and Dril-Quip's 18-3/4" high pressure wellhead housing was set at 5,982' TVD / 5,983' MD and cemented. The rig's BOP and riser was run and tested. A 16-1/2" hole was being drilled at 6,203' MD when losses were encountered due to a weak zone. The hole was opened up and an 18-1/8" x 21" hole was drilled to 11,099' TVD / 11,100' MD. While running the 18" 117.0 ppf P-110 Hydril 511 liner, the hanger hung up 75' below the wellhead. It was cemented in place with 2,500' of cement fill (TOC @ 6,779' MD). The 18" liner was drilled out and the rathole cleaned out to 19-1/2". A 16-1/2" x 19-1/2" hole was drilled to 13,981' TVD / 13,982' MD where a 16" 97.0 HCQ-125 Hydril 511 liner was run and cemented. A 14-1/2" x 17-1/2" hole was drilled to 18,909' TVD / 18,910' MD. 14" 112.6 ppf HCQ-125 Vam Top/ Hydril 523/ Hydril 513 casing was set at 18,850' TVD / 18,851' MD and cemented to 14,700' MD. A 12-1/4" x 14-3/4" hole was drilled to 21,899' TVD / 21,900' MD where an 11-3/4" 65.0 ppf HCQ-125 Hydril 523 liner was set and cemented. A 10-5/8" x 12-1/4" hole was drilled through the base of salt to 22,544' MD. The BHA was pulled out of the hole and 75' of tools were left in the hole. A cement stinger was run and a cement plug set from 22,323' – 21,400' MD. After waiting on cement, the casing/liner and plug were tested to 4,214 psi above 15.5 ppg SBM. A 10-5/8" hole will be drilled to 23,384' TVD / 23,387' MD. The hole will be under reamed to 12-1/4" and a 9-7/8" 62.8 ppf HCQ-125 Vam SLIJ II liner will be set and cemented. The well will be suspended and the BOPs pulled for repair. The BOPs will be run and tested. An 8-1/2" x 9-7/8" hole will be drilled to the kick off point at 23,497' TVD / 23,500' MD. Angle will be built to 35° and held tangent to the casing point of 27,000' TVD / 27,543' MD. The hole will be logged and a 7-5/8" 39.0 ppf HCQ-125 Vam SLIJ II and 39.0 ppf P-110 Hydril 513 liner will be set and cemented. A 6-1/2" hole will be drilled to 29,084' TVD / 30,039' MD where it will be logged per the evaluation program. At the conclusion of drilling and evaluating, the well will be plugged per Bureau of Safety and Environmental Enforcement (BSEE) requirements.

The well is being drilled by the semi-submersible rig, Ensco 8502 under a daywork contract with Nexen Petroleum USA Inc. (hereinafter "Nexen"). Nexen will be supervising the drilling operations.

Well Planning

Nexen mobilized the Ensco 8502 to its GC 504 #1 location. The 36" conductor casing was jetted in to 4,039' TVD/MD (327' below mudline "BML"). A 26" hole was drilled riserless and 22"

224.28 ppf X-80 casing and Dril-Quip's 18-3/4" high pressure wellhead housing was set at 5,982' TVD / 5,983' MD and cemented. The rig's BOP and riser was run and tested. A 16-1/2" hole was being drilled at 6,203' MD when losses were encountered due to a weak zone. The hole was opened up and an 18-1/8" x 21" hole was drilled to 11,099' TVD / 11,100' MD. While running the 18" 117.0 ppf P-110 Hydril 511 liner, the hanger hung up 75' below the wellhead. It was cemented in place with 2,500' of cement fill (TOC @ 6,779' MD). The 18" liner was drilled out and the rathole cleaned out to 19-1/2". A 16-1/2" x 19-1/2" hole was drilled to 13,981' TVD / 13,982' MD where a 16" 97.0 HCQ-125 Hydril 511 liner was run and cemented. A 14-1/2" x 17-1/2" hole was drilled to 18,909' TVD / 18,910' MD. 14" 112.6 ppf HCQ-125 Vam Top/ Hydril 523/ Hydril 513 casing was set at 18,850' TVD / 18,851' MD and cemented to 14,700' MD. The shoe has been drilled out, squeezed, and a 16.2 ppg LOT was obtained. The 12-1/4" x 14-3/4 hole was drilled to 21,899' TVD / 21,900' MD where the 11-3/4" 65.0 ppf HCQ-125 liner was run and cemented. A 10-5/8" x 12-1/4" hole was drilled through the base of salt to 22,544' MD. The BHA was pulled out of the hole and 75' of tools were left in the hole. A cement stinger was run and a cement plug set from 22,323' – 21,400' MD. After waiting on cement, the casing/liner and plug were tested to 4,214 psi above 15.5 ppg SBM.

A 10-5/8" hole will be drilled to 23,384' TVD / 23,387' MD and then opened to 12-1/4". A 9-7/8" 62.8 ppf HCQ-125 liner will be run and set with top of liner at approximately 18,017' MD. The liner will be cemented with a permitted slurry volume of 935 cubic feet of 16.4 ppg of premium cement. Annular volumes were calculated with top of cement at 22,837' MD utilizing no excess. (The liner top will be squeezed with 122 cubic feet of cement to the 11-3/4" shoe.) A double valve float collar and guide shoe will be utilized in the casing string. The liner packer will be set and the liner, packer, and 14"casing will be tested to 1,500 psi (assuming 15.2 ppg mud) per APD requirements. The landing string will be pulled out of the hole. After suspending the well, the BOP and riser will be pulled and repaired. They will be rerun and the BOP's will be tested to 250 / 10,200 psi and the annulars to 250 / 7,800 psi per the APD.

An 8-1/2" x 9-7/8" BHA will be run in the hole to the top of cement. The shoe track and 10' of new formation will be drilled with 15.2 ppg SBM. An LOT will be performed to 16.0 ppge. If the test does not reach 16.0 ppge, the curve will be evaluated and if unacceptable the shoe will be squeezed. If acceptable, the section will be drilled adhering to the BSEE requirement of 0.5 ppg between fracture gradient and mud weight. The hole will be drilled to the kick off point at 23,497' TVD / 23,500' MD. Angle will be built at 2.5° per 100' to 33.37° on an azimuth of 249.99° to 24,638' TVD / 24,715' MD and held tangent to the casing point of 27,000' TVD / 27,543' MD. The drill string will be pulled out of the hole and the well will be logged per evaluation requirements. A 7-5/8" 39.0 ppf HCQ-125 and P-110 liner will be run and set with top of liner at approximately 22,887' MD. The liner will be cemented with a permitted slurry volume of 462 cubic feet of 16.4 ppg of premium cement. Annular volumes were calculated with top of cement at 26,043' MD utilizing 10% excess over gauge hole. A double valve float collar and guide shoe will be utilized in the casing string. The liner packer will be set and the liners, packers, and 14"casing will be tested to 2,500 psi (assuming 15.4 ppg mud) per APD requirements. The BOP's will be tested to 250 / 10,200 psi and the annulars to 250 / 7,800 psi per the APD.

A 6-1/2" BHA will be run in the hole to the top of cement. The shoe track and 10' of new formation will be drilled with 15.4 ppg SBM. An FIT will be performed to 16.8 ppge. If the test does not reach 16.8 ppge, the curve will be evaluated and if unacceptable the shoe will be squeezed. If acceptable, the section will be drilled adhering to the BSEE requirement of 0.5 ppg between fracture gradient and mud weight. The hole will be drilled to 29,084' TVD / 30,039' MD where it will be logged per the evaluation program. At the conclusion of drilling and evaluating, the well will be plugged per BSEE requirements.

Well Equipment Design

The 22" surface, 18" drilling liner, 16" drilling liner, 14" intermediate casing, 11-3/4" drilling liner, 9-7/8" drilling liner, and 7-5/8" drilling liner have all been designed with acceptable safety factors for the drilling load cases.

The Dril-Quip 18-3/4" subsea 15,000 psi rated wellhead is fit for purpose. Maximum Anticipated Wellhead Pressure ("MAWP") on the 14" intermediate casing is 9,703 psi during the drilling phase.

Casing	Casing Size (Inch)	Weight (#/Feet)	Burst Rating (psi)	Type of Conn	MAWP (psi)	Safety Factors		
		Grade	Collapse Rating (psi)			B	C	T
Structural Pipe	36	374.0, 552.0, 726.0	N/A					
		X-56, X-65	N/A					
Conductor	22	277 & 224	6,360	XLW	6,306	1.4	3.5	4.3
		X-80	3,870					
Drilling Liner	18	117.0	6,680	Hydril 511	6,306	1.5	1.2	1.4
		P-110	2,110					
Drilling Liner	16	97.0	7,860	Hydril 511	6,306	1.8	1.0	3.7
		HCQ-125	2,950					
Surface	14	112.6	12,450	Vam Top Hydril 523	9,703	1.3	2.6	1.7
		HCQ-125	8,920					
Drilling Liner	11 3/4	65.0	9,940	Hydril 523 Vam SLIJ II	6,751	2.0	1.5	3.5
		HCQ-125	5,740					
Drilling Liner	9 7/8	62.8	13,840	Vam SLIJ II Hydril 513	9,703	2.5	2.1	1.7
		HCQ-125, P-110	11,640					
Drilling Liner	7 5/8	39.0	14,340	Hydril 523	9,703	2.9	2.3	2.8
		HCQ-125	13,310					

It is assumed all casing and wellhead equipment is new and conforms to the published API standards and that wear bushings will be utilized to protect the wellhead while performing downhole operations.

Well Control Equipment

The semi-submersible rig Ensco 8502 has a sub-sea 18-5/8" 15,000 psi blowout preventer (six rams –one blind shear/one casing shear/ three pipe/ one test ram) and two 10,000 psi annulars. The BOP's along with the choke and kill lines, and choke manifold will be tested to 250 psi for the low pressure test and to 10,200 psi for the high pressure test. The annular will be tested to 250 psi for the low pressure test and to 7,800 psi for the high pressure test. Nexen intends to follow the API recommended practices as published in API RP 53 Third Edition and all BSEE NTL requirements concerning sub-sea stacks.

Cementing Design

Nexen will utilize two barriers in their cementing operations. The 9-7/8" drilling liner is currently designed to bring the top of cement to 22,837' (± 550' above the shoe) with no excess. (The liner top will be squeezed to the 11-3/4" shoe.) A guide shoe and double valve float collar are planned for the 9-7/8" drilling liner. The 7-5/8" drilling liner is currently designed to bring the top of cement to 26,043' (± 1,500' above the shoe) plus an additional 10% open hole excess. A guide shoe and double valve float collar are planned for the 7-5/8" drilling liner.

Casing String	Volumes, Cubic Feet	Top of Cement	Well Barriers	Annular Barriers
9-7/8" Drilling Liner	Lead – 0 Tail – 935**	22,837'	-Reamer shoe and double valve float collar with cement in shoe track -Casing	-Cement and kill weight mud -Wellhead system -Liner top packer -BOP / Annulars
7-5/8" Drilling Liner	Lead – 0 Tail – 462	26,043'	-Guide shoe and double valve float collar with cement in shoe track -Casing	-Cement and kill weight mud -Wellhead system -Liner top packer -BOP / Annulars

**122 cubic feet will be squeezed from the top for a total of 1,057 cubic feet.

Well Control Drills, Procedures, and Training

Nexen will perform BOP and Pit Drills while performing drilling operations as required by BSEE for the GC 504 #1 ST00 BP01 well.

It is further recommended that Nexen maintain a practice of taking and recording slow pump rates each tour and to function test the TIW valves once a tour.

It is recommended that Nexen should maintain a practice of posting a kill sheet on the rig floor that is updated each tour and when the mud weight is changed.

It is recommended that Nexen ensure that each of the rig supervisors maintains a current well control certification and that all personnel adhere to safe and prudent work practices.

Safe Operations

The most critical component of safely drilling and completing a well is competent and conscientious personnel. Nexen's track record demonstrates that field and office personnel's supervision of operations are both competent and conscientious.

Summary

The well design and drilling procedure is appropriate for the purpose for which it is intended under expected wellbore conditions. The well design and drilling procedure complies with the guidelines of the BSEE, as published in 30 CFR 250. Nexen has conservatively designed the well and no exception is recommended.

This report is solely an opinion and is subject to the accuracy of data and materials furnished by Nexen, and the limitations, qualifications, and comments set forth herein. Only the material cited herein has been used to develop our opinion and no further investigation or independent review has been performed with regard to the proposed well.

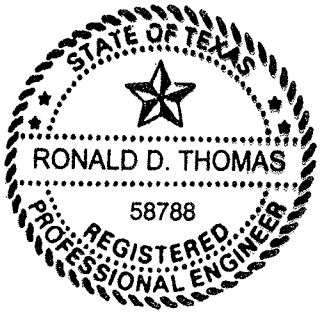
This report has been submitted with the anticipation that the proposed well plan will be utilized when the well is drilled, except when actual conditions necessitate a deviation from the original plan and that all operations will be conducted in a good and workmanlike manner that complies with industry standards and all applicable governmental regulations. Additionally, it is assumed that all tangible equipment is new and that the tubular products will be inspected as per API 5 CT.

To the extent there is any deviation from the well plan submitted for review, this opinion may require revision.

This report is submitted solely for the use and benefit of Nexen, its co-venturers, and its underwriters.

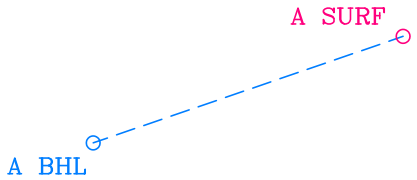
Reviewed by:

Ronald D. Thomas, P.E.
State of Texas
License No. 58788

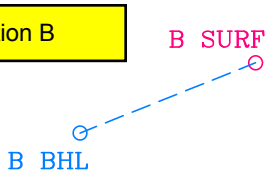


Location

GC 504 #1 Proposed at POE Location A



Relief Well Proposed at Location B



GC504

OCS-G-22968

Nexen

PROPOSED LOCATIONS

NAD27-UTM15 (NORTH)

LOCATION	CALLNS	CALLEW	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE	WD	TVD	MD
A SURF	1,720.00' FNL	616.00' FEL	2,312,024.00'	9,977,480.00'	27° 28' 48.051"N	90° 55' 41.424"W	3,600'		
A BHL	2,830.00' FNL	3,844.00' FEL	2,308,796.00'	9,976,370.00'	27° 28' 37.594"N	90° 56' 17.459"W		29,084'	30,117'
B SURF	4,735.00' FNL	767.00' FEL	2,311,873.00'	9,974,465.00'	27° 28' 18.227"N	90° 55' 43.659"W	3,600'		
B BHL	5,466.74' FNL	2,595.57' FEL	2,310,044.43'	9,973,733.26'	27° 28' 11.285"N	90° 56' 04.089"W		29,084'	30,016'

PROPOSED LOCATIONS

WGS84-UTM15 (NORTH)

LOCATION	X COORDINATE	Y COORDINATE	LATITUDE	LONGITUDE
A SURF	2,311,988.73'	9,978,132.83'	27° 28' 49.017"N	90° 55' 41.658"W
A BHL	2,308,760.73'	9,977,022.81'	27° 28' 38.560"N	90° 56' 17.693"W
B SURF	2,311,837.81'	9,975,117.79'	27° 28' 19.194"N	90° 55' 43.891"W
B BHL	2,310,009.25'	9,974,386.04'	27° 28' 12.251"N	90° 56' 04.322"W

DIGITAL COPY
ORIGINAL PLAT 6/24/10

Printed: 6/24/10

nexen

EXPLORATION PLAN
OCS-G-22968
BLOCK 504
GREEN CANYON AREA
GULF OF MEXICO

FUGRO CHANCE INC.
200 Dulles Dr. Lafayette, Louisiana 70506-3001 (337) 237-1300

GEODETIC DATUM: NAD27
PROJECTION: U.T.M. 15 (NORTH)
GRID UNITS: US SURVEY FEET

SCALE IN FEET 0 2,000'

Job No.: 1001594 | Date: 6/24/10 | Drwn: SJL | Chart: 1 Of: 1

Dwgfile: O:\WellPermit\UTM15\GC\Permit\504_EP_A_B_G22968

Drilling Procedure

Table of Contents

1. Basic Well Data

Well Data	
Operator	Nexen Petroleum USA
Working Interest Partner	Nexen 72.5%, Statoil 27.5%
Well Name	OCS-G-22968, Green Canyon 504 #1
Common Name	Kakuna #1
Water Depth	3,637 ft (Actual)
MSL - RT	86 ft (Actual)
RT – ML	3,723 ft (Actual)
Planned Total Depth	30,144 ft MD / 29,084 ft TVD
Authorized Total Depth	31,084 ft TVD (Top Oligocene)
Authorized Cost	$148.4 MM (PMean)
PAF number (SAP)	P-017777
Regulatory Agency	BOEMRE – Houma District
API number	60-811-40581-00
Surface Location Tolerance	10 ft radius
BH Target Hard Lines	See directional plan

Location	UTM	X Coordinate	Y Coordinate	Latitude	Longitude
Surface	NAD 27	2,312,025 ft	9,977,480 ft	27° 28‘ 48.052“ N	90° 55‘ 41.408“ W
Bottom Hole	NAD 27	2,308,788 ft	9,976,344 ft	27° 28‘ 37.338“ N	90° 56‘ 17.552“ W
Surface	WGS 84	2,312,010 ft	9,978,133 ft	27° 28‘ 48.053“ N	90° 55‘ 41.412“ W
Bottom Hole	WGS 84	2,308,781 ft	9,977,023 ft	27° 28‘ 37.319“ N	90° 56‘ 17.639“ W

2. Program Specifics

Casing Program

Casing Size	Setting MD	Setting TVD
36 in. (Actual)	4,039 ft	4,039 ft
22 in. (Actual)	5,983 ft	5,982 ft
18 in. (Actual)	9,279 ft	9,278 ft
16 in. (Actual)	13,982 ft	13,981 ft
14 in. (Actual)	18,851 ft	18,850 ft
11-3/4 in. (Actual)	21,900 ft	21,899 ft
9-7/8 in.	23,385 ft	23,384 ft
7-5/8 in.	27,585 ft	27,000 ft
6-1/2 in. OH	30,144 ft	29,084 ft

Wellhead Program

Vendor	Equipment
Dril-Quip	18-3/4" Big Bore II SS-15
	36 in Low Pressure Housing, Annular Outlet Spool with Six – 4" Oceaneering Annular Shut-Off Valves
	Two (2) Slope Indicator Supports
	18-3/4 in High Pressure Housing &22" 1.25" WT 277 ppf X80 housing joint with XLW pin down
	18 in. and 16 in. Supplemental Adapters, Hangers, and Seal Assemblies
	14 in. Hanger and Seals

Mud Program

Casing Interval	Mud Type	Planned Density @ Interval TD
36 in.	SW	8.6 ppg (surface)
22 in.	SW / Brine / WBM	8.6 – 9.8 ppg (surface) & 12.0 PAD
18 in.	SBM	12.0 ppg (surface)
16 in.	SBM	13.0 ppg (surface)
14 in.	SBM	15.6 ppg (surface)
11-3/4 in.	SBM	15.6 ppg (surface)
9-7/8 in.	SBM	15.3 ppg (surface)
7-5/8 in.	SBM	15.4 ppg (surface)
6-1/2 in. OH	SBM	15.7ppg (surface)

Wellbore Surveying Program

Casing Interval	Survey Type	Frequency
22 in.	MWD	Every stand
18 in.	MWD	Every stand
16 in.	MWD	Every stand
14 in.	MWD	Every stand
11-3/4 in.	MWD	Every stand
9-7/8 in.	MWD	Every stand
7-5/8 in.	MWD	Every stand
6-1/2 in. OH	MWD	Every stand

Note: **Survey frequency may be increased if inclination becomes problematic. Stand length average +/- 127 ft.**

3. Drill String Design (Size, Grade and Weight)

Kakuna GC504#1 Drill String	6-5/8" 50# S-135 (0.813" wt) Length (ft)	6-5/8" 40# S-135 (0.625" wt) Length (ft)	6-5/8" 34# S-135 (0.522" wt) Length (ft)	5" 19.5# S-135 (0.362" wt) Length (ft)	4" 14# S-135 (0.33" wt) Length (ft)	MASP (psi)
36" Casing Running	0	0	3,672	0	0	
Drilling to 22" Casing Point	0	0	4,804	0	0	
Drilling to 18" Casing Point	0	0	9,871	0	0	5,769
Drilling to 16" Casing Point	0	0	12,818	0	0	6,153
Drilling to 14" Casing Point	0	3,300	16,734	0	0	7,126
Drilling to 11-3/4" Casing Point	0	4,989	16,499	0	0	6,332
Drilling to 9-7/8" Casing Point	3,000	4,989	14,210	0	0	8,645
Drilling to 7-5/8" Casing Point	3,000	4,989	9,444	9,000	0	9,540
Drilling to TD	3,000	4,989	9,511	4,885	6,533	9,540

Operations Summary

The Kakuna GC 504 #1 exploration well is being drilled with Ensco 8502 semi submersible MODU in 3,637 ft of water. The well is being drilled directionally from the proposed surface "A" location 1,720.00 FNL and 616.00 ft FEL of Green Canyon block 504. The bottom hole location for well at the "A" location is 2,830.00 ft FNL and 3,844.00 ft FEL of Green Canyon block 504. Below is a summary of the operations.

4.1 Mobilized rig and positioned on location. Notified BOEMRE 48 hours prior to rig being on location.

4.2 Ran beacons and spotted Ensco 8502 DP rig on location.

4.3 An archeological survey was performed per conditions contained within the BOEMRE approved EP.

4.4 A structural (Conductor) casing string consisting of 1-68' extension joint of 36" 2" wt X-65, 1- 75' long Xover joint of 36" 1.5" wt X-56, 2-75' long intermediate joints of 36" 1.5" wt X-56 and 1-40' long shoe joint of 36" 1.0" wt X-56 pipe was run to mud line and jetted to approximately 4,039ft TVD RKB (316 ft below mud line (BML)). A Handling/Running Tool was used to jet the 36" structural casing to 4,039 ft TVD RKB, with 11 ft stick up above the mud line.

4.5 A shallow hazard was completed prior to commencing operations and seismic interpretation assessed a negligible risk for encountering shallow gas and SWF along most of the proposed wellbore between the seafloor to TOS at approximately 1,460 ft BML. A sealing barrier for Horizon 2 (240 ft to 393 ft BML) was unlikely however shallow gas risk was assessed as Low and SWF was assessed as Moderate for Horizon 2 (240-ft to 393-ft BML). The section was drilled riser-less with a pump and dump contingency option available if a shallow hazard was encountered. Drilling operations would have been stopped and 16.0 ppg kill weight water base mud pumped to stop any flow.

4.6 Ran 26" BHA and drilled hole riser-less to 6,016 ft MD / 6,015 ft TVD RKB. The top of salt was drilled at 4,979 ft MD/TVD. Drilling was conducted using seawater to + 500ft into salt, then switching over to a 9.6 – 9.8 ppg brine to drill to section TD. Once the hole section TD was reached, a 12.0 ppg pad WBM was spotted in the open hole and the well was flow checked to ensure the well was not flowing. Conditions were static, so 16.0 ppg mud was spotted in the rat hole and the BHA pulled. No shallow hazards found while drilling 26" riser-less hole section.

4.7 22" 224.28 ppf X-80 casing and Dril-Quip 18 ¾" HPWH were run and landed in LP Wellhead Housing, with shoe at 5,983 ft MD / 5,982 ft TVD RKB. Top HP Wellhead Housing is at 3,709 ft MD/TVD.

4.8 The 22" casing string was cemented back to the mud line. The lead slurry was foamed using nitrogen to a density of 12.6 ppg, with a 15.2 ppg non-foamed 500 ft tail slurry pumped behind. A total of 7571 ft^3 of Deep Set II cement was pumped.

4.9 The BOPs were run, latched and overpulled to 50K. 22" Casing and BOP connector were be tested to 250 psi (low) and 4500 psi (high) against the blind/shear rams per the APD. Unlocked slip joint and laid down landing joint. Installed diverter and tested per BOEMRE guidelines. BOP Annulars were tested to 250 psi (low) and 7800 psi (high). Remaining BOPs and surface equipment were tested to 250 psi (low) and 10,200 psi (high).

4.10 Ran 16-1/2" Bottom Hole Assembly (BHA) to top of cement. Displaced well with 13.1 ppg Synthetic Based Mud (SBM). Drilled shoe track plus 10 ft new hole. Performed successful Formation Integrity Test (FIT) to 14.8 ppg Equivalent Mud Weight (Equivalent to 1,000 psi over salt over-burden).

4.11 Drilled ahead 16-1/2" hole towards section TD at 21,100 ft MD/TVD. Planned mud weight for the interval at TD was 14.2 ppg. Unfortunately an unexpected weak loss zone was encountered below the 22" shoe at 6,203 ft MD / 6,202 ft TVD RKB.

Note 1:

The GC 504 #1 Kakuna Prospect well was on step 4.11 drilling ahead at 6203 ft, 220 ft below the 22" shoe, which had been set at 5983 ft MD, when a weak zone was drilled and lost circulation occurred. The procedure was updated to reflect that an 18" contingency casing string had to be added to the well design, to enable well objectives to be met and isolate the weak zone.

Verbal approval to cut mud weight from planned 13.0 ppg, to drill to 18" casing point in 18-1/8" x 21" hole and run 18" contingency liner was received from BOEMRE Houma District Engineer Mr Ben Coco on Friday 8th July 2011, subject to submittal of associated RPD documentation, including revised Professional Engineer certification during the following work week. This documentation was duly submitted to BOEMRE via eWell system on Wednesday 13th July 2011. The revised documentation included a plan to drill to 11,001 ft MD / 11,000 ft TVD with 11.5 ppg SBM and then run and set the 18" liner, with the hanger landed out in the 18" supplemental adaptor, which is located in the 22" casing string at 5,477 ft MD.

As part of the verbal approval noted above, an updated copy of the Well Containment Screening Tool was sent to Mr Lance Labiche of the BOEMRE on Friday 8th July. Later that same day, Mr labiche responded to confirm to Nexen and Mr Ben Coco with the BOEMRE that he was satisfied the revised design met the screening tool requirements.

The mud weight had to be increased from 11.5 ppg to 11.8 ppg while drilling ahead due to complications with an inclusion in salt encountered at 9,585 ft MD / 9,584 ft TVD RKB and tight spots in the well. At section TD SBM weight was increased to 12.0 ppg. During running of the 18" liner there were complications running through the BOPs with the liner which resulted in the 18" being set shallow. A number of discussions took place during this period of operations with the BOEMRE due to the changing situation. The BOEMRE, via Houma District Engineers Mr Ben Coco and Mr Bobby Nelson stated that they would be returning the submitted RPD and requested that operations associated

with getting the well back on plan per the original Approved permit to Drill (APD) and associated verbal approvals be captured. Per this request, the associated procedures have been captured in this document along with Verbal Approvals received and any notifications made.

4.12 After encountering losses at 6203 ft MD / 6202 ft TVD RKB in 16-1/2" hole, drilling was halted, pumps shut down, well placed on trip tank with base oil and the BHA pulled back inside the 22" shoe. 309 bbls of Base oil was pumped into well on backside to manage losses and stabilize well. With 13.1 ppg SBM in well below, this equated to 12.15 ppg Equivalent Mud Weight (EMWt)at the loss zone.

4.13 The riser was displaced to 10.4 ppg mud (11.5 ppg EMWt at 6203 ft MD/6202 ft TVD) before tripping out of the hole with 16-1/2" BHA to pick up 18-1/8" x 21" BHA. Tripped in with new BHA. Prior to drilling ahead, the well was displaced to 11.5 ppg SBM.

4.14 Drilled ahead to 9,623 ft MD / 9,622 ft TVD RKB, increasing SBM weight to 11.6 ppg. Encountered inclusion. Top of inclusion at 9,585 ft MD / 9,584 ft TVD RKB. The BHA became stuck. The BHA was then jarred free. Flow checked well due to gain observed in pits. The well was flowing. Shut in well and monitored pressures. Total gain was 35 bbls. Stabilized shut-in pressures were Shut In Drill Pipe Pressure = 90 psi and Shut In Casing Pressure = 130 psi. Influx was most likely swabbed in from inclusion during jarring operation. The influx was circulated out using Drillers Method at 30 spm. After completing well kill operation and flow checking well and confirming it was static, then a pumped a slug was pumped and the BHA tripped out to inside 22" shoe at 5,970 ft MD / 5,969 ft TVD RKB.

4.15 Performed function test on BOPs. Performed post jarring derrick and top drive inspection. Reamed shoe track. Tripped in hole to 9,517 ft MD / 9,516 ft TVD RKB and displaced well to 11.8 ppg SBM. Washed and reamed back to bottom.

Note 2: Nexen notified Mr Bobby Nelson of the BOEMRE on 14th July 2011 that a small leak had been noted on the open side shuttle valve for "test ram open" from the Yellow pod. After Nexen submitted the documentation listed below to the BOEMRE Verbal Approval was given by Mr Bryan Domangue (BOEMRE Houma District Manager) to continue with operations:

- **Risk Assessment**
- **ROV video of leak with function in open position and then no leak when function put into block position.**
- **BOP drawing identifying the leaking valve.**
- **BOP function test certification.**
- **WEST Engineering Services letter containing Statement that no other BOP functionality had been lost.**

4.16 Drilled ahead 18-1/8" x 21" hole section with 11.8 ppg SBM to section TD at 11,100 ft MD/11,099 ft TVD RKB. After pumping a high viscosity sweep and reaming some tight spots, placed 16.5 SBM pill in rat hole in preparation for 18" liner cement job. Picked up

into 21" hole. Flow checked well and commenced tripping out. Some tight spots observed, so ran back to 21" reamed hole TD and displaced well to 12.0 ppg SBM. Flow checked well, then tripped out of hole, flow checking at 22" shoe and BOPs on trip out.

4.17 The 18" P-110, 117 ppf casing was run down to the bottom of the riser. While running into LMRP, the liner shoe hung up on the lower annular. After maneuvering rig and adjusting riser tensioners, a ¼ right hand turn was applied and the continued to trip in hole.

4.18 Running of the 18" liner continued until the hanger reached the upper annular. No progress could be made. Attempted to pick up with 125 klbs overpull but could not move up. Continued to apply pick up and slack off weights to casing hanger while maneuvering rig and managed to free 18" casing and move casing hanger down to LMRP connector where it subsequently hung up. Continued to alternate set down weight and overpull weight whilst moving rig and manipulating riser tensioners. Work casing free and down to 3,732 ft MD / TVD RKB, 16 ft below the bottom of the HP wellhead housing.

4.19 Utilizing the successful principals from above to move the casing, whilst occasionally applying a single left hand turn per discussion with Dril-Quip, managed to work string down to place the 18" liner hanger at 3,791 ft MD / TVD RKB, inside of the 22" x 1" casing. This final 18" liner top depth is 75 ft below the bottom of the HP wellhead housing. The liner string could not be worked further beyond this point.

Note 3: Nexen notified BOEMRE that there was a problem getting the 18" liner to depth and that it was sitting across the BOP stack. This resulted in Nexen having to apply for Verbal Approvals for 24hr BOP test waivers on July 19th, 20th and 21st until 18" liner was worked to below BOP stack. BOP testing commenced on the July 22nd and was completed on July 23rd 2011.

Note 4: Nexen submitted procedure titled "GC504_001_Synopsis & Fwd Plan_Update Rev1" to Mr Bobby Nelson at BOEMRE for Verbal Approval on July 21st, which was subsequently granted the same day. This procedure was revised to reflect an error regarding the pod to be utilized for pressure testing the BOP stack. The original procedure read Blue pod, but was revised to read Yellow pod. Verbal Approval was received for the revision from Mr Bobby Nelson (on behalf of Mr Ben Coco) on Friday July 22nd 2011.

As part of the revised well plan, an updated Well Containment Screening Tool for the well, encompassing the final 18" shoe set depth was submitted to Mr Lance Labiche with the BOEMRE on Thursday 21st July. Mr Labiche responded later that same day to confirm to Nexen and Mr Ben Coco of the BOEMRE, that the screening tool was in line with requirements and the well still met requirements for a "Capping Stack only approval".

4.20 Confirmed running tool was not leaking by pumping down landing string. Picked up cement stand and made up surface lines and pressure tested same to 5000 psi.

4.21 The 18" casing primary cement job was performed. The Class H cement slurry was pumped at a density of 16.4 ppg, with a total of 1853 ft^3 of cement pumped. The top wiper plug was bumped and then floats confirmed to be holding. Note: The initial RPD which was returned by the BOEMRE had been submitted with 1847 ft^3 submitted for planned cement volume to be pumped.

4.22 Surface lines were re-configured to pressure test BOPs. Lines were pressure tested to 11,000 psi. BOP Annulars were tested to 250 psi (low) and 7800 psi (high) for 5 minutes. Remaining BOPs and surface equipment were tested to 250 psi (low) and 10,200 psi (high) per the APD.

4.23 BOPs were function tested. Released 18" Dril-Quip liner hanger running tool. Recover the landing string and running tool. Function tested Blind/Shear rams.

Note 5: Nexen submitted procedure titled "Update of Operations & Request for Further Operational Approval" to BOEMRE on Sunday July 24th. Verbal approval was already in place for pressure test of 14" casing seal area in High Pressure wellhead housing as part of procedure in note 4 above. This procedure requested verbal approval for running wireline gyro's to confirm well and BOP orientation as well as running inflatable packer to pressure test 18" liner and drift same.

Verbal approval was also requested for a waiver on Blind/Shear ram and 22" casing pressure test which was due. Nexen were unable to perform the test due to a weak zone exposed below the 22" shoe, with the 18" liner x 22" casing annulus still open to the well above.

On Sunday July 24th Ms Amy Wilson of the BOEMRE initially granted a 12 hour extension on the casing and Blind/Shear ram pressure test noted above. She also granted approval for running wireline gyro.

On Monday July 25th Mr Bobby Nelson (on behalf of Mr Ben Coco) gave Verbal Approval for the procedure above and the waiver from pressure testing of the Blind/Shear rams and 22" casing.

4.24 Two wireline gyro runs were performed to confirm orientation of the BOPs with respect to the wellhead and wellbore. As a result of analysis of the gyro runs, the rig was repositioned to align riser, BOPs and wellhead.

4.25 The BOP test plug assembly was run in hole and seated in high pressure wellhead housing across the 14" casing hanger seal area. After lining up and pressure testing surface lines, the BOP pipe rams were closed and the 14" casing hanger seal area pressure tested to 250 psi (low) and 10,200 psi (high) for 5 minutes.

4.26 After bleeding down pressure and opening BOPs, the BOP test plug was recovered and laid out.

4.27 An inflatable packer was picked up, run in hole on drill pipe and set at 3841 ft MD RKB, 50 ft below the 18" liner hanger. After lining up and pressure testing surface lines, the 18" liner was pressure tested to 250 psi (low) for 5 minutes and 2470 psi (high) for 30 minutes with 12.0 ppg SBM. Please note that the procedure in note 4 above was written with 2700 psi test with 11.5 ppg SBM, in line with the initial RPD which had not been returned at this point. However, per line item 4.16 above, the mud weight had to be raised to 12.0 ppg due to tight hole conditions. The 2470 psi adjusted test pressure accounted for the change in mud weight.

4.28 The inflatable packer was released and the 18" liner drifted to 9104 ft MD / 9103 ft TVD RKB. The packer was then recovered to surface and laid out.

Note 6: Further 24 hr waivers from having to pressure test the Blind/Shear rams against the 22" casing were requested by Nexen and subsequently issued by Ms Amy Wilson from the BOEMRE on July 25th and July 26th 2011. The pressure test was finally conducted on July 27th per line item 4.34.

Note 7: Nexen submitted procedure for Bullhead Liner Top Squeeze of 18" Liner x 22" Liner Lap to BOEMRE on Monday July 25th. Ms Amy Wilson from the BOEMRE gave approval for steps 1 through 5 that same day. On Tuesday July 26th Mr Ben Coco from the BOEMRE granted Verbal Approval for the full procedure. A revised procedure was submitted to BOEMRE on Wednesday July 27th titled "Bullhead Squeeze for 18" x 22" Annulus". The revised procedure received Verbal Approval from Mr Ben Coco on Wednesday July 27th 2011.

4.29 Picked up 18" liner top squeeze BHA, complete with Dril-Quip isolation BOP test tool and ran in hole on drill pipe. Made up cement stand and landed isolation BOP test tool in the High Pressure Wellhead Housing.

4.30 The lower pipe rams were closed and 2500 psi applied between the isolation test tool and the pipe rams. Surface lines were rigged up and pressure tested to 4000 psi. A bullhead rate injectivity test was then performed to establish rate versus pressure relationship.

4.31 Next 100 bbls of 8.6 ppg fresh water spacer with mutual solvent and water wetting surfactant was pumped, followed by 1002 ft^3 (742 sks) of 15.2 ppg Deepset cement slurry. Two foam wiper balls were dropped and the cement was displaced with 10 bbls of 8.6 ppg fresh water spacer, followed by 53 bbls of 12.0 ppg SBM and 70 bbls of 6.8 ppg base oil. The well was shut in and pressures monitored while waiting on cement for 16 hours.

4.32 After checking well for flow, bled off pressure and with annular closed unseated Dril-Quip isolation test plug and reverse circulated the base oil out of the cementing string. Rigged down surface lines and recovered the BOP test plug and flow diverter assembly. Laid out same.

4.33 Set nominal bore protector in well head on running tool.

4.34 Closed Blind/Shear rams and pressure tested against 22" casing, 18" liner and 18" liner lap to 250 psi (low) for 5 minutes and 2470 psi (high) for 30 minutes with 12.0 ppg SBM. See note 6 above.

Note 8: Nexen called Mr Bobby Nelson to notify him that the riser would be displaced from mud to seawater after completing an inflow test, due to high loop currents in the area. The well would be monitored for potential flow below the Blind / Shear rams. Mr Nelson issued Verbal Approval to proceed with the displacement on 28th July 2011. Per line 4.36 below, the BOEMRE were notified on July 30th 2011 prior to opening the Blind / Shear rams.

4.35 The 16-1/2" BHA was run in hole, but had to be recovered due to high loop currents. A successful negative test was performed on the well, and then the riser was displaced from 12.0 ppg SBM to 8.6 ppg seawater in case the rig had to unlatch. During this period, the well was monitored on the trip tank, with the Blind / Shear rams closed.

4.36 After currents had subsided, resumed running in hole with 16-1/2" BHA. With BHA above LMRP, displaced riser and BOPs back to 12.0 ppg SBM. Note: BOEMRE were notified before opening the Blind / Shear rams.

4.37 The 16-1/2" BHA was run in hole to 9071 ft MD RKB and a well control simulation drill was performed with the drill crew. Once complete, the BHA was run in hole and top of cement tagged at 9104 ft MD / 9103 ft TVD RKB.

4.38 The 18" shoe track was drilled out and it was found that there was no cement in the shoe track. When the shoe was drilled out, 160 bbls of 12.0 ppg SBM were lost.

Note 9: Nexen submitted procedure titled "Proposed Revised Drilling Procedure" to BOEMRE on July 28th. Mr Bobby Nelson issued Verbal Approval for procedure (On behalf on Mr Ben Coco) on July 29th 2011. Procedure covered, wash and ream of 18-1/8" x 21" rat hole, FIT and displacement to 14.2 ppg SBM to put well back on plan per APD.

4.39 The 16-1/2" BHA was washed and reamed down through the 18-1/8" x 21" rat hole to TD at 11,100 ft MD / 11,099 ft TVD RKB. The well was circulated and conditioned and an open hole FIT achieved of 12.8 ppg equivalent mud weight with the upper pipe rams closed. The FIT achieved was below desired 14.8 ppg minimum required FIT to drill to 14" casing point.

Note 10: Nexen submitted request to BOEMRE after hours e-mail address on Sunday July 31st 2011 to inform that the FIT below 18' shoe was unsuccessful and requested permission to place 14.2 ppg SBM, 14.2 ppg High Viscosity pill and LCM pill in rat hole while a cement squeeze procedure was prepared for the 18" liner shoe. It was specified that this was to prepare the rat hole for cement plug and that Nexen would seek full procedure approval from BOEMRE Houma District engineer the following morning Monday 1st August. This initial request was denied by Ms Amy Wilson, who stipulated that Nexen could not increase mud weight beyond 12.3 ppg.

A follow up e-mail was provided by Nexen to Ms Wilson at 11:10 hrs on evening of July 31st, to provide clarification that Nexen's intention was not to drill ahead, but to provide a base to minimize potential for cement slumping. Nexen monitored well on trip tank while waiting on approval to proceed with placing 14.2 ppg SBM and pills in well.

Nexen followed up with Mr Bobby Nelson of the BOEMRE Houma District on the morning of August 1st to gain approval to place the heavier weighted fluids in the rat hole below the 18" liner. A well schematic showing the pill placement as well as procedures for setting Baker Cementing Parabow tool was submitted to Mr Nelson at 7:21 am, after an initial phone call.

Verbal Approval was received from Mr Bobby Nelson (On behalf of Mr Bryan Domangue – BOEMRE Houma District Manager) on Monday August 1st to place weighted fluids in the rat hole in preparation for the cement job only.

<u>Note 11:</u> Nexen submitted procedure titled "Cement Squeeze Plan for 18" Shoe" to BOEMRE on August 1st 2011 to request verbal approval. The procedure included the steps noted up with regards to fluid placement in the rat hole. Verbal Approval for the procedure was received the same day from Mr Bobby Nelson of BOEMRE Houma District (on behalf of Mr Ben Coco).

This procedure included operations to squeeze shoe, clean out cement after squeeze and rat hole with 16-1/2" BHA, perform FIT as planned to 15.2 ppg Equivalent Mud Weight and displace well to 14.2 ppg SBM in preparation to drill ahead to 14" casing point, per APD.

4.40 Spotted 490 bbls of 14.2 ppg SBM in rat hole from 11,100 ft MD / 11,099 ft TVD back to 9933 ft MD / 9932 ft TVD RKB. Tripped out and spotted 100 bbls of 14.2 ppg SBM High Viscosity pill from 9933 ft MD / 9932 ft TVD RKB back to 9700 ft MD / 9699 ft TVD RKB. Tripped out and spotted 100 bbls of 12.0 ppg LCM back up across18" shoe.

4.41 Monitored well on trip tank while pulling out of hole with 18-1/8" x 21" BHA. Laid out BHA at surface.

4.42 The Baker cementing parabow assembly was made up and run in hole. The parabow was set at 9700 ft MD / 9699 ft TVD RKB.

4.43 The cementing assembly was picked up 10 ft above the parabow. Surface lines were rigged up and pressure tested to 5000 psi. 100 bbls of 14.8 ppg spacer was pumped, followed by 261 bbls (1337 sks) of 16.4 ppg class H cement slurry containing KCL and StaticFree. The cement was displaced with 11 bbls of 14.8 ppg spacer followed by 234 bbls of 12.0 ppg SBM. Note that a total of 38 bbls of down hole losses were observed during pumping and displacement of cement slurry.

4.44 The cementing string was pulled above the balanced cement plug from 9690 ft MD / 9689 ft TVD to 8798 ft MD / 8797 ft TVD RKB. During this process a further 14 bbls were lost down hole over a one hour period. The well was monitored for 30 minutes to see

what loss rate was. Lost a further 0.5 bbls down hole. Total lost at this point was 52.5 bbls. The procedure called for 54 bbls of cement to be squeezed around 18" shoe.

4.45 As the down hole lost volume was essentially equivalent to the desired cement squeeze volume, operations proceeded to step 21 of the Verbally Approved procedure. A foam wiper ball was dropped and the well circulated 2 x bottoms up from the end of the cement string. The cement string was then pulled to surface, with flow checks performed as required and laid out.

Note 12: As a result of the down hole losses Nexen contacted Mr Bobby Nelson at BOEMRE on Wednesday August 3rd 2011 to inform him of a revision to the verbally approved plan. Instead of picking up the 16-1/2" drill ahead BHA, Nexen would pick up a basic 16-1/2" rock bit drill out assembly, run in hole and see where top of cement is tagged and if tagged below the 18" shoe, Nexen would pull out of hole for a squeeze packer, run in hole with same and squeeze cement around the 18" shoe. If no cement below the 18" shoe Nexen would trip in open hole while evaluating remedial cement options. Nexen received verbal approval from Mr Bobby Nelson (on behalf of Mr Ben Coco) for the forward plan on August 3rd.

4.46 The 16-1/2" clean out BHA was run in hole to 9,240 ft MD RKB, 39ft above the 18" liner shoe. From this depth the BHA was washed in hole and tagged top of cement at 9,399 ft MD / 9,398 ft TVD RKB with 30 klbs set down weight. The top of cement depth was 120ft below the 18" liner shoe.

4.47 The well was circulated bottoms up. A flow check was performed which confirmed the well was static. After pumping a 35 bbls slug, the 16-1/2" clean out BHA was pulled to surface and laid out.

4.48 A Baker inflatable packer was made up and tripped in hole to 9050 ft MD / 9049 ft TVD RKB. The packer was inflated and set at this depth, 229 ft above the 18" liner shoe. Pressure tested surface lines to 3500 psi. Confirmed packer integrity by pressuring up on backside against lower annular to 300 psi. Bled off pressure and opened annular.

4.49 Established injection rates and pressures.

4.50 Opened "J" circulating sleeve above packer. Pumped 100 bbls of 8.6 ppg fresh water spacer with mutual solvent and water wetting surfactant. Pumped 157 bbls of class H, 16.4 ppg cement slurry then close the "J" circulating sleeve and pumped the remaining 143 bbls of cement. Total cement volume pumped was 300 bbls/1684ft^3 (1531 sks). Two foam wiper balls were dropped and the cement was displaced with 20 bbls of 8.6 ppg fresh water spacer followed by 231 bbls of 12.0 ppg SBM and 38 bbls of 6.8 ppg base oil.

4.51 After waiting on cement for 12.75 hours, successfully pressure tested cement and 18" liner to equivalent to 14.8 ppg mud weight at the 18" liner shoe which is set at 9278 ft TVD RKB. Pressure was bled off and the well flow checked.

4.52 The "J" circulating sleeve was opened, lower annular closed and choke line opened. The 38 bbls of base oil in the work string were then reverse circulated out. The well was then closed in and pressures monitored.

4.53 The Baker inflatable packer was then released and allowed to relax. The packer was pulled out of hole and laid down. The well was flow checked prior to pulling through the BOP stack with the packer.

4.54 The 16-1/2" drilling BHA was run in hole to 8940 ft MD / 8939 ft TVD RKB.

4.55 The drill string was spaced out and the BOPs pressure tested against the test rams, with annulars tested to 250 psi (low) and 7800 psi (high) for 5 minutes with the rams tested to 250 psi (low) and 10,200 psi (high) for 5 minutes, per the APD. The BOPs were then function tested.

4.56 After completion of taking slow pump rates, a pre-drill out well control drill was performed with the drill crew. The BHA was then tripped in hole and top of cement tagged at 9171 ft MD / 9170 ft TVD RKB, with 30 klbs set down weight.

Note 13: While testing the BOPs against the subsea test rams, a small leak of BOP hydraulic fluid was observed by the ROV. The leak was not an issue during the BOP pressure testing. After BOP testing was complete the leak was found to be coming from the closing side function hose for the test rams where it connected to the yellow pod wedge receptacle on the BOP receiver. It was confirmed that there was no leak when the test rams are open.

The BOEMRE were notified of the leak on Sunday 7th August 2011 and a request was submitted to continue with operations since the failure was on the test ram. After submission of a letter from WEST Engineering Services, stating that "the leak in no way compromises the well control capabilities of the BOP", Verbal Approval was issued by the BOEMRE that same day, on the understanding that the BOEMRE Houma District Office be notified immediately if any other BOP issues arose.

4.57 After receiving approval from the BOEMRE to continue operations, per note 14 above, cement was drilled out from 9171 ft MD / 9170 ft TVD to 9329 ft MD / 9328 ft TVD RKB, 50 ft below the 18" liner shoe.

4.58 The well was circulated and conditioned and the annular closed. An FIT was successfully performed equivalent to 14.8 ppg equivalent mud weight at the 18" liner shoe.

4.59 Cement was then drilled out from 9329 ft MD / 9328 ft TVD RKB to 9665 ft MD / 9664 ft TVD RKB, 25 ft above the anticipated bottom of cement.

4.60 After circulating and conditioning mud and pressure testing surface lines to 2000 psi an FIT was performed to 13.5 ppg equivalent mud weight. This was below the desired 14.8 ppg minimum FIT.

4.61 The remaining cement was drilled out to 9688 ft MD / 9687 ft TVD RKB and then the BHA was washed to bottom of 18-1/8" x 21" rat hole at 11,100 ft MD / 11,099 ft TVD RKB.

4.62 After circulating and conditioning SBM in hole to 12.0 ppg, surface lines were pressure tested and the middle pipe rams closed. An open hole FIT was performed which confirmed formation integrity was equivalent to a 13.5 ppg mud weight.

4.63 After bleeding off pressure, the well was flow checked and confirmed to be static. The 16-1/2" drill ahead BHA was pulled out of hole to surface.

Note 14: Ms Amy Wilson from the BOEMRE was notified on the evening of Monday 8th August that the desired minimum formation integrity of 14.8 ppg Equivalent Mud Weight had not been achieved.

A request was made to be able to run in hole with a 16-1/2" x 19-1/2" BHA instead of the 16-1/2" BHA originally planned for drilling ahead. This change was required as the well plan was changed to incorporate a 16" liner to be set at 14,000 ft TVD RKB. The change was necessary because of the reduced Formation Integrity Test. A request was also made to increase the mud weight in the well from 12.0 ppg to 12.8 ppg. Nexen specified that they would be following up with a detailed plan for Verbal Approval the following morning with the BOEMRE Houma District Engineer.

Verbal Approval was granted by Ms Amy Wilson for the requests above late in evening of August 8th 2011.

4.64 The 16-1/2" x 19-1/2" BHA was made up and run in hole to the 18" shoe and the well displaced from 12.0 ppg SBM to 12.8 ppg SBM.

Note 15: Mr Bobby Nelson from the BOEMRE was contacted on Tuesday 9th August, per the note above to discuss forward plans for a 16" liner interval. Verbal Approval was received to drill to the planned 16" liner set depth of 14,000 ft TVD RKB based on an interim review of proposed plan.

However Mr Nelson did inform Nexen that in order to gain approval for the 16" liner installation plan Nexen would have to submit the revised Well Containment Screening Tool to Mr Lance Labiche of the BOEMRE for approval. The procedure, revised well schematic and revised pore pressure chart would then have to be submitted along with associated P.E. certification to the BOEMRE.

The revised Well Containment Screening Tool was submitted to Mr Lance Labiche on Tuesday 9th August. Approval of the revised Well Containment Screening Tool was received the same day.

Per request from Mr Bobby Nelson, the revised well schematic, revised pore pressure plot, "Plan for 16" Liner Interval" procedure and associated PE certification were all

submitted to the BOEMRE on the morning of Thursday August 11th 2011. Nexen received Verbal Approval for the procedure the same day from Mr Bobby Nelson (on behalf on Mr Ben Coco).

4.65 Opened 19-1/2" under reamer below 18" shoe. Reamed down rat hole to open hole TD at 11,100 ft MD / 11,099 ft TVD RKB.

4.66 Drilled ahead in 16-1/2" x 19-1/2" hole to 11,656 ft MD / 11,655 ft TVD RKB. At this point some tight spots were observed when picking up off bottom to make a connection. Mud weight was increased to 13.0 ppg (0.5 ppg below the 13.5 ppg FIT achieved previously).

4.67 Drilling continued to interval TD at 14,001 ft MD / 14,000 ft TVD RKB. Losses of 10 bbls/hour were observed when drilling ahead and circulating. At TD when the well was flow checked it was found to be static.

4.68 After pumping slug, the 16-1/2" x 19-1/2" BHA was pulled out of hole and reconfigured to place the bit closer to the under reamer. The re-configured BHA was run in hole, washing and reaming as required in the open hole.

4.69 At section TD of the reamed hole from the previous BHA run, the reamer was engaged and the BHA reamed down to open up the 16-1/2" hole and place the 16-1/2" bit at section TD of 14,001 ft MD / 14,000 ft TVD RKB.

4.70 The well was circulated bottoms up and a 10 bbls 16.5 ppg pill placed in the bottom of the hole in preparation for the 16" liner shoe cement job.

4.71 The well was flow checked and confirmed to be static. After pumping a weighted slug into the drill string, the 16-1/2" x 19-1/2" ream down BHA was pulled out of hole and laid out.

4.72 Handling equipment for 16" liner running was rigged up.

4.73 The 16" liner, with shoe track consisting of guide shoe joint, 3 x centralizer joints, single joint of 16" liner and float collar joint were run in hole. Remaining 16" liner joints were run to place the shoe at 6018 ft MD / 6017 ft TVD RKB.

4.74 Inner string handling equipment was rigged up after the 16" landing joint was made up. The inner string consisting of 6-5/8" 34 ppf drill pipe was run along with the diverter sub.

4.75 The Weatherford spear and pack off 16" liner running and cementing assembly was made up to the inner string and landed out. The spear was engaged in the 16" liner and 16" liner string weight picked up.

4.76 The 16" liner was run in hole at a controlled rate on the Weatherford running assembly and landing string to 13,968 ft MD / 13,967 ft TVD RKB. The auto fill float collar was converted and the Weatherford cement stand made up to the landing string.

4.77 The landing string was spaced out to place the 16" liner shoe at 13,982 ft MD / 13,981 ft TVD RKB. Surface lines were then flushed and pressure tested to 5000 psi.

4.78 A wiper dart was dropped and displaced with 120 bbls of 14.8 ppg Ultra Flush HV spacer. The spacer was followed by 422 bbls (2369 ft^3 / 2154 sks) of class H cement slurry. Cement was displaced 20 bbls of 14.8 ppg Ultra Flush HV spacer and 364 bbls of 13.0 ppg SBM. Sufficient cement was pumped to place 3000 ft of cement in the annulus.

4.79 With cement in place, pressure was bled off and float equipment was confirmed to be holding.

4.80 After waiting on cement for 12 hrs to gain 500 psi compressive strength, slacked of 16" liner string weight in 1/3 increments and confirmed that the liner was supported by the cement, the well was monitored on the trip tank.

4.81 The Weatherford 16" liner running assembly was release from the top of the 16" liner and the liner running string contents circulated to clear landing string and inner string. The well was flow checked and confirmed to be static.

4.82 The landing string and inner string were recovered to surface. The Weatherford liner running assembly was laid out.

4.83 The Baker inflatable packer assembly was run in hole to 7909 ft MD / 7908 ft TVD RKB. Picked up and made up cement head. Surface lines were made up and pressure tested to 5000 psi. The inflatable packer was set at 7927 ft MD / 7926 ft TVD RKB, 29 ft above the top of the 16" liner which is at 7956 ft MD / 7955 ft TVD RKB.

4.84 Injection rates versus injection pressures were established prior to commencing the cement squeeze operation on the 16" liner top.

4.85 100 bbls of 8.6 ppg fresh water spacer were pumped, followed by 97 bbls (545 ft^3 / 500 sks) of 16.4 ppg class H cement slurry. Two foam wiper balls were dropped, then the cement was displaced with 15 bbls of 8.6 ppg fresh water spacer, 155 bbls of 13.0 ppg SBM and 69 bbls of 6.8 ppg SBM. Based on displacement volume, top of cement in 16" x 18" liner annulus was at 8252 ft MD / 8251 ft TVD RKB, 296 ft below the 16" liner top.

4.86 After 12 hours of waiting on cement, closed upper annular and pressured up on top of the Baker inflatable packer to 1250 psi. Attempted to perform pressure test of 16" liner top cement squeeze job. At 2098 psi, fluid started pumping into formation. The pressure was bled off and the annular opened. The well was monitored on the trip tank while continuing to wait on cement.

4.87 After a further 4 hours of wait on cement time, the upper annular was closed again and 1250 psi applied to the top of the Baker inflatable packer. Another attempt was made to achieved the desired surface pressure of 4026 psi over the fluid in the cement string to achieve the test equivalent to 3300 psi over 12.8 ppg SBM. This proved unsuccessful,

with pressure leaking off at 2735 psi. Pressure was bled off and the annular opened. The well was monitored on the trip tank while continuing to wait on cement.

4.88 After a further 2 hours of wait on cement time, the upper annular was closed again and 1250 psi applied to the top of the Baker inflatable packer. Another attempt was made to achieved the desired surface pressure of 4026 psi over the fluid in the cement string to achieve the test equivalent to 3300 psi over 12.8 ppg SBM. This proved unsuccessful, with pressure leaking off at 2522 psi, lower than the previous test. Pressure was bled off and the annular opened. The well was monitored on the trip tank while continuing to wait on cement.

Note 16: Mr Bobby Nelson from the BOEMRE was contacted on Friday 19th August to inform him of Nexen's intention to isolate the well to enable BOPs to be recovered, inspected and repaired prior to drilling out the 16" casing shoe. The Nexen team wanted to address earlier referenced leaks on the yellow pod side of the opening and closing functions of Test rams as well as inspect the remainder of the BOPs before drilling towards 14" casing point near the base of salt.

A procedure titled "Isolation Program to Pull BOP Stack" was submitted for approval along with a request for waiver from performing BOP test which was due for Sunday 21st August. The justification for the waiver was that the stack was about to be pulled after the well was isolated. A Verbal Approval was issued for the procedure and a waiver granted for the BOP test by Ms Amy Wilson on the evening of Friday 21st August 2011.

At this point in the operation, based on the leak off pressures it was felt that the leak was probably around the 16" shoe. The procedure submitted above reflected that determination. Observations made in step 4.90, below, changed that picture and pointed at the 16" liner top being the leak path.

4.89 Closed annular, opened "J" sleeve and bled off pressure from below inflatable packer. Reverse circulated the cementing string to displace same to 13.0 ppg SBM.

4.90 The baker inflatable packer was released and after drifting into 70 ft below the 16" liner top to confirm it was clear of cement, pulled out of hole with the packer to 7902 ft MD / 7901 ft TVD RKB. During the trip out of hole, some light spots were observed in the mud when circulating. After flow checking flow was noted, which was confirmed to be background formation gas breaking out in the riser. Mud cut was observed at 12.5 ppg with a maximum of 345 units observed, which was consistent with a shale inclusion located from 9,585 ft to 9,646 ft MD RKB, 306 ft below the 18" liner shoe, in open hole. This lead to suspicion that the 16" liner top squeeze job had been contaminated.

4.91 The well was displaced round to 13.0 ppg SBM. The well was flow checked and confirmed to be static. The Baker inflatable packer was recovered to surface.

4.92 A Halliburton RTTS retrievable packer was run in hole on drill pipe and set at 8008 ft MD / 8007 ft TVD RKB, 50 ft below the top of the 16" liner.

4.93 After rigging up and pressure testing surface lines to 5000 psi, pressure was applied below the RTTS packer, resulting in a successful pressure test of the 16" liner to 3155 psi for 5 minutes. Pressure was then bled off.

4.94 The lower annular was closed and the cement liner up to pump down the choke. Pressure was applied between the closed lower annular and the top of the RTTS packer. Pressure reached 3155 psi, but then quickly bled off to 2642 psi over a 10 minute period. This confirmed the determination above, that the 16" cement shoe job was successful, however the 16" liner top cement squeeze job was likely contaminated with SBM.

4.95 The RTTS was released and recovered to surface after flow checking well. Note that on the trip out of hole a 25 bbls high viscosity 13.0 ppg SBM pill was placed in the well from 8146 ft MD / 8145 ft TVD back to 8028 ft MD / 8027 ft TVD RKB as a base for the 16' line top remedial cement squeeze plug.

Note 17: Ms Amy Wilson from the BOEMRE was contacted on morning of Sunday 21st August to update her with progress being made on the well program. Ms Wilson was notified that it was Nexen's intention to pressure test the BOP stack as scheduled, in spite of the waiver issued per note 13 above.

Nexen's reason for this change was that isolation operations would likely be extended due to a remedial cement squeeze being required on the 16" liner top before recovering the BOP stack to surface.

Note 18: Ms Amy Wilson from the BOEMRE was notified on the afternoon of Sunday 21st August that the pipe handler on the Ensco 8502 rig had broken down while preparing to run the BOP test plug into the well. A 12 hour extension waiver was requested on the BOP test, which was due by midnight of the same day. Ms Wilson gave Verbal Approval for the 12 hour extension late in the afternoon of Sunday August 21st 2011.

4.96 The nominal bore protector was recovered from the wellhead.

4.97 After completing repairs to the rigs pipe handler hydraulic system, Dril-Quips BOP isolation test plug was run in hole and landed out in the wellhead. The BOPs were pressure tested against the test plug, with annulars tested to 250 psi (low) and 7800 psi (high) for 5 minutes and the rams tested to 250 psi (low) and 10,200 psi (high) for 5 minutes, per the APD. The BOPs were then function tested. Note that BOP pressure testing commence ahead of midnight on August 21st 2011, per schedule.

4.98 The test plug was recovered to surface and laid out.

Note 19: Mr Bobby Nelson from the BOEMRE was contacted on Monday 22nd August to provide update on well progress and submit Revision 1 of the procedure titled " Isolation Program to Pull BOP Stack. Revision 1 detailed the updated procedure to remedial squeeze the 16" liner top, isolate the well and recover and inspect the BOP stack. Verbal Approval was received from the BOEMRE on Tuesday 23rd August 2011.

4.99 The Baker cementing parabow assembly was run in hole on drill pipe and set at 8028 ft MD / 8027 ft TVD RKB.

4.100 The cementing string was picked up 10 ft to 8018 ft MD / 8017 ft TVD RKB.

4.101 With the surface lines made up and pressure tested to 5000 psi, pumped 100 bbls of 14.8 ppg Ultra Flush HV spacer followed by 128 bbls (718 ft3 / 653 sks) of 16.4 ppg class H cement slurry. The cement slurry was displaced with 6 bbls of 14.8 ppg Ultra Flush HV spacer followed by 210 bbls of 13.0 ppg SBM to place the balanced cement plug in position across the 16" liner top, which is located at 7956 ft MD / 7955 ft TVD RKB. Based on volumes pumped, bottom of cement was at 8018 ft MD / 8017 ft TVD RKB and top of cement was at 7548 ft MD / 7547 ft TVD RKB, 408 ft above the 16" liner top.

4.102 After rigging down surface lines, the cementing string was pulled out of hole to 7259 ft MD / 7258 ft TVD RKB, +/- 300 ft above the top of the balanced cement plug.

4.103 Lined up surface lines and closed annular to be able to perform Braden Head squeeze down both drill pipe and annulus. Pressure tested lines to 5000 psi. Squeezed away a total of 58 bbls of cement behind 16" liner top, keeping injection pressure below 3000 psi, to leave 200 ft of cement in the well above the top of the 16" liner.

4.104 After waiting on cement for 12 hours, pressure was bled off and the well confirmed to be static. The annular was opened and the well circulated bottoms up. The cement string was recovered to 2953 ft MD / TVD RKB, above the BOP stack.

4.105 The well was lined up to test below the Blind/Shear rams against the cement slurry. After testing surface lines to 4000 psi, the 16" liner top cement plug, 18" casing, 18" liner top, 22" casing, High Pressure Wellhead Housing and connector were successfully pressure tested to 250 psi (low) and 3155 psi (high) against the Blind/Shear rams for 5 minutes. Pressure was bled off.

4.106 The well was then successfully inflow tested well for 30 minutes to equivalent of seawater hydrostatic.

4.107 The cement string was recovered from 2953 ft MD / TVD RKB to surface and laid out.

4.108 The Baker inflatable storm packer assembly was run in hole and set at 3766 ft MD / TVD RKB, inside 22" x 1-1/4" casing, 25 ft above the 18" liner top.

4.109 Surface lines were rigged up and pressure tested to 5000 psi. The well was then tested successfully to 2200 psi for 5 minutes, with pressure being applied below the Baker inflatable storm packer.

4.110 After bleeding off the pressure, and completing 20 klbs push / pull test, the running tool was released and picked up to 92 ft above the Blind / Shear ram. The packer was then successfully inflow tested for 30 minutes to equivalent of seawater hydrostatic.

4.111 The BOP and riser were displaced to seawater then the packer running tool was recovered to surface and laid out.

4.112 Riser handling equipment was rigged up. The BOPs were then unlatched from the well and recovered to surface and landed out on the transfer cart in the moon pool area.

4.113 The BOPs were inspected and repaired, then stump tested.

Note 20: Mr Bobby Nelson from the BOEMRE was contacted on Sunday 28th August to provide notification of Nexen's intention to re-run and latch up the BOP stack on afternoon of Tuesday 30th August 2011.

4.114 After completing the stump testing of the BOP stack, including testing the Deadman sequence from the Blue and Yellow pods, Nexen moved the BOP stack to well center in the moon pool at 06:00 hrs on Tuesday 30th August, to prepare to run the BOP stack back onto the well.

4.115 At well center, Nexen completed alignment of bullseyes on BOP stack and performed tilt testing of the stack as final preparation to run the stack.

Note 21: Mr Bobby Nelson from the BOEMRE was contacted on Tuesday 30th August to determine whether Nexen would be required to perform Dead man test and/or ROV intervention test on the BOP stack once latched up. Mr Nelson confirmed that same day that this was not required as it is only required for the initial test on a well. Note, that these tests were performed by Nexen during stump testing of the BOP stack in line item 4.113 above.

Note 22: Mr Bobby Nelson from the BOEMRE was contacted on Tuesday 30th August regarding Nexen's procedure for well re-entry, titled "Well Re-entry and 14" Casing Interval Drill Ahead Program". He requested that it be sent to Ms Amy Wilson for approval and they would discuss. The procedure was sent to Ms Wilson at the BOEMRE on evening of Tuesday 30th August. Ms Wilson gave Verbal Approval for the procedure later that same evening.

4.116 After a short period of waiting on weather for currents, Nexen commenced re-running the BOP stack on Tuesday 30th August 2011. The BOP stack was run on riser to 2236 ft MD / TVD RKB.

Note 23: Mr Bobby Nelson from the BOEMRE was contacted on Thursday 1st September 2011 to notify him of Nexen's intention to recover the BOP stack back to surface as a result of a bad weather system developing the Gulf of Mexico, tropical storm Lee.

4.117 The BOP stack was recovered to surface and set on the transporter in the moon pool.

Note 24: Mr Bobby Nelson from the BOEMRE was contacted on evening of Monday 5th September 2011 to provide notification of Nexen's intention to re-run and latch up the BOP stack on afternoon of Thursday 8th September 2011.

4.118 Nexen commenced re-running the BOP stack on Tuesday 6th September 2011. The BOP stack was run and latched up on the well on Wednesday 7th September.

Note 25: Mr Bobby Nelson from the BOEMRE was contacted on morning of Wednesday 7th September 2011 to provide notification of likelihood that BOP pressure testing on the wellhead coming forward to evening of 7th September. The BOEMRE notified Mr Cary Bradford of Nexen that they would likely not be out to witness the BOP pressure testing after latch up.

4.119 After latching up the BOP stack and spacing out, the wellhead connector was successfully pressure tested to 250 psi (low) and 3000 psi (high) for 5 minutes with seawater.

4.120 After installing diverter, surface lines and umbilicals, handling equipment was laid out.

4.121 The Baker inflatable storm packer assembly was made up and run in hole on drill pipe and spaced out to perform BOP pressure tests. The BOPs were pressure tested per the APD, with annulars tested to 250 psi (low) and 7800 psi (high) for 5 minutes and the rams tested to 250 psi (low) and 10,200 psi (high) for 5 minutes, against the test rams. The BOPs were then function tested.

4.122 The riser and BOP were displaced from seawater to 13.0 ppg SBM, then the Baker inflatable storm packer released with the running tool engaged and the remainder of the seawater below the BOP stack and in the drill pipe displaced out to 13.0 ppg SBM.

4.123 The Baker inflatable storm packer was retrieved to surface and laid out.

4.124 The 14-3/4" x 16-1/2" cement clean out BHA was made up and run in hole, placing the Dril-Quip wear sleeve in the wellhead on the trip in hole. Top of the cement plug that had been set across the 16" liner top was tagged at 7772 ft MD / 7771 ft TVD RKB, with 10 klbs set down.

4.125 The cement plug was drilled down from 7772 ft MD / 7771 ft TVD to 8023 ft MD / 8022 ft TVD RKB. This placed the reamer at 7822 ft MD / 7821 ft TVD RKB, 199 ft back from the bit.

4.126 The remainder of the cement below the reamer was reamed down to place the reamer on top of the 16" liner at 7956 ft MD / 7955 ft TVD RKB. This depth placed the 14-3/4" bit below the 13.0 ppg high viscosity pill which had originally been placed in the well.

4.127 The well was circulated and conditioned to 13.0 ppg SBM.

4.128 After flow checking the well, the clean out BHA was pulled out of hole to surface and laid out. The Dril-Quip wear sleeve was recovered from the wellhead on the trip out of hole.

4.129 The Blind / Shear rams were closed and the well was pressure tested against 16" liner, 16" liner top, 18" liner, 18" liner top, 22" casing, High Pressure Wellhead Housing and wellhead connector to 250 psi (low) for 5 minutes and 3155 psi (high) for 30 minutes successfully.

4.130 The 14-1/2" x 17-1/2" drill ahead BHA was picked up and run in hole to 5076 ft MD / 5075 ft TVD RKB. The Dril-Quip wear sleeve was placed in the wellhead during the trip in hole with the BHA.

4.131 At this point, emergency disconnect and well control drills were performed with both rig crews after having recorded slow pump rates.

4.132 Tripping in hole with the BHA continued to 13,711 ft MD / 13,710 ft TVD RKB, where the top of cement above the 16" auto fill float collar was tagged.

Note 26: On Friday 9th September the BOEMRE inspectors arrived on the Ensco 8502 rig and conducted and inspection. The inspection went well. The purge system to the Schlumberger MWD unit could not be function tested due to a loss of power to the unit. The lead BOEMRE inspector, Mr James Richard notified Nexen's Drill Site Manager that the unit purge system must be functional before drilling out the 16" casing shoe. The Schlumberger MWD unit purge system was functional prior to drill out, with the functionality confirmation noted in the Nexen and IADC Daily Drilling Reports.

4.133 The 16" shoe track cement was drilled out along with cement in the rat hole early on Sunday 11th September 2011.

4.134 New hole was drilled from 14,001 ft MD / 14,000 ft TVD to 14,011 ft MD / 14,010 ft TVD RKB, then the well was circulated bottoms up to place cuttings in the riser.

4.135 With the BHA spaced out inside the 16" liner shoe, the BOPs were closed and an FIT performed to 1610 psi over 13.0 ppg SBM for 5 minutes, giving an FIT equivalent to 15.2 ppg mud weight.

4.136 After bleeding off the pressure and opening the BOP stack, the well was displaced from 13.0 ppg SBM to 14.2 ppg SBM and the mud in the well circulated and conditioned in preparation for drilling ahead.

4.137 After displacing the mud system, drilling commenced. The hole was drilled down to 15,832 ft MD / 15,831 ft TVD RKB. Several inclusions were drilled during this section, with erratic torque observed. While drilling, the MWD tool failed in the hole. To assist with drilling inclusions, the mud weight was increased to 14.5 ppg prior to flow checking and commencing trip out of hole with the BHA to replace the MWD tool. The trip was made and the MWD tool changed out.

Note 27: From this point forward the well was back on plan per the original submitted APD. A revised WCST (Well Containment Screening Tool) was sent by Mr. Cary Bradford to Mr. Lance Labiche at the BOEMRE on September 14th 2011 whilst drilling ahead, in preparation for sending RPD documentation to the P.E. certifiers. The WCST was approved that same day by Mr. Labiche.

4.138 Once back on bottom, drilled ahead with 14-1/2" x 17-1/2" BHA to 17,048 ft MD / 17,047 ft TVD, increasing mud weight from 14.5 ppg to 14.7 ppg, due to 0.7 ppg mud cut with drilled formation water and background gas. Drilled ahead to 17,478 ft MD / 17,477 ft TVD. Due to continued mud cut, circulated and conditioned well. Performed open hole FIT to 15.46 ppg EMW. After increasing mud weight up to 14.9 ppg, drilled ahead from 17,478 ft MD / 17,477 ft TVD to 18,910 ft MD / 18,909 ft TVD.

4.139 At 18,910 ft MD / 18,909 ft TVD a drilled kick was encountered in the Salt formation. The well was shut in immediately by the driller after flow was confirmed. The total volume of the kick at shut-in was 40 bbls. Shut in Drill Pipe Pressure = 580 psi; SICP = 690 psi. Based on mud weight in drill pipe and the SIDPP, the Kill Weight Mud requirement was determined to be 15.5 ppg. This influx occurred on Saturday September 17th 2011.

Note 28: Ms Amy Wilson from the BOEMRE was contacted on morning of Saturday 17th September at 10:00 am, to inform her that an influx had occurred and that Nexen's Kakuna well had been shut-in for well control purposes.

4.140 The well was circulated in a controlled manner utilizing the "Drillers Method", at 20 strokes per minute (spm), with the Upper Annular closed, while weighting up surface mud system to 15.5 ppg SBM.

4.141 Once Kill Weight Mud was ready, pumped 15.5 ppg SBM in a controlled manner in second circulation of driller's method. With mud at bit, shut in and monitored pressures. Based on observations, decision taken to weight up to 15.7 ppg SBM due to cut mud weight mud returns. Displaced well to 15.7 ppg SBM in controlled manner.

Note 29: Ms Amy Wilson from the BOEMRE was contacted on afternoon of Friday 23rd September, to inform her that it was Nexen's intention to pull out of hole with the BHA after completion of the BOP test. This would serve two functions. Firstly, the casing and blind/shear function tests could be performed. Secondly, the bit could be placed closer to reamer to enable 14" casing to be placed as close to bottom as possible. Ms Amy Wilson approved that same day and also requested that revised WCST be submitted prior to submitting RPD. Note: This was submitted October 6th to Lance Labiche.

4.142 Due to losses, cut mud weight in well to 15.5 ppg SBM in controlled manner. A well control pit drill was then performed and the well flow checked, prior to pumping out of hole with the BHA. With the BHA at 12,423 ft MD / 12,422 ft TVD, rigged up and performed BOP pressure and function testing. Displaced riser, choke and kill lines to 15.8 ppg SBM, flow checked well, then tripped out of hole with the BHA.

Note 30: Ms Amy Wilson from the BOEMRE was contacted on morning of Saturday 24th September, to inform her that after completion BOP pressure testing leaks were noted on the test rams from both pods. She was notified that pressure integrity was not compromised and that it was Nexen's intention to place the test rams in the "Block" position. Ms Wilson gave approval that same day, for the rams to be placed in block and operations to continue.

4.143 With the BHA reconfigured to place the under-reamer closer to the bit, the revised 14-1/2" x 17-1/2" ream down BHA was run in hole. Mud weight had to be managed in both the well bore and the riser and choke and kill lines to enable the BHA to be tripped in hole in a controlled manner. With the bit at 18,736 ft MD / 18,735 ft TVD, the well was circulated and conditioned round to 15.6 ppg SBM and then monitored to confirm stable.

4.144 The 17-1/2" hole was reamed down from 18,832 ft MD to 18,892 ft TVD, to place the 17-1/2" rat hole 18 ft above the section TD. The Diverter and BOPs were function tested. Due to mud losses in the well which increased significantly while reaming down, the bit was placed at a height to enable barite plugs to be pumped. The first barite plug was not present after the programmed time of waiting. As a result a second plug was pumped. Whilst the second plug was also not on bottom, it did act to stabilize the well.

Note 31: Ms Amy Wilson from the BOEMRE was contacted on morning of Saturday 1st October, to request extension on the Blind Ram and Casing Shear Ram function tests which had been due by October 1st at midnight. She was informed that we were waiting on barite plug to settle. Ms Wilson granted the request, on the understanding that the test would be performed at the earliest possible point and that the extension was valid until October 3rd 2011.

4.145 With the well stable, flow checked well and pulled out of hole to surface and laid out the BHA. During the trip out, the casing and blind/shear rams were function tested on 2nd October 2011.

4.146 The casing handling equipment for the 14" casing was rigged up. The 14" casing was then run in hole to 18,845 ft MD / 18,844 ft TVD, whilst monitoring down hole losses and keeping hole full of 15.6 ppg SBM. Note: 14" casing shoe finally confirmed at 18,851 ft MD / 18,850 ft TVD. The difference between the depths is the effect of casing stretch.

4.147 With the 14" casing landed out in the wellhead, the cement lines were rigged up and pressure tested. The 14" cement job was pumped, with 3051 cuft of 16.4 ppg, class H slurry being pumped, per APD. Note: APD approved for 3037 cuft.

4.148 After displacing the cement, the 14" seal assembly was set and pressure tested. The BOPs were then function tested and pressure tested against the 14" running tool to pressures identified in the APD. After laying out the cementing stand the 14" casing running tool was pulled to surface and laid out.

Note 32: In preparation for sending the RPD for drill ahead below 14" casing shoe, a revised Well Containment Screening Tool (WCST) was sent to Mr. Lance Labiche at the BOEMRE on October 6th 2011. The WCST was accompanied by a revised wellbore schematic, formation pressure curve and revised consequentiality curve. Mr. Labiche reviewed the documents and approved the revised WCST. Also approval was granted by Mr. Bobby Nelson of BOEMRE, on behalf of Ms Amy Wilson that same day, to proceed with operations while finalizing the P.E. certification documentation.

4.149 Three failed attempts were made to pressure test the 14" casing per the APD. There was suspicion that because the top cement wiper plug was not bumped onto the float collar, that the pressure build ups were just pushing the top wiper plug down hole. Pressure was leaking off if more than 200 psi applied.

4.150 Decision taken to run Baker Model "L" test packer assembly to determine the source of the leak. Using the plug, the casing was successfully pressure tested to 4000 psi from above, against the Upper Annular, with the plug set at 4194 ft MD / TVD, 4475 ft MD / TVD and 18,130 ft MD / 18,129 ft TVD. The packer was unset from bottom depth and a successful 4000 psi pressure test applied. After flow checking the well, the Baker Model "L" test packer was retrieved to surface.

4.151 Once the Baker packer was above the BOP stack, the 14" casing was successfully pressure tested offline against the blind shear rams to 250 psi for 5 minutes and 7400 psi for 30 minutes at 1 bpm with 15.6 ppg SBM. Note that the maximum pressure applied reflected the change in mud weight from the 14.2 ppg SBM originally planned in the APD.

4.152 A 12-1/4" clean out BHA was subsequently tripped in hole and wash down the last few stands to tag the 14" wiper plugs on top of the float collar. After taking slow pump rates and conducting well control and EDS drills with rig crews commenced drilling out the shoe track.

4.153 After the cement wiper plugs and float collar were drilled out, the BHA was washed down through the shoe track, with the exception of 10 ft of hard cement. The remainder of the shoe track did not exhibit signs of good cement. The string was washed and reamed to bottom and 10 ft of new hole drilled from 18,910 ft MD / 18,909 ft TVD to 18,920 ft MD / 18,919 ft TVD RKB. The well was flow checked, and then two Formation Integrity tests (FIT) were performed at 1 bpm. Both FITs achieved 16.15 ppg Equivalent Mud Weight (EMW), which was less than desired. As a result the BHA was pulled out of hole.

4.154 A Baker "Python" composite cement retainer was run in the hole to be able to squeeze cement around the 14" casing shoe. During the trip in the hole, the composite cement retainer unintentionally set while filling the drill pipe per Baker's procedure. After releasing from the cement retainer, the running string was pulled out of hole and a drill out BHA run in hole to drill out the cement retainer. The composite cement retainer was drilled and pushed to bottom of the well, where it was eventually drilled up and broken into pieces which were circulated out of the well bore. In drilling up the retainer, an

additional 6 ft of new hole was drilled to 18,926 ft MD / 18,925 ft TVD RKB, to remove the retainer fragments.

4.155 After having drilled up the cement retainer, the well was circulated and conditioned and a repeat FIT performed at 2 bpm to understand the impact of flow rate on the FIT result. There was no improvement. The well was then confirmed to be static and the BHA pulled out of hole.

4.156 A change was made to a Halliburton FAS-DRILL composite retainer after having function tested the Blind/Shear rams and the Casing Rams. The FAS-DRILL cement retainer was run in hole to 18,700 ft MD / 18,699 ft TVD RKB. After having rigged up surface lines and pressure tested same as well as the cement retainer from above, 130 bbls of spacer followed by 250 bbls (1404 cuft) of 16.4 ppg class H cement slurry, followed by 10 bbls of spacer, were pumped. This was displaced by 15.6 ppg SBM and squeezed away below the cement retainer. The stinger was pulled out of the cement retainer and the last 5 bbls of the cement slurry was set on top of the cement retainer. After circulating well clean, flow checking and confirming it was static, the surface cementing equipment was rigged down and the string pulled out to surface and the retainer running tool was laid out.

4.157 Schlumberger wireline was then rigged up and run in hole to confirm whether there was any cement behind pipe as well as to confirm well bore survey data. Two runs were made. The first run was primarily a USIT tool in combination with a MSIP (Sonic Scanner) tool for cement bond. The second run was a wireline gyro run with GR. The cement bond log indicate that there was no cement bind the 14" casing down to deepest point the tools could be run i.e. 18,660 ft MD / 18,659 ft TVD RKB (191 ft above 14" shoe).

Note 33: Mr Bobby Nelson and Ms Amy Wilson of the BOEMRE were contacted on Monday 17th October to confirm that after a failed 14" casing cement job a squeeze job had been pumped and wire-line logging had been performed. Mr Nelson and Ms Wilson were notified of the forward plan for drill out of cement retainer and cement and establishing a cement shoe. Ms Wilson gave approval that evening to continue with the procedure to establish an FIT. She also stipulated that no new "Drill Ahead" hole could be drilled until the BOEMRE had been notified of the FIT results.

4.158 The drill ahead 12-1/4" x 14-3/4" BHA was tripped in hole and tagged cement on top of the FAS-DRILL cement retainer. The cement and the retainer were drilled up, then the BHA was washed in hole, where top of cement was tagged at 18,914 ft MD / 18,913 ft TVD RKB. Firm cement was tagged at this depth. This meant that cement was only in the bottom 12 ft of the rat hole from 18,926 ft MD / 18,925 ft TVD to 18,914 ft MD / 18,913 ft TVD RKB. There was no cement observed in the casing below the cement retainer.

Note 34: Mr Bobby Nelson of the BOEMRE were contacted on Tuesday 18th October to confirm the forward plan for removing the drill ahead BHA from the hole given that the

cement job below the retainer had been unsuccessful. The forward plan was approved by Mr Nelson on afternoon of same date.

4.159 With the bit picked up into the casing shoe, circulating and conditioning of the mud system in the well commenced. During circulation, a gain was noted in the pits. The well was flow checked and confirmed to be flowing. It was then shut-in on the upper annular, with a gain of 106 bbls. Shut in casing pressure = 750 psi; Shut in Drill Pipe Pressure = 110 psi.

4.160 The influx was circulated out of the well in a controlled manner using the first circulation of the Drillers method, taking returns up both choke and kill lines. Once the well was stabilized, the upper annular was opened and the well circulated with 15.6 ppg SBM at 438 gpm, whilst monitoring for potential well flow. After circulation of bottoms up, the pumps were shut down. A 23 bbl gain was noted, attributed to well bore breathing, associated with mud losses downhole.

4.161 With the bit spaced out at 18,907 ft MD / 18,906 ft TVD RKD, the upper annular was closed and the drill pipe stripped up to 18,475 ft MD / 18,474 ft TVD RKB. At this depth a 66 bbl barite plug was pumped. While waiting on the barite plug to settle, the BOPs and Diverter were function tested and drill line slipped and cut.

4.162 After designated wait time had passed, the drill string was stripped in the hole to tag the barite plug. The barite plug was not present.

Note 35: Ms Amy Wilson of the BOEMRE was contacted on Friday 21st October to confirm that barite plug had been unsuccessful. Forward plan was laid out in e-mail along with request for BOP pressure test extension to complete operation necessary to put well in position to safely do so. Ms Wilson gave a 48 hr BOP test extension that same evening. Note that a further BOP pressure test extension was granted on Sunday 23rd October for 24 hrs, followed by an open ended BOP extension on Monday 24th October by Ms Wilson, until such time as the well could be stabilized to pull out of hole and pressure test BOPs. BOP pressure testing commenced on October 27th and was completed on October 28th after having stabilized well and tripped out.

4.163 After a period of attempting to let the drilling fluid which had been lost downhole to the well, breath back into the well to relieve the pressure in the formation near the 14" shoe, the well was circulated bottoms up through two fully open chokes. The well was then opened up and the BHA pumped out of hole to space out for second barite plug.

4.164 A 132 bbl, 18.0 ppg barite plug was placed in the bottom of the well with the upper annular closed and after the required period of time to let the plug settle, the BHA was stripped in the hole to tag the barite plug. There was no indication of the barite plug, with the BHA tagging up on the top of the cement in the rat hole sump which had previously been confirmed at 18,914 ft MD / 19,913 ft TVD RKB.

4.165 After stripping back into the 14" shoe, the well was circulated bottoms up through two fully open chokes again, whilst manipulating flow rate to prevent losses downhole of 15.6

ppg SBM. Once bottoms up circulation had been achieved, a formation water reactive Halliburton Baroid FUSE-IT lost circulation prevention pill was pumped into the well and allowed to set up. After the required wait period, the choke was opened up and it was confirmed that the pill had been unsuccessful.

4.166 After opening the upper annular and pumping out of hole to 18,596 ft MD RKB, the upper annular was again closed and a Baker cementing "Flow Guard" cement loss prevention remedy pumped into place. This pill train was pumped and squeezed away as follows: 10 bbls freshwater, 24 bbls Calcium Chloride, 10 bbls fresh water, 24 bbls Sodium Silicate, 10 bbls freshwater, 75 bbls (420 cuft) 16.4 ppg class H cement slurry, 10 bbls freshwater and then displaced with Synthetic Based Mud.

4.167 After period waiting on cement whilst monitoring well pressures, the upper annular was opened and the well confirmed to be static. The BHA was run in hole and tagged cement at 18,860 ft MD / 18,859 ft TVD RKB, 9 ft below the 14" casing shoe. The BHA was then tripped out of hole to pick up the BOP test tool and complete pressure testing which had been under BOEMRE extension per the note above. BOP pressure testing and function testing were completed on 28th October.

4.168 After completion of BOP testing, and confirmation there was no pressure below the BOP test plug after testing, the BHA and test plug were tripped back to surface in a controlled manner.

4.169 After laying out the directional BHA, a 12-1/4" clean out BHA was run in hole conditioning mud weight as necessary to trip BHA in hole in a controlled manner. The BHA was run in and tagged the top of cement at 18,860 ft MD / 18,859 ft TVD RKB as confirmed above.

4.170 After circulating bottoms up with 15.8 ppg SBM, the BHA was pulled out of hole to 18,600 ft MD, 251 ft above the 14" casing shoe. The upper annular was closed and another Baker cementing "Flow Guard" cement loss prevention remedy was again pumped into place. This pill train was pumped and squeezed away as follows: 20 bbls freshwater, 24 bbls Calcium Chloride, 10 bbls fresh water, 24 bbls Sodium Silicate, 10 bbls freshwater, 160 bbls (898 cuft) 16.4 ppg class H cement slurry, 10 bbls freshwater and then displaced with Synthetic Based Mud at 10 bpm. After a period of waiting on cement whilst monitoring well bore pressures. Opened chokes up and confirmed that well was losing mud slowly. After conditioning riser opened upper annular and circulated well at controlled rate monitoring for loses. Lost 109 bbls of 167 which was pumped. It was agreed that the displacement rate when the cement hit the formation in the cement job just performed was probably too high, leading to leak off.

4.171 After running to bottom and confirming no cement across shoe, the hole was circulated bottoms up with 15.8 ppg SBM, then the BHA pulled out of hole to 18,440 ft MD, 411 ft above the 14" casing shoe. The upper annular was closed and a third Baker cementing "Flow Guard" cement loss prevention remedy was again pumped into place. This pill train contained an additional cement stage and was pumped and squeezed away as follows: 20 bbls freshwater, 24 bbls Calcium Chloride, 8 bbls fresh water, 24 bbls

Sodium Silicate, 8 bbls freshwater, 100 bbls (561 cuft) 16.4 ppg class H cement slurry, 8 bbls freshwater, 24 bbls Sodium Silicate, 8 bbls freshwater, 200 bbls (1123 cuft) 16.4 ppg class H cement slurry, 10 bbls freshwater, and then displaced with Synthetic Based Mud at 4 bpm, slowing to 1 bpm at the end.

4.172 After a period of waiting on cement and monitoring well pressures, the well was placed on the trip tank to flow check and confirmed to be static. After opening the upper annular the BHA was tripped in hole and tagged top of cement with 25 klbs set down weight at 18,537 ft MD RKB.

4.173 After circulating well round from 15.8 ppg to 15.6 ppg SBM in a controlled manner (0.1 ppg above Kill Weight Mud of original influx), the well was flow checked and confirmed to be static. The clean out BHA was then pulled out of hole into the riser and Blind/Shear rams successfully pressure tested against the 14" casing and cement inside bottom of 14" casing to 250 psi for 5 minutes and 7400 psi for 30 minutes per the APD (Adjusted for mud heavier weight).

4.174 After completion of the pressure test as well as function test of Blind/Shear rams and Casing Shear rams, the BHA was tripped in hole to 18,530 ft MD RKB. After completion of BOP and diverter function testing a well control drill was completed with the rig crews. The BHA was then run in hole and tagged cement. Hard cement was drilled down to 2 ft below the 14" shoe. Below this point, the next 5 ft of cement was washed through.

4.175 The well was circulated bottoms up, with the bit inside the 14" shoe. A cement integrity test was then performed, which observed a 16.19 ppg EMW. This was less than desired. The well was giving indications of wanting to bleed back some of the fluids which had been pumped away with the last cement squeeze. To stabilize this, the mud weight was raised to 15.7 ppg. After completing circulation, the BHA was pulled to 18,435 ft MD RKB, to perform another Flow Guard treatment, this time with three cement stages.

4.176 The upper annular was closed and a fourth Baker cementing "Flow Guard" cement loss prevention remedy was pumped into place. This pill train contained an additional cement stage and was pumped and squeezed away as follows: 20 bbls freshwater, 48 bbls Calcium Chloride, 8 bbls fresh water, 24 bbls Sodium Silicate, 8 bbls freshwater, 100 bbls (561 cuft) 16.4 ppg class H cement slurry, 8 bbls freshwater, 24 bbls Sodium Silicate, 8 bbls freshwater, 100 bbls (561 cuft) 16.4 ppg class H cement slurry, 8 bbls freshwater, 24 bbls Sodium Silicate, 8 bbls freshwater, 200 bbls (1124 cuft) 16.4 ppg class H cement slurry, 10 bbls freshwater, and then displaced with Synthetic Based Mud at 4 bpm. While displacing the cement train, the pressure started increasing significantly from 1040 psi to 5250 psi, indicating that the cement, and cement chemical accelerator s were starting to mix and set up down hole going into the formation and having the desired effect.

4.177 There was still some of the last portion of cement inside the drill pipe. To prevent the BHA becoming cemented up, the upper annular was opened and the BHA was pumped out of hole per the plan contingency options. The BHA was pumped out to 17,138' MD RKB and then the well was circulated bottoms up with 15.8 ppg SBM. The upper annular

was then closed again and pressures in the well were monitored while waiting on cement to gain 500 psi compressive strength.

4.178 After waiting on cement, the well was confirmed to be static, the upper annular was opened and the BHA was tripped in hole and tagged top of cement at 17,515 ft MD RKB. Cement was drilled out down to 18,845 ft MD RKB, 5 ft above the 14" shoe. After circulating bottoms up and confirming that the well was static, the BHA was pulled out of hole and racked back.

4.179 Schlumberger wireline was rigged up and run in hole to evaluate cement. Two logging runs were done. The first was a MSIP (Sonic Scanner tool) and the second was a temperature/noise log. Both runs appear to indicate top of cement at +/- 18,814 ft MD RKB, 37 ft above the 14" casing shoe. This would suggest that all the previous cement pumped over several jobs away had exited into a thief zone near the potential cement top depth.

4.180 Due to cement build up in some tool joints some HWDP was run into the riser, then pulled and laid down to ship back to shore for cleaning The drill line was slipped and cut part way through the cleaning process. A total of 90 joints of drill pipe were laid down and shipped to shore for cleaning. The drill collars were also inspected and cleaned.

4.181 A 12 1/4" x 14 3/4" clean out assembly, was picked up and run into the well. The top of cement was tagged at 18,845 ft MD RKB and the well was circulated, reducing the mud weight from 15.8 ppg to 15.6 ppg planned drill ahead mud weight.

4.182 Firm cement was drilled from 18,845 ft MD to 18,856 ft MD KRB, 5 ft below 14" casing shoe. The cement cuttings were circulated above the BOP stack and a Cement Integrity Test was performed to 16.53 ppg Equivalent Mud Weight, confirming isolation of the loss zone behind the 14" casing with cement.

4.183 With the reamer still closed, the cement in the rat hole was drilled from 18,856 ft MD to 18,900 ft MD RKB. The weight on bit dropped off to zero from 18,900 ft MD to 18,908 ft MD RKB indicating an interval of poor or no cement. Hard cement was drilled from 18,908 ft MD to 18,926 ft MD then 10 ft of new hole was drilled to 18,936 ft MD / 18,935 ft TVD RKB.

4.184 After confirming that the well was static, the reamer was activated and the hole was reamed to 14-3/4" from 18,851 ft MD to 18,921 ft MD RKB. Bit depth was 18,936 ft MD RKB. The bit was pulled inside the casing shoe and the cuttings were circulated above the BOP stack. An FIT was performed to 16.2 ppg Equivalent Mud Weight which was less than the desired 16.5 ppg but confirmed to be the result of the weak zone below the casing shoe.

4.185 The well was circulated bottoms up and a flow check was conducted. The well was confirmed to be static.

Note 36: Nexen held a conference call with Mr Bobby Nelson at the BSEE (Previously referred to as BOEMRE in this document) at 9:30 am on Thursday 10th November. Mr Nelson was brought up to date with regards to operations on the rig and establishment of formation integrity at 14" shoe. Mr Nelson was advised of Nexen's plan forward. It was agreed with Mr Nelson that a forward plan summary document along with Well Containment Screening Tool, well bore schematic and formation pressure/mud weight curves would be sent to the BSEE for review that day. These documents were supplied to Mr Nelson and Mr Lance Labiche on the afternoon of that same day.

After review by the BSEE, Mr Bobby Nelson issued verbal approval on behalf of Mr Bryan Domangue to continue with operations up to drill out of the 11-3/4" liner shoe, to enable RPD documentation to be finalized, certified, submitted and reviewed by the BSEE.

4.186 The 12-1/4" x 14-3/4" drill out BHA was pumped out of the hole 3994 ft MD to prevent swabbing and then the BOP test tool was picked up. The BOP test tool was run back into the well to 18,279 ft MD. The BOPs were function tested on the trip back into the hole.

4.187 After circulating the well and confirming it was static, the BOP test tool was set in the wellhead and the BOPs were pressure tested as per the APD with annulars pressure tested to 250 psi (low) / 7800 psi (high) for 5 minutes for each test. Pipe rams and other well control equipment were successfully pressure tested to 250 psi (low) / 10,200 psi (high) for 5 minutes for each test.

4.188 After the BOP test, the well was opened up to the mini-trip tank and confirmed to be flowing. The well was shut back in and 16.8 ppg mud was circulated down the choke and kill lines. After confirming well was static, the riser was also displaced to 16.8 ppg SBM. The well was shut in and monitored on the mini-trip tank. After confirming a slow flow back, the mud in the choke/kill lines and the riser was displaced with 16.9 ppg SBM. The well started to slowly take fluid (minor mud losses downhole).

4.189 The well was displaced to 15.8 ppg SBM, manipulating the pump rate to control the losses. The choke and kill lines were also displaced to 15.8 ppg SBM. After the well was confirmed to be flowing back to the mini-trip tank, part of the riser was displaced back to 16.9 ppg SBM until the well was static.

4.190 The drilling assembly was pumped out of the hole to recover the BOP test tool and was run back into the well to 18,933 ft MD, where the well was circulated bottoms up with 15.6 ppg SBM after displacing the riser back to 15.6 ppg SBM. There was minimal gas (95 units max – 1.9%) on bottoms up and the maximum mud cut was 15.4 ppg EMW. The hole was fully displaced to 15.6 ppg SBM.

4.191 New 12-1/4" x 14-3/4" hole was drilled with 15.6 ppg SBM from 18,936 ft MD to 19,000 ft MD / 18,999 ft TVD RKB.

4.192 The cuttings were circulated out of the before displacing the hole to 15.8 ppg SBM for the trip to change out the BHA. 550 bbls of 16.9 ppg SBM was placed in the riser and

the well confirmed to be static after flow checking. The heavier mud weight was displaced into the well to allow a swab margin for tripping the BHA out of the hole.

4.193 The drill out assembly was pumped out of the hole from open hole TD to 12,322 ft MD and then pulled to surface.

4.194 The 12-1/4" x 14-3/4" drill ahead assembly was then run back into the well to bottom at 19,000 ft MD / 18,999 ft TVD RKB and the well circulated round to 15.6 ppg SBM in preparation for drilling ahead.

4.195 After activating the under-reamer, the well was drilled ahead vertically to the section TD of 21,900' MD / 21,899' TVD with 15.6 ppg SBM. Schlumberger's Seismic While Drilling tool was used to take a seismic checkshot surveys during each connection. Analysis of the seismic data resulted in a revised base of salt pick of 22,212' MD, ±150'.

4.196 After the final seismic survey was circulated up, the BOP was function tested. The hole was then circulated clean and 16.5 ppg SBM was spotted in the rat hole. After displacing the riser to 17.1 ppg SBM, a flow check was conducted and the drilling assembly was pumped out until it was above the BOP stack and then it was pulled to surface.

Note 37: On November 21, 2011, Mr. Bobby Nelson with BSEE Houma district office was contacted regarding a surge bottle for the upper annular which was leaking nitrogen from the Schrader valve. After receiving a letter from the Nexen in-house contract Subsea Specialist from West Engineering detailing the issue and indicating that this does not effect the certification of the BOP, Mr. Nelson gave approval to proceed.

4.197 The 11-3/4" Q125 HC, 65 ppf drilling liner was run into the hole. After making-up the Dril-Quip liner hanger, the liner was run into the hole on the 6-5/8" landing string. After converting the auto-fill float collar, the ball was dropped to set the liner hanger. After some challenges getting the ball to seat, approximately 100 klbs of string weight was lost. After displacing the riser back to 17.4 ppg SBM, flow back was confirmed so the well was shut-in and bottoms up was circulated via the choke and kill lines. After displacing the choke and kill lines back to 17.4 ppg SBM and conducting a flow check, the running tool was pulled to surface. Only the running tool assembly, including wiper plugs, was recovered. The entire 11-3/4" liner, including the hanger and liner top packer, was left in the well and fell to the bottom of the rat hole. This resulted in 334 ft of liner overlap above the 14" casing shoe with the 11-3/4" shoe landing at 20,900 ft MD/ 20,899 ft TVD RKB.

4.198 After functioning the blind shear/casing shear rams, an 11-3/4" Fas-drill cement retainer was run into the well and inadvertently set in the top of the 11-3/4" liner. This required a subsequent clean out run to drill out the retainer. On the trip into the hole with the clean out BHA, a BOP test was performed. The retainer was partially drilled and then pushed/pumped to the float collar, where the remainder was drilled as well as the float collar. The shoe was tagged and bottoms up was circulated. After displacing the riser back to 17.4 ppg SBM, the assembly was pulled to surface.

4.199 The liner top packer setting tool was then run into the well and the liner top packer was successfully set and pressure tested to 1000 psi. After the pressure test, the assembly was pulled to surface.

4.200 A second 11-3/4" Fas-drill cement retainer was run into the well and set in the shoe track at 21,547' MD. After establishing injection pressures, 115 bbl of 16 ppg Sealbond spacer was pumped followed by 113 bbl (634 ft³) of Class H cement and 15 bbl of 16 ppg Sealbond spacer. This was displaced with 15.6 ppg SBM with the rig pumps at 10 bpm until the leading edge of spacer was 10 bbl above the bottom of the stinger then the stinger was stabbed into the Fas-drill and 233 bbl of fluid was squeezed into the annulus (approx 66 bbl of cement). The stinger was unstung from the retainer and 5 bbl cement was dumped on top. After circulating above the retainer, the stinger was pulled to surface. On the trip out, the 11-3/4" liner and 14" casing were successfully pressure tested to a maximum test pressure of 4100 psi for 30 minutes against the Blind/Shear rams.

Note 38: On November 30, 2011, Ms. Amy Wilson, BSEE representative from Houma District Office, granted approval to drill out below the 11-3/4" casing shoe and stated that the final approval of the RPD would be granted before noon Thursday, December 1.

4.201 A 10-5/6" x 12-1/4" BHA was made up and run into the well to above the BOP. An inflow test was performed on the 14" seal assembly and the 11-3/4" liner to a differential pressure equivalent to seawater at the 14" seal assembly.

4.202 The drilling assembly was tripped in to the top of the cement retainer. No cement was observed on top of the retainer. The retainer was partially drilled then pushed through soft cement to just above the shoe.

4.203 The well was then displaced to 14.2 ppg SBM. Firm to hard cement was drilled from 21,698' to 21,900' MD. While drilling out the shoe, a 28 bbl influx was taken into the well which was circulated out using the Driller's Method and eventually required 15.8 ppg kill weight mud. The source of the influx was determined to be the original influx zone at 18,906' MD as a result of poor annular isolation which was charged up due to the cement squeeze.

4.204 The riser was displaced to 15.9 ppg SBM then the BOPs were function tested. The drilling assembly was pumped out of the hole to 18,159' MD then pulled to surface. Part way through the trip, the riser was boosted with 484 bbl of 16.5 ppg SBM to prevent flow back.

4.205 A 3-1/2" stinger was run into the well on 6-5/8" drill pipe to 21,895', where bottoms up was circulated. After boosting the riser with 16.0 ppg SBM, 90 bbl of 16.2 ppg Sealbond spacer, 67 bbl (376 ft³) of Class H cement, and 24 bbl of 16.2 ppg Sealbond spacer was pumped by the cement unit. The fluids were displaced with 15.8 ppg SBM until balanced. The stinger was pulled above the cement, swabbing 30 bbl of mud from the annulus into the casing which was subsequently bullheaded back into the annulus. After circulating the drill pipe clean, the annular was closed and 40 bbl of cement was

squeezed into the annulus using a hesitation technique. Pressure was held on the cement as it set up. After waiting on cement, the stinger was run back in and washed to the liner shoe with no indication of cement observed.

4.206 After circulating bottoms up, a pressure test was performed on the 11-3/4" casing shoe to 1050 psi (16.68 ppg EMW). After conducting a flowcheck, the cement stinger was pulled to surface.

4.207 The 10-5/8" x 12-1/4" drill ahead BHA was run in to 21,452' MD where it was washed down to 21,897' MD, where the top of cement was confirmed. New 10-5/8" hole was drilled from 21,897' to 21,920' MD.

4.208 After circulating bottoms up, it was determined that there was still annular communication with the original influx zone at 18,806' MD. The riser was displaced to 16.1 ppg SBM and the drilling assembly was pumped out to 17,657' MD, then pulled to surface.

4.209 The 3-1/2" stinger was run into the well on 6-5/8" drill pipe in preparation for a second bradenhead squeeze at the 11-3/4" shoe. Part way into the hole, the riser was boosted with 16.5 ppg LCM.

4.210 After making up the cement stand, 90 bbl of 16.2 ppg Sealbond spacer, 90 bbl (505 ft^3) of Class H cement, and 33 bbl of 16.2 ppg Sealbond spacer was pumped by the cement unit. The fluids were displaced with 15.8 ppg SBM until balanced. Due to partial losses during the displacement, 17 bbl of cement was squeezed into the annulus. The stinger was pumped above the cement at 50 ft/min and 5 bpm to avoid swabbing. The annular was closed and 28 bbl of cement was squeezed into the annulus for a total of 45 bbl. Pressure was held on the cement as it set up. After waiting on cement, the well was confirmed to be static, the stinger was pulled out to 18,371' and the drill string was circulated clean.

4.211 A BOP test was conducted. Then the stinger was run back in and washed to the liner shoe, tagging hard cement at 21,900'MD (right at the shoe). After circulating bottoms up, a successful pressure test was conducted on the 11-3/4" shoe to 1050 psi with 15.8 ppg SBM.

4.212 The stinger was pulled to surface and a dumb iron BHA was run into the well and tagged cement at 21,894' MD. Firm cement was drilled to 21,910' where a cement integrity test was performed to 16.7 ppg EMW.

4.213 Drilling continued to 21,930', where the official FIT was conducted successfully to 16.7 ppg EMW after circulating the cuttings above the BOP stack. The dumb iron assembly was pulled to surface.

4.214 The 10-5/8" x 12-1/4" drill ahead BHA was run into the well and tagged bottom at 21,930'. The bit was pulled into the shoe and the well was displaced to 14.5 ppg SBM. A 10-5/8" hole was drilled to 21,951' MD. While picking up off bottom to make a

connection, the drill string torqued up and pipe would not move freely. The jars fired three times while working the tight spot, later confirmed to be an inclusion in the salt.

4.215 After bringing pumps on line, Schlumberger was unable to establish communication with ARC and PowerDrive tools. An additional 6' was drilled and, after circulating bottoms up, the drilling assembly was pulled to surface.

4.216 The backup LWD/MWD tools were made-up and the 10-5/8" x 12-1/4" drill ahead BHA was run back into the well. While reaming back to bottom, the drill string was torquing up.

4.217 New 10-5/8" hole was drilled from 21,957' to 22,078' MD, then the reamer was activated. After pulling the reamer up against the shoe to confirm that it was open, drilling continued from 22,078' to 22,339' MD, fighting tight hole while making connections. The density of the active mud system was increased from 14.5 ppg to 14.7 ppg in an attempt to improve hole conditions, particularly in the inclusions. The base of salt was penetrated at 22,326' MD. While drilling ahead at 22,339' MD, torque increased and stopped rotation of the string. After jarring pipe free, communication was lost with the MWD/LWD tools. Drilling continued to 22,347' in an attempt to re-establish communication with the tools. While backreaming from 22,347 to 22,254', the hole showed signs of packing off requiring jars to fire 47 times to free the pipe. The drilling assembly was pulled to surface and the MWD/LWD tools were changed out. Then blind shear and casing shear rams were function tested.

4.218 The 10-5/8" x 12-1/4" drill ahead BHA was run back into the well to the 11-3/4" shoe. When the bit was still above the BOP, the BOPs were function tested and a slow leak on the blue pod was observed. The well was circulated in order to increase the mud weight from 14.7 to 14.9 ppg. The bit was pulled above the BOP to further troubleshoot the leak in the blue pod. The drilling assembly was pulled to surface and inspected. When a large quantity of cement was found in the mashburn filter, the Schlumberger Telescope tool was inspected and cement chips were found in the turbine. The Telescope tool was changed out and the BHA was run back to the 11-3/4" shoe and washed down to 22,347' MD.

<u>Note 39:</u> On December 19, 2011, Mr. Bobby Nelson with BSEE Houma district office called Cary Bradford with Nexen and gave approval for drilling the balance of the present hole section under the existing pod situation. He also stated that, in lieu of the blue pod, the ROV must be in the water close to the BOP stack on a 24/7 operation to ensure hot stab capability for the middle pipe rams, blind shear rams, casing shear rams, along with a wellhead connector unlatch and riser connector unlatch.

4.219 New 10-5/8" x 12-1/4" hole was drilled to 22,544' MD. The hole packed off several times requiring the BHA to be worked through the tight spots. The mud weight was further increased to 15.1 ppg. After jarring several times, communication with the Schlumberger MWD/LWD tools was lost again at 22,490' MD. Surveys confirmed that approximately 8° of inclination had been built.

4.220 The bit was pulled inside the liner to slip and cut drill line. When attempting to exit the shoe, the bit encountered a bridge at 21,938' and could not break through with low circulation required to keep the reamer from opening up inside the casing. The bit was pulled inside the shoe and bottoms up circulated, increasing the mud weight to 15.3 ppg. The bit was washed down into the open hole and reamed/backreamed to condition the hole before control reaming to engage the PowerDrive and reduce the hole inclination.

Note 37: At the 15:00 hrs on Thursday 22nd December 2011, the current ongoing operation is pulling out of the hole to reconfigure the BHA and change out the failed Schlumberger LWD/MWD tools. The plan is to leave the reamer out of the BHA and perform a separate reamer run at section TD. Removal of the reamer will allow a clearer assessment of the source of the excessive torque by removal of the largest annular restriction and will help ensure hole inclination is minimized.

4.221 Drilling will continue down to 23,385 ft MD / 23,384 ft TVD, which is 100 ft above the prognosed top of the reservoir. This hole section is an interval of continuous pressure increase (no regression seen on Nexen internal or KSI external pressure modeling) with an estimated pore pressure of 14.3 ppg EMW at section TD. Mud weight is to be increased as required.

4.222 At hole section TD, the hole will be conditioned and flow checked. If hole conditions are static, the drilling assembly will be pulled to surface and the interval will be logged as per the evaluation program.

4.223 The BHA will be re-configured with a reamer directly above the bit. The 10-5/8" hole will be opened to 12-1/4" from 22,379' MD to 23,385 ft MD / 23,384 ft TVD.

4.224 At hole section TD, the hole will be conditioned and flow checked. If hole conditions are static, the hole opening assembly will be pulled to surface.

4.225 A 9-7/8" Q125 HC, 62.8 ppf drilling liner will be hung ±500 ft above the 11-3/4" liner top. The liner hanger will be set around 18,017 ft MD/ 18,016 ft TVD RKB. The 9-7/8" liner will be cemented from the shoe back to 22,835 ft MD. Then the liner top will be squeezed down to the 11-3/4" casing shoe at 21,900 ft MD / 21,899 ft TVD. The class H cement slurry will have a density of 16.4 ppg. It is planned to pump a total of 1057 ft^3 of cement.

4.226 The liner top packer will be set and pressure tested. The landing string and running tool will then be recovered at surface. The liner and 14" casing, seal assembly and wellhead connector will be pressure tested against the blind/shear rams per the APD. The BOPs will then be pressure tested as per APD.

4.227 An 8-1/2" x 9-7/8" rotary steerable drilling assembly will be picked up and tripped in to the top of cement.

4.228 The shoe track plus 10 ft new hole will be drilled with 15.3 ppg SBM. A LOT will be performed to 16.0 ppg EMW.

4.229 This hole section will be drilled vertically to the kick-off point at 23,500 ft MD / 23,499 ft TVD and then will build at 2.50º/100 ft to a maximum angle of 35.34º at a depth of 24,908 ft MD / 24,819 ft TVD. Rotary steerable tools will be used to initiate the kick off and drill the hole section. The hole section will TD at 27,585 ft MD / 27,000 ft TVD RKB. The 8-1/2" x 9-7/8" hole section is an interval of continuous pressure increase (no regression seen on Nexen internal or KSI external pressure modeling) with an estimated pore pressure of 15.3 ppg EMW at section TD. Mud weight is to be increased as required. Concerns in this hole section are pore pressure uncertainty, lost circulation, ECD and MW management, sticking of drilling assembly and directional control.

4.230 At hole section TD, the hole will be conditioned and flow checked. If hole conditions are static, the drilling assembly will be pulled to surface and the interval will be logged as per the evaluation program.

4.231 When evaluation program is complete, a 7-5/8", 39 ppf drilling liner will be set with ±500 ft of liner lap above the 9-7/8" liner shoe. The liner will be hung at around 22,885 ft MD/ 22,884 ft TVD RKB. The 7-5/8" casing will be cemented from the shoe back to 26,085 ft MD / 26,393 ft TVD RKB (1500 ft of fill). The class H cement slurry will have a density of 16.4 ppg. It is planned to pump a total of 462 ft^3 of cement.

4.232 The liner top packer will be set and pressure tested. The landing string and running tool will then be recovered at surface. The liners and 14" casing, seal assembly and wellhead connector will be pressure tested against the blind/shear rams per the APD. The BOPs will then be pressure tested as per APD.

4.233 A 6-1/2" bit and rotary steerable drilling assembly will be picked up and tripped to the top of cement. The shoe track plus 10 ft new hole will be drilled with 15.4 ppg SBM. A LOT will be performed to 16.8 ppg EMW.

4.234 This hole section will be drilled to well TD at 30,144 ft MD / 29,084 ft TVD RKB with 15.7 ppg SBM. At section TD, the hole will be conditioned and flow checked. If hole conditions are static, the drilling assembly will be pulled and the interval will be logged as per the evaluation program. Concerns in this hole section are pore pressure uncertainty, lost circulation, ECD and MW management, sticking of drilling assembly and directional control.

4.235 At the conclusion of drilling and well evaluation operations, the well will be plugged per BSEE requirements. Te rig will be released after the riser and BOPs are recovered.

Note: The Casing Wear Monitoring Program is being implemented at the 22" surface casing shoe and continued for the remainder of the well.

4. Kakuna Operations Summary

Kakuna Drilling Operations Summary
GC 504
OCS-G 22968 #1

Drilling Procedure

		Start Depth, ft	End Depth, ft
1	Mobilization: Tow to location. (Complete)	0	0
2	Run beacons and spot DP rig on location. (Complete)	0	0
3	Run 36" casing and inner string to mudline. (Complete)	0	3723
4	Jet in 36" casing to 316' BML. (Complete)	3723	4039
5	Drill surface casing hole with 26" bit. (Complete)	4039	6016
6	Pull out of the hole with drilling assembly. (Complete)	6016	6016
7	Rig up to run 22" casing. (Complete)	6016	6016
8	Run 22" casing and inner string. (Complete)	6016	6016
9	Cement surface casing. (Complete)	6016	6016
10	Hold the 22" and check for slump. (Complete)	6016	6016
11	Trip out with the running string. (Complete)	6016	6016
12	Run riser and BOPs. Land and latch BOP's. Perform 50K overpull test.(Complete)	6016	6016
13	Close BSR's and test connector. Pressure test connector, BSR's, and 22" Casing, per APD.(Complete)	6016	6016
14	Unlock slip joint and lay down landing joint. Install diverter and test.(Complete)	6016	6016
15	Test BOP's per APD.(Complete)	6016	6016
16	Make up bit and BHA.(Complete)	6016	6016
17	Trip in the hole and tag cement. Drop off wear sleeve in W/H on the way in the hole.(Complete)	6016	6016
18	Drill out shoe plus 10' of new formation.(Complete)	6016	6026
19	Perform LOT.(Complete)	6026	6026
20	Displace to SBM.(Complete)	6026	6026
21	Drill 16-1/2" hole to 6203 ft in salt when losses occurred. (Actual)	6026	6203
22	Stabilize well by placing base oil in annulus and monitoring with trip tank. Displace riser to 10.4 ppg SBM. POOH.(Actual)	6203	6203
23	Drill 16-1/2" hole to 9623 ft increasing mud weight to 11.6 ppg.	6203	9623
24	Encounter inclusion at 9585 ft. BHA became stuck and was jarred free. Shut in then circulate out swabbed influx.	9623	9623
25	Trip into 22" shoe, function test BOPs, then run back to bottom and displace to 11.8 ppg SBM.	9623	9623
26	Drill 18-1/8" x 21" hole.	9623	11100
27	Place 16.5 ppg SBM in rat hole, Flow check, Trip out of the hole with BHA.	11100	11100
28	Rig up and run 18" and TIH.	11100	11100
29	Rig up landing string, MU to casing, and trip in on landing string. Work hanger through upper annular down to 3791 ft.	11100	11100
30	Cement 18" casing.	11100	11100
31	Test BOPs per APD.	11100	11100
32	Release Dril-Quip running tool then trip out with the running string.	11100	11100
33	Two wireline gyro runs to confirm orientation of BOP with respect to wellhead and wellbore.	11100	11100
34	Run in hole with BOP test plug assembly and pressure tested casing hanger seal area.	11100	11100
35	Run inflatable packer to pressure test 18" liner to 2470 psi with 12 ppg SBM. POOH drifting liner.	11100	11100
36	Cement squeeze 18" liner top.	11100	11100
37	Set nominal bore protector in wellhead then pressure test blind/shear rams against 22" casing, 18" liner, and 18" liner lap.	11100	11100
38	Make up and run in hole with 16-1/2" BHA then pulled BHA due to loop currents.	11100	11100
39	Conduct negative test on well, displace riser to seawater, and wait on loop currents.	11100	11100
40	Run back in with 16-1/2" BHA. Tag cement.	11100	11100
41	Drill out shoe track. No cement found. Reamed rat hole to TD. Circulate and condition mud.	11100	11100
42	Perform FIT to 12.8 ppg (below desired 14.8 ppg minimum)	11100	11100
43	On trip out, spot 14.2 ppg SBM in rathole, 14.2 ppg SBM hi-vis pill from 9933 ft to 9700 ft, and 100 bbl of 12.0 ppg LCM across 18" shoe.	11100	11100
44	Set Parabow at 9700 ft. Conduct bradenhead cement squeeze at 18" shoe.	11100	11100
45	Make up and run in hole with 16-1/2" clean out BHA. TOC was found 120 ft below the 18" shoe.	11100	11100
46	Run in hole and set inflatable packer at 9050 ft.	11100	11100
47	Establish injection rates then conduct a second cement squeeze.	11100	11100
48	Wait on cement for 12.75 hours. Pressure test 18" liner to equivalent to 14.8 ppg mud weight at the 18" liner shoe.	11100	11100
49	Reverse circulate out 38 bbl base oil in work string, unset packer, allow to relax, then pull out of the hole.	11100	11100
50	Run in hole with 16-1/2" drilling BHA to 8929 ft.	11100	11100
51	Test BOPs as per APD.	11100	11100
52	Drill out cement to 9329 ft, circulate to condition mud.	11100	11100
53	Perform FIT 13.5 ppg equivalent mud weight (below the desired 14.8 ppg minimum FIT)	11100	11100
54	Drill out remaining cement and wash BHA to bottom of rat hole.	11100	11100
55	Conduct open hole integrity test to a 13.5 ppg equivalent mud weight.	11100	11100
56	Pull out of the hole with drilling assembly.	11100	11100
57	Make up and run in hole with 16-1/2" x 19-1/2" BHA.	11100	11100
58	Displace well from 12.0 ppg SBM to 12.8 ppg SBM.	11100	11100
59	Drill ahead in 16-1/2" x 19-1/2" hole	11100	14001
60	Pull out of hole and reconfigure BHA to place the bit closer to the under reamer.	14001	14001
61	Run in with reconfigured 16-1/2" x 19-1/2" BHA.	14001	14001
62	Open up the 16-1/2" hole.	14001	14001
63	Circulate bottoms up and place a 10 bbls 16.5 ppg pill placed in the bottom of the hole.	14001	14001
64	Pull BHA out of the hole.	14001	14001
65	Rig up and run 16" and TIH.	14001	14001
66	Run inner string and make up to spear and pack-off running assembly.	14001	14001
67	Run casing/inner string into the hole on landing string.	14001	14001
68	Cement 16" casing.	14001	14001
69	Wait on cement for 12 hrs, slack off 16" liner string weight in 1/3 increments.	14001	14001
70	Release spear and pull out of the hole with the landing string and inner string.	14001	14001
71	Run in hole and set inflatable packer at 7909 ft.	14001	14001
72	Establish injection rates then conduct a liner top squeeze.	14001	14001
73	Wait on cement then pressure test cement squeeze. Leaked off to 2522 psi.	14001	14001
74	Release packer then pull out of the hole.	14001	14001

Kakuna Drilling Operations Summary
GC 504
OCS-G 22968 #1

Drilling Procedure

		Start Depth, ft	End Depth, ft
75	RTTS retrievable packer run in hole on drill pipe and set at 8008 ft.	14001	14001
76	Pressure test 16" liner to 3155 psi.	14001	14001
77	Pressure test above the packer to 3155 psi. Pressure bled off to 2642 psi.	14001	14001
78	Release RTTS and recover at surface.	14001	14001
79	Recover nominal bore protector from the wellhead.	14001	14001
80	Test BOPs per APD.	14001	14001
81	Set Parabow at 8028 ft. Conduct bradenhead cement squeeze at 16" liner top.	14001	14001
82	Wait on cement for 12 hours.	14001	14001
83	Pressure test below the blind/shear rams to 3155 psi (16" liner top cement plug, 18" casing, 18" liner top, 22" casing, HPWHH and connector).	14001	14001
84	Inflow test well.	14001	14001
85	Pull out of hole with cementing assembly.	14001	14001
86	Run in hole with Baker inflatable storm packer assembly and set at 3766 ft.	14001	14001
87	Pressure test packer to 2200 psi. Release running tool. Conduct inflow test.	14001	14001
88	Displace BOP and riser to seawater. Pull out of hole with packer running tool.	14001	14001
89	Rig up riser handling equipment, unlatch BOP, pull to surface.	14001	14001
90	BOPs were inspected and repaired, then stump tested.	14001	14001
91	Prepared to re-run BOP, start running riser.	14001	14001
92	Recover BOP to surface and wait on weather.	14001	14001
93	Run riser and BOPs. Land and latch BOP's.	14001	14001
94	Test BOPs per APD.	14001	14001
95	Displace riser and BOP from seawater to 13.0 ppg SBM.	14001	14001
96	Recover Baker inflatable storm packer assembly.	14001	14001
97	Make up and run in hole with 14-3/4" x 16-1/2" cement clean out BHA (drop wear sleeve).	14001	14001
98	Drilled cement from 7772 to 8023 ft.	14001	14001
99	Circulate and condition mud then pull BHA out of the hole.	14001	14001
100	Pressure test blind/shear rams against 16" liner, 16" liner top, 18" liner, 18" liner top, 22" casing, HPWHH and connector to 3155 psi.	14001	14001
101	Pick up and run in hole with 14-1/2" x 17-1/2" drill ahead BHA.	14001	14001
102	Drill out cement and shoe track from 13,711'.	14001	14001
103	Drill 10 ft of new hole from 14,001' to 14,011'.	14001	14011
104	Conduct FIT to 15.24 ppg equivalent mud weight.	14011	14011
105	Displace wellbore from 13.0 ppg to 14.2 ppg SBM	14011	14011
106	Drill 14 1/2" pilot hole from 14,011' to 14,085	14011	14085
107	Activate & confirm reamer open. Ream from 13,982' to 13,990'.	14085	14085
108	Drill 14 1/2" x 17 1/2" hole section from 14,085' to 15,832'. Tripped due to loss of MWD signal after 250 psi pressure spike.	14085	15832
109	Circulate bottoms up prior to trip to change out MWD tool. Increase MW to 14.5 ppg due to max 428 units of gas with mud cut to 14.1 ppg.	15832	15832
110	Pull out of the hole to change out reamer & MWD tools.	15832	15832
111	Run in hole with 14-1/2" x 17-1/2" drill ahead BHA (BOP function test at 5035').	15832	15832
112	Fill pipe and break circulation at 14,085' then activate and confirm reamer.	15832	15832
113	Run in hole to 15,586' then wash and ream to 15,832'.	15832	15832
114	Drill 14 1/2" x 17 1/2" hole section from 15,832 to 16,845'. Stop to rack back stand - leaking connection. Work pipe through inclusions.	15832	16845
115	Drill 14 1/2" x 17 1/2" hole section from 16,845' to 16,972', increase mud weight from 14.5 ppg to 14.6 ppg while drilling.	16845	16792
116	Change out leaking Schlumberger transducer. Ream back to bottom.	16972	16972
117	Drill 14 1/2" x 17 1/2" hole section from 16,972' to 17,478', increase MW to 14.7 ppg while drilling due to high gas (1500 u) and water cut mud (from 14.6 to 13.9 ppg).	16972	17478
118	Perform open hole formation integrity test (FIT) to 15.46 ppg equivalent mud weight. Increase MW to 14.9 ppg due to high gas/cut mud.	17478	17478
119	Drill 14 1/2" x 17 1/2" hole section from 17,478' to 18,910'.	17478	18910
120	Well shut in on 40 bbl drilled kick. Circulate out using driller's method. Circulate kill weight mud of 15.5/15.7 ppg at constant BHP.	18910	18910
121	Well started taking fluid. Function test BOPs. Start pumping 15.5 ppg. Lost total returns.	18910	18910
122	Spot LCM pill, vary density in kill line/riser to stabilize well	18910	18910
123	Pressure test BOPs	18910	18910
124	Manipulate mud weight in the choke/kill lines and riser to stop well flow back.	18910	18910
125	Attempt to break circulation with 15.7 ppg - no returns. Boost riser - got partial returns. Continue to circulate until 15.7 ppg up past wellhead. Shut down, well stable.	18910	18910
126	Pull out of hole to surface. Top up riser with 13.3 ppg to control losses. Function blind shear rams when BHA above BOP.	18910	18910
127	Pick up 14 1/2" X 17 1/2" BHA (Re-configure BHA placing 17-1/2" reamer closer to bit).	18910	18910
128	Trip back in hole with BHA. Break circulation at 7895' with 15.7 ppg, well on losses. Displace choke/kill lines and riser to 15.5 ppg. Circulate bottoms up.	18910	18910
129	Well flowing back, manipulate mud weight in riser, choke, & kill lines to reduce flow back.	18910	18910
130	Circulate with 15.7 ppg down drill pipe manipulating flow rate to minimize losses/gains. Well still flowing back.	18910	18910
131	Displace riser to 16.1 ppg. Well still flowing back. Pump 15.9 ppg mud down drill string, initiate losses then displace riser back to 15.9 ppg.	18910	18910
132	Trip back in hole to 14,014' (top up riser with 13.7 ppg).	18910	18910
133	Attempt to break circulation with 15.5 ppg - no returns. Displace riser to 14.3 ppg SBM. 2nd attempt to circulate with 15.5 ppg - 24% returns.	18910	18910
134	Boost riser with 13.6 ppg SBM. Stage up pump rate - gaining volume in mud pits. Shut down and displace choke/kill lines to 15.5 ppg SBM then 15.6 ppg SBM.	18910	18910
135	Trip in the hole from 14014' with 14.5" X 17.5" drilling assembly to 16024'. Circulate controlling gains with pump rate/ECD. Continue to trip in hole to 18,743'.	18910	18910
136	Circulate well down drill string & up choke and kill lines (100% open choke). Attempt to stabilize losses/gains with pump rate. 153 bbl of fluid gain.	18910	18910
137	Circulate well using driller's method keeping bottomhole pressure constant. Lose returns. Manipulate pump rate and pump up 100% choke/kill lines.	18910	18910
138	Ream from 18,832' to 18,910' (bit depth). Circulate bottoms up adding LCM. Function test diverter and BOPs.	18910	18910
139	Pump barite plug # 1. Wait on barite plug. Run in hole to tag but no plug observed.	18910	18910
140	Pump barite plug # 2. Wait on barite plug. Run in hole to tag but no plug observed. No pressure observed on choke, kill or standpipe gauges.	18910	18910
141	Pull out of hole with 14.5" X 17.5" drilling assembly.	18910	18910
142	Rig up and run 14" casing. Run in hole on landing string.	18910	18910
143	Cement 14" casing. Set seal assembly.	18910	18910
144	Function and pressure test diverter and BOPs.	18910	18910
145	Pull out of hole with DrilQuip running tool.	18910	18910
146	Pick up and run in hole with 12 1/4" cleanout assembly. Attempted to pressure test casing three times - not successful. Pull BHA out of the hole.	18910	18910
147	Run in hole with Baker Model L packer assembly. Packer set at 4194', 4475' and 18,130' and casing held 4000 psi pressure from above.	18910	18910
148	The packer was unset and casing held 4000 psi. Baker Model L packer assembly was pulled out of the hole.	18910	18910

Kakuna Drilling Operations Summary
GC 504
OCS-G 22968 #1

Drilling Procedure

		Start Depth, ft	End Depth, ft
149	Shear rams and 14" casing successfully pressure tested to 7400 psi once BHA above BOP.	18910	18910
150	Run in hole with 12-1/4" clean out BHA, drill out wiper plugs and float collar and washed through shoe track and rat hole (no cement). Drill 10' of new hole.'	18910	18920
151	Conduct two FITs - 16.15 ppg. Pull out of hole with BHA.	18920	18920
152	Run in hole with BJ Python cement retainer. It unintentionally set while filling the drill pipe. Release running tool and pull out of the hole.	18920	18920
153	Run in hole with scraper/junk basket BHA, push Python to bottom, and drill it up making 6' of new hole.	18926	18926
154	Perform FIT perform at 2 bpm - broke over at 16. ppg.	18926	18926
155	Pull out of hole with scraper/junk basket BHA.	18926	18926
156	Function test Blind/Shear and Casing Rams then run in hole with FAS-DRILL cement retainer.	18926	18926
157	Set retainer at 18,700' then perform cement squeeze.	18926	18926
158	Pull out of hole with running tool/stinger assembly.	18926	18926
159	Rig up for wireline logging then log well (2 runs - MSIP-USIT and Gyro survey). Rig down wireline equipment.	18926	18926
160	Run in hole with drill ahead 12-1/4" x 14-3/4" BHA. Drill out cement and cement retainer. Wash down through shoe track and rat hole. Tag cement at 18,914'.	18926	18926
161	Pull bit inside shoe then circulate. Well shut in due to flow/gain in pits.	18926	18926
162	Circulate well using driller's method keeping bottomhole pressure constant.	18926	18926
163	Strip up to 18,475' then pump 66 bbl barite plug. Wait on barite to settle. Function BOPs and diverter. Run in hole - no plug observed.	18926	18926
164	Circulate bottoms up via choke and kill lines (100% open) then pump out of the hole to 17,993'.	18926	18926
165	Pump 132 bbl barite plug. Wait on barite to settle. Run in hole - no indication of plug.	18926	18926
166	Circulate bottoms up via choke and kill lines (100% open) again, while manipulating flow rate to prevent losses.	18926	18926
167	Pump and squeeze Halliburton Baroid FUSE-IT pill. After the required wait period, open choke and confirm pressure indicating lack of success.	18926	18926
168	Open annular and pump out of the hole to 18,596'. Pump, displace, and squeeze Flo-Guard/Cement squeeze #1.	18926	18926
169	Wait on cement. Open annular and confirm well is static.	18926	18926
170	Run in hole and tag cement at 18,860'.	18926	18926
171	Pull out of hole with drilling assembly and pick up BOP test tool. Run in hole, set plug in wellhead, and test BOPs.	18926	18926
172	Pull BHA to surface and run in hole with 12-1/4" clean out BHA.	18926	18926
173	Tag cement at 18,860'. Well flowing back. Circulate well to 15.8 ppg SBM. Pull bit up to 18,600'.	18926	18926
174	Pump, displace, and squeeze Flo-Guard/Cement squeeze #2.	18926	18926
175	Wait on cement. Open annular and confirm well on losses.	18926	18926
176	Open annular and circulate trying to control losses.	18926	18926
177	Run in hole and tag cement at 18,857'. No cement across shoe.	18926	18926
178	Circulate with 15.8 ppg SBM. Pull bit up to 18,440'.	18926	18926
179	Pump, displace, and squeeze Flo-Guard/Cement squeeze #3 (2 stages).	18926	18926
180	Wait on cement. Open annular and confirm well static. Run in hole and tag cement inside casing at 18,537'.	18926	18926
181	Circulate reducing mud weight from 15.8 to 15.6 ppg. Flow check then pull BHA above the BOPs.	18926	18926
182	Pressure test Blind/Shear rams against the 14" casing and cement inside bottom of 14" casing. Function test Blind/Shear and Casing rams.	18926	18926
183	Run back and tag cement at 18,537' then drill cement inside casing to 2' below casing. Wash through 5' then pull bit inside casing shoe.	18926	18926
184	Circulate bottoms up then conduct cement integrity test to 16.19 ppg.	18926	18926
185	Well flowing back so mud weight increased to 15.7 ppg. Pull bit up to 18,435'.	18926	18926
186	Pump, displace, and squeeze Flo-Guard/Cement squeeze #4 (4 stages). Formation squeezed off with 133 bbl of cement still inside drill string.	18926	18926
187	Open annular and pump out to 17,138'. Circulate out cement then close annular.	18926	18926
188	Wait on cement. Open annular and confirm well static. Run in hole and tag cement inside casing at 17,515'.	18926	18926
189	Drill out hard cement to 18,845' (5' above 14" shoe). Circulate bottoms up then pull BHA to surface.	18926	18926
190	Rig up for wireline logging then log well (2 runs - MSIP and Temperature- Noise). Rig down wireline equipment.	18926	18926
191	Run in riser and lay out HWDP due to cement in tools joints and pipe body.	18926	18926
192	Run in hole with drill pipe and drill collars, breaking out and inspecting each tool joint cleaning out cement rings as required. 90 joints of drill pipe laid out.	18926	18926
193	Pull clean drill string to surface after circulating down a rubber ball with 15.8 ppg SBM.	18926	18926
194	Pick up and run in hole with 12-1/4" x 14-3/4" clean out assembly (including 23 new joints of HWDP).	18926	18926
195	Tag cement at 18,845'. Circulate well reducing mud weight from 15.8 to 15.6 ppg.	18926	18926
196	Drill cement from 18,845' to 18,856. Circulate cuttings above BOP then conduct cement integrity test to 16.53 ppg EMW.	18926	18926
197	Run in to top of cement then drill cement to 18,900'. Wash through interval of weak/no cement from 18,900' to 18,907' then drill hard cement to 18,926'.	18926	18926
198	Drill 10' of new hole. Activate reamer and open hole from 18,851' to 18,921' (bit depth 18,936'). Pull bit inside casing and circulate cuttings above BOP.	18926	18936
199	Conduct FIT to 16.2 ppg equivalent mud weight.	18936	18936
200	Circulate bottoms up then conduct a flow check.	18936	18936
201	Pump out of the hole 3994' due to swabbing and pick up BOP test tool. Run back in and circulate bottoms up (433 units gas, mud cut to 15.0 ppg, free tar)	18936	18936
202	Confirm well static and set plug in wellhead. Pressure test BOPs.	18936	18936
203	Open well - flowing back. Displace choke/kill lines to 16.8 ppg SBM - well static. Displace riser to 16.8 ppg - still flowing slightly.	18936	18936
204	Displace choke/kill/riser to 16.9 ppg - slight losses.	18936	18936
205	Circulate well to 15.8 ppg / 16.9 ppg in part of riser and pull out to recover BOP test tool. Run back in to TD then displace well back to 15.6 ppg SBM.	18936	18936
206	Drill 64' of new hole. Circulate bottoms up then displace well to 15.8 ppg SBM / 550 bbl 16.9 ppg in riser. Pump/pull drilling assembly to surface after static flow check.	18936	19000
207	Run in hole with 12-1/4" x 14-3/4" drill ahead assembly.	19000	19000
208	After activating the reamer, drill ahead vertically to 21,900' MD / 21,899' TVD RKB with 15.6 ppg SBM.	19000	21900
209	Circulate bottoms up, displace riser to 17.1 ppg SBM, flow check, then pull out of hole with BHA.	21900	21900
210	Rig up and run 11-3/4" liner and TIH.	21900	21900
211	Rig up landing string; MU to liner; TIH with casing.	21900	21900
212	Attempt to set hanger, lost 100 klbs liner weight	21900	21900
213	Pull out of hole with running tool assembly	21900	21900
214	Run in hole with Fas-drill and inadvertently set in the top of the 11-3/4" liner	21900	21900
215	Clean out trip to drill out Fas-drill cement retainer	21900	21900
216	Run in hole with liner top packer setting tool. Set packer and test 11-3/4" liner top	21900	21900
217	Run in hole with Fas-drill and conduct cement squeeze	21900	21900
218	Make up 10 5/8" x 12-1/4" BHA.	21900	21900
219	Conduct inflow test on the 14" seal assembly and the 11-3/4" liner top	21900	21900
220	Trip in the hole and tag retainer, drill retainer while displace well to 14.2 ppg SBM then drill out shoe	21900	21900
221	Circulate out 28 bbl influx using the Driller's Method eventually requiring 15.8 ppg kill weight mud	21900	21900
222	Displace riser to 15.9 ppg SBM then pump/pull out of the hole	21900	21900

Kakuna Drilling Operations Summary
GC 504
OCS-G 22968 #1

Drilling Procedure

		Start Depth, ft	End Depth, ft
223	Run in hole with 3-1/2" cement stinger	21900	21900
224	Conduct bradenhead cement squeeze on 11-3/4" liner shoe then hold pressure while WOC	21900	21900
225	Circulate bottoms up then pressure test 11-3/4" liner shoe	21900	21900
226	Conduct flow check then pull out of hole	21900	21900
227	Run in hole with 10 5/8" x 12-1/4" BHA	21900	21900
228	Tag cement at 21,897' the drill new 10-5/8" hole 21,897' to 21,920'	21900	21920
229	Circulate bottoms up, still annular communication with the original influx zone	21920	21920
230	Displace riser to 16.1 ppg SBM then pump/pull out of the hole	21920	21920
231	Run in hole with 3-1/2" cement stinger	21920	21920
232	Conduct second bradenhead cement squeeze on 11-3/4" liner shoe then hold pressure while WOC	21920	21920
233	Circulate bottoms up then conduct BOP test	21920	21920
234	Run in hole with stinger and tag hard cement at 21,900'	21920	21920
235	Conduct pressure test on 11-3/4" shoe	21920	21920
236	Conduct flow check then pull out of hole	21920	21920
237	Run in hole with 10 5/8" dumb iron BHA	21920	21920
238	Tag cement at 21,894'. Drill cement to 21,910'. Conduct cement integrity test to 16.7 ppg EMW.	21920	21920
239	Drill ahead 10' of new formation then conduct FIT to 16.7 ppg EMW	21920	21930
240	Pull BHA to surface and run in hole with 10 5/8" x 12-1/4" BHA	21930	21930
241	Displace well to 14.5 ppg SBM	21930	21930
242	Drill 10-5/8" hole to 21,951'. Work pipe across inclusion. Jarring resulted in loss of communication with the ARC and Power Drive	21930	21951
243	Drill 6' more then pull out of hole to change out LWD/MWD tools	21957	21957
244	Run in hole with 10 5/8" x 12-1/4" BHA	21957	21957
245	Drill 10-5/8" hole, activate reamer, then drill ahead through BOS fighting hole while making connections, jarring resulted in loss of communication with MWD/LWD tools	21957	22347
246	Trip to change out MWD/LWD tools	22347	22347
247	Drill 10-5/8" x 12-1/4" hole, hole packed off several times, jarring resulted in loss of communication with MWD/LWD tools	22347	22544
248	Pull bit inside shoe and slip & cut drill line. Attempt to control reaming to engage the Powerdrive and reduce the hole inclination.	22544	22544
249	Trip to change out MWD/LWD tools and re-configure BHA (remove reamer)	22544	22544
250	Drill 10 5/8" hole to 23,385' MD.	22544	23385
251	Circulate bottoms up, flow check, then pull out of hole with BHA.	23385	23385
252	Run E-logs as required.	23385	23385
253	Run in hole with 10 5/8" x 12-1/4" BHA	23385	23385
254	Ream open 10-5/8" hole to 12-1/4"	23385	23385
255	Circulate bottoms up, flow check, then pull out of hole with BHA.	23385	23385
256	Rig up and run 9-7/8" liner and TIH.	23385	23385
257	Rig up landing string; MU to liner; TIH with casing.	23385	23385
258	Cement 9-7/8" casing then perform liner top cement squeeze.	23385	23385
259	Set packer and test 9-7/8" liner top.	23385	23385
260	Trip out with the running string.	23385	23385
261	Test BOPs per APD.	23385	23385
262	Make up 8-1/2" x 9-7/8" BHA.	23385	23385
263	Trip in the hole and tag cement.	23385	23395
264	Drill out cement and shoe track plus 10' of new formation.	23395	23395
265	Perform LOT/FIT.	23395	23395
266	Drill 8-1/2" x 9-7/8" hole. Kick-off at 23,500' then build at 2.50°/100' to 35.3° and hold to TD.	23395	27585
267	Circulate bottoms up, flow check, then pull out of hole with BHA.	27585	27585
268	Run E-logs as required.	27585	27585
269	Rig up and run 7-5/8" liner and TIH.	27585	27585
270	Rig up landing string; MU to liner; TIH with casing.	27585	27585
271	Cement 7-5/8" casing.	27585	27585
272	Set packer and test 7-5/8" liner top.	27585	27585
273	Trip out with the running string.	27585	27585
274	Test BOPs per APD.	27585	27585
275	Make up 6-1/2" BHA.	27585	27585
276	Trip in the hole and tag cement.	27585	27585
277	Drill out cement and shoe track plus 10' of new formation.	27585	27585
278	Perform LOT/FIT.	27585	30144
279	Drill 6-1/2" hole to FTD.	30144	30144
280	Circulate bottoms up, flow check, then pull out of hole with BHA.	30144	30144
281	Run E-logs	30144	30144
282	Prepare to P&A or T&A (additional permitting approvals required)	30144	30144
283	Demobilize rig	30144	30144

5. Drilling Fluid Program

RISERLESS SECTION - Seawater / 10 ppg NaCl brine / 12.0 ppg SSR WBM (WD - 3,637'/ RKB-ML - 3,723')							
Int 1 - 26" hole	Density	Fluid Type	PV	YP	API filtrate	pH	Chlorides
3,723' – 5,616'	8.6	Seawater	NC	NC	NC	NC	~18,000
5,616' - 6,016'	9.6 - 9.8	Cut NaCl brine	NC	NC	NC	NC	~150,000
3,723' - 6,016'	12.0	SSR Pad Mud	12 - 18	16-22	< 10	8 - 9	~188,000
SW was utilized to drill to 5,616', which is 637' into the salt. The TOS was penetrated at 4,979'. At 5,616', cut 9.6 ppg NaCl brine was utilized to drill 200' of salt. The last 200' to TD of 6,016'was drilled with cut 9.8 ppg NaCl brine. Cut 12.0 ppg SSR was used as pad mud. 18,000 bbl of 10 ppg NaCl brine and 5,000 bbl of 16.0 ppg SSR was sent to the rig. Set 22" casing @ 5,983' MD / 5,982' TVD.							

SYNTHETIC BASED MUD – ENCORE									
Interval Length	Density	6 rpm	YP	PV	HTHP	ES	WPS	SWR	LGS
Interval 2 - 18-1/8" x 21" hole									
5,983' - 11,100' MD / 11,099' TVD	11.5-12.0	8 - 12	18 - 22	22 - 26	≤ 4	≥ 300	280 - 310K	74/26 - 78/22	< 6
Cut the current 13.1 ppg back to 11.5 ppg. Have an LCM plan prepared for possible inclusions/sutures while drilling salt. Formation: Salt. Set 18" liner @ 9,279' MD / 9,278' TVD. TOL @ 3,791'									
Interval 3 - 16-1/2" x 19-1/2" hole									
11,100' MD/11,099'TVD - 14,001' MD/14,000'TVD	13.0	10 - 14	20 - 26	28 - 34	≤ 4	≥ 300	280 - 310K	74/26 - 78/22	< 6
Maintain standard product additions. Have an LCM plan prepared for possible inclusions/sutures while drilling salt. Formation: Salt. Set 16" liner @ 13,982' MD / 13,981' TVD. TOL @ 7,956'									
Interval 4 - 14-1/2" x 17-1/2" hole									
14,001' MD/14,000'TVD - 18,910' MD/18,909'TVD	14.2-15.6	10 - 14	18 - 24	32 - 38	≤ 4	≥ 300	280 - 310K	74/26 - 78/22	< 6
Maintain standard product additions. Have an LCM plan prepared for possible inclusions/sutures while drilling salt. Formation: Salt. Set 14" casing @ 18,851' MD / 18,850' TVD.									
Interval 5 - 12-1/4" x 14-3/4" hole									
18,910' MD/18,909'TVD - 21,900'MD/21,899' TVD	15.6	8 - 12	18 - 22	38 - 44	≤ 4	≥ 300	280 - 310K	76/24 - 80/20	< 6
Maintain standard product additions. Have an LCM plan prepared for possible inclusions/sutures while drilling salt. Formation: Salt. Set 11-3/4" Liner. TOL @ 18,517'									
Interval 6 - 10-5/8" x 12-1/4" hole									
21,900'MD/21,899' TVD - 23,385'MD/23,384'TVD	14.5-15.3	8 - 12	16 - 20	32 - 38	≤ 4	≥ 300	280 - 300K	74/26 - 78/22	< 6
Maintain standard product additions. Have an LCM plan prepared for exiting the BOS @ ~ 22,685'. Recommended to maintain ~20 ppb LCM in the system while drilling below BOS. Formation: salt/rubble/shale/sand. Set 9-7/8" liner. TOL @ 18,017' MD									
Interval 7 - 8-1/2" x 9-7/8" hole									
23,385'MD/23,384' TVD - 27,585'MD/27,000'TVD	15.3-15.4	7 - 11	16 - 20	34 - 42	≤ 4	≥ 300	280 - 300K	74/26 - 80/20	< 6
Maintain standard product additions. Recommended to maintain ~20 ppb LCM in the system while drilling. The well will be kicked off in the interval. Pump hole cleaning sweeps as necessary. Formation: shale/sand. Set 7-5/8" liner. TOL @ 22,885' MD									
Interval 8 - 6-1/2" hole									
27,585'MD/27,000'TVD - 30,144'MD/29,084' TVD	15.4 - 15.7	7 - 11	15 - 19	38 - 44	≤ 4	≥ 300	280 - 300K	78/22 - 82/18	< 6

Maintain standard product additions. Recommended to maintain ~20 ppb LCM in the system while drilling. Formation: shale/sand. Log/evaluate as necessary.
Additional mud notes: 1. Although not specified, keep the excess lime in the 0.5 ppb range for all intervals. 2. Test the rheology @ 120°F and HTHP @ 200°F to 22,635' and then @ 150°F and 250°F from 22,635' to 30,144'. 3. Track accurate mud losses (downhole, SC, transfer, etc..) and report on daily mud report. 4. Baroid's DFG Hydraulics program will be run daily or as often as necessary to verify ECD's and hole cleaning, to maximize ROP's / flowrates while drilling, and for surge/swab calculations. 5. Maintain product concentrations as mentioned in the ENCORE Formulation section.

Operator Name: Nexen Petroleum, USA
Well Name: OSC-G 22968 #1 "Kakuna"
Well Location: Green Canyon 504
Date: December 20, 2011

The purpose of this document is to address regulatory requirement §250.415(f) as it applies to the well indicated above. Please note that this document has been revised from the original APD submission, as part of a submission for RPD and comments contained below reflect that all strings down to and including 11-3/4" intermediate casing have been installed at the time of review:

§250.415(f) *Written description of how the operator evaluated the best practices included in API RP 65-Part 2, Isolating Potential Flow Zones During Well Construction (incorporated by reference as specified in §250.198). The description must identify mechanical barriers and cementing practices to be used for each casing string (reference API RP 65-Part 2, Sections 3 and 4).*

	GENERAL QUESTIONS	
1	Have you considered the following in your well planning and drilling plan determinations: evaluation for flow potential, site selection, shallow hazards, deeper hazard contingency planning, well control planning for fluid influxes, planning for lost circulation control, regulatory issues and communications plans, planning the well, pore pressure, fracture gradient, mud weight, casing plan, cementing plan, drilling plan, wellbore hydraulics, wellbore cleaning, barrier design, and contingency planning? [API 65-2 1.5]	Yes
2	Have you considered the general well practices while drilling, monitoring and maintaining wellbore stability, curing and preventing lost circulation, and planning and operational considerations? [API 65-2 1.6]	Yes
	FLOW POTENTIAL	
3	Will a pre-spud hazard assessment be conducted for the proposed well site?	Yes
4	List all potential flow zones within the well section to be cemented.	Described below
5	Has the information concerning the type, location, and likelihood of potential flow zones been communicated to key parties (cementing service provider, rig contractor, or 3rd parties)?	Yes
	CRITICAL DRILLING FLUID PARAMETERS	
6	Are fluid densities sufficient to maintain well control without inducing lost circulation?	Yes
	CRITICAL WELL DESIGN PARAMETERS	
7	Will you use a cementing simulation model in the design of this well?	Yes
7a	If yes, how is the output of this simulation model used in your decision-making process?	Described below
7b	If no, include discussion of why a model is not being used.	Not Applicable
7c	Either way, include the number and placement of centralizers being used.	Described below
8	Will you ensure the planned top of cement will be 500 feet above the shallowest potential flow zone?	Yes
9	Have you confirmed that the hole diameter is sufficient to provide adequate centralization?	Yes
10	If there are any isolated annuli, how have you mitigated thermal casing pressure build-up?	Described below
11	Will you ensure the well will be stable (no volume gain or losses, drilling fluid density equal in vs. out) before commencing cementing operations?	Yes
12	List all annular mechanical barriers in your design.	Described below

13	Has the rathole length been minimized or filled with drilling fluid with a density greater than the cement density?	Yes
14a	If you have any liner top packers exposed to the production or intermediate annulus, what is the rating for differential pressure across this packer?	Described below
14b	If you have any liner top packers exposed to the production or intermediate annulus, have you confirmed that your negative test will not exceed this rating?	Yes
15	What type of casing hanger lock-down mechanisms will be used?	Described below
16	For all intermediate and production casing hangers set in subsea, HP wellhead housing, will you immediately set/energize the lock-down ring prior to performing any negative test?	Yes
17	For all production casing hangers set in subsea, HP wellhead housing, will you set/energize the lock-down sleeve immediately after running the casing and prior to performing any negative test?	No
	CRITICAL OPERATIONAL PARAMETERS	
18	Will you have 2 mechanical barriers in addition to cement in your final casing string (or liner if it is your final string)?	Yes
19	Do you plan to nipple down BOP in accordance with the WOC requirements in 30 CFR 250.422 and API RP 65 Part 2 First Edition?	Not Applicable
20	Do you plan on running a cement bond log on the production and intermediate casing/liner prior to conducting the negative test on that string?	No
	Are contingency plans in place for the following:	
21	Lost circulation?	Yes
22	Unplanned shut-down?	Yes
23	Unplanned rate change?	Yes
24	Float equipment does not hold differential pressures?	Yes
25	Surface equipment issues?	Yes
26	Will you monitor the annulus during cementing and WOC time?	Yes
27	If using foam cement, is a risk assessment being conducted and incorporated into cementing plan?	Yes
28	If using foam cement, will the foamer, stabilizer, and nitrogen injection be controlled by an automated process system?	Yes
	CRITICAL MUD REMOVAL PARAMETERS	
28	Have you tested your drilling fluid and cementing fluid programs for compatibility to reduce possible contamination?	Yes
29	Have you considered actual well conditions when determining appropriate cement volumes?	Yes
30	Has the spacer been modeled or designed to achieve the best possible mud removal?	Yes
	CRITICAL CEMENT SLURRY PARAMETERS	
31	Have all appropriate cement slurry parameters been considered to ensure the highest probability of isolating all potential flow zones?	Yes
32	Do you plan on circulating bottoms up prior to the start of the cement job?	No

If any question is answered "No", additional explanation will be needed as to why that practice is not being followed; identify the question and provide that explanation below. The following questions are not "Yes/No" questions and will require a description (if not applicable, state "Not Applicable").

Explanations to "Described Below" Responses:

4.) **List all potential flow zones within the well section to be cemented.** Potential flow zones:

Shallow Hazards: Based on the shallow hazards assessment, Horizon 2 from 240' to 393' BML has been assessed as a low risk for a shallow gas flow and a moderate risk for a shallow water flow although no sealing barrier is likely to exist. **Note: No shallow flow zones observed while drilling to the 22" shoe setting depth.**

Targets:

Formation	Depths of Formation Tops (RKB)	
	MD	TVD
Intra Mid-Miocene	23,484'	23,484'
Base Tahiti Pay	28,039'	27,384'

7a.) **If yes (a cementing simulation model will be used), how is the output of this simulation model used in your decision-making process?**

The CemFACTS and WellTemp simulation programs were used to design the cementing jobs planned for this well. The outputs of the simulations were used for the following:

- To optimize the densities and volumes of the spacer and cement slurries to ensure the well stays under control without causing losses.
- To optimize the pump rates, fluid rheologies, and centralization to provide the best mud removal.
- To predict the maximum surface pressure to ensure that casing and equipment limitations are not exceeded.
- To calculate the wellbore temperature profile during fluid circulation, cement placement, and after the cement is placed.

7c.) **Either way, include the number and placement of centralizers being used.**

Because this well is an exploration well, the centralizer program for each cement job is based on providing centralization only across the shoe track to help ensure an adequate shoe test. No centralizers were utilized for the 18" liner job because the clearance through the BOP stack and wellhead is too small. NOTE: the 22", 18", 16", 14" and 11-3/4" casing shoes were all set in salt.

Additional centralizers are available for the 9-7/8" and 7-5/8" liner jobs if hydrocarbon-bearing formations are present. If needed, the additional centralizers will be placed across any potential flow zones to help provide the proper isolation. **(Note: 22", 18", 16", 14", and 11-3/4" strings already installed)**

Centralizer Placement Summary

Casing String	Centralizer Type	# of Centralizers	Additional Available?
22" Casing	Welded SBLO Centralizer	5 (1/joint from shoe)	Yes
18" Liner	Not Applicable	0	No
16" Liner	Bow Spring Centralizer Sub	4 (1/joint from shoe)	No
14" Casing	Bow Spring Centralizer Sub	9 (1/joint from shoe)	Yes
11-3/4" Liner	Rotating Bow Spring Centralizer Sub	6 (1/joint from shoe)	Yes
9-7/8" Liner	Rotating Bow Spring Centralizer Sub	10 (1/joint from shoe)	Yes
	Spiralglider Centralizer	2 (Spaced between 9-7/8" & 11-3/4" liner hangers)	Yes
7-5/8" Liner	Rotating Bow Spring Centralizer Sub	10 (1/joint from shoe)	Yes

10.) **If there are any isolated annuli, how have you mitigated thermal casing pressure build-up?**

As planned, there are no isolated annuli. However, if hydrocarbon bearing formations are present in the 7-5/8" liner section, an isolated annulus may exist depending on the required TOC. An annular pressure build-up study was conducted when determining the maximum permissible set depth for the 16" contingency liner to mitigate APB issues in 14" intermediate string annulus in event of uncontrolled flow. Annular pressure build-up modeling will be performed to evaluate well construction as the well progresses, using as built information to support forward planning.

12.) **List all annular mechanical barriers in your design.**

The mechanical barriers to be used on this well are summarized in the following table.

Mechanical Barrier Summary

Casing String	Annular Mechanical Barriers
22" Casing	· 18-3/4" Rigid Lockdown Wellhead Housing – Pre-loaded to 2 MM lbs · Double Valve Float Shoe
18" Liner	· 18" x 22" Hanger Seal Assembly – Not used due to issues running 18" liner. The 18" Liner top was squeezed with cement and pressure tested to confirm integrity. · Double Valve Float Collar
16" Liner	· Unable to use 16" hanger and seal assembly due to 18" liner covering the 16" adaptor housing. The 16" Liner top was isolated by remedial cement top squeeze and pressure tested to confirm integrity. · Double Valve Float Collar
14" Casing	· 18-3/4" X 14" BIG BORE II CASING HANGER · 18-3/4" Seal Assembly · 18-3/4" Seal Assembly - Outer Lock Ring · Double Valve Float Collar
11-3/4" Liner	· 11-3/4" x 14" Liner Top Isolation Packer · Double Valve Float Collar
9-7/8" liner	· 9-7/8" x 14" Liner Top Isolation Packer **Note that the liner top will be squeezed with cement to place cement down to the 11-3/4" shoe, isolating the 11-3/4" liner, prior to setting the liner top isolation packer.** · Double Valve Float Collar
7-5/8" liner	· 7-5/8" x 9-7/8" Liner Top Isolation Packer · Double Valve Float Collar

14a.) **If you have any liner top packers exposed to the production or intermediate annulus, what is the rating for differential pressure across this packer?**

The differential pressure rating for the 11-3/4" X 14" liner-top packer is 6,000 psi from below.
The differential pressure rating for the 9-7/8" X 14" liner-top packer is 10,000 psi from below.
The differential pressure rating for the 7-5/8" X 9-7/8" liner-top packer is 7,500 psi from below.

15.) **What type of casing hanger lock-down mechanisms will be used?**

The high-pressure wellhead housing was pre-loaded to 2 MM lbs and the 14" casing hanger included the 18-3/4" seal assembly – outer lock ring.

Explanations to "No" Responses:

17.) **For all production casing hangers set in subsea, HP wellhead housing, will you set/energize the lock-down sleeve immediately after running the casing and prior to performing any negative test?**

There is no planned production casing for this well. After drilling and evaluating the final hole section, the well will be plugged and abandoned.

20.) **Do you plan on running a cement bond log on the production and intermediate casing/liner prior to conducting the negative test on that string?**

A cement evaluation tool will be run prior to abandoning the well, only if there are concerns that hydrocarbon-bearing zones were not covered by cement according to the regulations.

32.) **Do you plan on circulating bottoms up prior to the start of the cement job?**

Rather that circulating a pre-determined volume (e.g. bottoms up) prior to the cementing job, the plan will be to start the cementing job when the well is properly conditioned. Some hole sections (e.g. those in salt) will require less time to circulate and condition than those hole sections where hydrocarbons are present.

Efforts will be made to minimize the time required to circulate and condition without negatively affecting the cementing job itself. For example, the synthetic-base mud used to drill the hole section will already have properties adequate for mud removal during the cementing job. In addition, hole sections drilled with SBM are usually near gauge with minimal washouts resulting in more effective mud displacement. Once TD is reached, the hole will be circulated and sweeps will be pumped to remove any remaining cuttings prior to pulling out of the hole to log and/or run casing. Whenever possible, the casing will be rotated and/or reciprocated to improve mud removal.

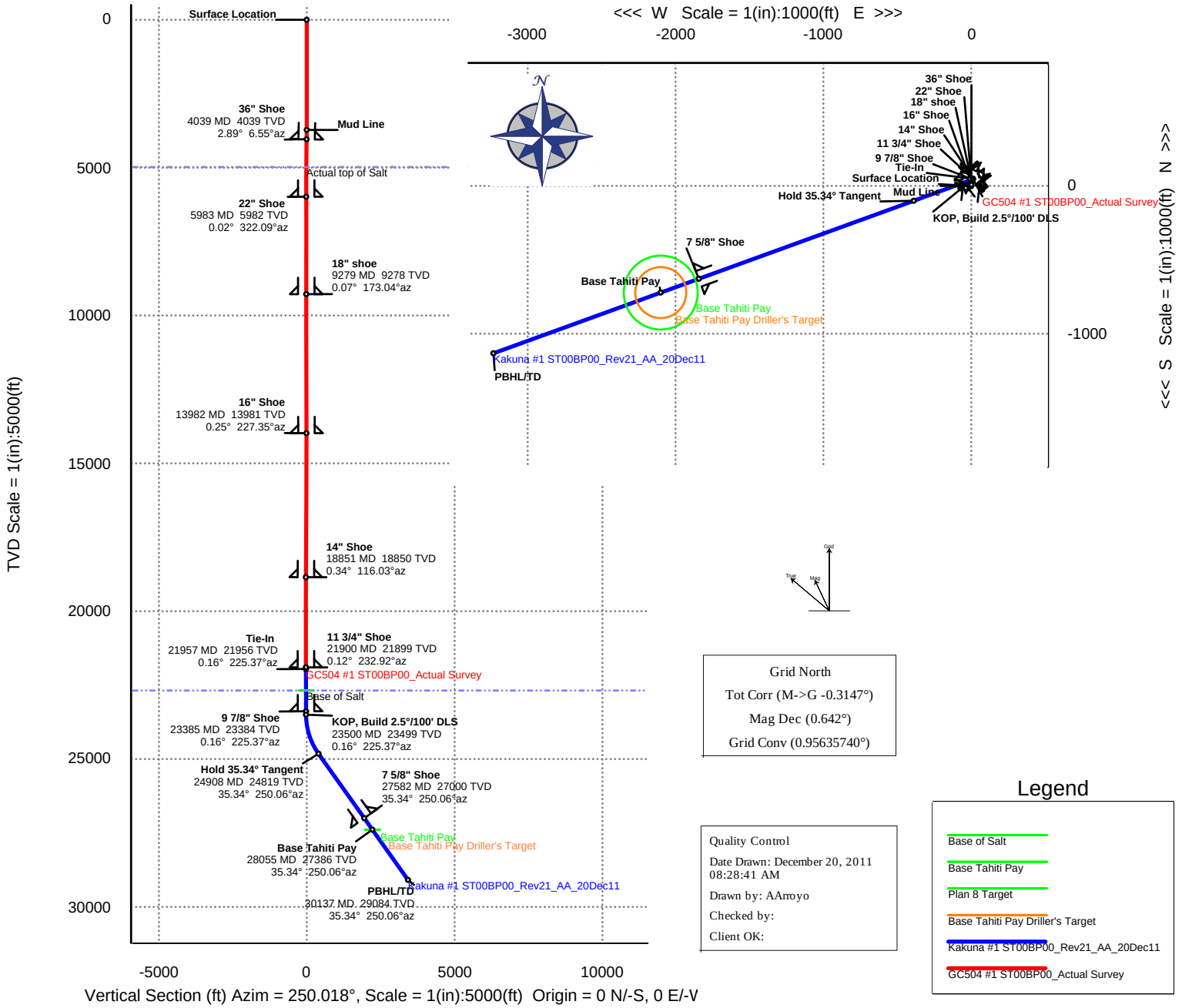
Directional Plan

Schlumberger — Nexen Petroleum — nexen

Well	Field	Structure
GC 504 #1 ST00BP00	Green Canyon 504 - Kakuna	Ensco 8502 (RKB=86ft)

Magnetic Parameters				Surface Location					Miscellaneous			
Model	BGGM 2011	Dip	57.141°	Latitude	N 27 28 48.052	Northing	9977480.10 ftUS	Grid Convergence	0.95635740°	Borehole	ST00BP00	TVD Reference	Rotary Table(86ft above MSL)
		Mag Dec	0.642°	Longitude	W 90 55 41.408	Easting	2312025.45 ftUS	Scale Factor	1.00011730 28	Plan	Kakuna #1 ST00BP00_Rev21_AA_19Dec11	Survey Date	June 01, 2011
		Field Strength	46316.4 nT										

NAD27 UTM Zone 15N, US Feet



Vertical Section (ft) Azim = 250.018°, Scale = 1(in):5000(ft) Origin = 0 N/-S, 0 E/-W

Grid North
Tot Corr (M->G -0.3147°)
Mag Dec (0.642°)
Grid Conv (0.95635740°)

Quality Control
Date Drawn: December 20, 2011 08:28:41 AM
Drawn by: AArroyo
Checked by:
Client OK:

Legend

- Base of Salt
- Base Tahiti Pay
- Plan 8 Target
- Base Tahiti Pay Driller's Target
- Kakuna #1 ST00BP00_Rev21_AA_20Dec11
- GC504 #1 ST00BP00_Actual Survey

Critical Points

Comments	Srvy MD(ft)	Inc(deg)	Azim(deg)	SS TVD(ft)	TVD(ft)	VS(ft)	NS(ft)	EW(ft)	Northing	Easting	Latitude(ft)	Longitude(ft)	DLS(ft)
Surface Location	0.00	0.00	0.00	-86.00	0.00	0.00	0.00	0.00	9977480.10	2312025.45	N 27 28 48.052	W 90 55 41.408	
Mud Line	3723.00	0.00	0.00	3637.00	3723.00	0.00	0.00	0.00	9977480.10	2312025.45	N 27 28 48.052	W 90 55 41.408	0.00
36" Shoe	4039.13	2.89	6.55	3953.00	4039.00	-3.43	7.91	0.91	9977488.01	2312026.36	N 27 28 48.130	W 90 55 41.397	0.91
Actual top of Salt	4979.00	0.93	356.91	4891.95	4977.95	-15.10	47.61	-0.39	9977527.71	2312025.06	N 27 28 48.524	W 90 55 41.404	0.73
22" Shoe	5983.06	0.02	322.09	5896.00	5982.00	-14.98	49.05	-1.02	9977529.16	2312024.43	N 27 28 48.538	W 90 55 41.410	0.04
18" shoe	9279.06	0.07	173.04	9192.00	9278.00	-13.88	48.97	-2.16	9977529.07	2312023.29	N 27 28 48.537	W 90 55 41.423	0.05
16" Shoe	13982.08	0.25	227.35	13895.00	13981.00	-7.18	46.72	-8.47	9977526.82	2312016.98	N 27 28 48.516	W 90 55 41.493	0.05
14" Shoe	18851.20	0.34	116.03	18764.00	18850.00	-26.75	48.44	11.63	9977528.54	2312037.08	N 27 28 48.530	W 90 55 41.270	0.17
11 3/4" Shoe	21900.20	0.12	232.92	21813.00	21899.00	-26.16	47.32	11.39	9977527.43	2312036.84	N 27 28 48.519	W 90 55 41.273	0.08
Tie-In	21957.00	0.16	225.37	21869.80	21955.80	-26.75	47.23	11.29	9977527.34	2312036.74	N 27 28 48.518	W 90 55 41.274	0.08
Base Salt	22685.21	0.16	225.37	22598.00	22684.00	-24.90	45.80	9.84	9977525.91	2312035.29	N 27 28 48.504	W 90 55 41.290	0.00
9 7/8" Shoe	23385.21	0.16	225.37	23298.00	23384.00	-23.13	44.43	8.45	9977524.53	2312033.90	N 27 28 48.491	W 90 55 41.306	0.00
KOP, Build 2.5°/100' DLS	23500.00	0.16	225.37	23412.79	23498.79	-22.83	44.20	8.22	9977524.31	2312033.68	N 27 28 48.488	W 90 55 41.309	0.00
Hold 35.34° Tangent	24907.95	35.34	250.06	24732.77	24818.77	399.56	-100.63	-388.56	9977379.46	2311636.84	N 27 28 47.120	W 90 55 45.740	2.50
7 5/8" Shoe	27582.03	35.34	250.06	26914.00	27000.00	1946.48	-628.15	-1842.76	9976851.88	2310182.48	N 27 28 42.137	W 90 56 1.981	0.00
Base Tahiti Pay	28055.25	35.34	250.06	27300.00	27386.00	2220.23	-721.50	-2100.10	9976758.52	2309925.11	N 27 28 41.255	W 90 56 4.855	0.00
PBHL/TD	30136.92	35.34	250.06	28998.00	29084.00	3424.44	-1132.14	-3232.13	9976347.83	2308792.95	N 27 28 37.375	W 90 56 17.497	0.00

Wellbore Schematic

NEXEN PETROLEUM USA

GOM Deepwater Exploration

KAKUNA Prospect -- Green Canyon 504

OPERATOR:	Nexen	PARTNER:		DATE:	12/19/2011
WELL NAME:	GC 504 OCS-G 22968	RIG:	ENSCO 8502	RF ELEV:	86'
SURFACE LOCATION:	X: 2,312,025 Y: 9,977,480	PBHL:	X: 2,308,788 Y: 9,976,344	WD:	3,637'
OBJECTIVE ZONE:	Base Tahiti Pay			PTD:	29,084' TVD

HOLE			CSG		PP	MW	FG	
MD	TVD	BML	TOP	FT	DO/TD	DO/TD	FRAC	
								Big Bore II Subsea Wellhead
								36" Jetted to 318' BML
								36" Ext Joint 2.0" wall, 726 lb/ft, X-65, HC100/MT Pin, 68 ft Joint
								36" Xover 1.5" wall 552 lb/ft, X-56, HC100/MT Box X D90/MT Pin
								36" Intermediate 1.5" wall 552 lb/ft, X-56, D60/MT (2 Joints)
								36" Jetin 1.0" wall, 374 lb/ft, X-56, D60/MT Box X Inverted Bevel
4,039'	4,039'	316'	3,712'	327'	8.6	Sea Water		**Shoe @ 4,039' TVD**
(Actual Depths)								
								26" PDC
								CMT: 15.2 ppg Foamed Deep Set II Lead / 15.2 ppg Non-Foamed Deep Set II Tail
								TOC @ MudLIne
								No Burst / Collapse Rupture Disks
Top Salt @ 4,979' TVD								**22" X 1.25" Ext Joint, X-80, XLW**
(Actual Depth)								**22" X 1.25" 1 Joint, X-80, XLW**
6,016'	6,015'	2,293'	3,709'	2,274'	8.6 / 9.0	Sea Water / 9.8	14.8	**22" X 1", 224 lb/ft, X-80, XLW (Burst 6364 - Collapse 3874)** 87° F
(Actual Depths)					Achieved 22" FIT to 14.8 ppg, equivalent to OBG Plus 1000 psi			**Shoe @ 5,983' MD / 5,982' TVD**
								Top HP WHH @ 3709' MD/TVD
								Bottom HP WHH @ 3715.6' MD TVD
								18-1/8" PDC x 21" Reamer
								(Annular cement job squeezed from 6203' MD to 4010' MD)
								CMT: 16.4 ppg Premium H, TOC @ 6,779' MD (2,500' of fill)
11,100'	11,099'	7,377'	3,791'	5,488'	9.0 / 10.5	11.5 / 12.0	16.0	**18", 117 lb/ft, P110, Hyd511 (Burst 6684 - Collapse 2109)** 109° F
(Actual Depths)					Planned FIT = 15.2 ppg. Actual LOT achieved = 13.5			**Shoe @ 9,279' MD / 9,278' TVD**
Original 18" setting depth was planned for 11,000 ft TVD.								TOL @ 3,791' MD/TVD (Originally planned to set in 18" Supp Adaptor @ 5477')
18" liner set earlier than planned, due to hang up of liner hanger 75ft below wellhead housing.								
Rathole length below revised 18" setting depth = 1,821 ft								
								16-1/2" PDC x 19-1/2" Reamer
								CMT: 16.4 ppg Premium H, TOC = 3000' fill for primary cement job on shoe.
								No Burst / Collapse Rupture Disks
14,001'	14,000'	10,277'	7,956'	6,020'	10.5 / 12.1	12.0 / 13.0	16.6	**16", 97 lb/ft, Q-125HC, Hydrill 511 (Burst 7860 - Collapse 2950)** 122° F
(Actual Depths)					Planned FIT = 15.2 ppg. Actual LOT achieved = 15.2			**Shoe @ 13,982' MD / 13,981' TVD**
Note: Notch in salt body at 14,000' TVD +/- 500'. 1800' separation at closest approach.								TOL @ 7,956' MD / 7,955' TVD (18" liner covering the 16" supplemental adaptor)
Note: Rounded up pore pressure based on kick pressure, not predicted Pp curve.								**Note: 16" liner top overlap 1323' inside 18" liner.**
The salt was being drilled w/ 14.9 ppg SBM prior to kick. Kick = 15.5 ppg EMWt.								**Note: 16" liner top to be squeezed to leave 1000' of cement in lap above 18" shoe.**
Kick zone pressure equated to 97% of OBG. Above trend. Believed to be discrete zone.								**Note: Remedial Squeeze Job performed on 16" liner top after poor initial squeeze.**
Note: Isolated zone in salt at 18820' - 18,825' TVD w/Pfrac = 16.2ppg EMWt, cemented.								14-1/2" PDC x 17-1/2" Reamer
Note: A total of five remedial cement squeezes performed on 14" shoe/rat hole.								CMT: 16.4 ppg Premium H, Planned TOC @ 14,700' MD (4,151' of fill attempted on primary job)
Final successful squeeze left 37' of slurry above the shoe (Actual TOC at 18,814' MD)								**No Burst / Collapse Rupture Disks**
								14", 112.6 lb/ft, Q-125HC, VAMTOP (± 200 ft) (Burst 12450 - Collapse 8920)
								No Burst / Collapse Rupture Disks
18,910'	18,909'	15,186'	3,709'	15,142'	12.1 / 15.5	13.0 / 15.6	17.3	**14", 112.6 lb/ft, Q-125HC, Hyd 513 / 523 (Burst 12450 - Collapse 8920)** 142° F
(Actual Depths)					Planned FIT = 16.5 ppg. Actual LOT achieved = 16.2 ppg			**Shoe @ 18,851' MD / 18,850' TVD**
Note: Isolated weak zone in salt from 18906' - 18,917' TVD w/Pfrac = 16.2ppg EMWt								
Note: Premature release of liner hanger running tool resulted in liner hanger falling to bottom without								12-1/4" PDC x 14-3/4" Reamer
engagement of liner hanger slips. Set liner top packer and conducted primary cement squeeze.								CMT: 16.4 ppg Premium H, Planned TOC @ 20,900' MD (1000' of fill attempted on primary squeeze)
A total of two remedial cement squeezes also performed on 11-3/4" shoe.								**No Burst / Collapse Rupture Disks**
Final successful squeeze left 689' of slurry above the shoe (Actual TOC at 21,211' MD).								**11-3/4", 65 lb/ft, Q-125HC, Hyd523 (±712 ft) (Burst 9940 - Collapse 5740)**
								11-3/4", 65 lb/ft, Q-125HC, SLIJ II (±1587 ft) (Burst 9940 - Collapse 5740)
21,900'	21,899'	18,176'	18,517'	3,383'	15.5 / 14.1	15.6	17.6	**11-3/4", 65 lb/ft, Q-125HC, Hyd523 (Burst 9940 - Collapse 5740)** 158° F
(Actual Depths)					Planned FIT = 16.7 ppg. Actual FIT achieved = 16.7 ppg			**Shoe @ 21,900' MD / 21,899' TVD**
Base Salt @ 22,326' MD / 22,325' TVD (TBC by LWD logs)						BOS FG: 15.9 ppg		
Note: Predicted pore pressure at BoS is 13.8 - 14.1 ppg EMWt.								
Higher mud weight to stabilize inclusions near Base of Salt.								
								10-5/8" PDC x 12-1/4" Reamer
								CMT: 16.4 ppg Premium H, Top squeeze top of liner down to 21,900' MD
								CMT: 16.4 ppg Premium H, TOC @ 22,835' MD (550' of fill above 9-7/8" shoe)
								No Burst / Collapse Rupture Disks
23,385'	23,384'	19,662'	18,017'	5,368'	14.1 / 14.3	14.5 / 15.3	16.0	**9-7/8", 62.8 lb/ft, Q-125HC, SLIJ II (Burst 13840 - Collapse 11640)** 166° F
						Planned LOT = 16.0 ppg		**Shoe @ 23,384' TVD**
M15 - 23,484' TVD								
M18 - 25,634' TVD								8-1/2" PDC x 9-7/8" Reamer
M21 - 27,384' TVD								CMT: 16.4 ppg Premium H, TOC @ 26,085' MD (1,500' of fill, to be adjusted for hydrocarbon zones)
								No Burst / Collapse Rupture Disks
								7-5/8", 39 lb/ft, Q-125HC, SLIJ II (Burst 14340 - Collapse 12810)
27,585'	27,000'	23,862'	22,885'	4,700'	14.3 / 15.3	15.3/ 15.4	16.8	**7-5/8", 39 lb/ft, Q-125HC/P-110, Hyd 513/523 (±490 ft) (Burst 12620 - Collapse 11080)** 201° F
						Planned LOT = 16.8 ppg		**Shoe @ 27,000' TVD**
M22 - 28,284' TVD								
								6-1/2" PDC
30,144'	29,084'	26,421'			15.3 / 15.6	15.4 / 15.7	17.1	**Well TD** 220° F

Well Design Validation

APPENDIX 2 - FROM MMS - 123S

U.S. Department of the Interior
Minerals Management Service (MMS)

Submit ORIGINAL plus TWO copies

OMB CONTROL NO. 1010-0131
OMB Approval Expires XX/XX/2005

PERMIT TO DRILL A WELL SUPPLEMENTAL INFORMATION SHEET

(Replaces Supplemental APD Information Sheet)

1. OPERATOR NAME	5. WELL NAME (Proposed)	6. SIDETRACK NO. (Proposed)	7. BYPASS NO. (Proposed)	12. WATER DEPTH	5278
Nexen Petroleum USA Inc.	GC 504 #1	0	0	3,637'	86'

2. API WELL NO. *(Proposed) (12 Digits)*	8. SURFACE WELL LOCATION *(NAD 27)*	14. TYPE OF WELL
60-811-40581-00	LATITUDE 27º 28' 48.052" N LONGITUDE 90º 55' 41.408" W	☑ EXPLORATION ☐

3. BOTTOM LEASE NO *(Proposed)*	9. BOTTOM WELL LOCATION *(NAD 27)*	15. H_2S DESIGNATION
OCS-G-22968	LATITUDE 27º 28' 37.338' N LONGITUDE 90º 56' 17.552" W	☐ KNOWN ☐ UNKNC ☑

4. TOTAL DEPTH *(Proposed)*	10. RIG NAME	11. RIG TYPE	16. H_2S ACTIVATION PLAN DEPTH FT (TVD)
MD 30,144' TVD 29,084'	Ensco 8502	SEMI-SUBMERSIBLE	N/A

15. ENGINEERING DATA

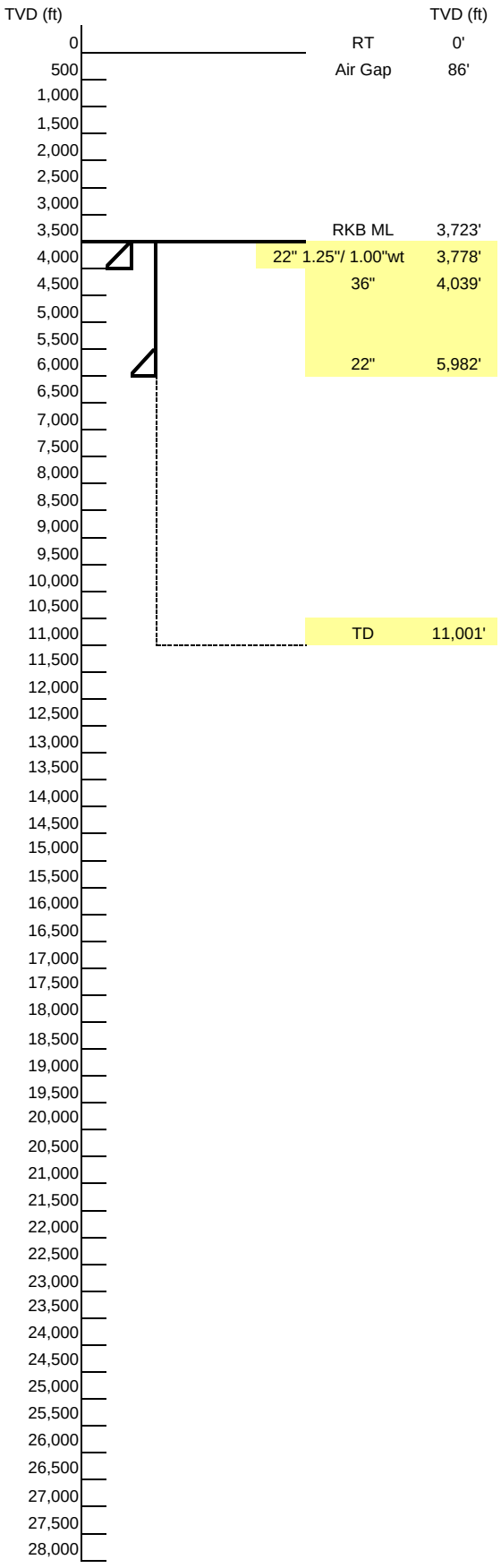
Hole Size (in.)	Casing (Indicate if liner)	Casing Size (in.)	Weight / Grade	Burst Rating / Collapse Rating (psi)	Type of Connection	MASP (psi) / MAWP (psi)	Safety Factors B	C	T	Top of Liner MD	Casing Depth M D / T V D	Shoe (ppg) P P	M W	F G	Well-head Rating (psi)	BOP Size (in)	Rated BOP Working Pres. Annular / Ram (psi)	Test Presures Annular (psi) / Casing (psi) MW used	Shoe Test (ppg)	Cement (ft3)	Drilling Fluid Type (oil base, water base, synthetic)
Jet in	Drive Structural	36	726.00 / X-65		HC100/MT						3,779' / 3,779'										Sea Water w/gel sweeps
		36	552.00 / X-56		HC100/MT D90/MT D60/MT						4,001' / 4,001'										Sea Water w/gel sweeps
		36	374.00 / X-56		D60/MT						4,039' / 4,039'										Sea Water w/gel sweeps
26	Conductor	22	277 / X-80	7,950 / 6,670	XLW	5,769	1.4	3.5	4.3		3,778' / 3,778'	9.0	9.1	14.8	15,000	18 3/4"	10,000	7,800	3,400	14.8	7,571	Sea Water & Brine w/gel sweeps
		22	224 / X-80	6,360 / 3,870	XLW	5,787					5,983' / 5,982'		EMW				15,000	10,200	w/8.7 ppg		
21	Drilling Liner	18	117.00 / P-110	6,680 / 2,110	Hydril 511	5,769 / 5,787	1.5	1.2	1.4	3,791'	9,279' / 9,278'	10.5	12.0	16.0	15,000	18 3/4"	10,000 / 15,000	7,800 / 10,200	2,470 / w/12.0 ppg	13.5	1,853	Synthetic
19-1/2	Drilling Liner	16	97.00 / HCQ-125	7,860 / 2,950	Hydril 511	6,153 / 6,306	1.8	1.0	3.7	7,956'	13,982' / 13,981'	12.1	13.0	16.6	15,000	18 3/4"	10,000 / 15,000	7,800 / 10,200	3,155 / w/13.0 ppg	15.2	2,369	Synthetic
17-1/2	Surface	14	112.60 / HCQ-125	12,450 / 8,920	VamTop	7,126	1.3	2.7	1.7		3,909' / 3,909'	15.5	15.6	16.2	15,000	18 3/4"	10,000	7,800	7,400	16.2	3,051	Synthetic
		14	112.60 / HCQ-125	12,450 / 8,920	Hydril 523						18,604' / 18,603'						15,000	10,200	w/15.6 ppg		
		14	112.60 / HCQ-125	12,450 / 8,920	Hydril 513	7,281					18,851' / 18,850'										
14-3/4	Drilling Liner	11-3/4	65.00 / HCQ-125	9,940 / 5,740	Hydril 523	6,332	2.0	1.6	3.5	18,517'	19,601' / 19,600'	14.1	15.6	17.6	15,000	18 3/4"	10,000	7,800	2,800	16.7	612	Synthetic
		11-3/4	65.00 / HCQ-125	9,940 / 5,740	Vam SLIJ II						21,188' / 21,187'						15,000	10,200	w/15.6 ppg		
		11-3/4	65.00 / HCQ-125	9,940 / 5,740	Hydril 523	6,457					21,900' / 21,899'										
12-1/4	Drilling Liner	9-7/8	62.80 / HCQ-125	13,840 / 11,640	Vam SLIJ II	8,645 / 8,779	2.5	2.0	2.0	18,017'	23,385' / 23,384'	14.3	15.3	16.0	15,000	18 3/4"	10,000 / 15,000	7,800 / 10,200	1,400 / w/15.3 ppg	16.0	1,057	Synthetic
9-7/8	Drilling Liner	7-5/8	39.00 / HCQ-125	14,340 / 12,810	Vam SLIJ II	9,540	2.9	2.3	2.8	22,885'	27,032' / 26,553'	15.3	15.4	16.8	15,000	18 3/4"	10,000	7,800	2,500	16.8	462	Synthetic
		7-5/8	39.00 / P-110	12,620 / 11,080	Hydril 513	9,703					27,585' / 27,000'						15,000	10,200	w/15.4 ppg		
6-1/2	Open Hole					9,540 / 9,703					30,144' / 29,084'	15.6	15.7	17.1	15,000	18 3/4"	10,000 / 15,000	7,800 / 10,200	2,500 / w/15.4 ppg			Synthetic

16. CONTACT NAME	17. CONTACT PHONE NO.	18. CONTACT E-MAIL ADDRESS

19. Will you maintain quantities of mad and mud material (including weight materials and additives) sufficient to raise the entire mud weight 1/2 ppg or more? _X_ Yes ___ No

20. REMARKS: The maximum wellbore pressure on the annulars during a well control event will be limited to 3,000 psi. On an event where the wellbore pressure exceeds 3,000 psi we would switch to the VBR rams.
The casing Safety factors were obtain using the Landmark StressCheck program version 2003.21 build 1185.
9-7/8" liner job cement volume includes primary shoe cement job volume and liner top cement squeeze volume.

22"



Design Details

Casing Size in	Casing Weight lb/ft	Casing Grade	Thread Type	Burst Rating psi	Collapse Rating psi	Tension Ratings Body kips	Tension Ratings Conn kips
22 1.25"wt	277	X-80	XLW	7,950	6,670	6,519	6,519
22 1.00"wt	224	X-80	XLW	6,360	3,870	5,278	5,278
OH	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Casing Size in	Depth Top MD ft	Depth Top TVD ft	Depth Shoe or TD MD ft	Depth Shoe or TD TVD ft	Pore lb/gal	MW lb/gal	BF	Fracture Gradient lb/gal
22 1.25"wt	3,709'	3,709'	3,778'	3,778'	8.7	9.1	0.86	8.7
22 1.00"wt	3,778'	3,778'	5,983'	5,982'	9.0	9.1	0.86	14.8
OH	5,983'	5,982'	11,001'	11,000'	11.1	11.5	0.83	16.2

Casing Size in	MW in Csg Post Cmt lb/gal	Gradient Split Gas %	Gradient Split Mud %	Pore Pressure psi	Fracture Pressure psi	Gas Gradient psi/ft	Equ. Gradient psi/ft
22	8.7	70%	30%	2,800	4,604	0.10	0.212
OH	11.5	70%	30%	6,349	9,266	0.10	0.249

Less Than 10,000' gas 0.1 psi/ft
Deeper Than 10,000' gas .15 psi/ft
Above 12,000' 30% Mud / 70% Gas
Between 12,000-15,000 40% Mud / 60% Gas
Depper than 15,000' 50% Mud / 50% Gas

Surface Pressure Calculations

$MASP_{pore} = P_{pore} - (\gamma_{equiv})\ (TVD_{next})$

$MASP_{pore}$ = 6,349 - 0.249 x 11,000' = **3,606** psi

$MASP_{frac} = P_{frac} - (\gamma_{gas})\ (TVD_{shoe})$

$MASP_{frac}$ = 4,604 - 0.100 x 5,982' = **4,006** psi

$MASP_{MMS}$ = Minimum of [$MASP_{pore}$] or [$MASP_{frac}$]

$MASP_{MMS}$ = **3,606** psi

$MAWP = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{mudline}) - (8.65)(0.052)(TVD_{water})$

MAWP = 3,606 + 0.249 x 3,723' - 0.4498 x 3,637' = **2,898** psi

$MAP_{bml\ int}\ (TVD) = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{int}) - (Ppore)(0.052)(TVD_{int})$

$MAP_{bml\ shoe}$ (TVD) = 3,606 + 0.249 x 5,982' - 8.7 x 0.052 x 5,982' = **2,407** psi

$MAP_{bml\ 22"\ XO}$ (TVD) = 3,606 + 0.249 x 3,778' - 8.7 x 0.052 x 3,778' = **2,849** psi

Casing Pressure Test Calculations (check uncement liner capacity)

$P_{test\ surf}$ = Minimum of A, B, or C:

$P_{test\ surf}$ = **3,398** psi

A. MAWP + 500 psi

B. 70% OCTG Rating - (ρmud- Ppore)(0.052)(TVD)

~~C. 70% Hanger Rating - (ρmud - Ppore)(0.052)(TVD)~~

~~D. $P_{frac\ @\ liner\ shoe}$ + 500 psi - (ρ_{mud})(0.052)($TVD_{liner\ shoe}$)~~

A. = 2,898 + 500 = **3,398** psi

B. = 22" 1.25"wt Top 70% x 7,950 - (8.7 - 8.7) x 0.052 x 3,709' = **5,565** psi

B. = 22" 1.25"wt Bottom 70% x 7,950 - (8.7 - 8.7) x 0.052 x 3,778' = **5,565** psi

B. = 22" 1.00"wt Top 70% x 6,360 - (8.7 - 8.7) x 0.052 x 3,778' = **4,452** psi

B. = 22" 1.00"wt Shoe 70% x 6,360 - (8.7 - 9.0) x 0.052 x 5,982' = **4,561** psi

$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVD_{water})$

$P_{test\ WH}$ = 3,398 + (8.7 - 8.7) x 0.052 x 3,637' = **3,398** psi

$P_{test\ shoe} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$

$P_{test\ shoe}$ = 3,398 + (8.7 - 9.0) x 0.052 x 5,982' = **3,290** psi

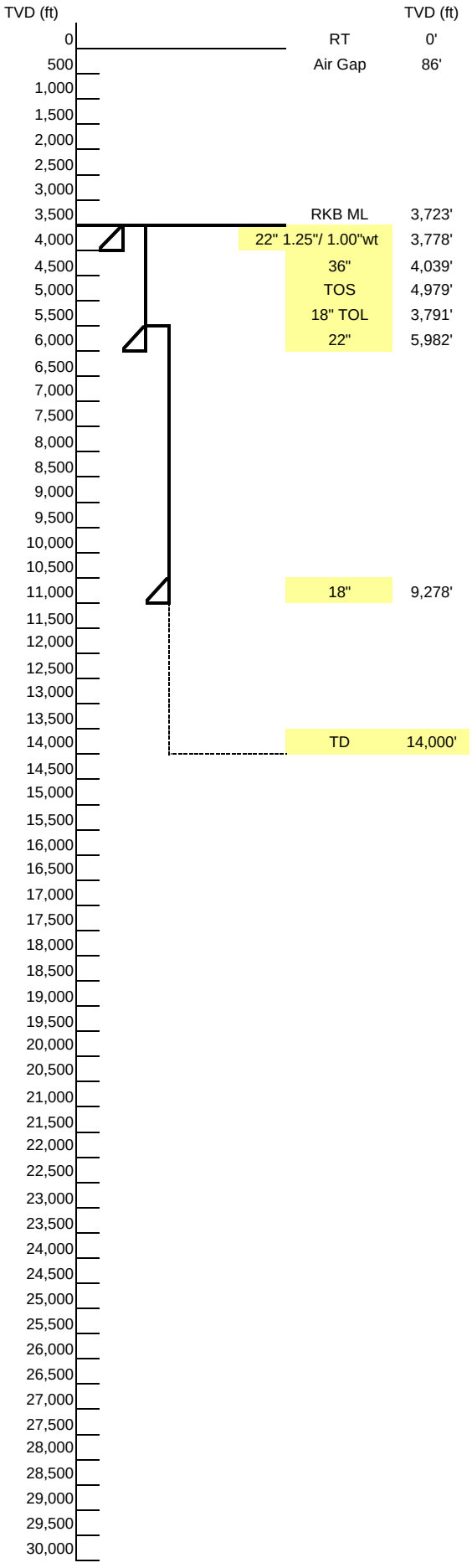
$P_{22"\ XO} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVDxo)$

$P_{22"\ XO}$ = 3,398 + (8.7 - 8.7) x 0.052 x 3,778' = **3,398** psi

Pressure Test Requirements

Item	Annular	Rams	Casing			
psi	7,800	10,200	3,400	w/	8.7	ppg mud

22" x 18"



Design Details

Casing Size in	Casing Weight lb/ft	Casing Grade	Thread Type	Burst Rating psi	Collapse Rating psi	Tension Ratings Body kips	Tension Ratings Conn kips
22 1.25"wt	277	X-80	XLW	7,950	6,670	6,520	6,520
22 1.00"wt	224	X-80	XLW	6,360	3,870	5,280	5,280
18	117	P-110	Hydril 511	6,680	2,110	3,750	2,330
OH	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Casing Size in	Depth Top MD ft	Depth Top TVD ft	Depth Shoe or TD MD ft	Depth Shoe or TD TVD ft	Pore lb/gal	MW lb/gal	BF	Fracture Gradient lb/gal
22 1.25"wt	3,709'	3,709'	3,778'	3,778'	8.7	9.8	0.85	8.7
22 1.00"wt	3,778'	3,778'	5,983'	5,982'	9.0	9.8	0.85	14.8
18	3,791'	3,791'	9,279'	9,278'	10.5	12.0	0.82	16.0
OH	9,279'	9,278'	14,001'	14,000'	12.1	13.0	0.81	16.6

Casing Size in	MW in Csg Post Cmt lb/gal	Gradient Split Gas %	Gradient Split Mud %	Pore Pressure psi	Fracture Pressure psi	Gas Gradient psi/ft	Equ. Gradient psi/ft
22	8.7	70%	30%	2,800	4,604	0.10	0.223
18	12.0	70%	30%	5,066	7,719	0.10	0.257
OH	13.0	50%	50%	8,809	12,085	0.15	0.413

Less Than 10,000' gas 0.1 psi/ft
Deeper Than 10,000' gas .15 psi/ft
Above 12,000' 30% Mud / 70% Gas
Between 12,000-15,000 40% Mud / 60% Gas
Depper than 15,000' 50% Mud / 50% Gas

Surface Pressure Calculations

$MASP_{pore} = P_{pore} - (\gamma_{equiv})\ (TVD_{next})$

$MASP_{pore}$ = 8,809 - 0.413 x 14,000' = **3,027** psi

$MASP_{frac} = P_{frac} - (\gamma_{gas})\ (TVD_{shoe})$

$MASP_{frac}$ = 7,719 - 0.150 x 9,278' = **6,328** psi

$MASP_{MMS}$ = Minimum of [$MASP_{pore}$] or [$MASP_{frac}$]

$MASP_{MMS}$ = **3,027** psi

$MAWP = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{mudline}) - (8.65)(0.052)(TVD_{water})$

MAWP = 3,027 + 0.413 x 3,723' - 0.4498 x 3,637' = **2,928** psi

$MAP_{bml\ int}\ (TVD) = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{int}) - (Ppore)(0.052)(TVD_{int})$

$MAP_{bml\ lnr\ top}$ (TVD) = 3,027 + 0.413 x 3,791' - 8.7 x 0.052 x 3,791' = **2,887** psi

$MAP_{bml\ lnr\ shoe}$ (TVD) = 3,027 + 0.413 x 9,278' - 10.5 x 0.052 x 9,278' = **1,793** psi

$MAP_{bml\ 22"\ XO}$ (TVD) = 3,027 + 0.413 x 3,778' - 8.7 x 0.052 x 3,778' = **2,888** psi

$MAP_{bml\ 22"\ TOS}$ (TVD) = 3,027 + 0.413 x 4,979' - 8.7 x 0.052 x 4,979' = **2,844** psi

Casing Pressure Test Calculations (check uncement liner capacity)

$P_{test\ surf}$ = Minimum of A, B, C or D:

$P_{test\ surf}$ = **2,430** psi

A. MAWP + 500 psi

B. 70% OCTG Rating - (ρmud- Ppore)(0.052)(TVD)

C. 70% Hanger Rating - (ρmud - P_{pore})(0.052)(TVD)

D. $P_{frac\ @\ liner\ shoe}$ + 500 psi - (ρ_{mud})(0.052)($TVD_{liner\ shoe}$)

A. = 2,928 + 500 = **3,428** psi

B. = 22" 1.25"wt Top 70% x 7,950 - (12.0 - 8.7) x 0.052 x 3,709' = **4,919** psi

B. = 22" 1.25"wt Bottom 70% x 7,950 - (12.0 - 8.7) x 0.052 x 3,778' = **4,907** psi

B. = 22" 1.00"wt Top 70% x 6,360 - (12.0 - 8.7) x 0.052 x 3,778' = **3,794** psi

B. = 22" 1.00"wt Bottom 70% x 6,360 - (12.0 - 8.7) x 0.052 x 5,982' = **3,410** psi

B. = 18" Top 70% x 6,680 - (12.0 - 8.7) x 0.052 x 3,791' = **4,016** psi

B. = 18" Shoe 70% x 6,680 - (12.0 - 10.5) x 0.052 x 9,278' = **3,952** psi

C. = 18" Liner Hanger 70% x 5,000 - (12.0 - 8.7) x 0.052 x 3,791' = **2,849** psi

D. = 7,719 + 500 - (12.0 x 0.052) x 9,278' = **2,430** psi

$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVD_{water})$

$P_{test\ WH}$ = 2,430 + (12.0 - 8.7) x 0.052 x 3,637' = **3,063** psi

$P_{lnr\ top} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{lnr\ top})$

$P_{lnr\ top}$ = 2,430 + (12.0 - 8.7) x 0.052 x 3,791' = **3,090** psi

$P_{test\ shoe} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$

$P_{test\ shoe}$ = 2,430 + (12.0 - 10.5) x 0.052 x 9,278' = **3,154** psi

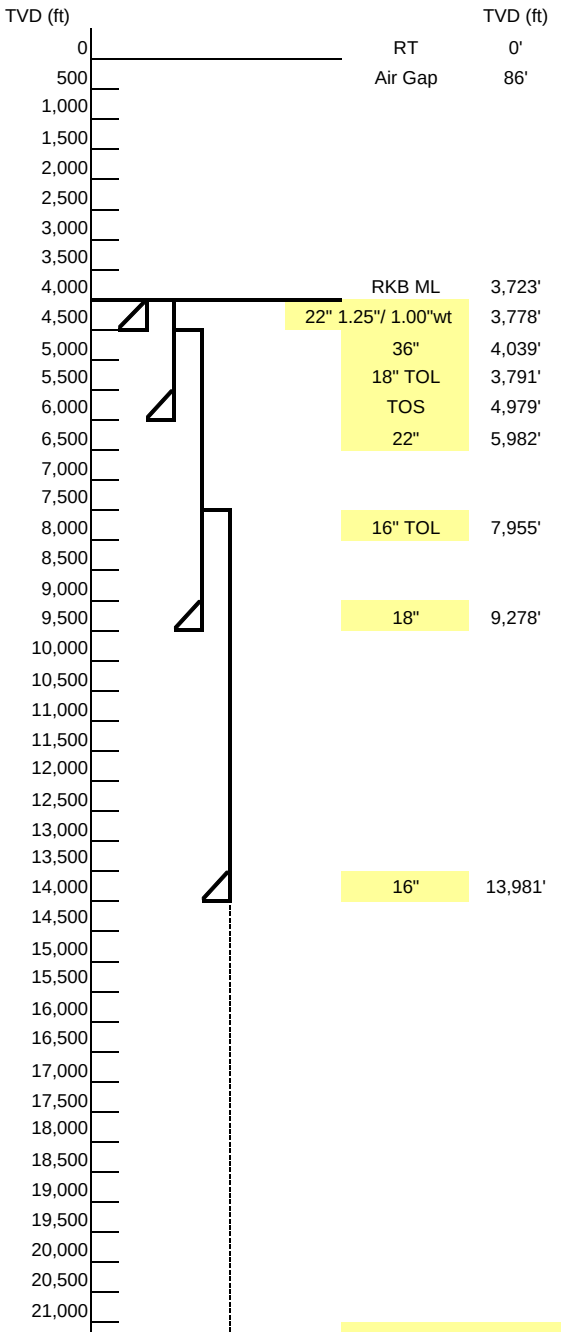
$P_{22"\ XO} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVDxo)$

$P_{22"\ XO}$ = 2,430 + (12.0 - 9.0) x 0.052 x 3,778' = **3,019** psi

Pressure Test Requirements

Item	Annular	Rams	Casing		
psi	7,800	10,200	2,400	w/ 12.0	ppg mud

22" x 18" x 16"



Design Details

Casing Size in	Casing Weight lb/ft	Casing Grade	Thread Type	Burst Rating psi	Collapse Rating psi	Tension Ratings Body kips	Tension Ratings Conn kips
22 1.25"wt	277	X-80	XLW	7,950	6,670	6,520	6,520
22 1.00"wt	224	X-80	XLW	6,360	3,870	5,280	5,280
18	117	P-110	Hydril 511	6,680	2,110	3,750	2,330
16	97	HCQ125	Hydril 511	7,860	2,340	3,480	2,177
OH	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Casing Size in	Depth Top MD ft	Depth Top TVD ft	Depth Shoe or TD MD ft	Depth Shoe or TD TVD ft	Pore lb/gal	MW lb/gal	BF	Fracture Gradient lb/gal
22 1.25"wt	3,709'	3,709'	3,778'	3,778'	8.7	9.8	0.85	8.7
22 1.00"wt	3,778'	3,778'	5,983'	5,982'	9.0	9.8	0.85	14.8
18	3,791'	3,791'	9,279'	9,278'	10.5	12.0	0.82	13.5
16	7,956'	7,955'	13,982'	13,981'	12.1	13.0	0.81	16.6
OH	13,982'	13,981'	18,910'	18,909'	15.5	15.6	0.77	16.2

Casing Size in	MW in Csg Post Cmt lb/gal	Gradient Split Gas %	Gradient Split Mud %	Pore Pressure psi	Fracture Pressure psi	Gas Gradient psi/ft	Equ. Gradient psi/ft
22	8.7	70%	30%	2,800	4,604	0.10	0.223
18	12.0	70%	30%	5,066	6,513	0.10	0.257
16	13.0	60%	40%	8,797	12,068	0.15	0.360
OH	15.6	50%	50%	15,241	15,929	0.15	0.481

Less Than 10,000' gas 0.1 psi/ft
Deeper Than 10,000' gas .15 psi/ft
Above 12,000' 30% Mud / 70% Gas
Between 12,000-15,000 40% Mud / 60% Gas
Depper than 15,000' 50% Mud / 50% Gas

Surface Pressure Calculations

$MASP_{pore} = P_{pore} - (\gamma_{equiv})\ (TVD_{next})$

$MASP_{pore}$ = 15,241 - 0.481 x 18,909' = **6,153** psi

$MASP_{frac} = P_{frac} - (\gamma_{gas})\ (TVD_{shoe})$

$MASP_{frac}$ = 12,068 - 0.150 x 13,981' = **9,971** psi

$MASP_{MMS}$ = Minimum of [$MASP_{pore}$] or [$MASP_{frac}$]

$MASP_{MMS}$ = **6,153** psi

$MAWP = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{mudline}) - (8.65)(0.052)(TVD_{water})$

MAWP = 6,153 + 0.481 x 3,723' - 0.4498 x 3,637' = **6,306** psi

$MAP_{bml\ int}\ (TVD) = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{int}) - (Ppore)(0.052)(TVD_{int})$

$MAP_{bml\ 16"\ lnr\ top}$ (TVD) =	6,153	+	0.481	x	7,955'	-	9.0	x	0.052	x	7,955'	=	**6,253** psi
$MAP_{bml\ 16"\ lnr\ shoe}$ (TVD) =	6,153	+	0.481	x	13,981'	-	12.1	x	0.052	x	13,981'	=	**4,075** psi
$MAP_{bml\ 18"\ lnr\ TOP}$ (TVD) =	6,153	+	0.481	x	3,791'	-	9.0	x	0.052	x	3,791'	=	**6,201** psi
$MAP_{bml\ 22"\ XO}$ (TVD) =	6,153	+	0.481	x	3,778'	-	9.0	x	0.052	x	3,778'	=	**6,201** psi
$MAP_{bml\ 22"\ TOS}$ (TVD) =	6,153	+	0.481	x	4,979'	-	9.0	x	0.052	x	4,979'	=	**6,216** psi

Casing Pressure Test Calculations (check uncement liner capacity)

$P_{test\ surf}$ = Minimum of A, B, C or D:

$P_{test\ surf}$ = **3,117** psi

A. MAWP + 500 psi

B. 70% OCTG Rating - (ρmud- Ppore)(0.052)(TVD)

C. 70% Hanger Rating - (ρmud - P_{pore})(0.052)(TVD)

D. $P_{frac\ @\ liner\ shoe}$ + 500 psi - $(\rho_{mud})(0.052)(TVD_{liner\ shoe})$

A. =	6,306	+	500	=	**6,806** psi										
B. = 22" 1.25"wt Top	70%	x	7,950	-	(	13.0	-	8.7	)	x	0.052	x	3,709'	=	**4,726** psi
B. = 22" 1.25"wt Bottom	70%	x	7,950	-	(	13.0	-	8.7	)	x	0.052	x	3,778'	=	**4,710** psi
B. = 22" 1.00"wt Top	70%	x	6,360	-	(	13.0	-	8.7	)	x	0.052	x	3,778'	=	**3,597** psi
B. = 22" 18" Ann Cmt Top	70%	x	6,360	-	(	13.0	-	8.7	)	x	0.052	x	4,010'	=	**3,545** psi
B. = 18" Liner Top	70%	x	6,680	-	(	13.0	-	8.7	)	x	0.052	x	3,791'	=	**3,818** psi
B. = 16" Top	70%	x	7,860	-	(	13.0	-	8.7	)	x	0.052	x	7,955'	=	**3,703** psi
B. = 16" Shoe	70%	x	7,860	-	(	13.0	-	12.1	)	x	0.052	x	13,981'	=	**4,848** psi
C. = 16" Liner Hanger	70%	x	7,860	-	(	13.0	-	8.7	)	x	0.052	x	7,955'	=	**3,703** psi
D. =	12,068	+	500	-	(	13.0	x	0.052	)	x	13,981'	=	**3,117** psi		

$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVD_{water})$

$P_{test\ WH}$ = 3,117 + (13.0 - 8.7) x 0.052 x 3,637' = **3,940** psi

$P_{lnr\ top} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{lnr\ top})$

$P_{lnr\ top}$ = 3,117 + (13.0 - 8.7) x 0.052 x 7,955' = **4,917** psi

$P_{test\ shoe} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$

$P_{test\ shoe}$ = 3,117 + (13.0 - 12.1) x 0.052 x 13,981' = **3,772** psi

$P18_{"\ lnr\ top} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVDlnr\ top)$

$P\ 18_{"\ lnr\ top}$ = 3,117 + (13.0 - 8.7) x 0.052 x 3,791' = **3,975**

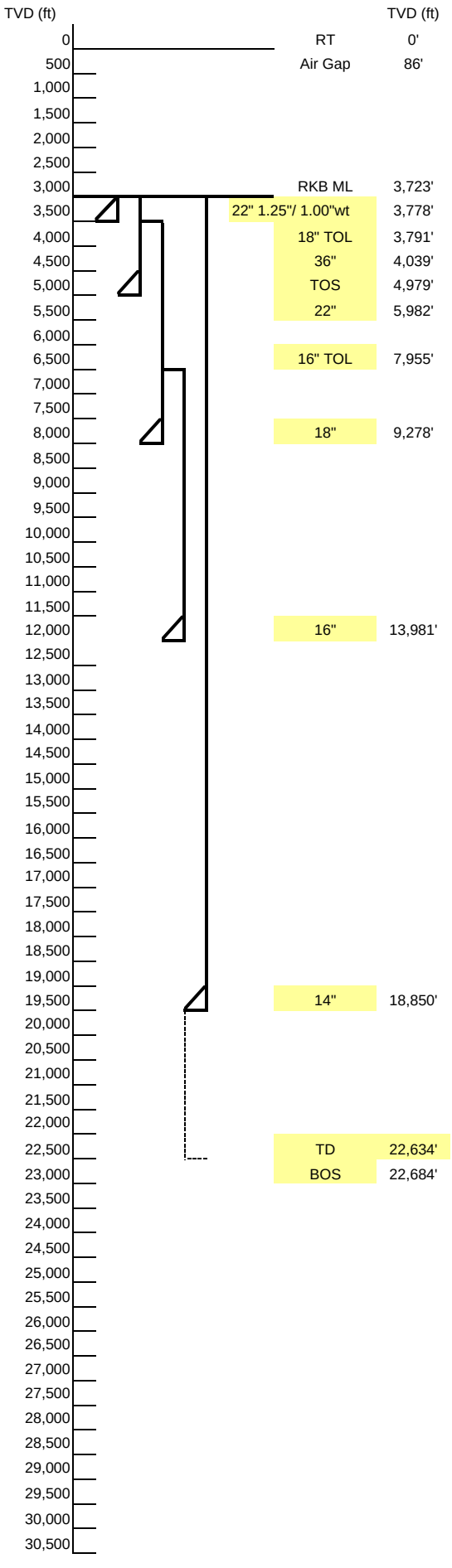
$P_{22"\ XO} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVDxo)$

$P_{22"\ XO}$ = 3,117 + (13.0 - 9.0) x 0.052 x 3,778' = **3,903** psi

Pressure Test Requirements

Item	Annular	Rams	Casing			
psi	7,800	10,200	3,155	w/	13.0	ppg mud

14"



Design Details

Casing Size in	Casing Weight lb/ft	Casing Grade	Thread Type	Burst Rating psi	Collapse Rating psi	Tension Ratings Body kips	Tension Ratings Conn kips
14	112.6	HCQ-125	Vam Top	12,450	8,920	4,132	4,132
14	112.6	HCQ-125	HYD 523	12,450	8,920	4,132	3,054
14	112.6	HCQ-125	HYD 513	12,450	8,920	4,132	2,587
OH	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Casing Size in	Depth Top MD ft	Depth Top TVD ft	Depth Shoe or TD MD ft	Depth Shoe or TD TVD ft	Pore lb/gal	MW lb/gal	BF	Fracture Gradient lb/gal
14	3,709'	3,709'	3,909'	3,909'	8.9	15.6	0.77	8.7
14	3,909'	3,909'	18,597'	18,596'	14.7	15.6	0.77	17.3
14	18,597'	18,596'	18,851'	18,850'	14.8	15.6	0.77	16.2
OH	18,851'	18,850'	21,900'	21,899'	15.5	15.6	0.77	16.7

Casing Size in	MW in Csg Post Cmt lb/gal	Gradient Split Gas %	Gradient Split Mud %	Pore Pressure psi	Fracture Pressure psi	Gas Gradient psi/ft	Equ. Gradient psi/ft
14	15.6	50%	50%	1,809	1,768	0.15	0.481
14	15.6	50%	50%	14,215	16,729	0.15	0.481
14	15.6	50%	50%	14,507	15,879	0.15	0.481
OH	15.6	50%	50%	17,651	19,017	0.15	0.481

Less Than 10,000' gas 0.1 psi/ft
Deeper Than 10,000' gas .15 psi/ft

Above 12,000' 30% Mud / 70% Gas
Between 12,000-15,000 40% Mud / 60% Gas
Depper than 15,000' 50% Mud / 50% Gas

Surface Pressure Calculations

$MASP_{pore} = P_{pore} - (\gamma_{equiv})\ (TVD_{next})$

$MASP_{pore}$ = 17,651 - 0.481 x 21,899' = **7,126** psi

$MASP_{frac} = P_{frac} - (\gamma_{gas})\ (TVD_{shoe})$

$MASP_{frac}$ = 15,879 - 0.150 x 18,850' = **13,052** psi

$MASP_{MMS}$ = Minimum of [$MASP_{pore}$] or [$MASP_{frac}$]

$MASP_{MMS}$ = **7,126** psi

$MAWP = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{mudline}) - (8.65)(0.052)(TVD_{water})$

MAWP = 7,126 + 0.481 x 3,791' - 0.4498 x 3,705' = **7,281** psi

$MAP_{bml\ int}\ (TVD) = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{int}) - (Ppore)(0.052)(TVD_{int})$

$MAP_{bml\ shoe}$ (TVD) = 7,126 + 0.481 x 18,850' - 14.8 x 0.052 x 18,850' = **1,678** psi

$MAP_{bml\ top\ 14"\ VAM}$ (TVD) = 7,126 + 0.481 x 3,709' - 8.9 x 0.052 x 3,709' = **7,192** psi

$MAP_{bml\ top\ 14"\ HYD}$ (TVD) = 7,126 + 0.481 x 3,909' - 8.9 x 0.052 x 3,909' = **7,196** psi

Casing Pressure Test Calculations (check uncement liner capacity)

$P_{test\ surf}$ = Minimum of A, B, or C:

$P_{test\ surf}$ = **7,353** psi

A. MAWP + 500 psi

B. 70% OCTG Rating - (ρmud- Ppore)(0.052)(TVD)

C. 70% Liner Hanger Rating - (ρmud - P_{pore})(0.052)(TVD)

A. = 7,281 + 500 = **7,781** psi

B. = 14" Top (VAM) 70% x 12,450 - (15.6 - 8.9) x 0.052 x 3,709' = **7,423** psi

B. = 14" Bottom (VAM) 70% x 12,450 - (15.6 - 8.9) x 0.052 x 3,909' = **7,353** psi

B. = 14" Top (HYD) 70% x 12,450 - (15.6 - 8.9) x 0.052 x 3,909' = **7,353** psi

B. = 14" Shoe (HYD) 70% x 12,450 - (15.6 - 14.8) x 0.052 x 18,850' = **7,931** psi

C. = 14" Hanger 70% x **12,700** - (15.6 - 8.9) x 0.052 x 3,709' = **7,598** psi

$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVD_{water})$

$P_{test\ WH}$ = 7,353 + (15.6 - 8.65) x 0.052 x 3,705' = **8,692** psi

$P_{test\ shoe} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$

$P_{test\ shoe}$ = 7,353 + (15.6 - 14.8) x 0.052 x 18,850' = **8,137** psi

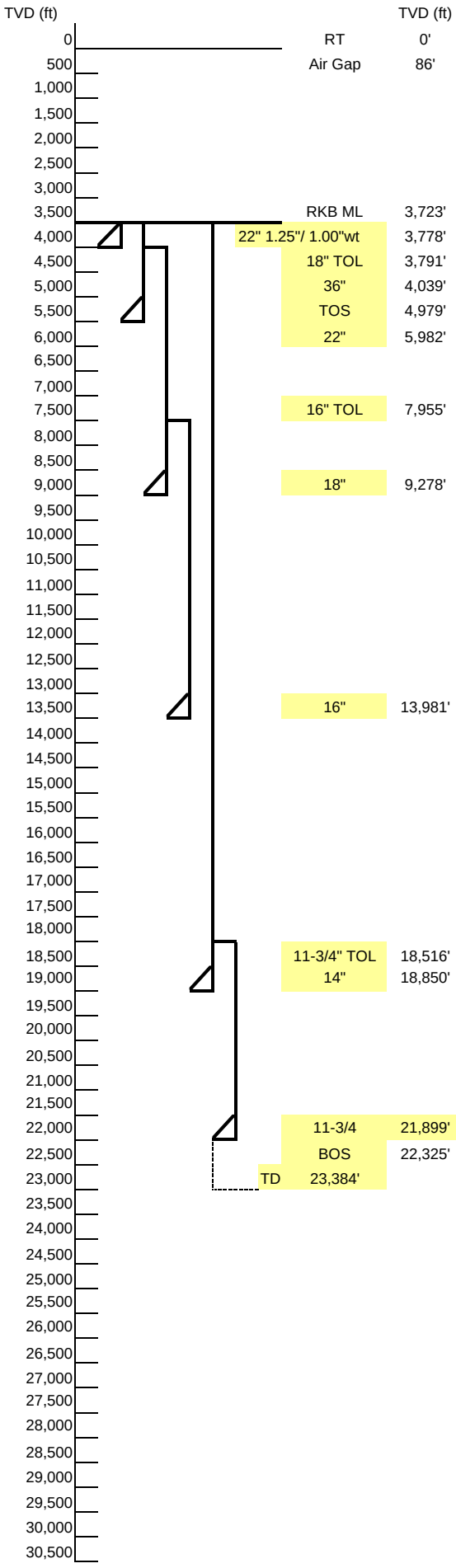
$P_{14X14\ XO} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVDxo)$

$P_{14(VAM)x14(HYD)\ XO}$ = 7,353 + (15.6 - 8.65) x 0.052 x 3,909' = **8,766** psi

Pressure Test Requirements

Item	Annular	Rams	Casing			
psi	7,800	10,200	7,400	w/	15.6	ppg mud

14" x 11-3/4"



Design Details

Casing Size in	Casing Weight lb/ft	Casing Grade	Thread Type	Burst Rating psi	Collapse Rating psi	Tension Ratings Body kips	Tension Ratings Conn kips
14	112.6	HCQ-125	Vam Top	12,450	8,920	4,132	4,132
14	112.6	HCQ-125	HYD 523	12,450	8,920	4,132	3,054
14	112.6	HCQ-125	HYD 513	12,450	8,920	4,132	2,587
11 3/4	65	HCQ-125	Hydril 523	9,940	5,740	2,352	1,679
11 3/4	65	HCQ-125	Vam SLIJ II	9,940	5,740	2,352	1,700
11 3/4	65	HCQ-125	Hydril 523	9,940	5,740	2,352	1,679
OH	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Casing Size in	Depth Top MD ft	Depth Top TVD ft	Depth Shoe or TD MD ft	Depth Shoe or TD TVD ft	Pore lb/gal	MW lb/gal	BF	Fracture Gradient lb/gal
14	3,709'	3,709'	3,909'	3,909'	8.9	15.6	0.77	8.7
14	3,909'	3,909'	18,604'	18,603'	14.7	15.6	0.77	17.3
14	18,604'	18,603'	18,851'	18,850'	14.8	15.6	0.77	16.2
11 3/4	18,517'	18,516'	19,601'	19,600'	15.5	15.6	0.77	16.2
11 3/4	19,601'	19,600'	21,188'	21,187'	15.5	15.6	0.77	17.5
11 3/4	21,188'	21,187'	21,900'	21,899'	14.1	15.6	0.77	17.6
OH	21,900'	21,899'	23,385'	23,384'	14.3	15.3	0.77	16.0

Casing Size in	MW in Csg Post Cmt lb/gal	Gradient Split Gas %	Gradient Split Mud %	Pore Pressure psi	Fracture Pressure psi	Gas Gradient psi/ft	Equ. Gradient psi/ft
14	15.6	50%	50%	1,809	1,768	0.15	0.481
14	15.6	50%	50%	14,220	16,735	0.15	0.481
14	15.6	50%	50%	14,507	15,879	0.15	0.481
11 3/4	15.6	50%	50%	15,798	16,511	0.15	0.481
11 3/4	15.6	50%	50%	17,077	19,280	0.15	0.481
11 3/4	15.6	50%	50%	16,056	20,042	0.15	0.481
OH	15.3	50%	50%	17,388	19,455	0.15	0.473

Less Than 10,000' gas 0.1 psi/ft Above 12,000' 30% Mud / 70% Gas
Deeper Than 10,000' gas .15 psi/ft Between 12,000-15,000 40% Mud / 60% Gas
Depper than 15,000' 50% Mud / 50% Gas

Surface Pressure Calculations

$MASP_{pore} = P_{pore} - (\gamma_{equiv})\ (TVD_{next})$

$MASP_{pore}$ = 17,388 - 0.473 x 23,384' = **6,332** psi

$MASP_{frac} = P_{frac} - (\gamma_{gas})\ (TVD_{shoe})$

$MASP_{frac}$ = 20,042 - 0.150 x 21,899' = **16,757** psi

$MASP_{MMS}$ = Minimum of [$MASP_{pore}$] or [$MASP_{frac}$]

$MASP_{MMS}$ = **6,332** psi

$MAWP = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{mudline}) - (8.65)(0.052)(TVD_{water})$

MAWP = 6,332 + 0.473 x 3,723' - 0.4498 x 3,637' = **6,457** psi

$MAP_{bml\ int}\ (TVD) = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{int}) - (Ppore)(0.052)(TVD_{int})$

$MAP_{bml\ lnr\ top}$ (TVD) =	6,332	+	0.473	x	18,516'	-	14.7	x	0.052	x	18,516'	=	**933** psi
$MAP_{bml\ shoe}$ (TVD) =	6,332	+	0.473	x	21,899'	-	14.1	x	0.052	x	21,899'	=	**630** psi
$MAP_{11.75"(Hyd)\ XO\ to\ 11.75"(Vm)}$	6,332	+	0.473	x	19,600'	-	15.5	x	0.052	x	19,600'	=	**-198** psi
$MAP_{11.75"(Vm)\ XO\ to\ 11.75"(Hyd)}$	6,332	+	0.473	x	21,187'	-	15.5	x	0.052	x	21,187'	=	**-727** psi
$MAP_{14"(HYD)at\ XO\ to\ 14"(VM)}$ =	6,332	+	0.473	x	3,909'	-	**8.7**	x	0.052	x	3,909'	=	**6,422** psi

Casing Pressure Test Calculations (check uncement liner capacity)

$P_{test\ surf}$ = Minimum of A, B, or C:

$P_{test\ surf}$ = **2,777** psi

A. MAWP + 500 psi

B. 70% OCTG Rating - (ρmud- Ppore)(0.052)(TVD)

C. 70% Hanger Rating - (ρmud - P_{pore})(0.052)(TVD)

D. $P_{frac\ @\ liner\ shoe}$ + 500 psi - (ρ_{mud})(0.052)($TVD_{liner\ shoe}$)

A. =	6,457	+	500	=	**6,957** psi								
B. = 14" Top (VAM)	70%	x	12,450	-	(15.6	-	8.9	) x	0.052	x	3,709'	=	**7,423** psi
B. = 14" Bottom (VAM)	70%	x	12,450	-	(15.6	-	8.9	) x	0.052	x	3,909'	=	**7,353** psi
B. = 14" Top (HYD)	70%	x	12,450	-	(15.6	-	8.9	) x	0.052	x	3,909'	=	**7,353** psi
B. = 14" Bottom(HYD)	70%	x	12,450	-	(15.6	-	14.7	) x	0.052	x	18,516'	=	**7,848** psi
B. = 11 3/4" Top	70%	x	9,940	-	(15.6	-	14.7	) x	0.052	x	18,516'	=	**6,091** psi
B. = 11 3/4" Shoe	70%	x	9,940	-	(15.6	-	14.1	) x	0.052	x	21,899'	=	**5,250** psi
B. = 11 3/4"@ Hyd/Vm XO	70%	x	9,940	-	(15.6	-	15.5	) x	0.052	x	19,600'	=	**6,856** psi
B. = 11 3/4"@ Vm/Hyd XO	70%	x	9,940	-	(15.6	-	15.5	) x	0.052	x	21,187'	=	**6,848** psi
C. = 11 3/4" Liner Hanger	70%	x	7,000	-	(15.6	-	14.7	) x	0.052	x	18,516'	=	**4,033** psi
C. = 14" Hanger	70%	x	12,700	-	(15.6	-	8.9	) x	0.052	x	3,709'	=	**7,598** psi
D. =	20,042	+	500	-	(15.6	x	0.052	) x	21,899'	=	**2,777** psi		

$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVD_{water})$

$P_{test\ WH}$ = 2,777 + (15.6 - 8.65) x 0.052 x 3,637' = **4,092** psi

$P_{lnr\ top} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{lnr\ top})$

$P_{lnr\ top}$ = 2,777 + (15.6 - 14.7) x 0.052 x 18,516' = **3,644** psi

$P_{test\ shoe} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$

$P_{test\ shoe}$ = 2,777 + (15.6 - 14.1) x 0.052 x 21,899' = **4,486** psi

PTop Liner XO = $P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVDXO)$

PTopLiner XO = 2,777 + (15.6 - 15.5) x 0.052 x 19,600' = **2,879** psi

PBtm Liner XO = $P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVDXO)$

PBtmLiner XO = 2,777 + (15.6 - 15.5) x 0.052 x 21,187' = **2,888** psi

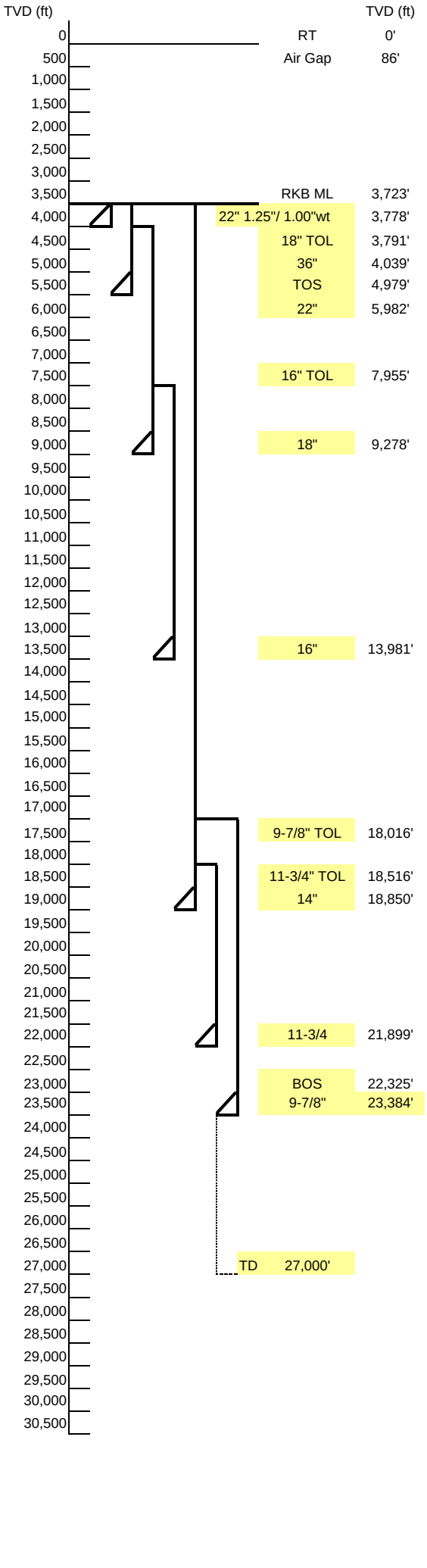
$P_{14X14\ XO} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVDxo)$

$P_{14(VAM)x14(HYD)\ XO}$ = 2,777 + (15.6 - 8.65) x 0.052 x 3,909' = **4,190** psi

Pressure Test Requirements

Item	Annular	Rams	Casing		
psi	7,800	10,200	2,800	w/ 15.6	ppg mud

14" x 9-7/8"



Design Details

Casing Size in	Casing Weight lb/ft	Casing Grade	Thread Type	Burst Rating psi	Collapse Rating psi	Tension Ratings Body kips	Tension Ratings Conn kips
14	112.6	HCQ-125	Vam Top	12,450	8,920	4,132	4,132
14	112.6	HCQ-125	HYD 523	12,450	8,920	4,132	3,054
14	112.6	HCQ-125	HYD 513	12,450	8,920	4,132	2,587
9 7/8	62.8	HCQ-125	Vam SLIJ II	13,840	11,640	2,270	1,762
OH	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Casing Size in	Depth Top MD ft	Depth Top TVD ft	Depth Shoe or TD MD ft	Depth Shoe or TD TVD ft	Pore lb/gal	MW lb/gal	BF	Fracture Gradient lb/gal
14	3,709'	3,709'	3,909'	3,909'	8.9	15.6	0.77	8.7
14	3,909'	3,909'	18,604'	18,603'	14.7	15.6	0.77	17.3
14	18,604'	18,603'	18,851'	18,850'	14.8	15.6	0.77	16.2
9 7/8	18,017'	18,016'	23,385'	23,384'	14.3	15.3	0.77	16.0
OH	23,385'	23,384'	27,585'	27,000'	15.3	15.4	0.77	16.8

Casing Size in	MW in Csg Post Cmt lb/gal	Gradient Split Gas %	Gradient Split Mud %	Pore Pressure psi	Fracture Pressure psi	Gas Gradient psi/ft	Equ. Gradient psi/ft
14	15.6	50%	50%	1,809	1,768	0.15	0.481
14	15.6	50%	50%	14,220	16,735	0.15	0.481
14	15.6	50%	50%	14,507	15,879	0.15	0.481
9 7/8	15.3	50%	50%	17,388	19,455	0.15	0.473
OH	15.4	50%	50%	21,481	23,587	0.15	0.475

Less Than 10,000' gas 0.1 psi/ft
Deeper Than 10,000' gas .15 psi/ft
Above 12,000' 30% Mud / 70% Gas
Between 12,000-15,000 40% Mud / 60% Gas
Depper than 15,000' 50% Mud / 50% Gas

Surface Pressure Calculations

$MASP_{pore} = P_{pore} - (\gamma_{equiv})\ (TVD_{next})$

$MASP_{pore}$ = 21,481 - 0.475 x 27,000' = **8,645** psi

$MASP_{frac} = P_{frac} - (\gamma_{gas})\ (TVD_{shoe})$

$MASP_{frac}$ = 19,455 - 0.150 x 23,384' = **15,948** psi

$MASP_{MMS}$ = Minimum of [$MASP_{pore}$] or [$MASP_{frac}$]

$MASP_{MMS}$ = **8,645** psi

$MAWP = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{mudline}) - (8.65)(0.052)(TVD_{water})$

MAWP = 8,645 + 0.475 x 3,723' - 0.4498 x 3,637' = **8,779** psi

$MAP_{bml\ int}$ (TVD) = $MASP_{MMS} + (\gamma_{equiv})\ (TVD_{int}) - (Ppore)(0.052)(TVD_{int})$

$MAP_{bml\ lnr\ top}$ (TVD) = 8,645 + 0.475 x 18,016' - 14.7 x 0.052 x 18,016' = **3,439** psi

$MAP_{bml\ shoe}$ (TVD) = 8,645 + 0.475 x 23,384' - 14.3 x 0.052 x 23,384' = **2,374** psi

$MAP_{14"(HYD)at\ XO\ to\ 14"(VM)}$ = 8,645 + 0.475 x 3,909' - **8.7** x 0.052 x 3,909' = **8,745** psi

Casing Pressure Test Calculations (check uncement liner capacity)

$P_{test\ surf}$ = Minimum of A, B, or C:

$P_{test\ surf}$ = **1,351** psi

A. MAWP + 500 psi

B. 70% OCTG Rating - (ρmud- Ppore)(0.052)(TVD)

C. 70% Hanger Rating - (ρmud - P_{pore})(0.052)(TVD)

D. $P_{frac\ @\ liner\ shoe}$ + 500 psi - $(\rho_{mud})(0.052)(TVD_{liner\ shoe})$

A. = 8,779 + 500 = **9,279** psi

B. = 14" Top (VAM) 70% x 12,450 - (15.3 - 8.9) x 0.052 x 3,709' = **7,481** psi

B. = 14" Bottom (VAM) 70% x 12,450 - (15.3 - 8.9) x 0.052 x 3,909' = **7,414** psi

B. = 14" Top (HYD) 70% x 12,450 - (15.3 - 8.9) x 0.052 x 3,909' = **7,414** psi

B. = 14" Bottom(HYD) 70% x 12,450 - (15.3 - 14.7) x 0.052 x 18,016' = **8,153** psi

B. = 9-7/8" Top 70% x 13,840 - (15.3 - 14.7) x 0.052 x 18,016' = **9,126** psi

B. = 9-7/8" Shoe 70% x 13,840 - (15.3 - 14.3) x 0.052 x 23,384' = **8,472** psi

C. = 9-7/8" Liner Hanger 70% x 10,000 - (15.3 - 14.7) x 0.052 x 18,016' = **6,438** psi

C. = 14" Hanger 70% x 12,700 - (15.3 - 8.9) x 0.052 x 3,709' = **7,656** psi

D. = 19,455 + 500 - (15.3 x 0.052) x 23,384' = **1,351** psi

$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVD_{water})$

$P_{test\ WH}$ = 1,351 + (15.3 - 8.65) x 0.052 x 3,637' = **2,609** psi

$P_{lnr\ top} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{lnr\ top})$

$P_{lnr\ top}$ = 1,351 + (15.3 - 14.7) x 0.052 x 18,016' = **1,913** psi

$P_{test\ shoe} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$

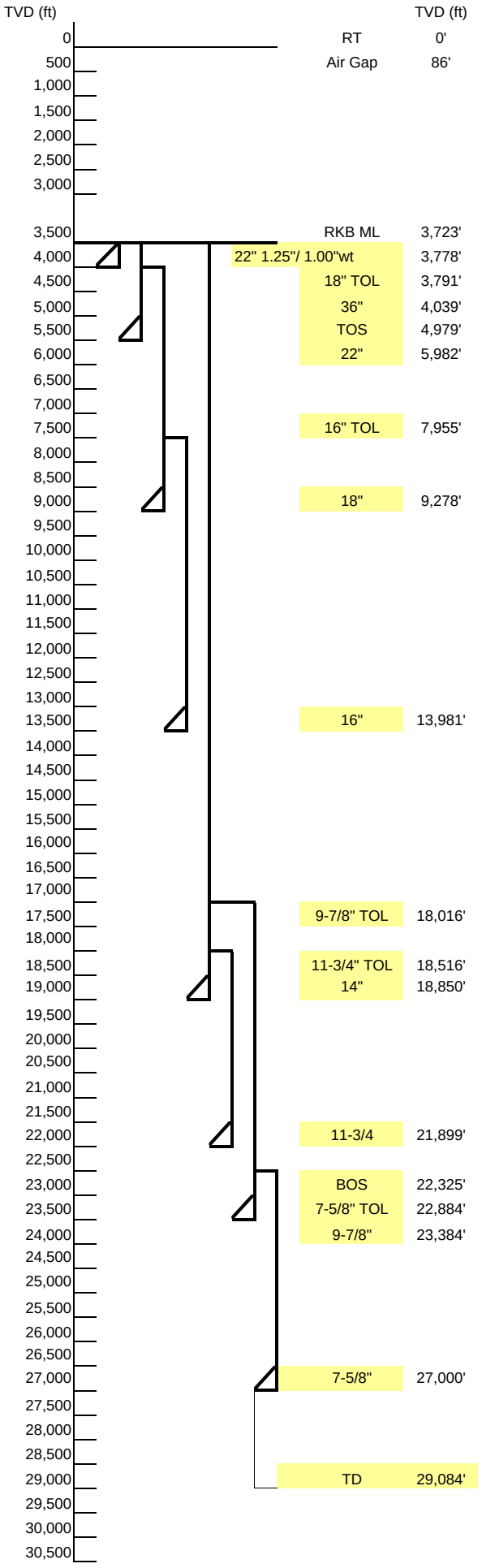
$P_{test\ shoe}$ = 1,351 + (15.3 - 14.3) x 0.052 x 23,384' = **2,567** psi

$P_{14X14\ XO} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVDxo)$

$P_{14(VAM)x14(HYD)\ XO}$ = 1,351 + (15.3 - 8.65) x 0.052 x 3,909' = **2,703** psi

Pressure Test Requirements					
Item	Annular	Rams	Casing		
psi	7,800	10,200	1,400	w/ 15.3	ppg mud

14" x 9-7/8" x 7-5/8"



Design Details

Casing Size in	Casing Weight lb/ft	Casing Grade	Thread Type	Burst Rating psi	Collapse Rating psi	Tension Ratings Body kips	Tension Ratings Conn kips
14	112.6	HCQ-125	Vam Top	12,450	8,920	4,132	4,132
14	112.6	HCQ-125	HYD 523	12,450	8,920	4,132	3,054
14	112.6	HCQ-125	HYD 513	12,450	8,920	4,132	2,587
9 7/8	62.8	HCQ-125	Vam SLIJ II	13,840	11,640	2,270	1,762
7 5/8	39	HCQ-125	Vam SLIJ II	14,340	12,810	1,399	1,041
7 5/8	39	P-110	Hydril 513	12,620	11,080	763	763
OH	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Casing Size in	Depth Top MD ft	Depth Top TVD ft	Depth Shoe or TD MD ft	Depth Shoe or TD TVD ft	Pore lb/gal	MW lb/gal	BF	Fracture Gradient lb/gal
14	3,709'	3,709'	3,909'	3,909'	8.9	15.6	0.77	8.7
14	3,909'	3,909'	18,604'	18,603'	14.7	15.6	0.77	17.3
14	18,604'	18,603'	18,851'	18,850'	14.8	15.6	0.77	16.2
9 7/8	18,017'	18,016'	23,385'	23,384'	14.3	15.3	0.77	16.0
7 5/8	22,885'	22,884'	27,032'	26,553'	15.3	15.4	0.77	16.8
7 5/8	27,032'	26,553'	27,585'	27,000'	15.3	15.4	0.77	16.8
OH	27,585'	27,000'	30,144'	29,084'	15.6	15.7	0.76	17.1

Casing Size in	MW in Csg Post Cmt lb/gal	Gradient Split Gas %	Gradient Split Mud %	Pore Pressure psi	Fracture Pressure psi	Gas Gradient psi/ft	Equ. Gradient psi/ft
14	15.6	50%	50%	1,809	1,768	0.15	0.481
14	15.6	50%	50%	14,220	16,735	0.15	0.481
14	15.6	50%	50%	14,507	15,879	0.15	0.481
9 7/8	15.3	50%	50%	17,388	19,455	0.15	0.473
7 5/8	15.4	50%	50%	21,481	23,587	0.15	0.475
OH	15.7	50%	50%	23,593	25,861	0.15	0.483

Less Than 10,000' gas 0.1 psi/ft Above 12,000' 30% Mud / 70% Gas
Deeper Than 10,000' gas .15 psi/ft Between 12,000-15,000 40% Mud / 60% Gas
Depper than 15,000' 50% Mud / 50% Gas

Surface Pressure Calculations

$MASP_{pore} = P_{pore} - (\gamma_{equiv})(TVD_{next})$

$MASP_{pore}$ = 23,593 - 0.483 x 29,084' = **9,540** psi

$MASP_{frac} = P_{frac} - (\gamma_{gas})(TVD_{shoe})$

$MASP_{frac}$ = 23,587 - 0.150 x 27,000' = **19,537** psi

$MASP_{MMS}$ = Minimum of [$MASP_{pore}$] or [$MASP_{frac}$]

$MASP_{MMS}$ = **9,540** psi

$MAWP = MASP_{MMS} + (\gamma_{equiv})(TVD_{mudline}) - (8.65)(0.052)(TVD_{water})$

MAWP = 9,540 + 0.483 x 3,723' - 0.4498 x 3,637' = **9,703** psi

$MAP_{bml\ int}(TVD) = MASP_{MMS} + (\gamma_{equiv})(TVD_{int}) - (Ppore)(0.052)(TVD_{int})$

$MAP_{bml\ 9.875"lnr\ top}$ (TVD) =	9,540	+	0.483	x	18,016'	-	14.7	x	0.052	x	18,016'	=	**4,473** psi
$MAP_{bml\ 7.625"lnr\ top}$ (TVD) =	9,540	+	0.483	x	22,884'	-	14.2	x	0.052	x	22,884'	=	**3,700** psi
$MAP_{bml\ 7.625"\ XO}$ (TVD) =	9,540	+	0.483	x	26,553'	-	15.3	x	0.052	x	26,553'	=	**1,244** psi
$MAP_{bml\ 7.625"shoe}$ (TVD) =	9,540	+	0.483	x	27,000'	-	15.3	x	0.052	x	27,000'	=	**1,105** psi
$MAP_{14"(HYD)at\ XO\ to\ 14"(VM)}$ =	9,540	+	0.483	x	3,909'	-	**8.7**	x	0.052	x	3,909'	=	**9,670** psi

Casing Pressure Test Calculations (check uncement liner capacity)

$P_{test\ surf}$ = Minimum of A, B, or C:

$P_{test\ surf}$ = **2,466** psi

A. MAWP + 500 psi

B. 70% OCTG Rating - (ρmud- Ppore)(0.052)(TVD)

C. 70% Hanger Rating - (ρmud - P_{pore})(0.052)(TVD)

D. $P_{frac\ @\ liner\ shoe}$ + 500 psi - (ρ_{mud})(0.052)($TVD_{liner\ shoe}$)

A. =	9,703	+	500	=	**10,203** psi								
B. = 14" Top (VAM)	70%	x	12,450	-	(15.4	-	8.9	) x	0.052	x	3,709'	=	**7,461** psi
B. = 14" Bottom (VAM)	70%	x	12,450	-	(15.4	-	8.9	) x	0.052	x	3,909'	=	**7,394** psi
B. = 14" Top (HYD)	70%	x	12,450	-	(15.4	-	8.9	) x	0.052	x	3,909'	=	**7,394** psi
B. = 14" Bottom(HYD)	70%	x	12,450	-	(15.4	-	14.7	) x	0.052	x	18,016'	=	**8,059** psi
B. = 9-7/8" Top	70%	x	13,840	-	(15.4	-	14.7	) x	0.052	x	18,016'	=	**9,032** psi
B. = 9-7/8" Bottom	70%	x	13,840	-	(15.4	-	14.3	) x	0.052	x	22,884'	=	**8,379** psi
B. = 7-5/8" Top	70%	x	14,340	-	(15.4	-	14.2	) x	0.052	x	22,884'	=	**8,610** psi
B. = 7-5/8" XO (SLIJ/Hyd)	70%	x	12,620	-	(15.4	-	15.3	) x	0.052	x	26,553'	=	**8,696** psi
B. = 7-5/8" Shoe	70%	x	12,620	-	(15.4	-	15.3	) x	0.052	x	27,000'	=	**8,694** psi
C. = 9-7/8" Liner Hanger	70%	x	10,000	-	(15.4	-	14.7	) x	0.052	x	22,884'	=	**6,167** psi
C. = 7-5/8" Liner Hanger	70%	x	7,500	-	(15.4	-	14.2	) x	0.052	x	18,016'	=	**4,126** psi
C. = 14" Hanger	70%	x	12,700	-	(15.4	-	8.9	) x	0.052	x	3,709'	=	**7,636** psi
D. =	23,587	+	500	-	(15.4	x	0.052	) x	27,000'	=	**2,466** psi		

$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVD_{water})$

$P_{test\ WH}$ = 2,466 + (15.4 - 8.65) x 0.052 x 3,637' = **3,742** psi

$P_{lnr\ top\ 9.875"} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{lnr\ top})$

$P_{lnr\ top}$ = 2,466 + (15.4 - 14.7) x 0.052 x 18,016' = **3,121** psi

$P_{lnr\ top\ 7.625"} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{lnr\ top})$

$P_{lnr\ top}$ = 2,466 + (15.4 - 14.2) x 0.052 x 22,884' = **3,894** psi

$P_{lnr\ XO\ 7.625"} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{lnr\ xo})$

$P_{lnr\ XO}$ = 2,466 + (15.4 - 15.3) x 0.052 x 26,553' = **2,604** psi

$P_{test\ shoe\ 7.625"} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$

$P_{test\ shoe}$ = 2,466 + (15.4 - 15.3) x 0.052 x 27,000' = **2,606** psi

$P_{14X14\ XO} = P_{test\ surf} + (\rho_{mud} - 8.65)(0.052)(TVDxo)$

$P_{14(VAM)x14(HYD)\ XO}$ = 2,466 + (15.4 - 8.65) x 0.052 x 3,909' = **3,838** psi

Pressure Test Requirements						
Item	**Annular**	**Rams**	**Casing**			
psi	**7,800**	**10,200**	**2,500**	**w/**	**15.4**	**ppg mud**

The first method of calculating maximum anticipated surface pressure is the pore pressure at TD of the next hole interval or at the deepest open hole depth to which the casing/liner is exposed, less the gas/mud gradient equivalent to the surface:

$$MASP_{pore} = P_{pore} - (\gamma_{equiv})\ (TVD_{next})$$

The pore pressure at the next relevant depth is:

$$P_{pore} = (\rho_{pore})\ (0.052)\ (TVD_{next})$$

The gas/mud gradient equivalent is:

$$\gamma_{equiv} = (Mud\%)\ (\rho_{mud})\ (0.052) + (Gas\%)\ (\gamma_{gas})$$

Where

Mud% = 30%, Gas% = 70%, and γ_{gas} = 0.10 psi/ft for TVD $\leq$ 12,000'

Mud% = 40%, Gas% = 60%, and γ_{gas} = 0.15 psi/ft for TVD 12,000' - 15,000'

Mud% = 50%, Gas% = 50%, and γ_{gas} = 0.15 psi/ft for TVD > 15,000'

The second method of calculating maximum anticipated surface pressure is the fracture pressure at the current casing shoe, less the gas gradient to the surface:

$$MASP_{frac} = P_{frac} - (\gamma_{gas})\ (TVD_{shoe})$$

The fracture pressure at the current casing shoe is:

$$P_{frac} = (\rho_{frac})\ (0.052)\ (TVD_{shoe})$$

The gas gradient varies with depth accordingly:

γ_{gas} = 0.10 psi/ft for TVD $\leq$ 12,000'

γ_{gas} = 0.15 psi/ft for TVD > 12,000'

We take the lesser of $MASP_{pore}$ or $MASP_{frac}$:

$$MASP_{MMS} = \text{Minimum of } [MASP_{pore}] \text{ or } [MASP_{frac}]$$

The Maximum Anticipated Wellhead Pressure (MAWP) is the $MASP_{MMS}$ plus the gas/mud gradient to the mud line, less the sea water gradient:

$$MAWP = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{mudline}) - (8.6)(0.052)(TVD_{water})$$

The maximum anticipated casing/liner pressure below the mudline (MAP_{bml}) is the anticipated internal pressure (P_{int}) at the TVD of interest (TVD_{int}), less the formation pressure at depth of interest as backup

$$MAP_{bml}\ (TVD) = P_{int} - (FP)(0.052)(TVD_{int})$$

Where

$$P_{int} = MASP_{MMS} + (\gamma_{equiv})\ (TVD_{int})$$

Test Pressure Calculations

The casing test pressure at the surface is based on the MAWP+500 psi, or 70% of burst of the weakest exposed casing/liner at exposed depth with an 8.6 ppg backup at the liner top or pore pressure backup at the casing shoe, or 500 psi + fracture pressure at the shoe for liners whichever is less:

$P_{test\ surf}$ = Minimum of:

A. MAWP + 500 psi, or
B. 70% $P_{bexposed\ csg\ @\ liner\ top}$ - $(\rho_{mud} - 8.6)(0.052)(TVD_{liner\ top})$, or
C. 70% $P_{bnew\ set\ csg}$ - $(\rho_{mud} - P_{pore})(0.052)(TVD_{new\ csg\ shoe})$, or
D. $P_{frac\ @\ liner\ shoe}$ + 500 psi - $(\rho_{mud})(0.052)(TVD_{liner\ shoe})$

The equivalent pressure at the wellhead during the casing test is the surface test pressure plus the mud, gradient less the sea water gradient:

$$P_{test\ WH} = P_{test\ surf} + (\rho_{mud} - 8.6)(0.052)(TVD_{water})$$

Similarly, the equivalent test pressure at the shoe is the surface test pressure plus the mud gradient, less the pore pressure gradient:

$$P_{test\ shoe} = P_{test\ surf} + (\rho_{mud} - \rho_{pore})(0.052)(TVD_{shoe})$$

Nomenclature

$MASP_{pore}$ =	Maximum Anticipated Surface Pressure from pore pressure, psi
$MASP_{frac}$ =	Maximum Anticipated Surface Pressure from fracture at casing shoe, psi
$MASP_{MMS}$ =	Lesser of $MASP_{pore}$ or $MASP_{frac}$
MAWP =	Maximum Anticipated Wellhead Pressure, psi
MAP_{bml} =	Maximum Anticipated Pressure at point of interest, psi
P_b =	Casing burst rating, psi
P_{pore} =	Pore pressure, psi
P_{frac} =	Fracture pressure, psi
$P_{test\ surf}$ =	Casing test pressure at surface, psi
$P_{test\ WH}$ =	Equivalent casing test pressure at wellhead, psi
$P_{test\ shoe}$ =	Equivalent casing test pressure at shoe, psi
P_{int} =	Pressure at point of interest, psi
TVD_{next} =	True vertical depth of next casing shoe from rotary table, ft
TVD_{shoe} =	True vertical depth of casing shoe from rotary table, ft
TVD_{water} =	Water depth, ft
$TVD_{mudline}$ =	True vertical depth of mudline from rotary table, ft
TVD_{int} =	True vertical depth at point of interest, ft
γ_{equiv} =	Equivalent gradient of gas/mud mixture, psi/ft
γ_{gas} =	Gas gradient, psi/ft
ρ_{mud} =	Mud weight, lb/gal
ρ_{pore} =	Equivalent mud weight of pore pressure, lb/gal
ρ_{frac} =	Equivalent mud weight of fracture pressure, lb/gal

Burst Design

SF_{burst} = minimum of P_b / (MAWP, MAP_{bml}, or P_{test})

Collapse Design f

$SF_{collapse} = P_c / (P_e-(P_c+P_r))$

$P_e = (\rho_{mud\ when\ pipe\ run})(0.052)(TVD_{shoe})$

$P_{csg} = (\rho_{mud\ to\ drill})(0.052)(TVD_{shoe-RiserLenght})$

$P_{riser} = (8.6)(0.052)(_{RiserLenght})$

Tension Design

$$SF_{tension} = T_{joint} / [(W_c)(MD_{shoe} - MD_{casing\ top})(BF) + T_{overpull} + (W_{c\ liner})(MD_{liner\ shoe} - MD_{liner\ top})(BF)]$$

Nomenclature

BF=	Buoyancy factor, dimensionless
$MASP_{MMS}$ =	Maximum Anticipated Surface Pressure, psi
P_{pore} =	Pore pressure, psi
P_b =	Casing burst rating, psi
P_c =	Casing collapse rating, psi
P_i =	Pressure internal
P_e =	Pressure external
P_{csg}=	Pressure internal casing with mud weight
P_{riser}=	Pressure internal riser with seawater
SF_{burst} =	Safety factor for burst, dimensionless
$SF_{collapse}$ =	Safety factor for collapse, dimensionless
$SF_{tension}$ =	Safety factor for tension, dimensionless
T_{joint} =	Joint strength, lbs
$T_{overpull}$ =	Over-pull, lbs
TVD_{shoe} =	True vertical depth of casing shoe, ft
TVD_{water} =	Water depth, ft
MD_{shoe} =	Measured depth of casing shoe, ft
$MD_{casing\ top}$ =	Measured depth of casing top, ft
$MD_{liner\ shoe}$ =	Measured depth of liner shoe, ft
$MD_{liner\ top}$ =	Measured depth of liner top, ft
W_c =	Weight of casing, lbs/ft
$W_{c\ liner}$ =	Weight of liner to be hung off in previous string, lbs/ft
ρ_{mud} =	Mud weight, lb/gal

Kakuna GC 504
Predicted PP Profile

Comments:
1 - Curve below updated to reflect the addition of 18" shoe as a result of drilling losses to formation +/-220 ft below the 22" shoe. The required MWt to drill 18" section to 11,000 ft was 12.0 ppg due to inclusion at 9,585' TVD. Planned for 11.5 ppg.
2 - The Mudline, Top Salt, 36", 22", 18" & 16" shoe depths have all been updated with actual set depths. Top of 18" liner at 3,791' TVD. Annulus between 18" & 22" strings cemented and pressure tested.
3 - Top of 16" Liner is set at 7,955' TVD.

3723

36"
4039

4979

FIT at 22" casing shoe achieved 1000 psi over Overburden Gradient (14.8 ppg EMWt)

22"
5982

Contingency 18" Liner planned for 11,000'. Liner set early due to problems while running.

18"
9278

Contingency 16" Liner set at 13,981' TVD due to low LOT achieved below 18" liner

16"
13981

Isolated weak zone in salt f/ 18906-17' TVD equivalent to 16.2 ppg EMWt. Isolated weak zone also cemented at 18,820' - 25' TVD (16.2 ppg

14"
18850

Estimated PP_Hi
Estimated FG (Based on OBG)
Mudline
TOS
BOS
Planned Csg Points
TD
Plan MW
OBG GC504

While drilling ahead in 14-1/2" x 17-1/2" hole, at 18,910' MD / 18,909' TVD RKB, with 14.9 ppg SBM, a drilled kick was taken. Kick zone pressure was calculated to be 15.5 ppg EMW. Pressure equates to 97% of OBG. Influx was determined to be salt water.
At completion of well kill operation, well was displaced to 15.6 ppg SBM to enable 14" casing to be run. This depth is revised casing point.
It is believed that the high pressure observed in the inclusion relative to OBG, indicates a discrete zone that supports overburden pressure. Up to depth of influx, drilling had progressed with mud weight equivalent to 91 - 94% of OBG.

11-3/4"
21899

22325

Casing design has been revised to place the 11-3/4" liner shoe, inside salt, but as close as possible to the Base of Salt. This will enable the well to be drilled to casing point with mud weight necessary to control inclusion that lead to drilled kick noted above and then after cementation of the 11-3/4" liner, cut the mud weight prior to drill out of Base of Salt.
This will minimize potential for massive losses if salt exit was drilled with higher mud weight. Close proximity of shoe to base of salt minimizes likelihood of drilling high pressure inclusion prior to salt exit.
The 9-7/8" liner has been added to well design. This will be placed at depth originally planned for the 11-3/4" liner.

15.6 ppg MW at 11-3/4" shoe = 96% of OBG.

9-7/8"
23384

Higher mud weight to stabilize inclusions near BOS

7-5/8"
27000

29084

TVD (Feet)

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000 16000 17000 18000 19000 20000 21000 22000 23000 24000 25000 26000 27000 28000 29000 30000

8 9 10 11 12 13 14 15 16 17 18

Pressure (ppg EMW)

Cementing Program

Proposal No: 1001144059I

NEXEN PETROLEUM USA

OCS G22968 ST00BP00 #001S0B0

ENSCO 8502 Rig
API # 60-811-40581-0000
WILDCAT Field
GC BLOCK504
Green Canyon County, NORTHERN GULF OF MEXICO
December 9, 2011

*** TIGHT HOLE ***
Rev.1

Well Proposal

Prepared for:
Rob MacLeod/ Tracy Mossman
Drilling Engineer
Nexen Petroleum, USA

Prepared by:
Joe Shine
Cementing Specialist
Houston, Texas
Email: joe.shine@bakerhughes.com

Service Point:
Fourchon, LA
Bus Phone: (985) 396-2250
(504) 396-2552

Service Representatives:
Greg Martin
Senior Account Manager
Lafayette, Louisiana

Powered by
PowerVision

Operator Name: NEXEN PETROLEUM
Well Name: OCS G22968 ST00BP00 #001S0B0
Job Description: 9-7/8" Tack n Sqz @ 23,385' MD/23,384' TVD
Date: December 9, 2011

Proposal No: 1001144059I

WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
12.400 CASING	18,517	18,517
10.682 CASING	21,899	21,898
12.250 HOLE	23,385	23,384

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
9.875	8.625	62.8	23,385	23,384

Drill Pipe 6.625 (in) OD, 5.375 (in) ID, 40 (lbs/ft) set @ 4,064 ft
Drill Pipe 6.625 (in) OD, 5.581 (in) ID, 33.988 (lbs/ft) set @ 18,017 ft
Liner 9.875 (in) OD, 8.625 (in) ID, 62.8 (lbs/ft) set @ 23,385 ft
Depth to Top of Liner 18,017 ft

STAGE: 1

Float/Landing Collar set @ 22,809 ft
Mud Density 15.30 ppg
Mud Type Synthetic
Est. Static Temp. 166 ° F
Est. Circ. Temp. 116 ° F

VOLUME CALCULATIONS

549 ft	x	0.2866 cf/ft	with	0 %	excess	=	157 cf
1 ft	x	0.2866 cf/ft	with	0 %	excess	=	0 cf
576 ft	x	0.4057 cf/ft	with	0 %	excess	=	234 cf (inside pipe)
			TOTAL SLURRY VOLUME			=	391 cf
						=	70 bbls

STAGE: 2

Top Squeeze Ref. Depth 18,017 ft
Mud Density 15.30 ppg
Mud Type Synthetic
Est. Static Temp. 136 ° F
Est. Circ. Temp. 95 ° F

WELL DATA (Continued)

Verify all wellbore tubulars with casing tally and company representative on location.

KOP @ 23,500' MD/TVD

Baroid Synthetic Based Mud: 14.4 to 15.3-ppg (Estimated)

Estimated Tops of Cement: 22,835' MD
Float Collar Set at +/- 22,878' MD

Geological Risk:
Base of Salt +/- 22,634' TVD
Potential Lost Circulation or Kicks due to Geological Uncertainty

BHST of 166 deg F provided by customer

WellTEMP Simulations BHCT
Shoe: 95 deg F
Hot Spot: 116 deg F

NOTE: Recommended to Caliper the casing every 10 joints and report variance.

WFT Sub-Sea Release Dual Wiper Plug System
WFT Centralizer Subs & Spiral Gliders

Liner Hanger Restriction for Cementing: 3.86 in2 flow by area

Operator Name: NEXEN PETROLEUM
Well Name: OCS G22968 ST00BP00 #001S0B0
Job Description: 9-7/8" Tack n Sqz @ 23,385' MD/23,384' TVD
Date: December 9, 2011

Proposal No: 1001144059I

FLUID SPECIFICATIONS

STAGE NO. 1

Weighted Spacer — 115.0 bbls Seal Bond 50 + 2 gal/bbl US-2 + 18 lbs/bbl Potassium Chloride + 3 gal/bbl SS-2 @ 15.8 ppg

FLUID	VOLUME CU-FT		VOLUME FACTOR		AMOUNT AND TYPE OF CEMENT
Lead Slurry	157	/	1.21	=	130 sacks Premium Plus H Cement + 1.1 lbs/sack Potassium Chloride + 0.07% bwoc Static Free + 1.78 gps BA-90L, drum + 0.4 gps FL-67L + 0.15 gps CD-32L + 0.015 gps SR-34L + 0.04 gps FP-12L + 26.6% Fresh Water
Shoe Slurry	234	/	1.21	=	194 sacks Premium Plus H Cement + 1.1 lbs/sack Potassium Chloride + 0.07% bwoc Static Free + 1.78 gps BA-90L, drum + 0.4 gps FL-67L + 0.15 gps CD-32L + 0.01 gps SR-34L + 0.04 gps FP-12L + 26.7% Fresh Water

Disp-Weighted Spacer — 15.0 bbls Sealbond 50 + 18 lbs/bbl Potassium Chloride + 2 gal/bbl US-2 + 3 gal/bbl SS-2 @ 15.8 ppg

Displacement — 874.5 bbls SBM @ 15.3 ppg

CEMENT PROPERTIES

	SLURRY NO.1	SLURRY NO.2
Slurry Weight (ppg)	16.20	16.20
Slurry Yield (cf/sack)	1.21	1.21
Amount of Mix Water (gps)	3.00	3.01
Amount of Mix Fluid (gps)	5.39	5.39
Estimated Pumping Time - 70 BC (HH:MM)	5:47	5:29
Free Water (mls) @ 116 ° F @ 90 ° Angle	0.0	0.0
Fluid Loss (cc/30min) at 1000 psi and 116 ° F	26.0	20.0
COMPRESSIVE STRENGTH		
3 hrs @ 95 ° F (psi)		50
4 hrs @ 95 ° F (psi)		500
24 hrs @ 95 ° F (psi)		5902
5 hrs @ 116 ° F (psi)	50	
7 hrs @ 116 ° F (psi)	500	
24 hrs @ 116 ° F (psi)	4502	

FLUID SPECIFICATIONS (Continued)

STAGE NO. 2

Weighted Spacer — 115.0 bbls Sealbond 50 + 18 lbs/bbl Potassium Chloride + 2 gal/bbl US-2 + 3 gal/bbl SS-2 @ 15.8 ppg

FLUID	VOLUME CU-FT		VOLUME FACTOR		AMOUNT AND TYPE OF CEMENT
Squeeze Slurry	557	/	1.21	=	460 sacks Premium Plus H Cement + 1.1 lbs/sack Potassium Chloride + 0.07% bwoc Static Free + 1.78 gps BA-90L, drum + 0.4 gps FL-67L + 0.15 gps CD-32L + 0.01 gps SR-34L + 0.04 gps FP-12L + 26.7% Fresh Water
Slurry	109	/	1.21	=	90 sacks Premium Plus H Cement + 1.1 lbs/sack Potassium Chloride + 0.07% bwoc Static Free + 1.78 gps BA-90L, drum + 0.4 gps FL-67L + 0.15 gps CD-32L + 0.03 gps SR-34L + 0.04 gps FP-12L + 26.5% Fresh Water

Disp-Weighted Spacer — 15.0 bbls Sealbond 50 + 18 lbs/bbl Potassium Chloride + 2 gal/bbl US-2 + 3 gal/bbl SS-2 @ 15.8 ppg

Displacement — 1.0 bbls SBM @ 15.3 ppg

CEMENT PROPERTIES

	SLURRY NO.1	SLURRY NO.2
Slurry Weight (ppg)	16.20	16.20
Slurry Yield (cf/sack)	1.21	1.21
Amount of Mix Water (gps)	3.01	2.99
Amount of Mix Fluid (gps)	5.39	5.39
Estimated Pumping Time - 70 BC (HH:MM)	5:29	11:36
Free Water (mls) @ 95 ° F @ 90 ° Angle	0.0	0.0
Fluid Loss (cc/30min) at 1000 psi and 95 ° F	20.0	20.0
COMPRESSIVE STRENGTH		
3 hrs @ 95 ° F (psi)	50	
4 hrs @ 95 ° F (psi)	500	
10 hrs @ 95 ° F (psi)		50
11 hrs @ 95 ° F (psi)		500
24 hrs @ 95 ° F (psi)	5902	5092

FLUID SPECIFICATIONS (Continued)

NOTE: Job Planned for a Tack and Squeeze, where the Squeeze Volume is based on:

Csg-Csg Big Ann: 27 bbls
Csg-Csg Littel Ann: 64 bbls
Excess

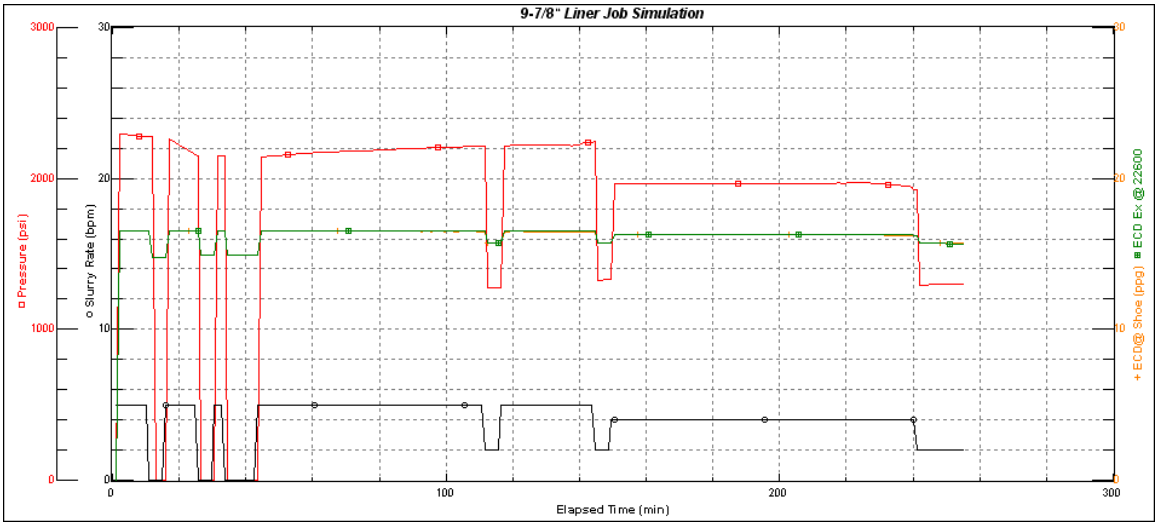
Spacer fluids and volumes used will be the same as the primary cement job to mimic same mud displacement efficiencies.

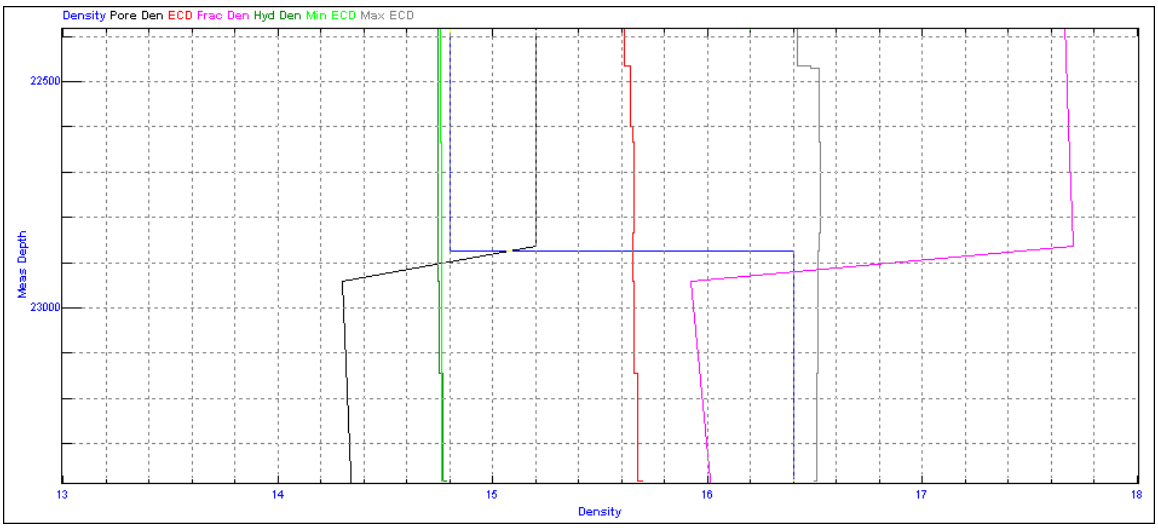
1. 5 bbls of the Tail Slurry will be placed behind the top dart.
2. All fluids will be optimized/tested by the Region Laboratory as the above design are only estimates.
3. Mud-Spacer-Cement compatabilties/wettability will be performed prior to cementing.
4. Fluid caliper will be run to compare values of caliper tool results.
5. 10% Mud Contamination test will be performed for both TT and UCA.
6. Remember to cut back the water requirement to account for volume of surfactant package.
7. KCl will be added to Sealbond 50 after hydration.
8. Rig will displace.
9. Estimated COMPRESSIBILITY during displacement: 25 bbls

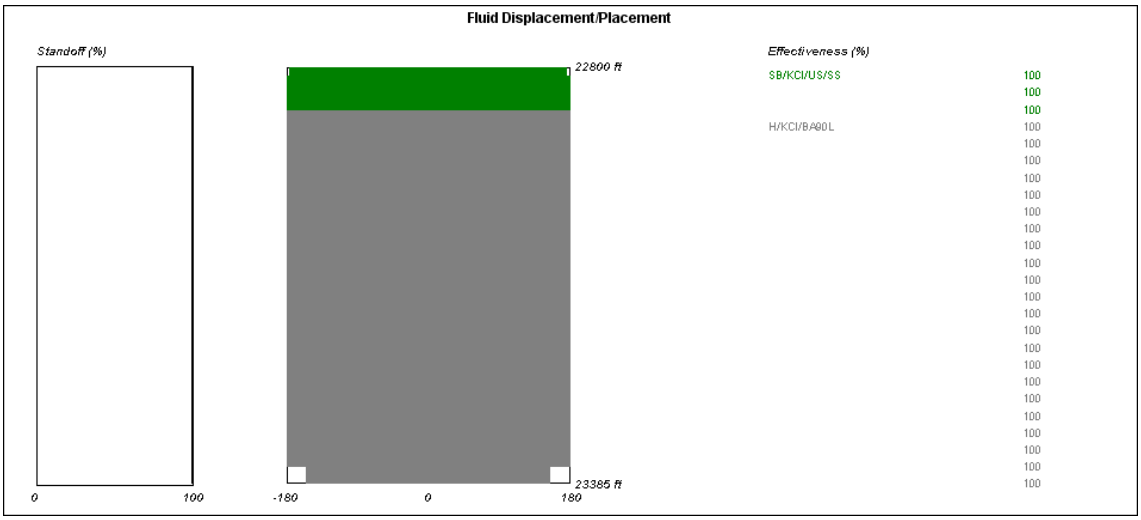
NOTE: Cement design will be tested on temperature ramp as defined by WellTEMP. . Due to large temperature drop across column, a lead and shoe track slurry will be run.

Testing will be in compliance with

API 10-B2
API 10-B3
API 65-1
API 65-2







** In the graphic above it demonstrates excellent mud displacment efficiencies. These same cementing fluids will be used for the cement squeeze down the annulus, therefore will obtain same mud removal**

Operator Name: NEXEN PETROLEUM
Well Name: OCS G22968 ST00BP00 #001S0B0
Job Description: 7-5/8" Liner @ 27,585' MD/27,000' TVD
Date: December 9, 2011

Proposal No: 1001144059I

WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
12.400 CASING	18,017	18,017
8.625 CASING	23,385	23,384
9.875 HOLE	27,585	27,000

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
7.625	6.625	39	27,585	27,000

Drill Pipe 6.625 (in) OD, 5.0 (in) ID, 69 (lbs/ft) set @	3,300 ft
Drill Pipe 6.625 (in) OD, 5.375 (in) ID, 40 (lbs/ft) set @	8,300 ft
Drill Pipe 6.625 (in) OD, 5.581 (in) ID, 33.988 (lbs/ft) set @	11,488 ft
Drill Pipe 5.875 (in) OD, 5.045 (in) ID, 26.4 (lbs/ft) set @	16,488 ft
Drill Pipe 5.0 (in) OD, 4.276 (in) ID, 19.5 (lbs/ft) set @	21,991 ft
Drill Pipe 5.0 (in) OD, 3.0 (in) ID, 60.1 (lbs/ft) set @	22,885 ft
Liner 7.625 (in) OD, 6.625 (in) ID, 39 (lbs/ft) set @	27,585 ft
Depth to Top of Liner	22,885 ft
Float/Landing Collar set @	27,134 ft
Mud Density	15.40 ppg
Mud Type	Synthetic
Est. Static Temp.	201 ° F
Est. Circ. Temp.	143 ° F

VOLUME CALCULATIONS

1,499 ft	x	0.2148 cf/ft	with	10 %	excess	=	354 cf
1 ft	x	0.2148 cf/ft	with	0 %	excess	=	0 cf
451 ft	x	0.2394 cf/ft	with	0 %	excess	=	108 cf (inside pipe)
			TOTAL SLURRY VOLUME			=	462 cf
						=	82 bbls

WELL DATA (Continued)

Verify all wellbore tubulars with casing tally and company representative on location.

KOP @ 23,500' MD/TVD

Baroid Synthetic Based Mud: 15.4-ppg (Estimated)

Estimated Tops of Cement: 26,085' TVD

Geological Risks:
Potential Lost Circulation or Kicks due to Geological Uncertainty
Top of Potential Sand @ 23,484' TVD

BHST of 201 deg F provided by customer

WellTEMP Simulations BHCT
Shoe: 115 deg F
Hot Spot: 143 deg F

NOTE: Recommended to Caliper the casing every 10 joints and report variance.

BHI Sub-Sea Release Dual Wiper Plug System
WFT Centralizers

Estimated Liner Hanger Restriction for Cementing: 3.86 in2 flow by area

Operator Name: NEXEN PETROLEUM
Well Name: OCS G22968 ST00BP00 #001S0B0
Job Description: 7-5/8" Liner @ 27,585' MD/27,000' TVD
Date: December 9, 2011

Proposal No: 1001144059I

FLUID SPECIFICATIONS

Weighted Spacer — 115.0 bbls Seal Bond 50 + 2 gal/bbl US-2 + 18 lbs/bbl Potassium Chloride + 3 gal/bbl SS-2 @ 15.8 ppg

FLUID	VOLUME CU-FT		VOLUME FACTOR		AMOUNT AND TYPE OF CEMENT
Slurry	354	/	1.21	=	293 sacks Premium Plus H Cement + 0.07% bwoc Static Free + 1.1 lbs/sack Potassium Chloride + 0.04 gps FP-12L + 0.15 gps CD-32L + 0.4 gps FL-67L + 0.05 gps SR-34L + 1.78 gps BA-90L, tote + 26.4% Fresh Water
Shoe Slurry	108	/	1.21	=	90 sacks Premium Plus H Cement + 1.1 lbs/sack Potassium Chloride + 0.07% bwoc Static Free + 1.78 gps BA-90L, tote + 0.4 gps FL-67L + 0.15 gps CD-32L + 0.04 gps FP-12L + 0.055 gps SR-34L + 26.3% Fresh Water

Disp-Weighted Spacer — 15.0 bbls Seal Bond 50 + 2 gal/bbl US-2 + 18 lbs/bbl Potassium Chloride + 3 gal/bbl SS-2 @ 15.8 ppg

Displacement — 712.3 bbls SBM @ 15.4 ppg

CEMENT PROPERTIES

	SLURRY NO.1	SLURRY NO.2
Slurry Weight (ppg)	16.20	16.20
Slurry Yield (cf/sack)	1.21	1.21
Amount of Mix Water (gps)	2.97	2.97
Amount of Mix Fluid (gps)	5.39	5.39
Estimated Pumping Time - 70 BC (HH:MM)	5:35	4:45
Free Water (mls) @ 115 ° F @ 45 ° Angle		0.0
Free Water (mls) @ 143 ° F @ 45 ° Angle	0.0	
Fluid Loss (cc/30min) at 1000 psi and 143 ° F	20.0	20.0
COMPRESSIVE STRENGTH		
5 hrs @ 115 ° F (psi)		50
7 hrs @ 115 ° F (psi)		500
24 hrs @ 115 ° F (psi)		3990
6 hrs @ 143 ° F (psi)	50	
10 hrs @ 143 ° F (psi)	500	
24 hrs @ 143 ° F (psi)	3875	

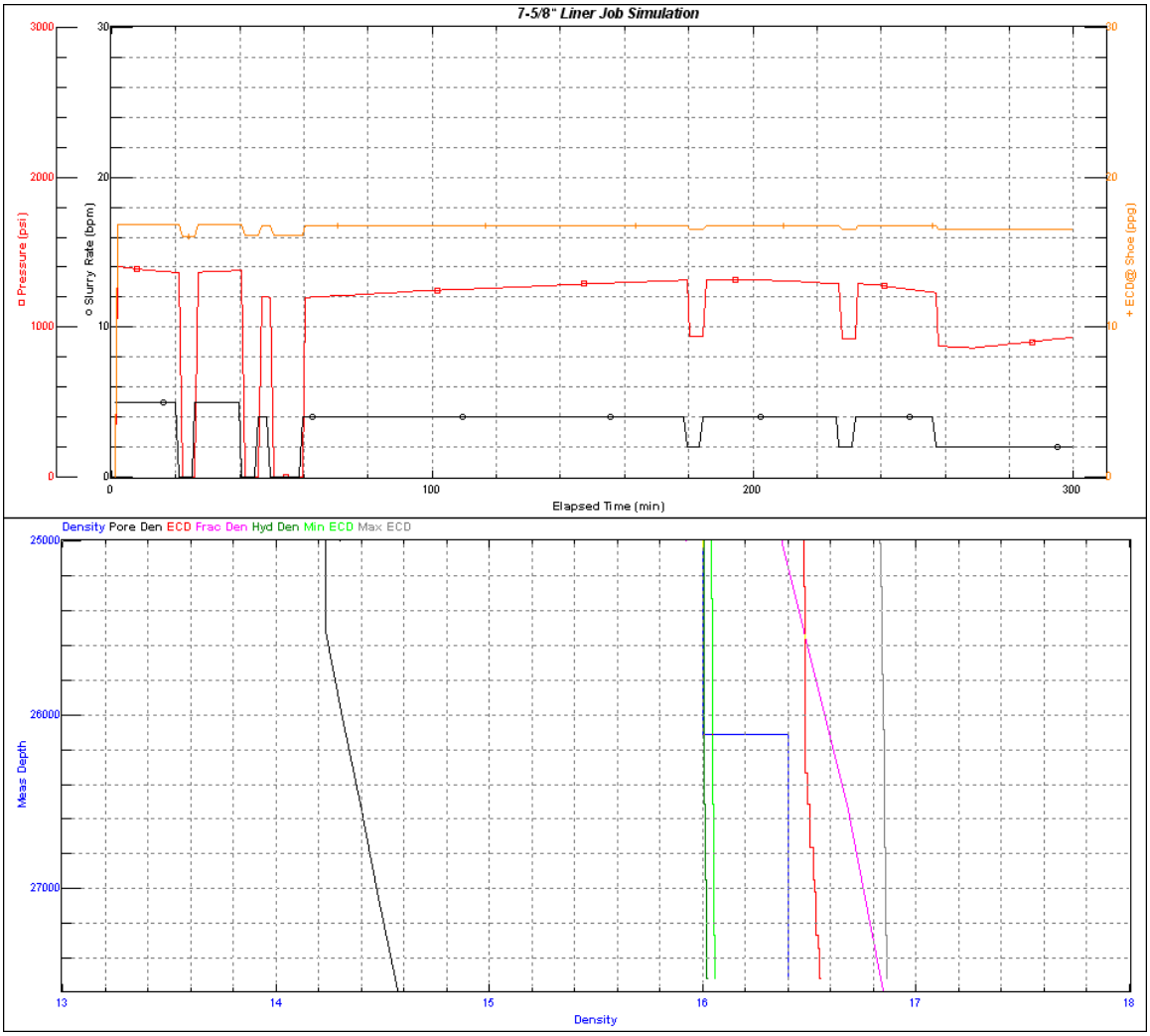
FLUID SPECIFICATIONS (Continued)

1. All fluids will be optimized/tested as the above design are only estimates.
2. Mud-Spacer-Cement compatabilties/wettability will be performed prior to cementing.
3. Fluid caliper will be run to compare values of caliper tool results.
4. 10% Mud Contamination test will be performed for both TT and UCA.
5. Remember to cut back the water requirement to account for volume of surfactant package.
6. KCl will be added to Sealbond 50 after hydration.
7. Rig will displace.
8. Estimated COMPRESSIBILITY during displacement: 21 bbls

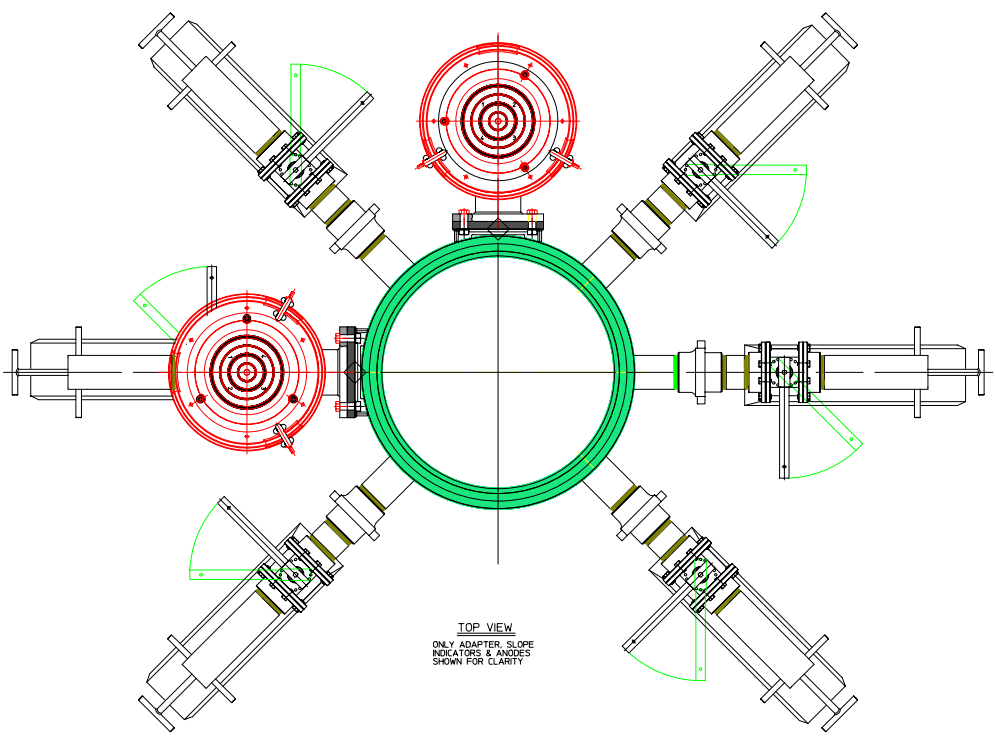
NOTE: Cement design will be tested on temperature ramp as defined by WellTEMP. Due to large temperature drop across column, a lead and shoe track slurry will be run.

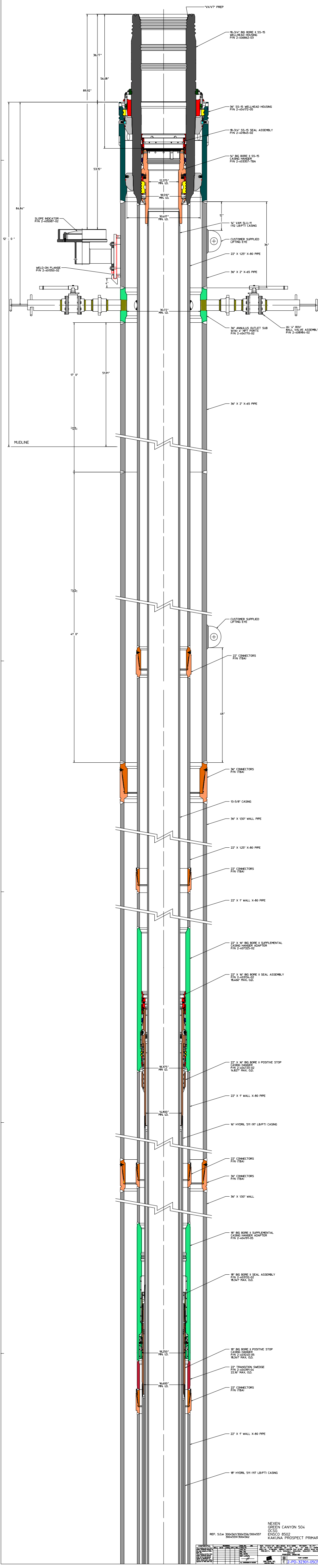
Testing will be in compliance with

API 10-B2
API 10-B3
API 65-1
API 65-2


7-5/8" Liner Job Simulation
Pressure (psi)
Slurry Rate (bpm)
ECD@ Shoe (ppg)
Elapsed Time (min)
Density Pore Den ECD Frac Den Hyd Den Min ECD Max ECD
Meas Depth
Density

Wellhead





NEXEN
GREEN CANYON 504
OCSG
ENSCO 8502
KAKUNA PROSPECT PRIMARY

REF. S.O.# 3004561/3004556/3004557
3004559/3004562

CAD

CONFIDENTIAL	REVISIONS					DWN. BY: JRS
This drawing and the information contained thereon is the sole property of DRIL-QUIP, INC. This drawing and the information contained thereon shall not be reproduced, copied or disclosed to others without prior written approval of DRIL-QUIP, INC.	REV.	DATE	CHKD.	APP.	REL.	CHKD. BY:
						APP. BY:
						REL. BY:
						REL. DATE:
						REF. LAYOUT:
	ALL DIMENSIONS IN INCHES					

SWS - STACK-UP - WELLHEAD, BIG BORE - PRIMARY 18.75", TYPE SS-15, W/36" HOUSING, 28" - 22" - 18" - 16" AND 14" HANGERS, SPECIAL - P/NEXEN - GREEN CANYON 504 OCSG - ENSCO 8502 KAKUNA PROJECT - REF. S.O#. 3004561, 3004556, 3004557, 3004559, 3004562
PROPOSAL DRAWING

DRIL-QUIP, INC. HOUSTON, TEXAS

SIZE	PART NUMBER	LAST REV.
E	2-PD-32301-05CP	

Diverter and BOP’s

SECTION III

WELL CONTROL EQUIPMENT
&
PROCEDURES

1 PURPOSE

1.1 To establish the guidelines for diverting operations on the DWBU Rigs.

2 OBJECTIVE

2.1 To outline the responsibilities, duties, safety precautions, and detailed tasks for diverting operations.

3 GENERAL PRECAUTIONS

3.1 It should be noted that the following diverter procedure should ONLY be used in the case where the rig has ascertained that a fluid influx has occurred in the riser after the wellbore has been shut-in. Historically, diverting procedures on floating rigs have had limited success, primarily due to the telescopic joint packer(s) leaking which exposes the rig and its personnel to a potentially serious fire hazard. This procedure assumes that the well has been shut-in and influx migration is noted in the riser.

4 PROCEDURE

4.1 The Driller's actions and responsibilities are:

4.1.1 If possible, clear the drill floor and notify the OIM, Company Representative, Subsea Engineer and DPO.

4.1.2 Pre-select the port or starboard overboard valves, dependant on boats and wind direction.

4.1.3 Activate the diverter packer valve to the *CLOSE* position and immediately verify the following actions occur:

4.1.3.1 The flowline valve shifts to the *CLOSE* position

4.1.3.2 Pre-selected overboard valve shifts to the *OPEN* position

4.1.3.3 Alternate overboard valve remains in the *CLOSED* position

4.1.3.4 Mud gas separator valve remains in the *CLOSED* position

4.1.3.5 Lower telescopic joint packer *ENERGIZES* with hydraulics

4.1.4 Verify that the hydraulic supply to the lower telescopic joint packer is regulated between 500-1000psi. Adjustment may be necessary.

4.1.5 After 60 seconds and when directed by the OIM, *OPEN* the mud gas separator valve.

4.1.6 *CLOSE* the pre-selected overboard valve.

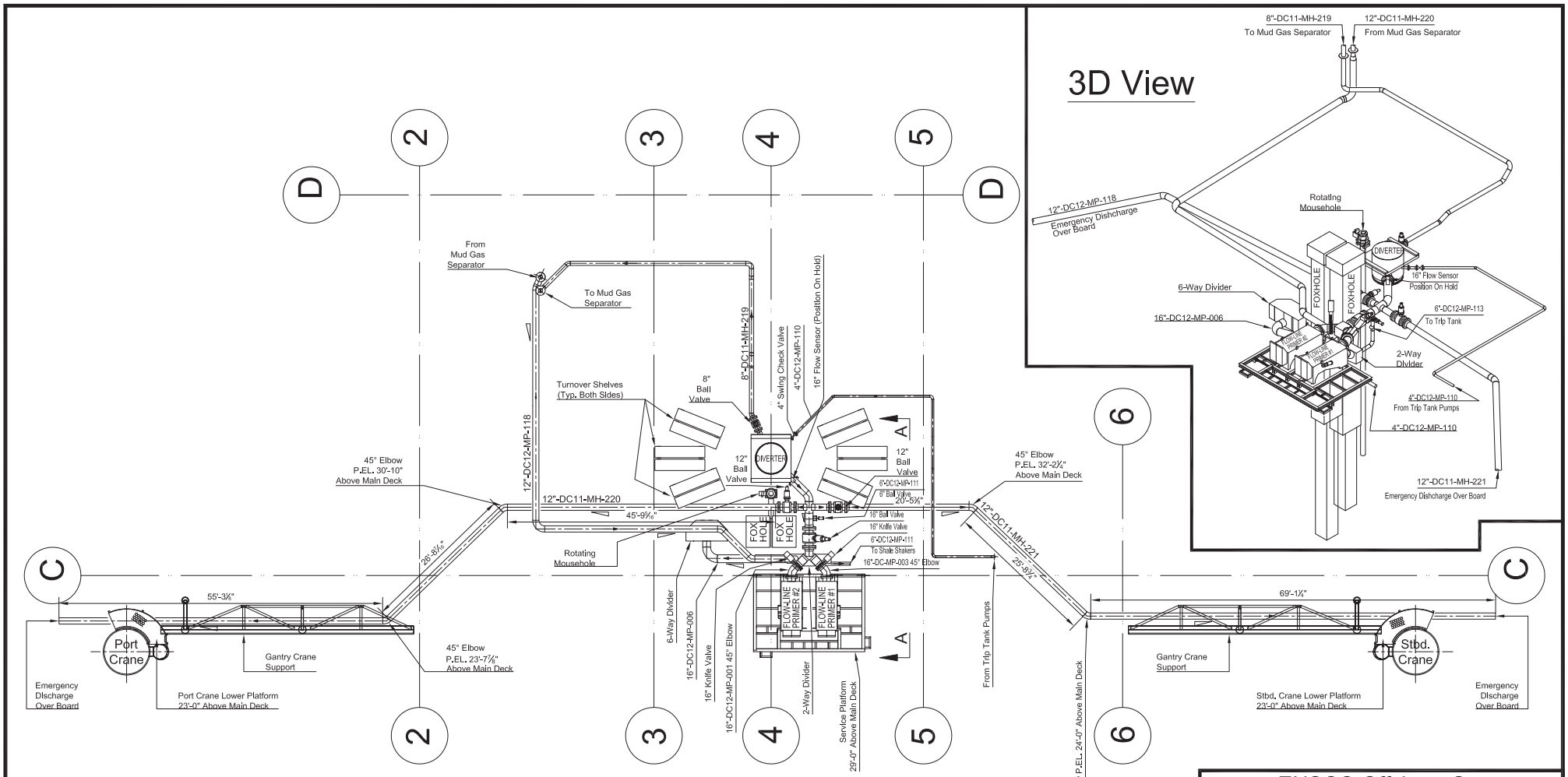
4.1.7 Line up on the riser boost line, bring the pumps online and circulate the Riser contents with drilling fluid through the mud gas separator.

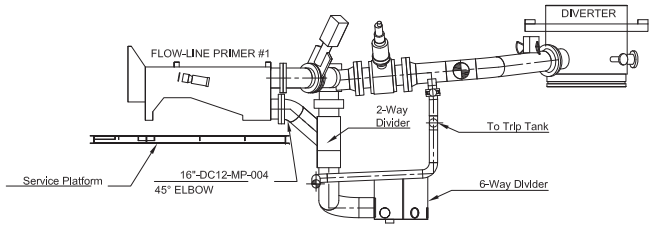
5 NOTES

5.1 The Telescopic Joint is equipped with dual packers. Each packer has the capability to be operated pneumatically or hydraulically, up to 1,000 psi. In normal operations, only the upper packer will be energized pneumatically. The diverter interlock sequence AUTOMATICALLY selects hydraulics as the operating supply for the LOWER PACKER and ENERGIZES the packer. It is the user's responsibility to ensure that the pressure is properly adjusted between 500 - 1,000 psi.

5.2 If the drill string compensator is in use, it is permissible to CLOSE the CMC isolation valves during periods of excessive heave to allow the drill pipe to strip through the BOP annular and not the diverter packer.

5.3 When the diverter packer is in the closed position, the interlock system will not allow all valves to be closed at the same time. One or more valves must remain open.





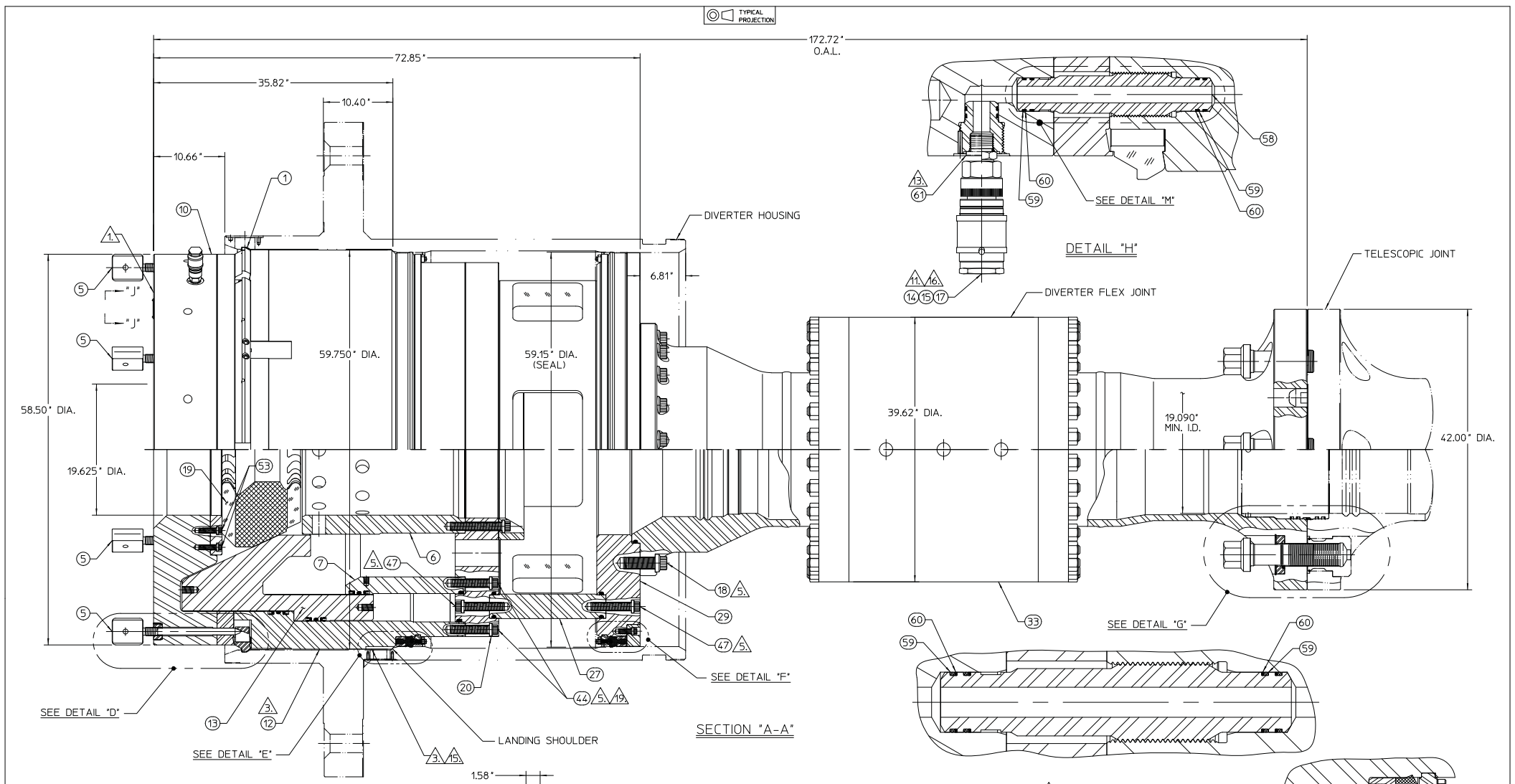
Section A-A

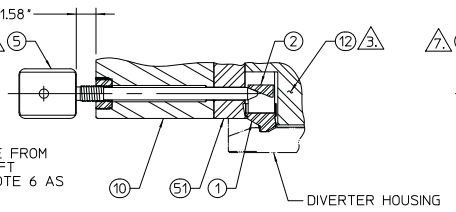
NO.	DATE	REVISION	BY

ENSCO Offshore Co.
Gulf of Mexico
ENSCO 8502
Diverter System

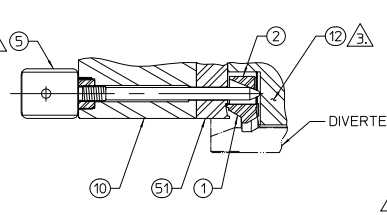
Ensco Offshore Company
620 Moulin Road
Broussard, LA. 70518
Main: (337) 837-8500
www.enscoplc.com

DRAWN BY:	Joseph D. Mayer	DATE:	06/15/2010	REV.
SHEET(S):	01 of 01		Not To Scale	
NUMBER:	ENSCO 8502-NA-MMS-Section-03.02			





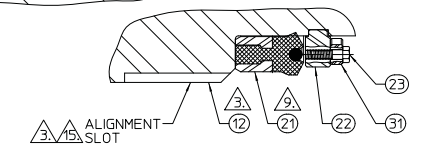
LATCHED POSITION



UNLATCHED POSITION

DETAIL "D"

DETAIL "M"



DETAIL "E"

8. BACK OUT THE SIX (6) RETRIEVING EYES (ITEM 5) AT LEAST 1.58" TO ALLOW THE DIVERTER LOCKRING SEGMENTS (ITEM 1) TO LOCK INTO THE DIVERTER HOUSING. COMPLETELY REMOVE THE RETRIEVING EYES PRIOR TO SLIDING THE ROTARY TABLE IN PLACE ABOVE THE DIVERTER.

7. THREAD THE SIX (6) RETRIEVING EYES (ITEM 5) INTO THE DIVERTER CASSETTE UNTIL THE RETRIEVING EYES ARE SHOULDERED. THIS RETRACTS THE DIVERTER LOCKRING SEGMENTS AND UNLOCKS THE DIVERTER CASSETTE FROM THE DIVERTER HOUSING. THE RETRIEVING EYES SHOULD NOT BE USED TO LIFT THE DIVERTER CASSETTE AND FLEX JOINT. USE LOCATIONS IDENTIFIED IN NOTE 6 AS LIFT POINTS.

6. THE SWIVEL HOIST RINGS (ITEMS 48) ARE THE DESIGNATED LIFT POINTS FOR THIS ASSEMBLY. THEY CAN BE USED TO LIFT THE DIVERTER CASSETTE AND FLEX JOINT FROM VERTICAL OR HORIZONTAL POSITIONS. TWO SWIVEL HOIST RINGS ARE REQUIRED TO LIFT THE ASSEMBLY AND THEY MUST BE POSITIONED AT 180° APART AND TORQUED PER MANUFACTURER'S RECOMMENDATIONS.

5. MAKE-UP ITEM 18 USING 1550 FT-LBS OF TORQUE.
MAKE-UP ITEM 44 USING 475 FT-LBS OF TORQUE.
MAKE-UP ITEM 45 USING 2300 FT-LBS OF TORQUE.
MAKE-UP ITEM 46 USING 450 FT-LBS OF TORQUE.
MAKE-UP ITEM 47 USING 600 FT-LBS OF TORQUE.
MAKE-UP ITEM 49 USING A MAXIMUM OF 100 FT-LBS OF TORQUE.
MAKE-UP ITEM 52 USING 200 FT-LBS OF TORQUE.

4. APPROXIMATE INDIVIDUAL COMPONENT WEIGHTS:
DIVERTER BODY: 29,585 LBS./13,417 KG.
DIVERTER FLEX JOINT: 10,975 LBS./4,977 KG.

3. PRIOR TO BOLTING IN PLACE, ALIGN MAIN LOAD BODY (ITEM 12) PER SPEC SHEET.

NOTES:

2. FUNCTION TEST PER SPEC SHEET.

1. STAMP PER SPEC SHEET.

14. REMOVE ITEMS 48 PRIOR TO SLIDING THE ROTARY TABLE IN PLACE ABOVE THE DIVERTER.

13. ITEM 61 (HOLLOW HEX PLUG) TO BE USED DURING SHIPPING AND HANDLING. REMOVE IT PRIOR TO INSTALLING ITEMS 14,15, AND 17 FOR OPERATION.

12. ENGRAVE PER ITEM P/N DRAWING. IDENTIFICATION PLATE TO BE ATTACHED OVER LOW STRESS STAMP AREA.

11. AFTER FUNCTION TEST, FLUSH AND FILL HYDRAULIC CIRCUIT PER SPEC SHEET.

10. LUBRICATE PRIOR TO FIELD INSTALLATION AND STORAGE USING "COPPER SUPREME SPECIAL BLEND" (BESTO LIFE) OR EQUAL.

9. LUBRICATE THE FLOWLINE SEALS (ITEM 21) WITH ALCO-EP73 PLUS RED WATER RESISTANT GREASE (JET-LUBE, INC.) OR EQUIVALENT PRIOR TO INSTALLING DIVERTER CASSETTE IN DIVERTER HOUSING. PROTECT SEALS FROM HANDLING DAMAGE.

20. CLOSE FUNCTION VOLUME: 33 GALLONS
OPEN FUNCTION VOLUME: 13 GALLONS

19. APPLY LOCTITE 243 BLUE OR EQUIVALENT TO NOTED BOLTS.

18. WHEN SWIVEL HOIST RINGS (ITEM 48) ARE REMOVED FROM THE DIVERTER CASSETTE, INSTALL ITEMS 49 & 50 IN THE VACANT 2"-4 1/2UNC LIFT HOLES. ENSURE 2"-4 1/2UNC LIFT HOLES, AS WELL AS ITEM 49, ARE LIBERALLY COATED WITH ALCO-EP73 PLUS RED WATER RESISTANT GREASE (JET-LUBE, INC.) OR EQUIVALENT PRIOR TO INSTALLING ITEM 49 PER NOTE 5.

17. STENCIL PER SPEC SHEET.

16. MALE AND FEMALE QUICK-DISCONNECT COUPLING. FEMALE HAS 1 1/16"-12UNF-2B FEMALE THREAD (3/4" SAE THREAD) FOR CONNECTION TO RIG HYDRAULICS.

15. ORIENT ALIGNMENT SLOT ON DIVERTER CASSETTE WITH ALIGNMENT KEY IN DIVERTER HOUSING BEFORE RUNNING DIVERTER CASSETTE INTO HOUSING.

CAD

REVISIONS					
REV.	DATE	CHKD	APP.	REL.	
A	03-JUN-10	RTP	JLR	SNH	
B					

DWN. BY: JXG
CHKD. BY: RTP
APP. BY: JLR
REL. BY: SNH
REL. DATE: 29-APR-10
REF. LAYOUT:
2-L-12771-01
ALL DIMENSIONS IN INCHES

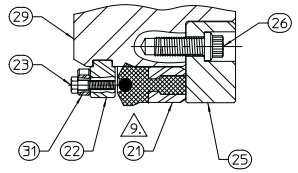
FDS, CASSETTE, CSO DIVERTER, 60.00", 0/500 PSI, F/H2S, W/UPPER & LOWER FLOWLINE SEALS, W/OILSTATES DIVERTER II-3 FLEXJOINT +/- 15 DEGREES, FLANGED DOWN FOR TELESCOPIC JOINT, 19.09" DIAMETER THRU BORE, RATED 1MM AT 500 PSI, RATED 2MM AT 0 PSI, SPECIAL, FULL CLOSURE, W/PACKER RETAINING CAP PORT LOCATIONS
:ASSEMBLY DRAWING

ESTIMATED WEIGHT	
40,560 LBS.	18,398 KG.

DRIL-QUIP, INC.
HOUSTON, TEXAS

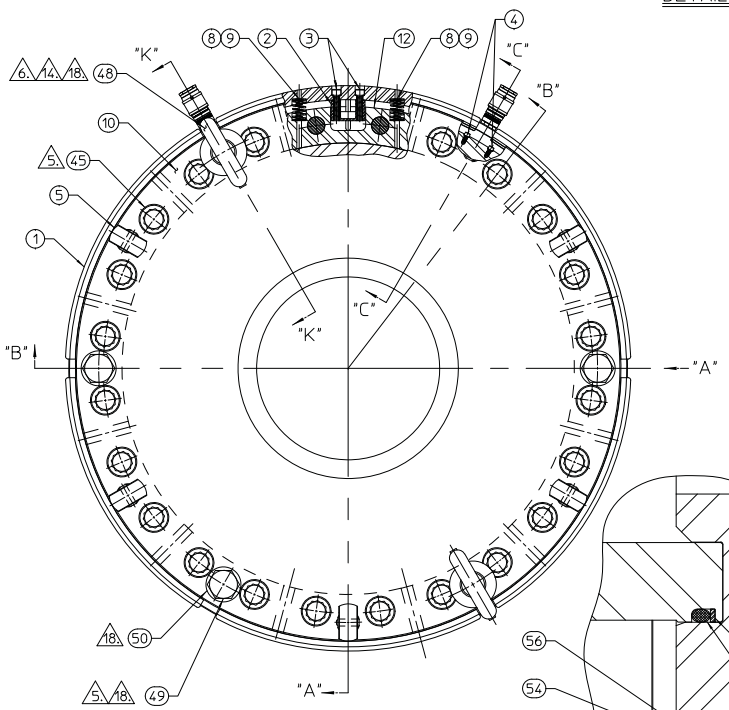
DWG SIZE	PART NUMBER	LAST REV
J	2-606453	B

TYPICAL PROJECTION

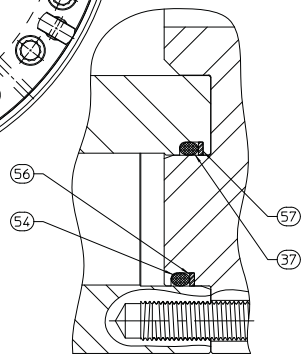


DETAIL "F"

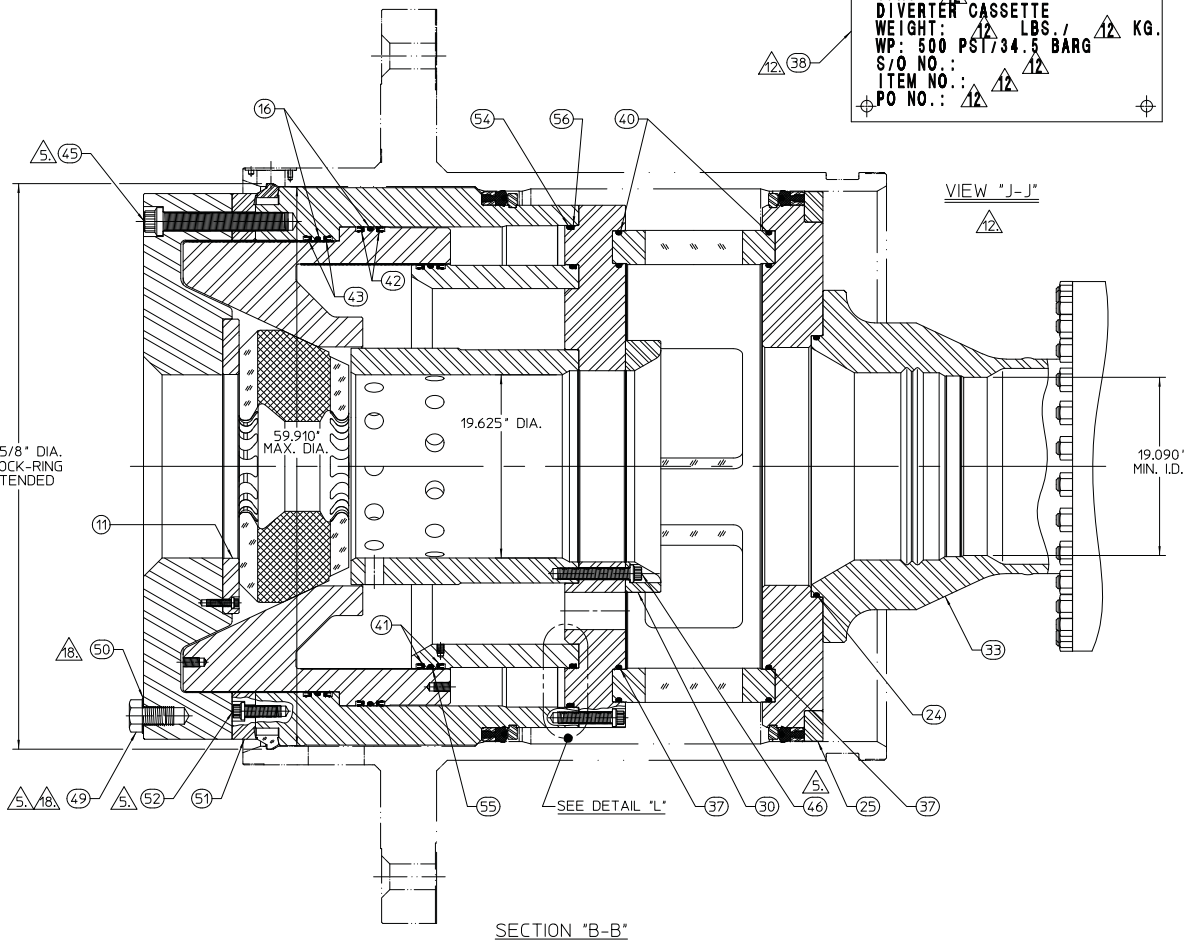
DRIL-QUIP INC.
P/N: 12
S/N: 12
DIVERTER CASSETTE
WEIGHT: 12 LBS./ 12 KG.
WP: 500 PSI/34.5 BARG
S/O NO.: 12
ITEM NO.: 12
PO NO.: 12



TOP VIEW

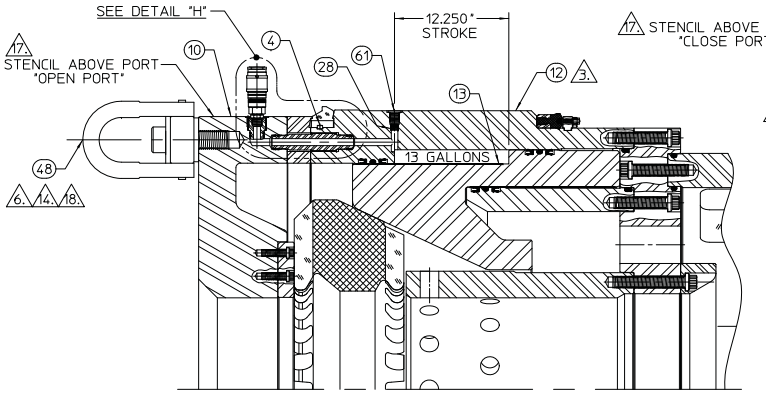


DETAIL "L"

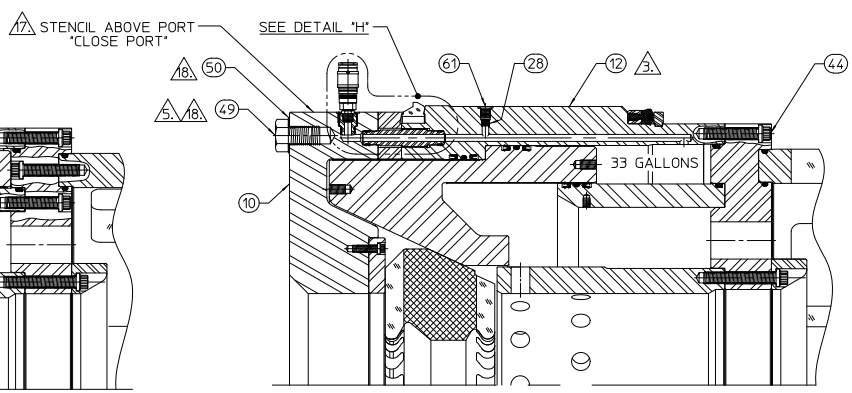


VIEW "J-J" 12

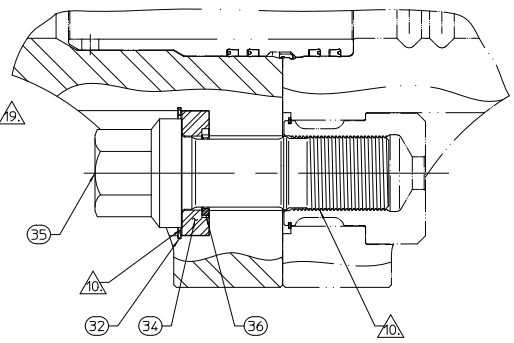
SECTION "B-B"



SECTION "K-K"
SHOWN IN OPENED POSITION



SECTION "C-C"
SHOWN IN CLOSED POSITION



DETAIL "G"
(BOLTS SHOWN IN MADE-UP POSITION)

SHEET 2 OF 2

NOTES:

ESTIMATED WEIGHT	
40,560 LBS.	18,398 KG.

REVISIONS					
REV.	DATE	CHKD.	APP.	REL.	
A	03-JUN-10	RTP	JLR	SNH	
B					

DWN. BY: JXG
CHKD. BY: RTP
APP. BY: JLR
REL. BY: SNH
REL. DATE: 29-APR-10
REF. LAYOUT: 2-L-12771-01
ALL DIMENSIONS IN INCHES

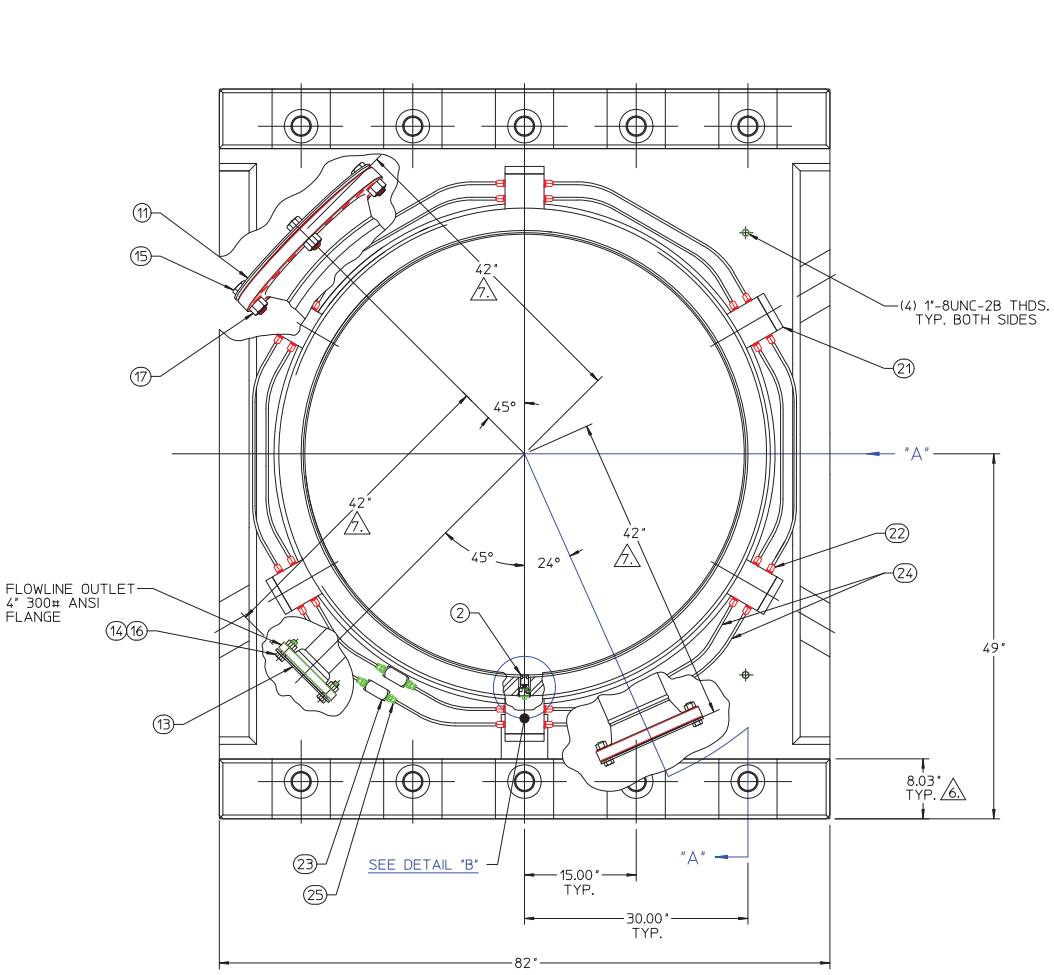
CAD

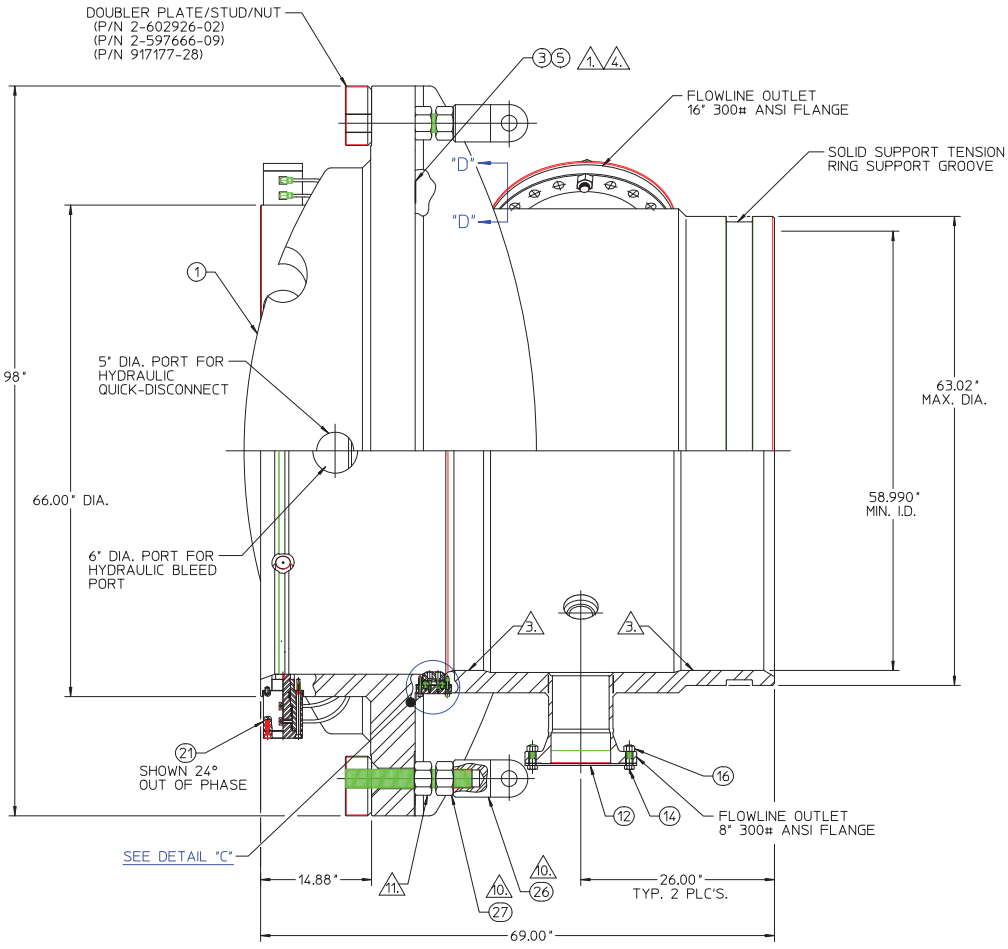
FDS, CASSETTE, CSO DIVERTER, 60.00", 0/500 PSI, F/H2S, W/UPPER & LOWER FLOWLINE SEALS, W/OILSTATES DIVERTER II-3 FLEXJOINT +/- 15 DEGREES, FLANGED DOWN FOR TELESCOPIC JOINT, 19.09" DIAMETER THRU BORE, RATED 1MM AT 500 PSI, RATED 2MM AT 0 PSI, SPECIAL, FULL CLOSURE, W/PACKER RETAINING CAP PORT LOCATIONS :ASSEMBLY DRAWING

DRIL-QUIP, INC. HOUSTON, TEXAS

DWG SIZE	PART NUMBER	LAST REV
J	2-606453	B

TYPICAL PROJECTION





SECTION "A-A"

11. TORQUE HEX NUT PER SPEC SHEET.

10. ITEM 26 & 27 TO BE INSTALLED AFTER DIVERTER HOUSING ASSEMBLY HAS BEEN FITTED AND TORQUED TO THE DOUBLER PLATE.

9. ITEMS 18, 19, & 20 NOT SHOWN. THESE ITEMS ARE SHIPPED LOOSE, TO BE MOUNTED TO MATING EQUIPMENT.

8. CLEAN & LUBRICATE PER SPEC SHEET.

7. DIMENSION IS TAKEN FROM HOUSING AXIS TO CENTER OF FLANGE, ALONG OUTLET AXIS.

6. TOUCH UP COAT PER SPEC SHEET.

5. APPLY ITEMS 7 AND 8 PER SPEC SHEET.

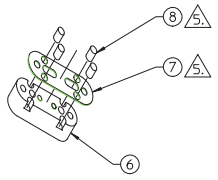
4. ENGRAVE PER ITEM P/N DRAWING. IDENTIFICATION PLATE TO BE ATTACHED OVER LOW STRESS STAMP AREA.

3. CLEAN AND LUBRICATE PER SPEC SHEET.

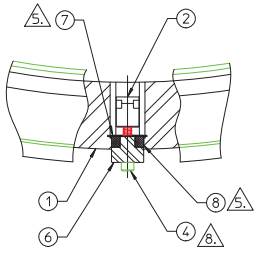
2. FUNCTION TEST PER SPEC SHEET.

1. STAMP PER SPEC SHEET.

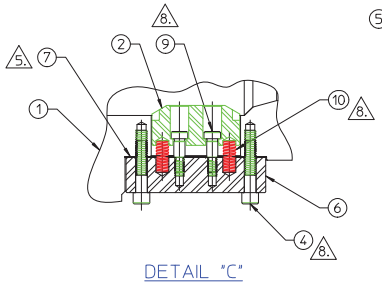
NOTES:



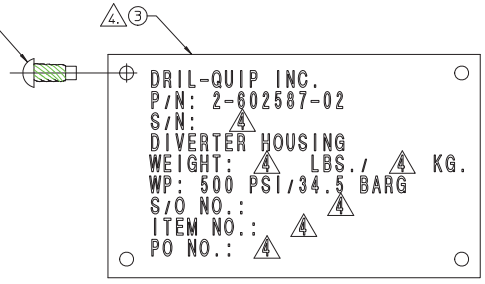
ADHESIVE APPLICATION DETAIL



DETAIL "B"



DETAIL "C"
SHOWN 24° OUT OF PHASE



VIEW "D-D"

ESTIMATED WEIGHT	
24,600 LBS.	11,158 KG.

REVISIONS					
REV.	DATE	CHKD.	APP.	REL.	
A					

DWN. BY: FAX
CHKD. BY: RAC
APP. BY: CEM
REL. BY: RXN
REL. DATE: 13-JUL-07
REF. LAYOUT: 2-L-12747-02
ALL DIMENSIONS IN INCHES

CAD

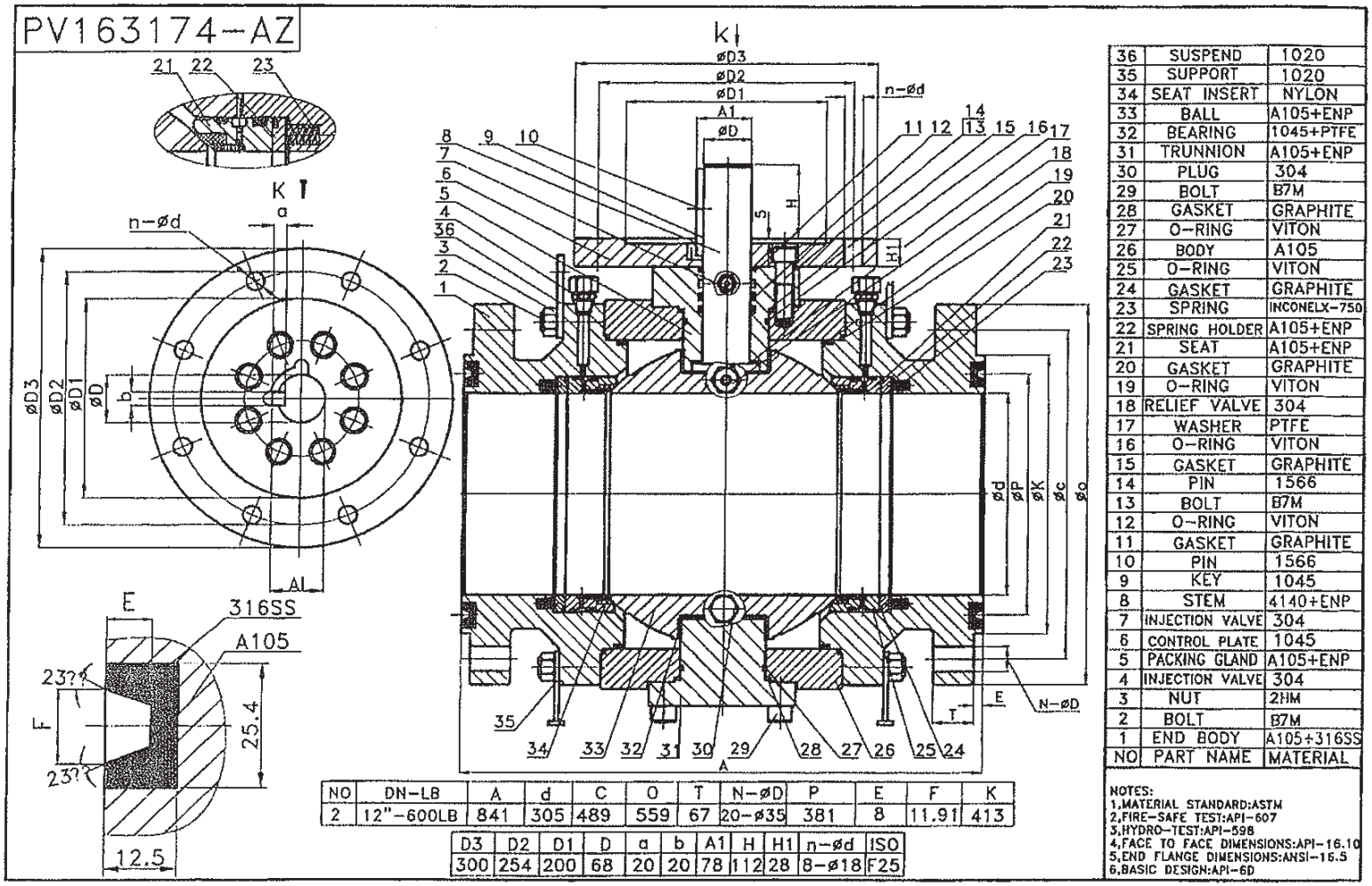
FDS, HOUSING, DIVERTER, 60.00", 500 PSI, F/H2S, W/ONE (1) 16" FLOWLINE, ONE (1) 8" MGS LINE, & ONE (1) 4" FILL LINE, ALL W/300# ANSI RF FLANGES, 59" THRU-BORE, SPECIAL, W/SOLID SUPPORT TENSION RING GROOVE, W/PAD-EYES F/SOLID SUPPORT TENSION RING SAFETY CHAINS, W/PROVISIONS F/STUDS AND NUTS
:ASSEMBLY DRAWING

DRIL-QUIP, INC. HOUSTON, TEXAS

DWG SIZE	PART NUMBER	LAST REV
J	2-602587	A

T3 ENERGY SERVICES
PVS-CFT BALL VALVE
316 SS RING GROOVES

PV163174-AZ

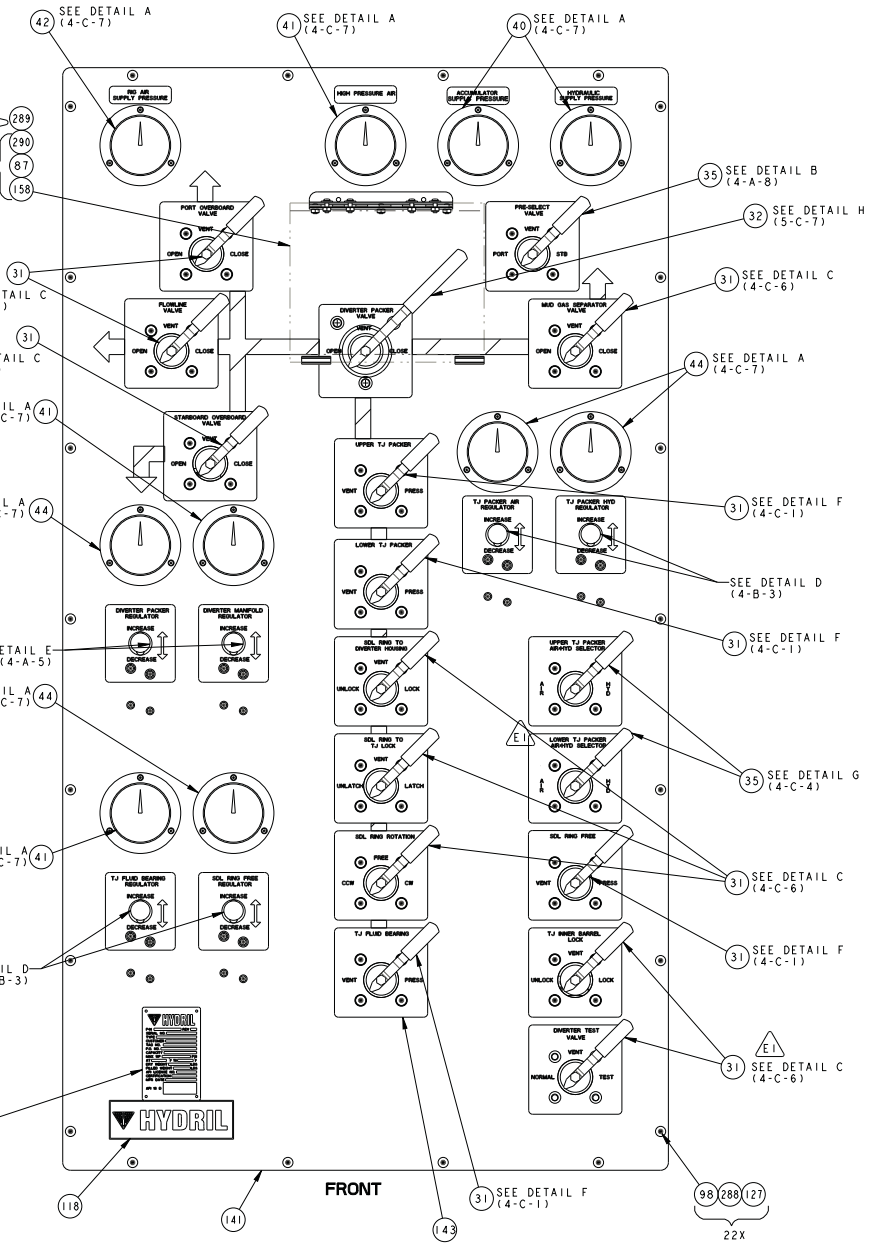


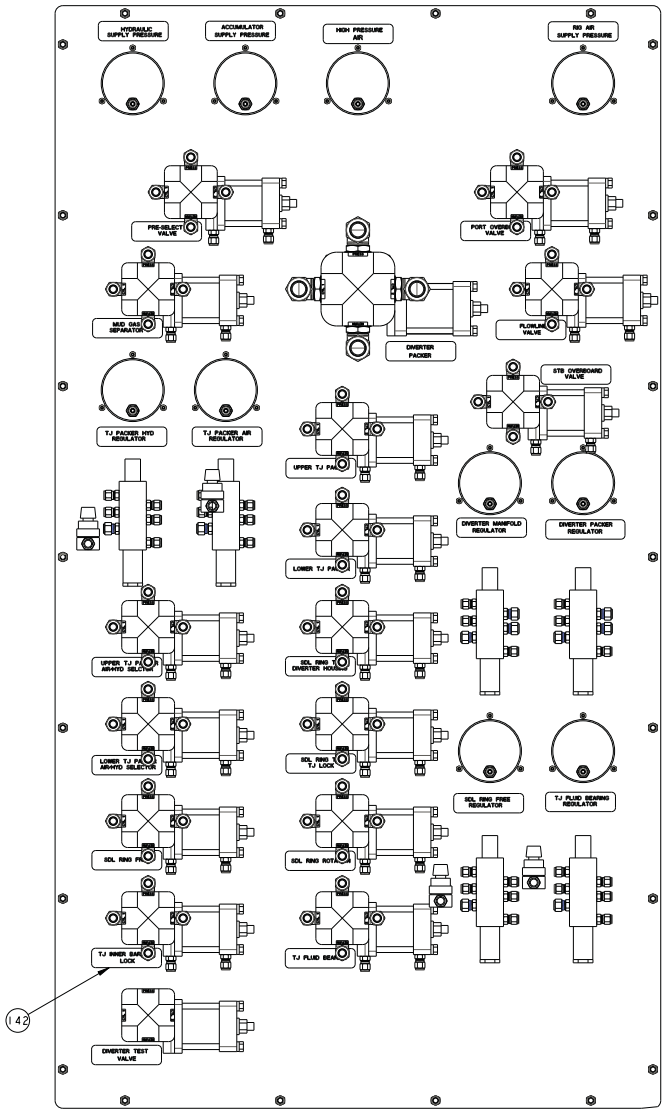
NO	DN-LB	A	d	C	O	T	N-ØD	P	E	F	K
2	12"-600LB	841	305	489	559	67	20-ø35	381	8	11.91	413

D3	D2	D1	D	a	b	A1	H	H1	n-ød	ISO
300	254	200	68	20	20	78	112	28	8-ø18	F25

NO	PART NAME	MATERIAL
36	SUSPEND	1020
35	SUPPORT	1020
34	SEAT INSERT	NYLON
33	BALL	A105+ENP
32	BEARING	1045+PTFE
31	TRUNNION	A105+ENP
30	PLUG	304
29	BOLT	B7M
28	GASKET	GRAPHITE
27	O-RING	VITON
26	BODY	A105
25	O-RING	VITON
24	GASKET	GRAPHITE
23	SPRING	INCONELX-750
22	SPRING HOLDER	A105+ENP
21	SEAT	A105+ENP
20	GASKET	GRAPHITE
19	O-RING	VITON
18	RELIEF VALVE	304
17	WASHER	PTFE
16	O-RING	VITON
15	GASKET	GRAPHITE
14	PIN	1566
13	BOLT	B7M
12	O-RING	VITON
11	GASKET	GRAPHITE
10	PIN	1566
9	KEY	1045
8	STEM	4140+ENP
7	INJECTION VALVE	304
6	CONTROL PLATE	1045
5	PACKING GLAND	A105+ENP
4	INJECTION VALVE	304
3	NUT	2HM
2	BOLT	B7M
1	END BODY	A105+316SS

NOTES:
1.MATERIAL STANDARD:ASTM
2.FIRE-SAFE TEST:API-607
3.HYDRO-TEST:API-598
4.FACE TO FACE DIMENSIONS:API-16.10
5.END FLANGE DIMENSIONS:ANSI-16.5
6.BASIC DESIGN:API-6D





CONTROL PANEL
(2-B-8)

HYDRIL PRESSURE CONTROL a GE Oil & Gas business	
A/D, DIVERTER CONTROL SKID ENSCO 8500	
DOCUMENT NO. X-1013718	REV. E 1
SCALE: 0.250	WEIGHT:
SHEET 3 OF 12	
PRO/E DRW	FILENAME: X-1013718.drw
"D" SIZE SHEET	

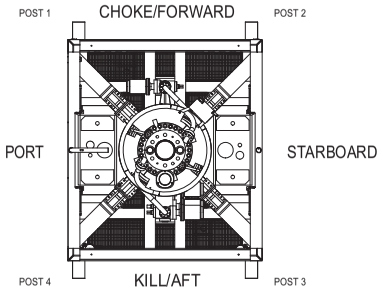
ENG FORM ..D2-INFO12JAN06

LATEST REVISION Printed on : Wed May 13 06:53:02 CDT 2009

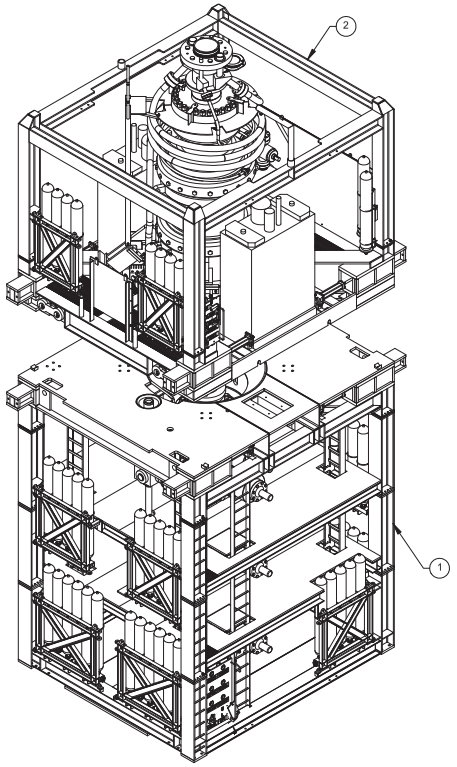
NOTES:

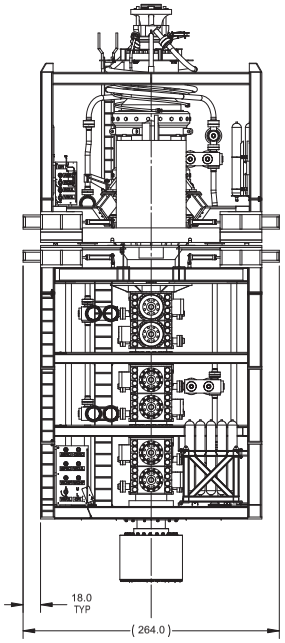
1. MANUFACTURE IN ACCORDANCE WITH SV1C-00-003.
2. ALL BOP CONTROL HARD PIPING TO MEET ASME B31.3, AT RATED WORKING PRESSURES DESIGNATED BY CUSTOMER DOCUMENTS #x-1012298-D1 AND #x-1012297-D1.
3. ALL FLEXIBLE HOSING TO BE RATED AT WORKING PRESSURES DESIGNATED BY CUSTOMER DOCUMENTS #x-1012298-D1 AND #x-1012297-D1.
4. FUNCTION TEST BOP STACK SYSTEM IN ACCORDANCE WITH SV50111-913.
5. SEAL WELD ALL POST NUMBERS.
6. POST NUMBERS TOP COAT BLACK.

ITEM NO.	PART NUMBER	QTY	DESCRIPTION	MATERIAL
1	SV50112-114	1	ASSEMBLY, LOWER STACK	
2	SV50112-145	1	LMRP ASSEMBLY	

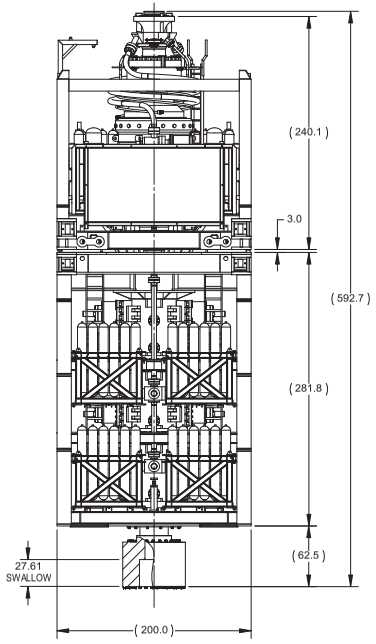


ELECTRONICALLY APPROVED &/or CONTROLLED DOCUMENT VERIFY CURRENT REVISION BEFORE PROCEEDING WITH WORK

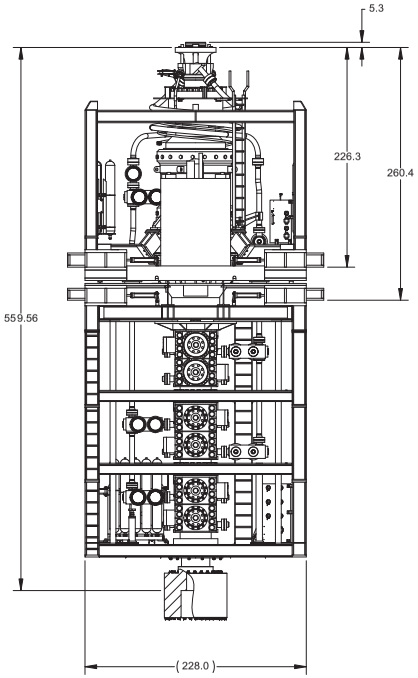




VIEW OF PORT SIDE



VIEW OF AFT SIDE



VIEW OF STARBOARD SIDE

REV.	DATE	DESCRIPTION	BY	APPR
1	10-13-08	REFER TO ECR	DG	DD

TOLERANCES UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
X ± 1 | CONC. ... 010 TIR
XX ± .05 | RADII ... .015 MAX
XXX ± .031
ANGLES ± 0°30'
BREAK SHARP EDGES .015 MAX

REF. | MARKING DATA

DWN. BY: L GUIDRY | DATE: 12/21/07
CHK. BY: | DATE:
APPR. BY: M MISER | DATE: 12/21/07

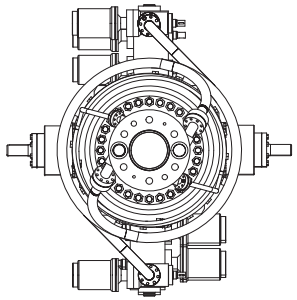
EST. WEIGHT: 700000 LBS | DO NOT SCALE | SCALE: 1:64 | SHEET 1 OF 3 | SIZE: D | DRAWING NO: SV50209-001 | PART REV: 1 | DWG REV:

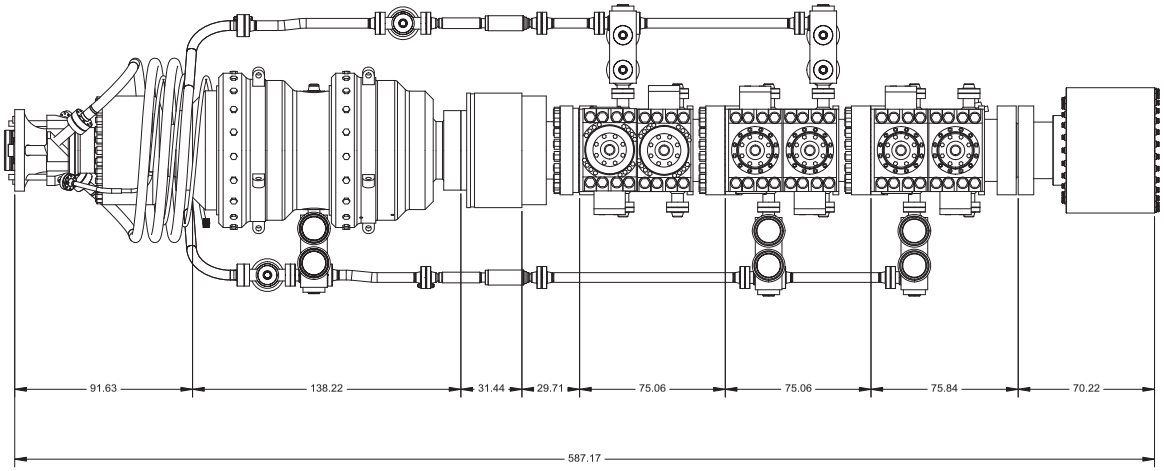
Oil States Industries, Inc. Houston Operations

GENERAL ASSEMBLY
18 3/4 - 10/15K BOP STACK
FRAME SYSTEM ENSCO 8502

ELECTRONICALLY APPROVED &/or
CONTROLLED DOCUMENT
VERIFY CURRENT REVISION
BEFORE PROCEEDING WITH WORK

KILL

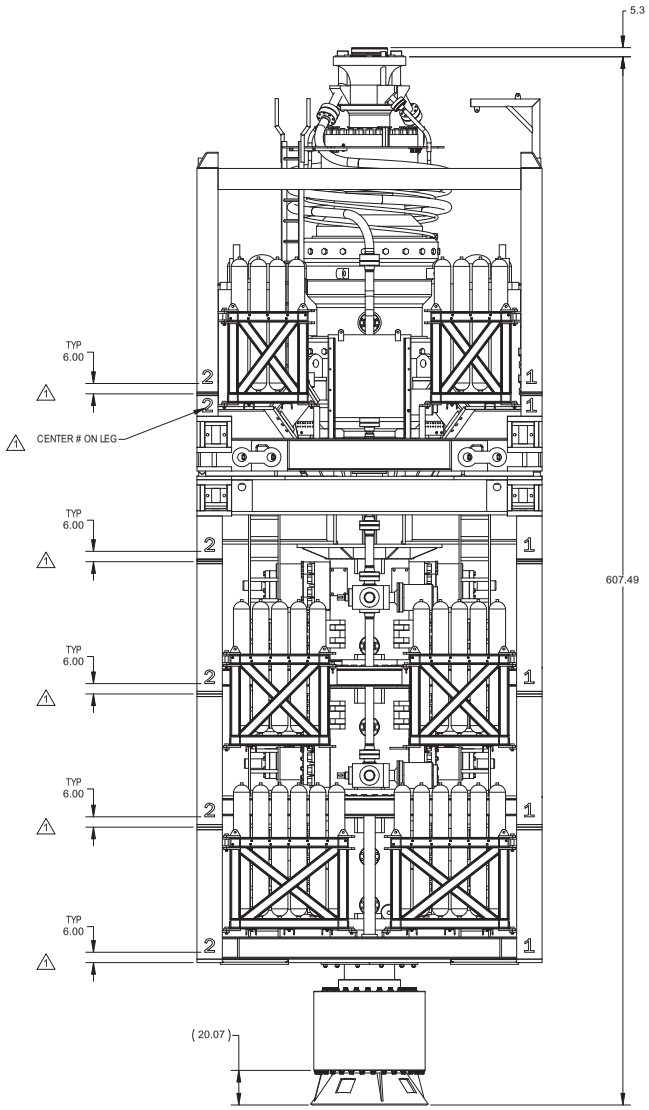




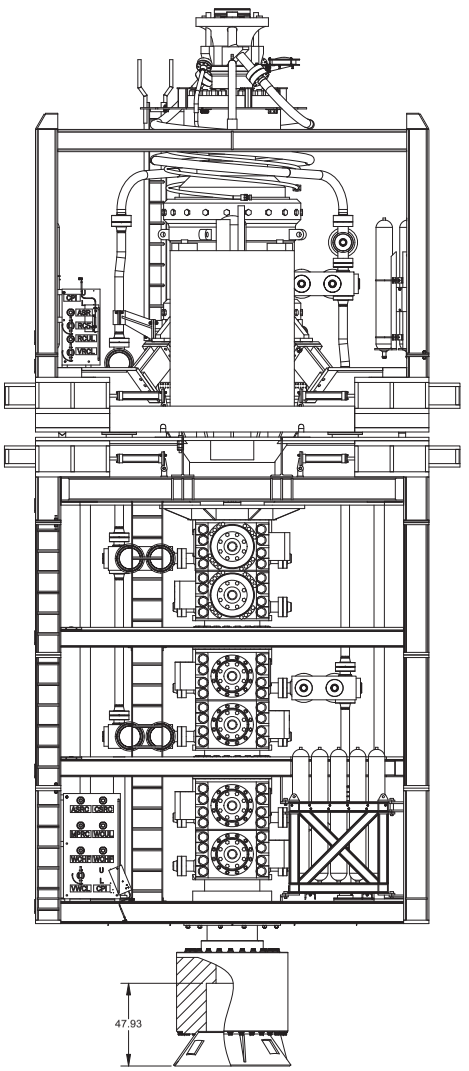
CHOKE

TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES X ± .1 CONC. .010 TIR XX ± .05 CONC. .005 TIR XXX ± .031 RADII .010 MAX ANGLES ± 0°30' BREAK SHARP EDGES .015 MAX	REF:	MARKING DATA	Oil States Industries, Inc. Houston Operations		
	DWN. BY: L GUIDRY	DATE: 12/21/07	THIS DRAWING AND ALL THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF OIL STATES INDUSTRIES, INC AND MAY NOT BE REPRODUCED, COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF OIL STATES INDUSTRIES, INC.			
	CHK. BY:	DATE	GENERAL ASSEMBLY 18 3/4 - 10/15K BOP STACK FRAME SYSTEM ENSCO 8502		
	APPR. BY: M MISER	DATE: 12/21/07			
EST. WEIGHT: 370894 LBS	DO NOT SCALE	SCALE: 1:32	SHEET: 2 OF 3	SIZE: D	DRAWING NO: SV50209-001
				PART REV: 1	DWG. REV:

ELECTRONICALLY APPROVED &/or
CONTROLLED DOCUMENT
VERIFY CURRENT REVISION
BEFORE PROCEEDING WITH WORK



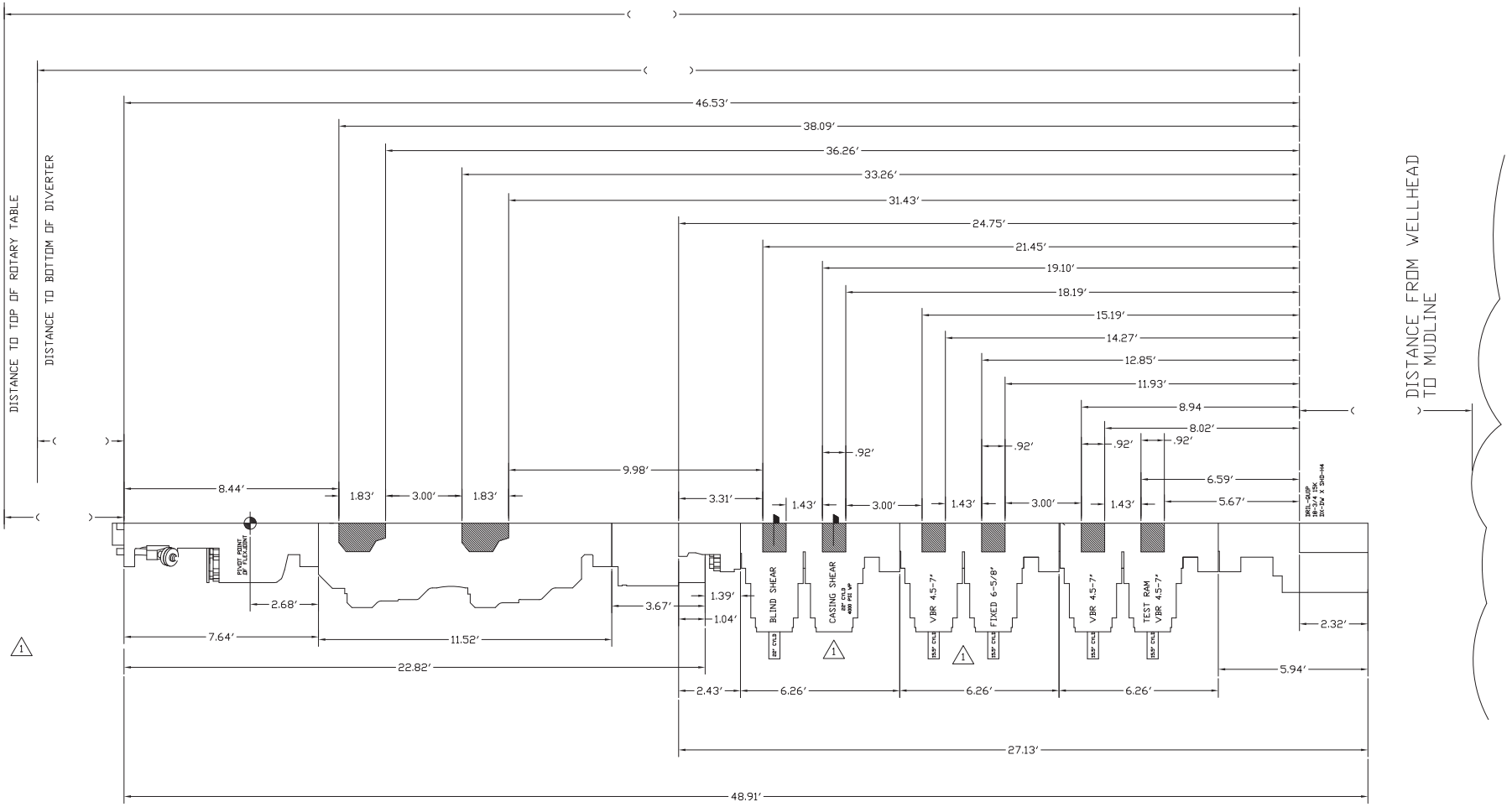
VIEW OF FORWARD SIDE



VIEW OF PORT SIDE

TOLERANCES UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES X ± .1 CONC. .01 TIR XX ± .05 RAD .. .015 MAX XXX ± .031 ANGLES ± 0°30' BREAK SHARP EDGES .015 MAX EST. WEIGHT 694755 LBS	REF.	MARKING DATA	Oil States Industries, Inc. Houston Operations THE DRAWING AND ALL THE INFORMATION HEREIN ARE THE SOLE PROPERTY OF OIL STATES INDUSTRIES, INC AND MAY NOT BE REPRODUCED, COPIED OR DISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF OIL STATES INDUSTRIES, INC. GENERAL ASSEMBLY 18 3/4 - 10/15K BOP STACK FRAME SYSTEM ENSCO 8502
	DWN. BY: L GUIDRY	DATE: 12/21/07	
	CHK. BY:	DATE	
	APPR. BY: M MISER	DATE: 12/21/07	
	DO NOT SCALE	SCALE: 1:38	SHEET 3 OF 3
	SIZE: D	DRAWING NO: SV50209-001	PART REV: 1 DWG REV:

ENSCO RIG E8501, E8502, E8503



ELECTRONICALLY APPROVED &/or
CONTROLLED DOCUMENT
VERIFY CURRENT REVISION
BEFORE PROCEEDING WITH WORK

REV	DATE	BY	DESCRIPTION
1	05/28/10	DG	REMOVED "22 CYLD" AND "4000 PSI WP". SWITCHED "FIXED 6-5/8" WITH "VBR 4.5-7". ADDED 8502 AND 8503

REVISIONS

TOLERANCES- UNLESS OTHERWISE SPECIFIED

WHOLE NUMBERS ± .25 | CAD DOCUMENT= NO MANUAL CHANGES
ONE DECIMAL ± .1
TWO DECIMALS ± .05 | BREAK ALL SHARP CORNERS
THREE DECIMALS ± .001 | ALL DIMENSIONS IN ENGLISH
ANGLES ± 1° | ALL WELDS FULL PERIMETER SEAL WELD ALL JOINTS
SURFACE FINISH N/A

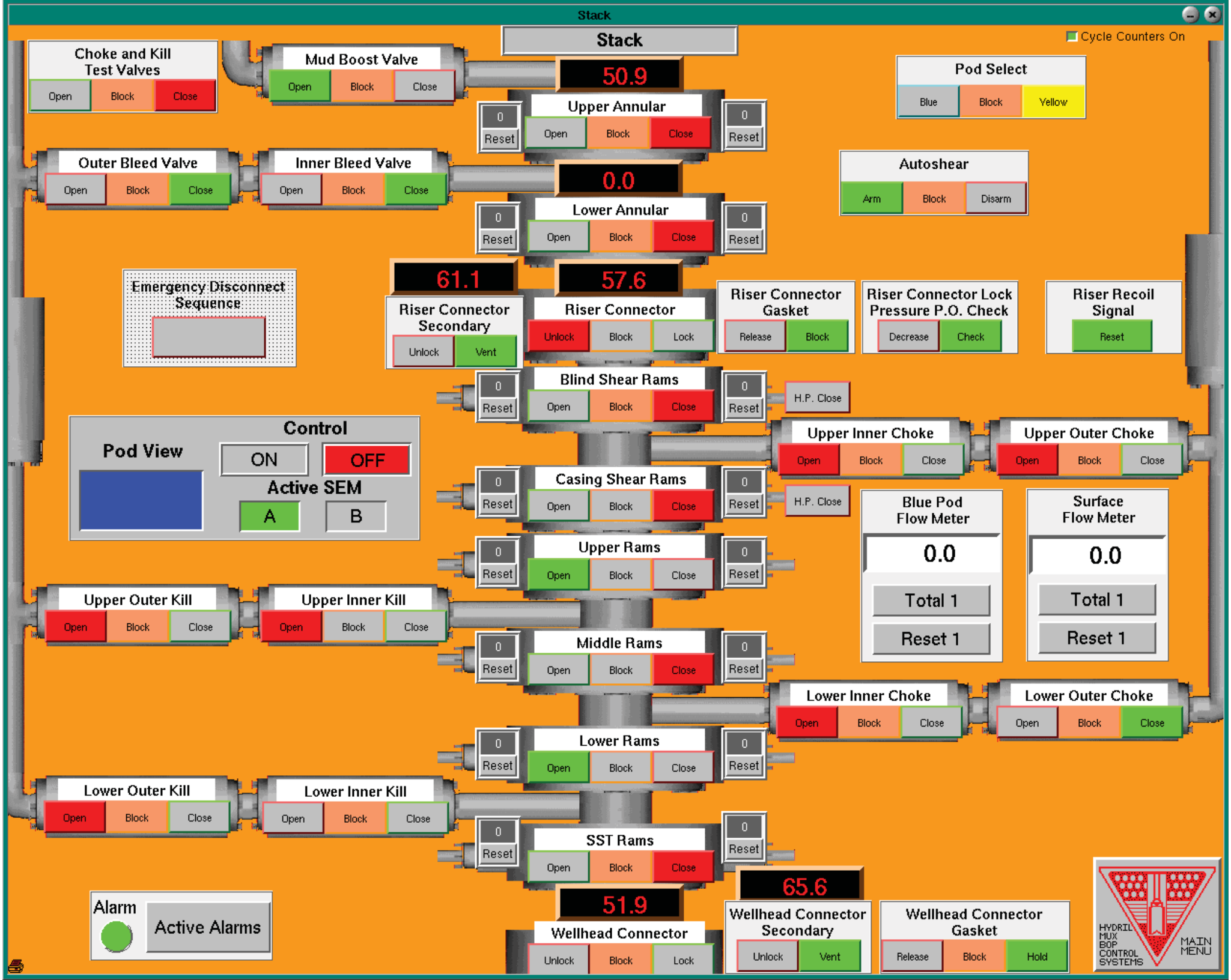
MATERIAL
COATING SPECIFICATION
CUSTOMER DWG

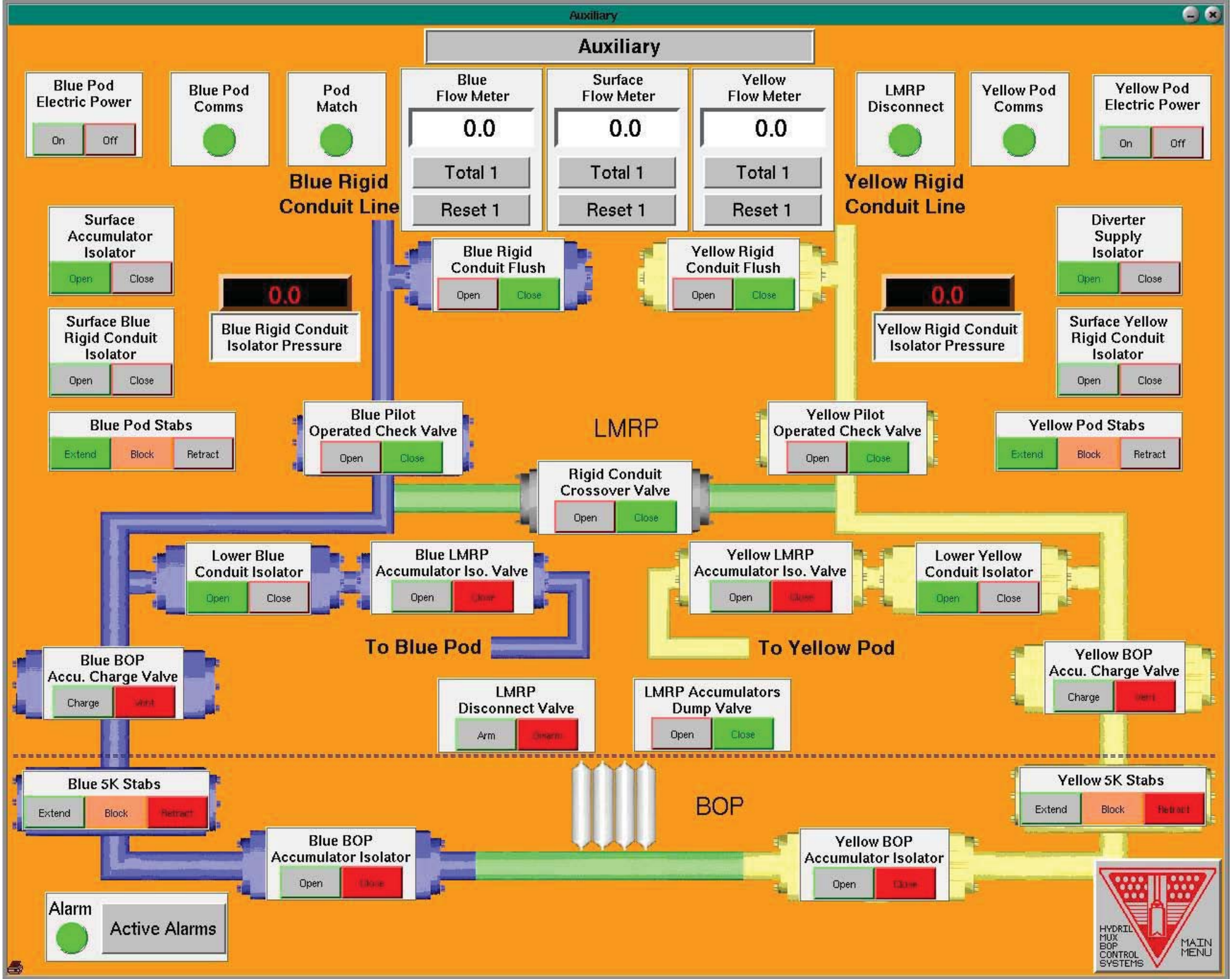
DRAWN BY	DATE
D. GRANT	10/09/08
APPROVED BY	DATE
D. DVORAK	10/09/08

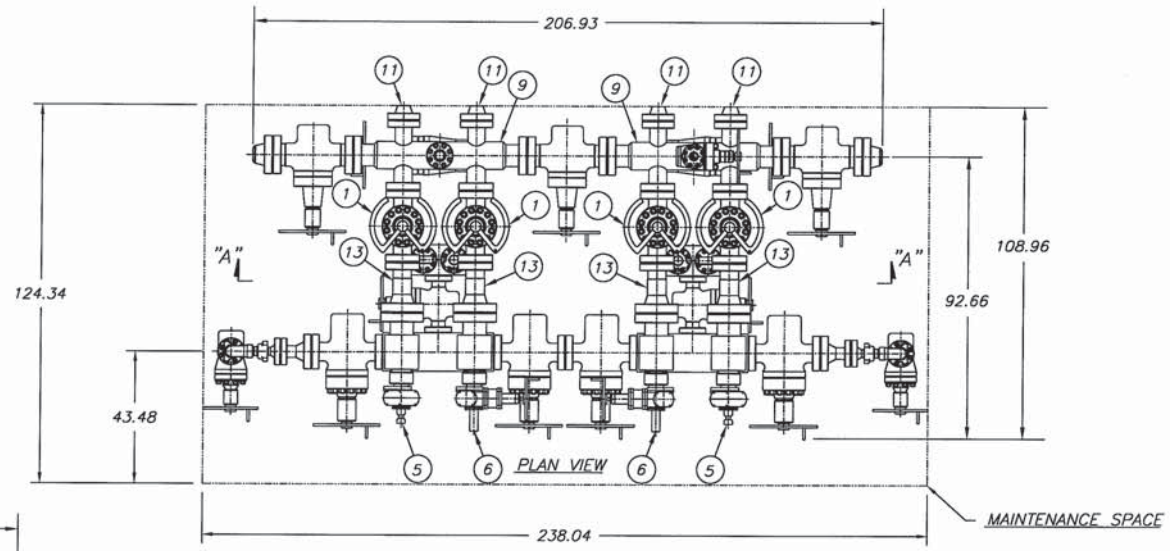
GL STATES INDUSTRIES, INC.
GL STATES INDUSTRIES, INC., HOUSTON
GL STATES INDUSTRIES, INC.
10111 RICHMOND
HOUSTON, TEXAS 77042
PH_713-465-6270
FAX 713-465-6231

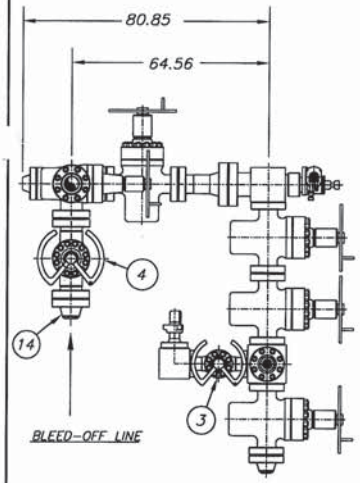
TITLE
INTERNAL DIMENSIONS
18-3/4 15M GUIDELESS BOP STACK
ENSCO "8501"

SIZE	EST WEIGHT	SCALE	DRAWING NO	PAGE	REV
D			SP30112-DDINT	1 OF 1	1

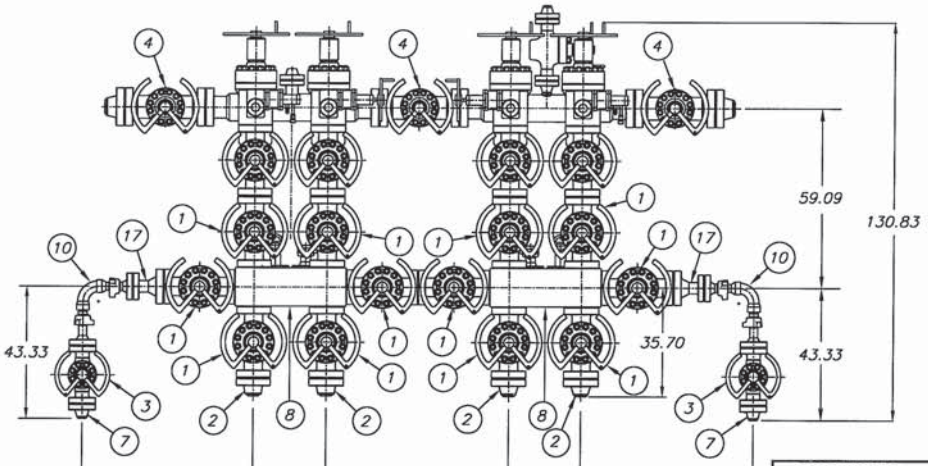

Stack
Stack
Cycle Counters On
Choke and Kill Test Valves
Open
Block
Close
Mud Boost Valve
Open
Block
Close
50.9
Upper Annular
0
Reset
Open
Block
Close
0
Reset
Pod Select
Blue
Block
Yellow
Outer Bleed Valve
Open
Block
Close
Inner Bleed Valve
Open
Block
Close
0.0
Lower Annular
0
Reset
Open
Block
Close
0
Reset
Autoshear
Arm
Block
Disarm
Emergency Disconnect Sequence
61.1
Riser Connector Secondary
Unlock
Vent
57.6
Riser Connector
Unlock
Block
Lock
Riser Connector Gasket
Release
Block
Riser Connector Lock Pressure P.O. Check
Decrease
Check
Riser Recoil Signal
Reset
Blind Shear Rams
0
Reset
Open
Block
Close
0
Reset
H.P. Close
Control
Pod View
ON
OFF
Active SEM
A
B
Upper Inner Choke
Open
Block
Close
Upper Outer Choke
Open
Block
Close
Casing Shear Rams
0
Reset
Open
Block
Close
0
Reset
H.P. Close
Blue Pod Flow Meter
0.0
Total 1
Reset 1
Surface Flow Meter
0.0
Total 1
Reset 1
Upper Rams
0
Reset
Open
Block
Close
0
Reset
Upper Outer Kill
Open
Block
Close
Upper Inner Kill
Open
Block
Close
Middle Rams
0
Reset
Open
Block
Close
0
Reset
Lower Inner Choke
Open
Block
Close
Lower Outer Choke
Open
Block
Close
Lower Rams
0
Reset
Open
Block
Close
0
Reset
Lower Outer Kill
Open
Block
Close
Lower Inner Kill
Open
Block
Close
SST Rams
0
Reset
Open
Block
Close
0
Reset
65.6
51.9
Wellhead Connector
Unlock
Block
Lock
Wellhead Connector Secondary
Unlock
Vent
Wellhead Connector Gasket
Release
Block
Hold
Alarm
Active Alarms
HYDRIL
MUX
BOP
CONTROL
SYSTEMS
MAIN
MENU


Auxiliary
Auxiliary
Blue Pod Electric Power
On
Off
Blue Pod Comms
Pod Match
Blue Flow Meter
0.0
Total 1
Reset 1
Surface Flow Meter
0.0
Total 1
Reset 1
Yellow Flow Meter
0.0
Total 1
Reset 1
LMRP Disconnect
Yellow Pod Comms
Yellow Pod Electric Power
On
Off
Blue Rigid Conduit Line
Yellow Rigid Conduit Line
Surface Accumulator Isolator
Open
Close
Blue Rigid Conduit Flush
Open
Close
Yellow Rigid Conduit Flush
Open
Close
Diverter Supply Isolator
Open
Close
0.0
Blue Rigid Conduit Isolator Pressure
0.0
Yellow Rigid Conduit Isolator Pressure
Surface Blue Rigid Conduit Isolator
Open
Close
Surface Yellow Rigid Conduit Isolator
Open
Close
Blue Pod Stabs
Extend
Block
Retract
Blue Pilot Operated Check Valve
Open
Close
LMRP
Yellow Pilot Operated Check Valve
Open
Close
Yellow Pod Stabs
Extend
Block
Retract
Rigid Conduit Crossover Valve
Open
Close
Lower Blue Conduit Isolator
Open
Close
Blue LMRP Accumulator Iso. Valve
Open
Close
Yellow LMRP Accumulator Iso. Valve
Open
Close
Lower Yellow Conduit Isolator
Open
Close
To Blue Pod
To Yellow Pod
Blue BOP Accu. Charge Valve
Charge
Vent
LMRP Disconnect Valve
Arm
Disarm
LMRP Accumulators Dump Valve
Open
Close
Yellow BOP Accu. Charge Valve
Charge
Vent
Blue 5K Stabs
Extend
Block
Retract
BOP
Yellow 5K Stabs
Extend
Block
Retract
Blue BOP Accumulator Isolator
Open
Close
Yellow BOP Accumulator Isolator
Open
Close
Alarm
Active Alarms
HYDRIL
MUX
BOP
CONTROL
SYSTEMS
MAIN
MENU

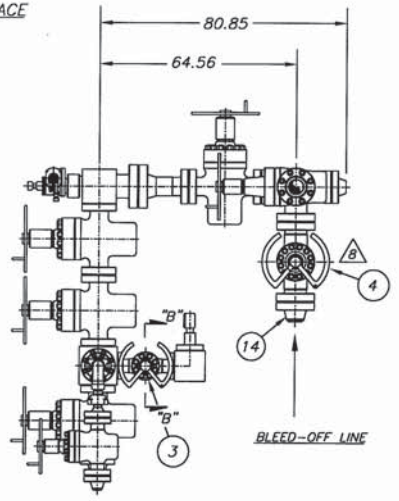




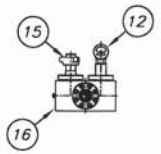
LT. SIDE VIEW



ELEVATION



RT. SIDE VIEW



SECTION B-B

NOTES

1. REF. B.O.M. SHT. 2 OF 2
2. REF. SECTION "A"-A" SHT. 2 OF 2
3. ITEM #14 & #33 ARE RATED FOR 5K W.P.

REVISIONS		
NO	DATE	BY
0	10/03/05	GS
1	11/22/05	GS
2	03/01/06	DV
3	03/06/06	RD
4	07/31/06	DV
5	08/14/06	DV
6	01/17/07	DV
7	07/27/07	RD
8	08/13/08	DV

TOLERANCES (EXCEPT WHERE NOTED)	
FRACTION	±1/64
DECIMAL 0.X	±.030
0.XX	±.015
0.XXX	±.005
ANGULAR	±1/2
M/C FINISH	125
BREAK ALL SHARP CORNERS	

WORLDWIDE OILFIELD MACHINE INC.
11809 CANEMONT, HOUSTON, TX 77035.

SCALE: NONE
DATE: 10/03/05
APPROVED BY
DRAWN BY: GS
CHK. BY:

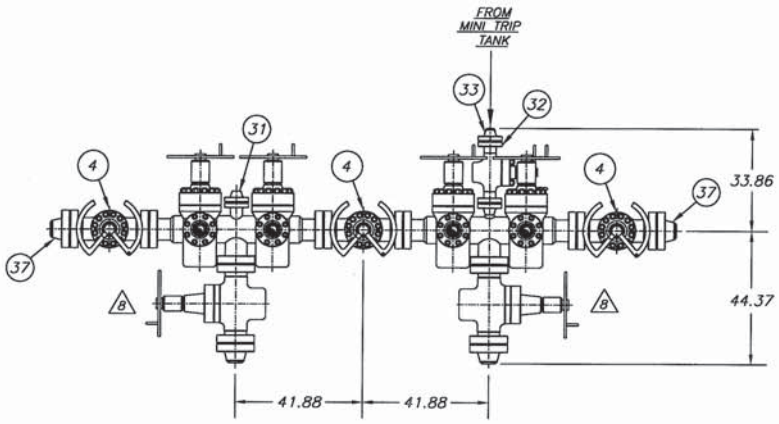
CHOKE & KILL MANIFOLD, 15,000 PSI W.P. H2S

SHT. 1 OF 2

DRAWING NUMBER M2548 (8)

ASSY. PART NO. M2548
APPROX. WT.: 41,750 LBS.

ITEM	PART NO.	QTY.	DESCRIPTION DESCRIPTION		
1	WM1900	20	VALVE, MAN. GATE 3 1/16"–15M 'MAGNUM' F.E.		
2	M2548–2	4	FLANGE, WELDNECK 3 1/16"–15M (5.75" OD X 3.00 ID)		
3	WM900	4	VALVE, MAN. GATE 2 1/16"–15M 'MAGNUM' F.E.		
4	WM2300	5	VALVE, MAN. GATE 4 1/16"–10M 'MAGNUM' F.E.		
5	-----	2	CHOKE, HYD. 3 1/16"–15M F.E. (SUPPLIED BY P. C.)		
6	-----	2	CHOKE, ADJ. 3 1/16"–15M F.E. (SUPPLIED BY P. C.)		
7	M2548–7	2	FLANGE, WELDNECK 2 1/16"–15M (3.75 OD X 2.00 ID)		
8	M2548–8	2	BLOCK, STUD'D. SPECIAL 7–WAY (1) 2 1/16" X (6) 3 1/16"–15M		
9	M1082–13	2	TANK, BUFFER 10,000 PSI W.P., 9.00 O.D. X 6.00 I.D. C/W		
			(2) 3 1/16"–15M INLETS X (2) 3 1/16"–10M OUTLETS X		
			(3) 4 1/16"–10M OUTLETS X (1) 2 1/16"–10M OUTLET		
10	M2548–10	2	ASSY., CHIKSAN STYLE 60 LONG SWEEP SWIVEL JOINT (2"–FIG.2202 MXF)		
			C/W (2) 2 1/16"–15M FLANGE CONNECTIONS		
11	M1132–40A	4	FLANGE, FLUID CUSHION 3 1/16"–10M		
12	M2548–12	2	GAUGE, PRESS. 0–15,000 PSI W.P. W/ 2 1/16"–15M FLG.		
13	M2548–13	4	SPOOL, SPACER 3 1/16" X 4 1/16"–15M FLG'D. X 16.50 O.A.L.		
14	M2548–14	2	FLANGE, WELDNECK 4 1/16"–10M 5" SCH. 80 (5.56 OD X 4.81 ID)		
15	M815–10	2	FLANGE, CROSSOVER 2 1/16"–15M X 2"–FIG.2202 UNION		
			C/W BLIND MALE SUB		
16	M2548–16	2	BLOCK, STUD'D. INSTRUMENT 3–WAY 2 1/16"–15M		
17	M2548–17	2	SPOOL, SPACER 2 1/16" X 3 1/16"–15M FLG'D. X 10.00 O.A.L.		
18	BX–152–16	14	GASKET, RING BX–152		
19	BX–154–16	41	GASKET, RING BX–154		
20	BX–155–16	14	GASKET, RING BX–155		
21	AB–0764	32	STUD, 7/8"–9UNC X 6 1/2" LG.	(CAD. PLT'D.)	2 1/16"–15M
22	B–07	64	NUT, HEX 7/8"–9UNC	(CAD. PLT'D.)	
23	AB–1072	32	STUD, 1"–8UN X 7 1/4" LG.	(CAD. PLT'D.)	3 1/16"–10M
24	B–10	64	NUT, HEX 1"–8UN	(CAD. PLT'D.)	
25	AB–1180	168	STUD, 1 1/8"–8UN X 8" LG.	(CAD. PLT'D.)	3 1/16"–15M
26	B–11	336	NUT, HEX 1 1/8"–8UN	(CAD. PLT'D.)	
27	AB–1184	56	STUD, 1 1/8"–8UN X 8 1/2" LG.	(CAD. PLT'D.)	4 1/16"–10M
28	B–11	112	NUT, HEX 1 1/8"–8UN	(CAD. PLT'D.)	
29	AB–1396	32	STUD, 1 3/8"–8UN X 9 3/4" LG.	(CAD. PLT'D.)	4 1/16"–15M
30	B–13	64	NUT, HEX 1 3/8"–8UN	(CAD. PLT'D.)	
31	WFC–210	1	FLANGE, FLUID CUSHION 2 1/16"–10M		
32	WM800	1	VALVE, MAN. GATE 2 1/16"–10M 'MAGNUM' F.E.		
33	M2548–33	1	FLANGE, WELDNECK 2 1/16"–10M 3" SCH. 40 (3.50" OD X 3.06" ID)		
34	BX–152–16	2	GASKET, RING BX–152		
35	AB–0656	16	STUD, 3/4"–10UNC X 5 3/4" LG.	(CAD. PLT'D.)	2 1/16"–10M
36	B–06	32	NUT, HEX 3/4"–10UNC	(CAD. PLT'D.)	
37	SW–4649	2	FLANGE, WELDNECK 4 1/16"–10M (5.56 OD X 4.06 ID)		



SECTION "A"–"A"

TOLERANCES (EXCEPT WHERE NOTED)	
FRACTION	±1/64
DECIMAL 0.X	±.030
0.XX	±.015
0.XXX	±.005
ANGULAR	±1/2
M/C FINISH	125
BREAK ALL SHARP CORNERS	

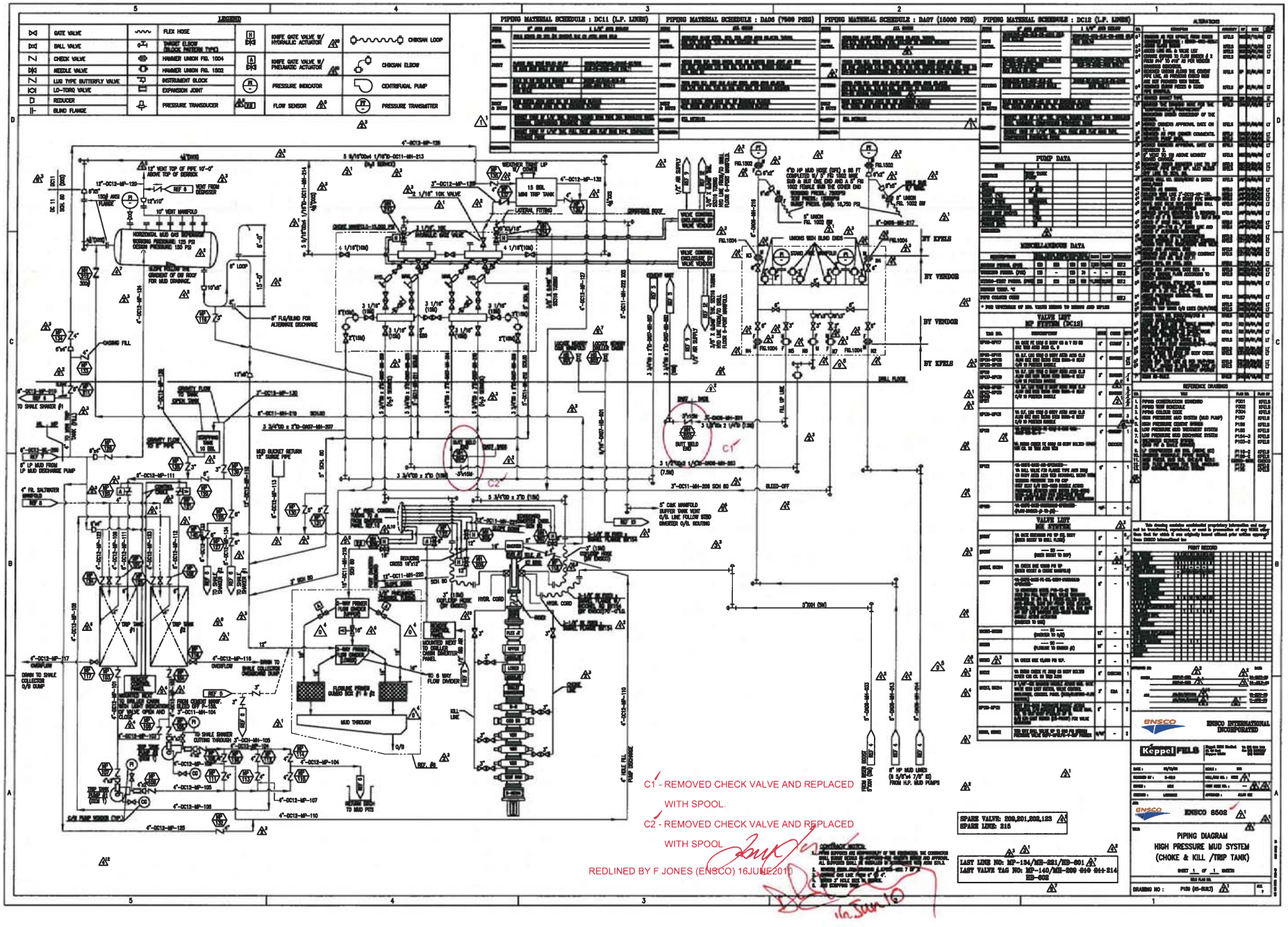
WORLDWIDE OILFIELD MACHINE INC.
11809 CANEMONT, HOUSTON, TX 77035.

SCALE: NONE	APPROVED BY	DRAWN BY: GS
DATE: 10/03/05		CHK. BY:

CHOKE & KILL MANIFOLD, 15,000 PSI W.P. H2S

SHT. 2 OF 2

DRAWING NUMBER M2548 (8)


LEGEND
GATE VALVE
BALL VALVE
CHECK VALVE
NEEDLE VALVE
LUG TYPE BUTTERFLY VALVE
LO-TORQ VALVE
REDUCER
BLIND FLANGE
FLEX HOSE
INSERT ELBOW (BLOCK INTERLOCK TYPE)
HAMMER UNION FIG. 1004
HAMMER UNION FIG. 1502
INSTRUMENT BLOCK
EXPANSION JOINT
PRESSURE TRANSDUCER
KNIFE GATE VALVE W/ HYDRAULIC ACTUATOR
KNIFE GATE VALVE W/ PNEUMATIC ACTUATOR
PRESSURE INDICATOR
FLOW SENSOR
CHIKSAN LOOP
CHIKSAN ELBOW
CENTRIFUGAL PUMP
PRESSURE TRANSMITTER
PIPING MATERIAL SCHEDULE : DC11 (L.P. LINES)
PIPING MATERIAL SCHEDULE : DA06 (7500 PSIG)
PIPING MATERIAL SCHEDULE : DA07 (15000 PSIG)
PIPING MATERIAL SCHEDULE : DC12 (L.P. LINES)
PUMP DATA
MISCELLANEOUS DATA
VALVE LIST MP SYSTEM (DC12)
VALVE LIST MR SYSTEM
REFERENCE DRAWINGS
REVISIONS
C1 - REMOVED CHECK VALVE AND REPLACED WITH SPOOL
C2 - REMOVED CHECK VALVE AND REPLACED WITH SPOOL
REDLINED BY F JONES (ENSCO) 16JUNE2010
SPARE VALVE: 200,201,202,123
SPARE LINE: 215
LAST LINE NO: MP-134/MR-221/HP-601
LAST VALVE TAG NO: MP-140/MR-200 210 211 214 HP-602
ENSCO INTERNATIONAL INCORPORATED
KeppelFELS
ENSCO 8502
PIPING DIAGRAM
HIGH PRESSURE MUD SYSTEM
(CHOKE & KILL /TRIP TANK)
DRAWING NO : P101 (HP-DRIL)