

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED
OMB NO 1004-0135
Expires: July 31, 2010**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No
NMLC029419A

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

7. If Unit or CA/Agreement, Name and/or No

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other8. Well Name and No
SKELLY UNIT 739

2. Name of Operator

COG OPERATING LLC

Contact KELLY J HOLLY

E-Mail: kholly@concho.com

9. API Well No

30-015-38343

3a. Address

550 WEST TEXAS AVENUE SUITE 100
MIDLAND, TX 79707

3b. Phone No (include area code)

Ph: 432-685-4384

10. Field and Pool, or Exploratory
FREN; GLORIETA YESO

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 22 T17S R31E Mer NMP SWSW 1215FSL 330FWL

11. County or Parish, and State

EDDY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION=

TYPE OF ACTION

☒ Notice of Intent☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☐ Alter Casing☐ Casing Repair☐ Change Plans☐ Convert to Injection☐ Deepen☐ Fracture Treat☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other
Change to Original APD

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC respectfully requests permission to change this well to a horizontal well at this location:

SHL: 1237' FSL & 330' FWL, Unit M
BHL: 1215' FSL & 330' FEL, Unit P

COG Operating LLC respectfully requests permission to change the well name to:
Skelly Unit #739H

A revised C-102, 1 mile map, flow line, road map, directional plan, drilling plan, rig layouts and surface use plan are attached.

**SUBJECT TO LIKE
APPROVAL BY STATE**

OK of Fast 8-34-12

Eng. reviewed 8/13/12 CRW

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

14. Thereby certify that the foregoing is true and correct.

Electronic Submission #144275 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Carlsbad
Committed to AFMS for processing by KURT SIMMONS on 08/03/2012 ()

Name (Printed/Typed) KELLY J HOLLY

Title PERMITTING TECH

Signature

(Electronic Submission)

Date 07/31/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

/s/ Don Peterson

Title

AFM

Date

AUG 24 2012

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Surface Use Plan
COG Operating, LLC
Skelly Unit 739H
SL: 1237' FSL & 330' FWL UL M
BHL: 1215' FSL & 330' FEL UL P
Section 22, T-17-S, R-31-E
Eddy County, New Mexico

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 3rd day of April, 2012.

Signed: Carl Bird

Printed Name: Carl Bird

Position: Drilling Engineer

Address: 550 W. Texas, Suite 1300, Midland, Texas 79701

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

E-mail: cbird@concho.com

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-	Pool Code 26770	Pool Name Fren;Glorieta-Yeso
Property Code 305607	Property Name SKELLY UNIT	Well Number 739H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3818'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn.	Feet from the	North/South line	Feet from the	East/West line	County
M	22	17-S	31-E		1237	SOUTH	330	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn.	Feet from the	North/South line	Feet from the	East/West line	County
P	22	17-S	31-E		1215	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>CORNER COORDINATES TABLE</p> <p>Ⓐ - Y=661008.4 N, X=643714.1 E</p> <p>Ⓑ - Y=661044.9 N, X=648994.3 E</p> <p>Ⓒ - Y=659724.5 N, X=649001.8 E</p> <p>Ⓓ - Y=659688.1 N, X=643721.9 E</p> <p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=660927.0 N X=644044.5 E</p> <p>BOTTOM HOLE LOCATION Y=660936.9 N X=648665.0 E</p> <p>PRODUCING AREA PROJECT AREA</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division</p> <p><i>Kacie Connally</i> 5-7-12 Signature Date</p> <p>Kacie Connally Printed Name</p> <p>Kconnally@concho.com E-mail Address</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>APRIL 4, 2012</p> <p>Date of Survey</p> <p>Signature & Seal of Professional Surveyor:</p> <p><i>Ronald J. Eidson</i></p> <p>RONALD J. EIDSON NEW MEXICO 8239 Certificate Number Gary G. Eidson 12641 Ronald J. Eidson 3239 DSR PROFESSIONAL SURVEYOR W.O.: 12.11.0151</p>
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ATTACHMENT TO FORM 3160-3
COG Operating, LLC
SKELLY UNIT #739H
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6. Proposed Mud System

The well will be drilled to TD with a combination of fresh water, brine, cut brine and polymer mud systems. The applicable depths and properties of these systems are as follows:

DEPTH (MD)	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-488'	Fresh Water	8.5	28	N.C.
488'-1800'	Brine	10	30	N.C.
1800'-4723'	Cut Brine	8.7-9.2	30	N.C.
4723'-5481'	Cut Brine/polymer mud	8.7-9.2	30	N.C.
5481'-9616'	Cut Brine/polymer mud	8.7-9.2	30	N.C.

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

6. Proposed Casing Program

Hole Size	Interval MD	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 1/2"	0-488'	13 3/8"	48#	H-40/J-55 Hybrid	New ST&C	ST&C	9.79/4.36/16.77
12 1/4"	488'- 1800'	9 5/8"	40#	J/K-55	New ST&C	ST&C	5.51/3.16/9.32
8 3/4"	1800'- 4723'	7"	26#	L-80	New LT&C	LT&C	2.07/2.71/4.73
8 3/4"	4723'- 5481'	5 1/2"	17#	L-80	New LT&C	LT&C	2.08/2.82/4.36
7 7/8"	5481'- 9616'	5 1/2"	17#	L-80	New LT&C	LT&C	2.08/2.82/4.36

Production string will be a tapered string with 7" 26# L-80 LTC run from surface to kick off point (4723') and then crossed over to 5 1/2" 17# L-80 LTC.

7. Proposed Cement Program

13 3/8" SURFACE:

Lead: 0'-488' 400 sks Class "C" w/2% CaCl₂ 1.32 cf/sk 14.8 ppg
Circulate to surface + 0.25 pps CF

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COG Operating, LLC
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9 5/8" INTERMEDIATE:

Option #1: Single Stage (Circulate to Surface)

Lead:	300 sks	50:50:10 C:Poz:Gel	2.45 cf/sk	11.8 ppg
0'-1200'		w/ 5% Salt+ 0.25% CF		

Tail:	200 sks	Class C w/2% CaCl2	1.32 cf/sk	14.8 ppg
1200'-1800'				

**Option #2: Multi-stage w/ DV Tool @ +/-538' (DV Tool 50' below 13 3/8" csg. Shoe)
(Circulate to Surface)**

Stage #1:	200 sks	Class "C" w/2% CaCl2	1.32 cf/sk	14.8 ppg
538'-1800'				

Stage #2				
0'-538'	300 sks	50:50:10 C:Poz:Gel w/5% salt+ 0.25% CF	2.45 cf/sk	11.8 ppg

Note: Multi-stage tool to be set depending on hole conditions at approximately 538' (50' below the surface casing shoe). Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

7" X 5 1/2" PRODUCTION CASING:

Option #1: Single Stage

DV Tool & ECP (external csg. Packer) @ 4723' KOP:

Lead:	500 sks	35:65:6 C:Poz Gel w/5%	2.05 cf/sk	12.5 ppg
1600'-2500'		salt+ 5 pps LCM+ 0.2 %		
(min. tie back 200')		SMS+ 0.3% FL-52A+		
(into inter. Csg)		0.125 pps CF+1 % BA-58+		
		1% FL-25		

Tail:	200 sks	50:50:2 C:Poz Gel w/5%	1.37 cf/sk	14.0 ppg
2500'-4723'		salt+ 3 pps LCM+ 0.6 %		
		SMS+ 0.3% FL-52A+		
		0.125 pps CF+1% FL-25+		
		1% BA-58		

Option #2: Multi-stage w/DV Tool & ECP@ +/-4723'

Stage #1:	500 sks	50:50:2 C:Poz Gel w/5%	1.37 cf/sk	14.0 ppg
1850'-4723'		salt+ 3 pps LCM+ 0.6 %		
		SMS+ 0.3% FL-52A+		
		0.125 pps CF+1% FL-25+ 1% BA-58		

See
COA

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COG Operating, LLC
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Stage #2: 2nd DV Tool @ 1850' (50' below 9 5/8" csg shoe)

Lead:	200 sks	50:50:2 C:Poz Gel w/5%	1.37 cf/sk	14.0 ppg
0'-1600'		salt+ 3 pps LCM+ 0.6 %		
(min. tie back 200')		SMS+ 0.3% FL-52A+		
(into inter. Csg)		0.125 pps CF+1% FL-25+		
		1% BA-58		
Tail:	200 sks	Class "C" w/0.3% R-3+	1.02 cf/sk	16.8 ppg
1600'-1850'		1.5% CD-32		

Note: Assumption for 2nd DV tool is water flow. Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

Note: FL-52A is fluid loss additive, R-3 is retarder.

Note: Multi-stage tool to be set depending on hole conditions at approximately 1850'
Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

8. Pressure Control Equipment:

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. A 13-5/8" BOP will be used during the drilling of the well. A 13 5/8" permanent casing head will be installed on the 13 3/8" casing. The BOP will be nipped up on the 13 5/8" permanent casing head and tested to 2000 psi. After setting 9-5/8", permanent "B section" well head will be installed and the BOP will then be nipped up on the permanent B section well head and tested by a third party to 2000 psi and used continuously until total depth is reached. 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. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve, choke lines and a choke manifold with a 2000 psi WP rating all of which will also be tested to working pressure by independent tester also.

9. Production Hole Drilling Summary:

Drill 8 3/4" hole and kick off at +/- 4723', building curve over +/- 758' to horizontal at 5481' MD/5200'TVD. Drill 7 7/8" lateral section in a easterly direction for +/-4621' lateral to TD at +/- 9616' MD, 5128' TVD. Run 7" x 5-1/2" production casing. 7" to be run from surface to kickoff point and then changed over to 5 1/2" with DV Tool and ECP at kickoff point. 5 1/2" casing will be run from kickoff point to td and isolation packers set throughout lateral. 7" to be cemented from kickoff point to surface.

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COG Operating, LLC
SKELLY UNIT #739H
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10. Auxiliary Well Control and Monitoring Equipment

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

11. Logging, Testing and Coring Program:

- A. The following logs will be run in the vertical portion of the hole to KOP: SLB-PEX/HRLA,HNGS.
- B. The mud logging program will consist of lagged 10' samples from KOP to TD in Horizontal hole.
- C. Drill Stem test is not anticipated.
- D. No conventional coring is anticipated.
- E. Further testing procedures will be determined after the 7" x 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

12. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole temperature at TD is 90 degrees and estimated maximum bottom hole pressure is 2288 psi. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, however an H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

13. Anticipated Starting Date

Drilling operations will commence approximately on September 30, 2012 with drilling and completion operations lasting approximately 90 days.

COG Operating LLC

Eddy County, NM

Skelly Unit 739H

Skelly Unit 739H

Wellbore #1

Plan: Plan #2

Standard Survey Report

11 May, 2012

Crescent Directional Drilling Survey Report

Client:	COG Operating LLC	Local Coordinates:	Site Skelly Unit 739H
Location:	Eddy County, NM	TVL:	WELL @ 3836.00ft (Original Well Elev)
Well:	Skelly Unit 739H	Log Interval:	WELL @ 3836.00ft (Original Well Elev)
Plan:	Skelly Unit 739H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Method:	Minimum Curvature
Plan #:	Plan #2	Database:	R5000 Houston DB

Project:	Eddy County, NM	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Skelly Unit 739H				
Site Position:		Northing:	660,927 00 ft	Latitude:	32 816095
From:	Map	Easting:	644,044 50 ft	Longitude:	-103 864472
Position Uncertainty:	0 00' ft	Slot Radius:	13 200 in	Grid Convergence:	0 25 °

Well:	Skelly Unit 739H					
Well Position	+N/-S	0 00 ft	Northing:	660,927 00 ft	Latitude:	32.816095
	+E/-W	0 00 ft	Easting:	644,044.50 ft	Longitude:	-103.864472
Position Uncertainty		0 00 ft	Wellhead Elevation:	ft	Ground Level:	3,818 00 ft

Wellbore:	Wellbore #1				
Wellbore Name	Sample Date	Declination	Dip Angle	Plan Strength	
		(°)	(°)	(mT)	
IGRF2010	5/10/2012	7.66	60.66	48,847	

Design:	Plan #2				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0 00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0 00	0 00	0 00	89 88	

Survey Tool Program:	Date:	5/11/2012			
From:	To:	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
0 00	9,616 29	Plan #2 (Wellbore #1)	Good_mag	Good Magnetic	

Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)
4,722.61	0 00	0 00	4,722 61	0 00	0 00	0 00	0 00	0.00	0 00
KOP - Start Build @ 12.00°/100'									
4,800 00	9 29	89 88	4,799 66	0.01	6 26	6 26	12 00	12 00	0 00
4,900.00	21 29	89 88	4,895.95	0 07	32 58	32 58	12 00	12 00	0 00
5,000.00	33 29	89 88	4,984 66	0 17	78 34	78 34	12.00	12.00	0 00
5,100 00	45 29	89 88	5,081 91	0 30	141.54	141 54	12.00	12 00	0 00
5,200 00	57 29	89 88	5,124 34	0 47	219.43	219 43	12 00	12 00	0 00
5,300 00	69 29	89 88	5,169 21	0.66	308 59	308.59	12 00	12 00	0.00
5,400 00	81 29	89 88	5,194.56	0 87	405 13	405 13	12 00	12 00	0 00
5,480 94	91 00	89.88	5,200 00	1.04	485 80	485 80	12 00	12 00	0 00

Crescent Directional Drilling

Survey Report

Client: COG Operating LLC	Logistics: Skelly Unit 739H	Site: Skelly Unit 739H
Location: Eddy County, NM	Well: WELL @ 3836.00ft (Original Well Elev)	Well: WELL @ 3836.00ft (Original Well Elev)
Well: Skelly Unit 739H	Grid:	Grid:
Wellbore #1	Minimum Curvature	Minimum Curvature
Plan #2	R5000 Houston DB	R5000 Houston DB

Depth (ft)	True North (°)	True East (°)	Depth (ft)	True North (°)	True East (°)	Depth (ft)	True North (°)	True East (°)	Depth (ft)
Landing Point - Hold @ 91.00° INC, 89.88° AZ									
5,500.00	91.00	89.88	5,199.67	1.08	504.85	504.85	0.00	0.00	0.00
5,600.00	91.00	89.88	5,197.92	1.30	604.84	604.84	0.00	0.00	0.00
5,700.00	91.00	89.88	5,196.18	1.51	704.82	704.82	0.00	0.00	0.00
5,800.00	91.00	89.88	5,194.43	1.72	804.80	804.81	0.00	0.00	0.00
5,900.00	91.00	89.88	5,192.69	1.94	904.79	904.79	0.00	0.00	0.00
6,000.00	91.00	89.88	5,190.94	2.15	1,004.77	1,004.78	0.00	0.00	0.00
6,100.00	91.00	89.88	5,189.20	2.37	1,104.76	1,104.76	0.00	0.00	0.00
6,200.00	91.00	89.88	5,187.45	2.58	1,204.74	1,204.75	0.00	0.00	0.00
6,300.00	91.00	89.88	5,185.71	2.80	1,304.73	1,304.73	0.00	0.00	0.00
6,400.00	91.00	89.88	5,183.96	3.01	1,404.71	1,404.71	0.00	0.00	0.00
6,500.00	91.00	89.88	5,182.22	3.22	1,504.70	1,504.70	0.00	0.00	0.00
6,600.00	91.00	89.88	5,180.47	3.44	1,604.68	1,604.68	0.00	0.00	0.00
6,700.00	91.00	89.88	5,178.73	3.65	1,704.67	1,704.67	0.00	0.00	0.00
6,800.00	91.00	89.88	5,176.98	3.87	1,804.65	1,804.65	0.00	0.00	0.00
6,900.00	91.00	89.88	5,175.24	4.08	1,904.63	1,904.64	0.00	0.00	0.00
7,000.00	91.00	89.88	5,173.49	4.30	2,004.62	2,004.62	0.00	0.00	0.00
7,100.00	91.00	89.88	5,171.75	4.51	2,104.60	2,104.61	0.00	0.00	0.00
7,200.00	91.00	89.88	5,170.00	4.72	2,204.59	2,204.59	0.00	0.00	0.00
7,300.00	91.00	89.88	5,168.25	4.94	2,304.57	2,304.58	0.00	0.00	0.00
7,400.00	91.00	89.88	5,166.51	5.15	2,404.56	2,404.56	0.00	0.00	0.00
7,500.00	91.00	89.88	5,164.76	5.37	2,504.54	2,504.55	0.00	0.00	0.00
7,600.00	91.00	89.88	5,163.02	5.58	2,604.53	2,604.53	0.00	0.00	0.00
7,700.00	91.00	89.88	5,161.27	5.79	2,704.51	2,704.52	0.00	0.00	0.00
7,800.00	91.00	89.88	5,159.53	6.01	2,804.50	2,804.50	0.00	0.00	0.00
7,900.00	91.00	89.88	5,157.78	6.22	2,904.48	2,904.49	0.00	0.00	0.00
8,000.00	91.00	89.88	5,156.04	6.44	3,004.46	3,004.47	0.00	0.00	0.00
8,100.00	91.00	89.88	5,154.29	6.65	3,104.45	3,104.46	0.00	0.00	0.00
8,200.00	91.00	89.88	5,152.55	6.87	3,204.43	3,204.44	0.00	0.00	0.00
8,300.00	91.00	89.88	5,150.80	7.08	3,304.42	3,304.43	0.00	0.00	0.00
8,400.00	91.00	89.88	5,149.06	7.29	3,404.40	3,404.41	0.00	0.00	0.00
8,500.00	91.00	89.88	5,147.31	7.51	3,504.39	3,504.40	0.00	0.00	0.00
8,600.00	91.00	89.88	5,145.57	7.72	3,604.37	3,604.38	0.00	0.00	0.00
8,700.00	91.00	89.88	5,143.82	7.94	3,704.36	3,704.36	0.00	0.00	0.00
8,800.00	91.00	89.88	5,142.08	8.15	3,804.34	3,804.35	0.00	0.00	0.00
8,900.00	91.00	89.88	5,140.33	8.37	3,904.33	3,904.33	0.00	0.00	0.00
9,000.00	91.00	89.88	5,138.59	8.58	4,004.31	4,004.32	0.00	0.00	0.00
9,100.00	91.00	89.88	5,136.84	8.79	4,104.29	4,104.30	0.00	0.00	0.00
9,200.00	91.00	89.88	5,135.10	9.01	4,204.28	4,204.29	0.00	0.00	0.00
9,300.00	91.00	89.88	5,133.35	9.22	4,304.26	4,304.27	0.00	0.00	0.00
9,400.00	91.00	89.88	5,131.60	9.44	4,404.25	4,404.26	0.00	0.00	0.00
9,500.00	91.00	89.88	5,129.86	9.65	4,504.23	4,504.24	0.00	0.00	0.00
9,600.00	91.00	89.88	5,128.11	9.87	4,604.22	4,604.23	0.00	0.00	0.00
9,618.29	91.00	89.88	5,127.83	9.90	4,620.50	4,620.51	0.00	0.00	0.00

Crescent Directional Drilling Survey Report

Client:	COG Operating LLC	Location:	Site Skelly Unit 739H
County:	Eddy County, NM	Well Name:	WELL @ 3836.00ft (Original Well Elev)
Well:	Skelly Unit 739H	Well ID:	WELL @ 3836.00ft (Original Well Elev)
Wellbore:	Wellbore #1	Grid:	Minimum Curvature
Plan:	Plan #2	Projection:	R5000 Houston DB

Station	Interval	Depth	MD	TVL	SLR	Vertical	Depth	SLR	Turn
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
TD @ 9616.29' MD, 5127.83' TVD - PBHL (Skelly Unit 739H Plan 2)									

Station	Dip Angle	Dip Dir	TVD	MD	SLR	Horizontal	Easting	Latitude	Longitude
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
PBHL (Skelly Unit 739H)	0.00	0.00	5,127.83	9.90	4,620.50	660,936.90	648,665.00	32.816065	-103.849433
- plan hits target center									
- Point									

Station	Depth	Local Deviation	SLR	Comment
(ft)	(ft)	(ft)	(ft)	
4723	4723	0	0	KOP - Start Build @ 12.00°/100°
5481	5200	1	486	Landing Point - Hold @ 91.00° INC, 89.88° AZ
9616	5128	10	4821	TD @ 9616.29' MD, 5127.83' TVD

Checked By: _____	Approved By: _____	Date: _____
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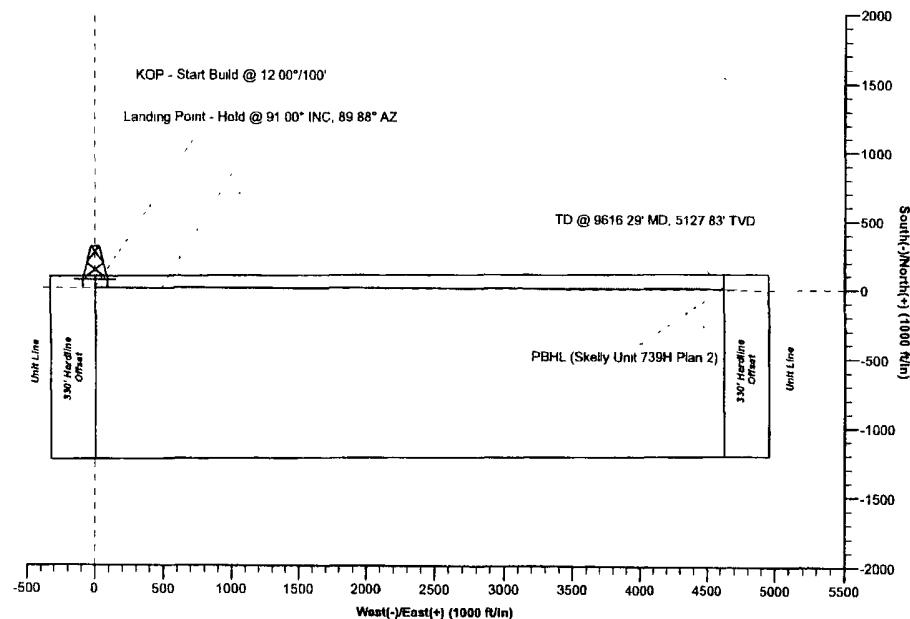
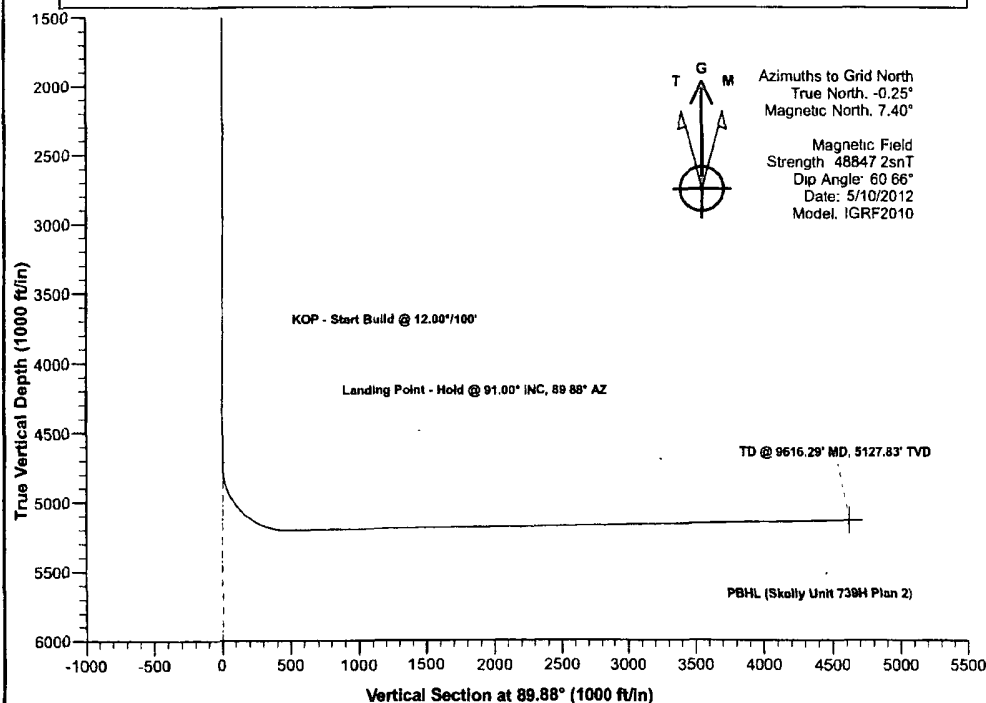
COG Operating LLC
Skelly Unit 739H
Eddy County, NM
Plan #2



Surface Location		Ground Elev: 3818.00 WELL @ 3836.00ft (Original Well Elev)			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	660927.00	644044.50	32.816095	-103.864472

TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (Skelly Unit 739H Plan 2)	5127.83	9.90	4620.50	660936.90	648665.00	32.816065	-103.849432

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dlog	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4722.61	0.00	0.00	4722.61	0.00	0.00	0.00	0.00	0.00	KOP - Start Build @ 12.00°/100°
3	5480.94	91.00	89.88	5200.00	1.04	485.80	12.00	89.88	485.80	Landing Point - Hold @ 91.00° INC, 89.88° AZ
4	9616.29	91.00	89.88	5127.83	9.90	4620.50	0.00	0.00	4620.51	TD @ 9616.29' MD, 5127.83' TVD



ATTACHMENT TO FORM 3160-3
COG Operating, LLC
SKELLY UNIT #739H
SHL: 1237' FSL & 330' FWL, Unit M
BHL: 1215' FSL & 330' FEL, Unit P
Sec 22, T17S, R31E
Eddy County, NM

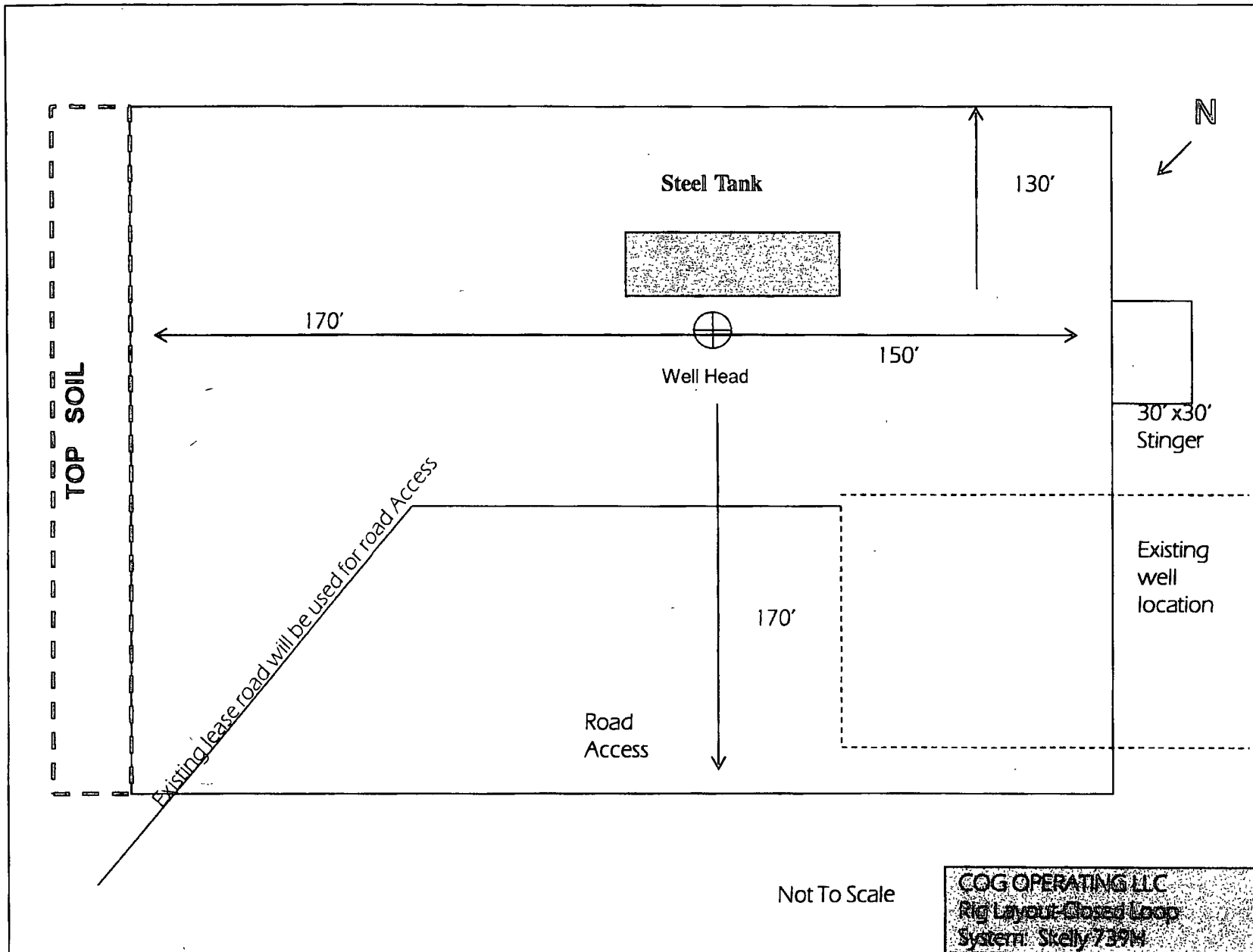
1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3818'
3. Proposed Depths: Horizontal TVD = 5200', MD =9616'
4. Estimated tops of geological markers:

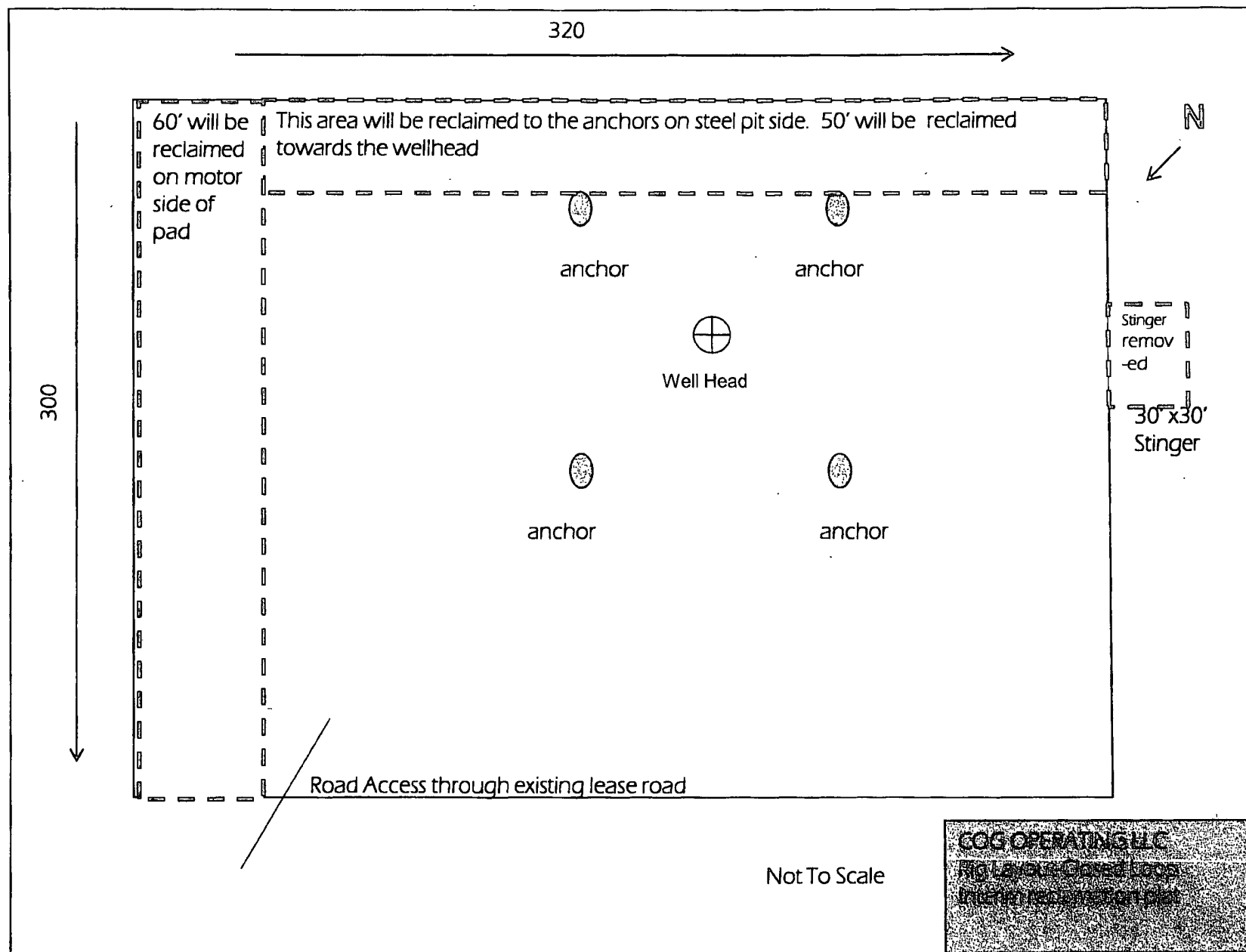
Rustler	463'
Top of Salt	737'
Base of Salt	1611'
Yates	1766'
Seven Rivers	2126'
Queen	2776'
Grayburg	3124'
San Andres	3542'
Glorieta	4995'
Paddock	5077'
Blinberry	6099'
Tubb	6676'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Grayburg	3124'	Oil/Gas
San Andres	3542'	Oil/Gas
Glorieta	4995'	Oil/Gas
Paddock	5077'	Oil/Gas
Blinberry	6099'	Oil/Gas
Tubb	6676'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 488' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 9 5/8" casing to 1800' and circulating cement back to surface in a single or multi-stage job and/or with an ECP. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them or be isolated by external casing packers. This will be achieved by cementing from the KOP by single or multi-stage job using ECP & DV Tools as necessary. The 7" portion of the tapered 7" x 5 1/2" production casing will be cemented back to a minimum of 200' into the intermediate casing (although cement volume is actually calculated to surface). At the KOP the 7" casing will be tapered to 5 1/2" casing which will be run thru curve and lateral with external packers for zone isolation. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.





Conditions of Approval

Skelly Unit 739H

30-015-38343

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

1. A Hydrogen Sulfide (H₂S) Drilling Plan should be activated 500 feet prior to drilling into the Grayburg formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. **The record of the drilling rate along with the GR/N well log run from TD to surface will be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#).

Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possible water and brine flows in the Salado and Artesia Group.

Possible lost circulation in the Grayburg and San Andres formations.

1. The 13-3/8 inch surface casing shall be set at approximately 488 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:

☒ As proposed. If cement does not circulate see B.1.a, c-d above.

Operator has proposed DV tool at depth of 538', but will adjust cement proportionately if moved. DV tool SHALL be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

- a. First stage to DV tool:
 - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage. **Additional cement may be required – excess calculates to -32%.**
 - b. Second stage above DV tool:
 - ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.
3. The minimum required fill of cement behind the 7 X 5-1/2 inch production casing is: (Casing will be cemented from KOP through a DV Tool, the lateral will be uncemented)
- ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Operator has proposed DV tool at depth of 1850', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

- a. First stage to DV tool:
 - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve tie-back on the next stage.
 - b. Second stage above DV tool:
 - ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Proposed blowout preventer (BOP) and related equipment (BOPE) meets minimum requirement.
 - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips or where the float does not hold, the minimum wait time before cut-off is eight hours after bumping the plug or when the cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. BOP/BOPE testing can begin after the above conditions are satisfied.
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
 - c. The results of the test shall be reported to the appropriate BLM office.
 - d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
 - e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

CRW 081312

Rate/Time Graph

Project: C:\Program Files\IHS Energy\PowerTools v9.0\Projects\Eds well project.mdb

Date: 8/13/2012

Time: 10:42 AM

Lease Name: THISTLE UNIT (32H)

County, ST: LEA, NM

Location: S23 E33 33

Operator: DEVON ENERGY CORPORATION

Field Name: BRINNINSTOOL

THISTLE UNIT - BRINNINSTOOL 30025400160000 DELAWARE THISTLE UNIT (32H)

