

1. Geologic Formations

RECEIVED

TVD of target	9,580'	Pilot hole depth	None
MD at TD:	14,101'	Deepest expected fresh water:	

30-025-42054

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	1,870	Barren	
Salado	2,150	Barren	
Base of Salt	3,400	Barren	
Queen	4,720	Oil/Gas	
Delaware	6,550	Oil/Gas	
1st BSPG Sand	9,420	Oil/Gas	

*H2S, water flows, loss of circulation, abnormal pressures, etc

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2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn .	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	2,100'	13.375"	54.5	J-55	BTC	1.25	1.93	4.33
12.25"	0	5,300'	9.625"	40	J-55	LTC	1.39	1.24	2.25
8.75"	0	14,101'	5.5"	17	P-110	BTC	1.67	1.25	2.27
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	Y
If yes, does production casing cement tie back a minimum of 50' above the Reef?	Y
Is well within the designated 4 string boundary.	Y
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

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3. Cementing Program

String	Number of sx	Weight lbs/gal	Water Volume g/sx	Yield cf/sx	Stage; Lead/Tail	Slurry Description
Surface	1320	13.5	9.13	1.73	Lead	Premium Plus C Cement + 0.005 lbs/sack Static Free + 1% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 0.005 gps FP-6L + 4% bwoc Bentonite + 81% Fresh Water
	500	14.8	6.34	1.35	Tail	Premium Plus C Cement + 0.005 lbs/sack Static Free + 2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 0.005 gps FP-6L + 56.3% Fresh Water
Intermediate	1005	12.6	8.81	1.73	Lead	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 3 lbs/sack LCM-1 + 0.2% bwoc FL-52 + 0.005 gps FP-6L + 1% bwoc Sodium Metasilicate + 89.6% Fresh Water 350 sacks (60:
	400	13.8	6.41	1.38	Tail	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.005 gps FP-6L + 0.25% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.2% Fresh Water
Intermediate 2 Stage	680	12.8	8.01	1.66	1 st Lead	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.25 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 0.005 gps FP-6L + 1.5% bwoc Sodium Metasilicate + 81.5% Fresh Water
	450	13.8	6.40	1.38	1 st Tail	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.25 lbs/sack Cello Flake + 0.005 gps FP-6L + 0.25% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.1% Fresh Water
	DVT @ 2150'					
	355	12.8	8.01	1.66	1 st Lead	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.25 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 0.005 gps FP-6L + 1.5% bwoc Sodium Metasilicate + 81.5% Fresh Water
	150	13.8	6.40	1.38	2 nd Tail	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.25

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						lbs/sack Cello Flake + 0.005 gps FP-6L + 0.25% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.1% Fresh Water
Production	155	11.8	13.15	2.3	1 st Lead	(50:50) Poz (Fly Ash):Premium Plus H Cement + 0.005 lbs/sack Static Free + 0.5% bwoc FL-52 + 0.3% bwoc ASA-301 + 0.005 gps FP-6L + 10% bwoc Bentonite + 0.35% bwoc R-21 + 130.6% Fresh Water
	395	12.5	11.00	2.01	2 nd Tail	(35:65) Poz (Fly Ash):Premium Plus H Cement + 0.005 lbs/sack Static Free + 3% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.125 lbs/sack Cello Flake + 0.7% bwoc FL-52 + 0.3% bwoc ASA- 301 + 0.005 gps FP-6L + 6% bwoc Bentonite + 105.5% Fresh Water
	1385	14.2	5.76	1.28	Tail	(50:50) Poz (Fly Ash):Premium Plus H Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.3% bwoc CD-32 + 0.5% bwoc FL-25 + 0.4% bwoc FL-52 + 0.005 gps FP-6L + 0.5% bwoc Sodium Metasilicate + 57.2% Fresh Water

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
13-3/8" Intermediate	0'	100%
9-5/8" Intermediate	0'	75%
9-5/8" Intermediate Two Stage	DVT 50' below previous	75%
5-1/2" Production Casing	4800'	25%

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4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12.25"	13-5/8"	3M	Annular	x	50% testing pressure 3M
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other*		
8.75"	13-5/8"	3M	Annular	x	50% testing pressure 3M
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other*		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

A 3M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the first and second intermediate hole sections. The BOP system will be tested as a 3M system per BLM Onshore Oil and Gas Order 2 prior to drilling out of the casing shoes.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

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Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	2,100'	FW Gel	8.5-9.5	28-34	N/C
2,100'	5,300'	Saturated Brine	10.0-10.2	28-34	N/C
5,300'	14,101'	FW Gel	8.4-9.0	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned	Interval
Resistivity	Int. shoe to KOP
Density	Int. shoe to KOP
X CBL	Production casing
X Mud log	Intermediate shoe to TD
PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4633 psi (bottom of pilot hole)
Abnormal Temperature	No

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Mitigation measure for abnormal conditions: Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
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N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

Directional Plan

Other, describe