

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 394-6161 Fax (575) 391-0720

DISTRICT II
811 S. First St., Artesia, NM 87010
Phone (505) 748-1283 Fax (505) 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) 476-1462

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 30-015-41273	Pool Code 96718	Pool Name Loco Hills; Glorieta Yaso
Property Code 302524	Property Name MCINTYRE DK FEDERAL COM	Well Number 28H
OGRID No 229137	Operator Name COG OPERATING, LLC	Elevation 3646'

Surface Location

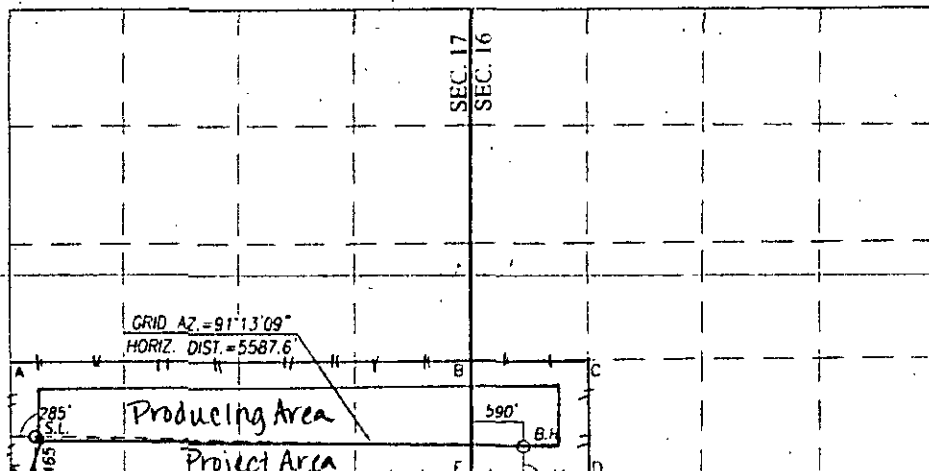
UL or lot No	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	17	17-S	30-E		465	SOUTH	285	WEST	EDDY

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
M	16	17-S	30-E		330	SOUTH	590	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No
200			

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



OPERATOR CERTIFICATION

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.

Signature *[Signature]* Date **3-14-16**

Printed Name **Kelly J Holly**

E-mail Address **kholly@concho.com**

SURVEYOR CERTIFICATION

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.

SEPTEMBER 10, 2011

Date of Survey **SEPTEMBER 10, 2011**
Signature *[Signature]* Seal of Professional Surveyor.



[Signature] **01/06/2016**
Certificate No. **12641**
Ronald J. Eidson **3239**

ACK REL W.O. 1415157 JWSK W.O. 1613 0009

GEODEIC COORDINATES

NAD 27 NME
SURFACE LOCATION
Y=665262.2 N
X=601988.9 E
LAT.=32.828452° N
LONG.=104.001312° W

CORNER COORDINATES TABLE

NAD 27 NME
A - Y= 666116.7 N, X= 601700.9 E
B - Y= 666132.7 N, X= 606980.5 E
C - Y= 666135.0 N, X= 608301.6 E
D - Y= 664814.6 N, X= 608306.2 E
E - Y= 664812.4 N, X= 606985.3 E
F - Y= 664796.4 N, X= 601705.4 E

GEODEIC COORDINATES

NAD 27 NME
BOTTOM HOLE LOCATION
Y=665143.2 N
X=607573.9 E
LAT.=32.828076° N
LONG.=103.983132° W

GEODEIC COORDINATES

NAD 83 NME
SURFACE LOCATION
Y=665325.7 N
X=643167.9 E
LAT.=32.828568° N
LONG.=104.001820° W

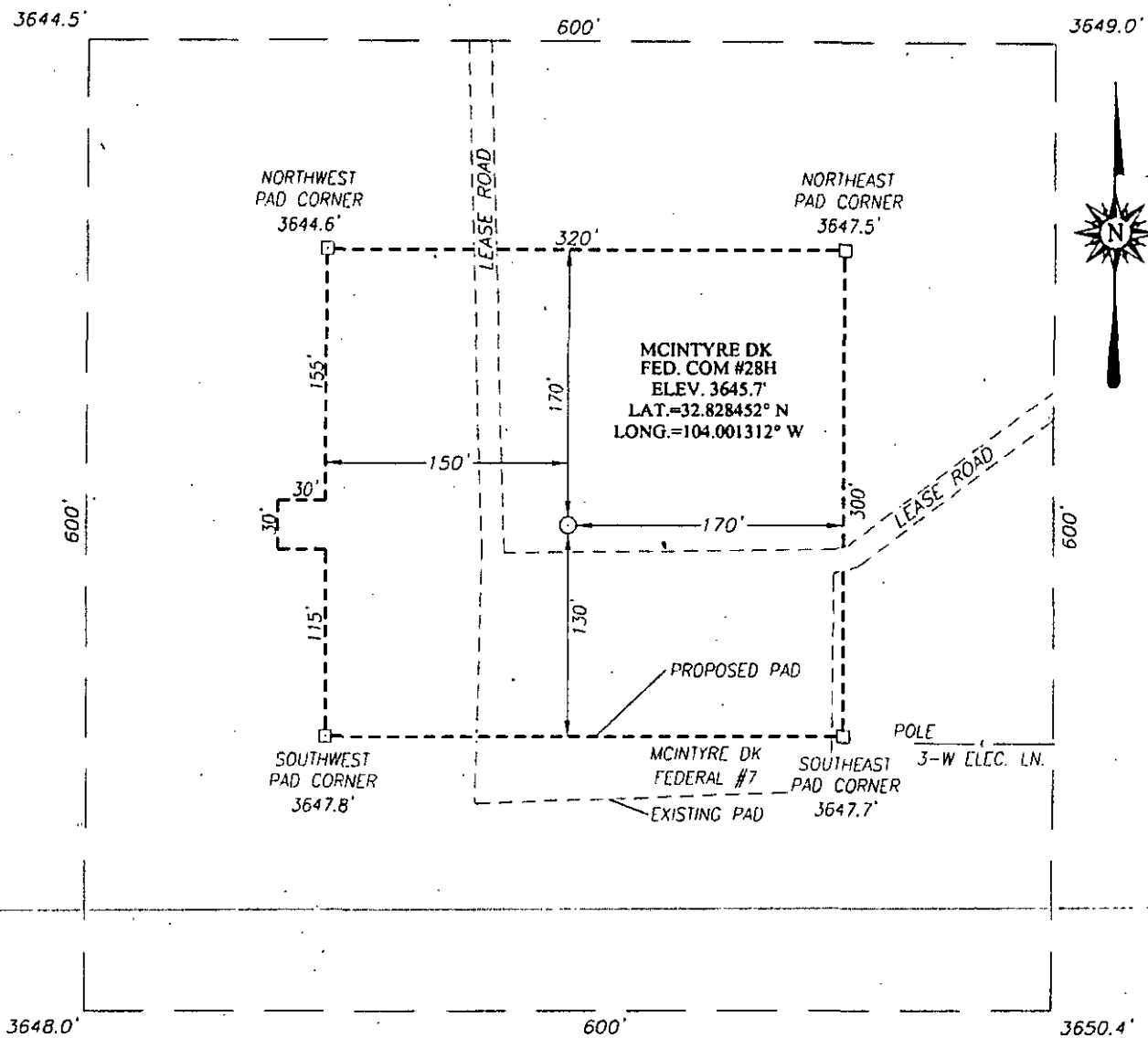
CORNER COORDINATES TABLE

NAD 83 NME
A - Y= 666180.2 N, X= 642879.9 E
B - Y= 666196.2 N, X= 648159.4 E
C - Y= 666198.6 N, X= 649480.5 E
D - Y= 664878.1 N, X= 649485.1 E
E - Y= 664875.9 N, X= 648164.2 E
F - Y= 664859.9 N, X= 642884.4 E

GEODEIC COORDINATES

NAD 83 NME
BOTTOM HOLE LOCATION
Y=665206.8 N
X=648752.9 E
LAT.=32.828192° N
LONG.=103.983640° W

WELL SITE PLAN



NOTE:

1) SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP" FOR PROPOSED ROAD LOCATION.

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #82 AND CO. RD. #217
(HAGERMAN CUTOFF) GO NORTH ON CO. RD. #217 APPROX. 0.6
MILES. TURN LEFT AND GO WEST APPROX. 0.8 MILES TO THE
MCINTYRE DK FEDERAL #7 WELL PAD. THE LOCATION STAKE IS
APPROX. 142 FEET NORTHWEST OF WELL HEAD.

PROVIDING SURVEYING SERVICES
SINCE 1946

JOHN WEST SURVEYING COMPANY

412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

COG OPERATING, LLC

MCINTYRE DK FEDERAL COM #28H WELL
LOCATED 465 FEET FROM THE SOUTH LINE
AND 285 FEET FROM THE WEST LINE OF SECTION 17,
TOWNSHIP 17 SOUTH, RANGE 30 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 9/10/11

CAD Date: 1/06/16

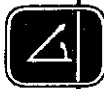
Drawn By: ACK

W.O. No.: 16130009

Rev: .

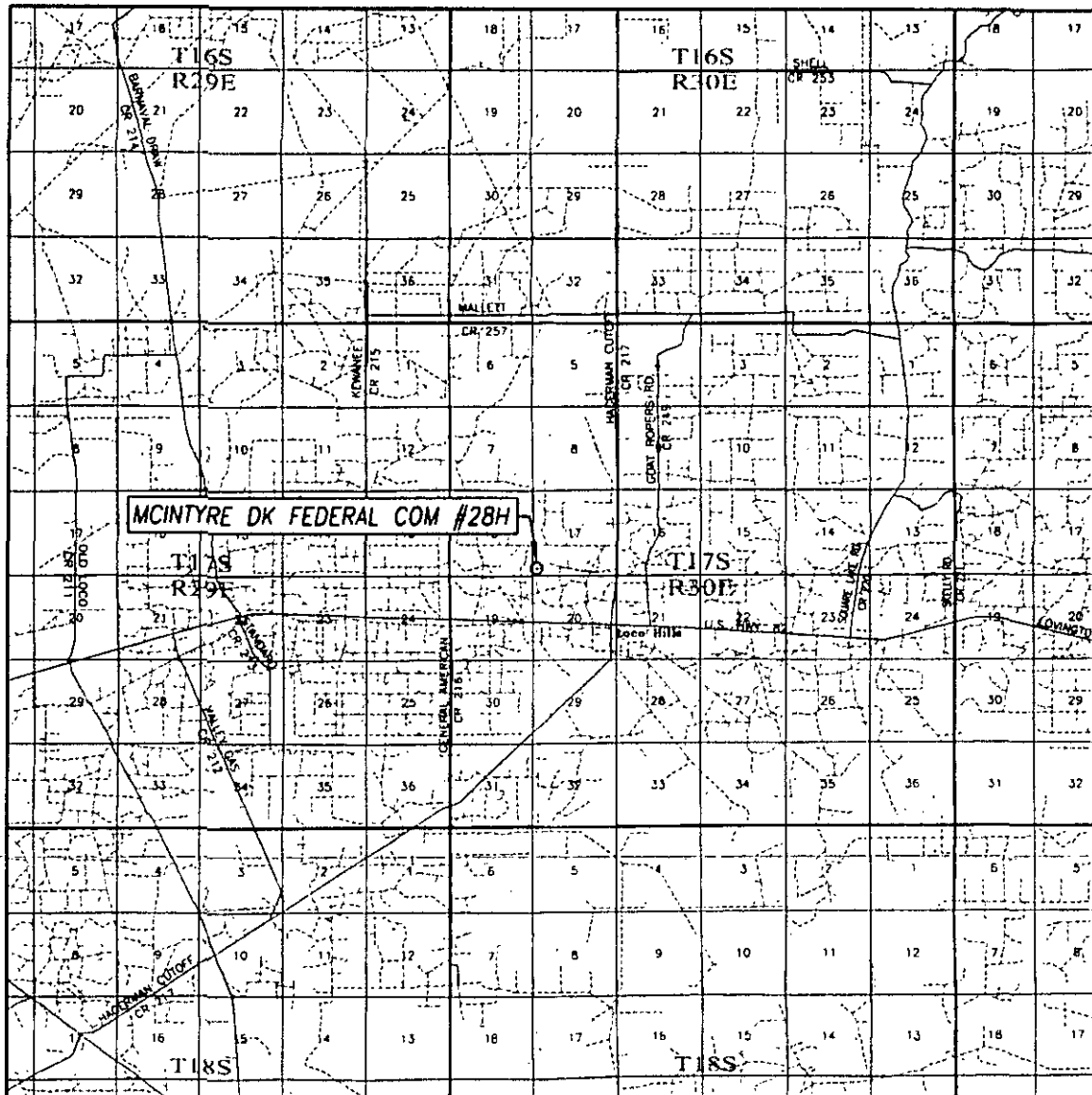
Ref. W.O.:14131153

Sheet 1 of 1



© DRAFT\

VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE TOPOGRAPHICAL AND ACCESS ROAD MAP

SEC. 17 TWP. 17-S RGE. 30-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 465' FSL & 285' FWL

ELEVATION 3646'

OPERATOR COG OPERATING, LLC

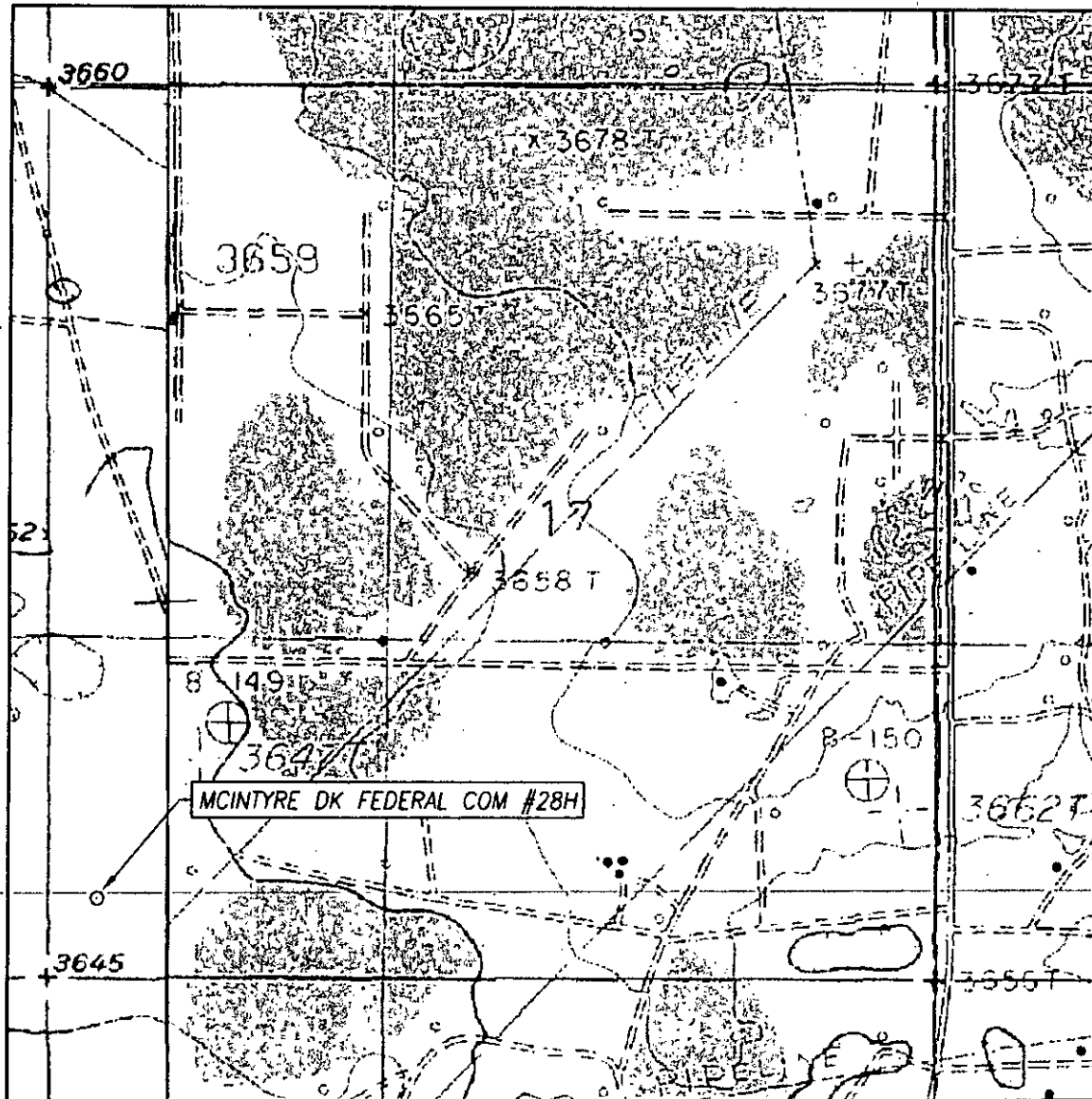
LEASE MCINTYRE DK FEDERAL COM

PROVIDING SURVEYING SERVICES
SINCE 1946

JOHN WEST SURVEYING COMPANY

412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

TOPOGRAPHICAL AND ACCESS ROAD MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
LOCO HILLS, N.M. - 10'

SEC. 7 TWP. 17-S RGE. 30-E
SURVEY N.M.P.M.
COUNTY EDDY STATE NEW MEXICO
DESCRIPTION 465' FSL & 285' FWL
ELEVATION 3646'

OPERATOR COG-OPERATING, LLC
LEASE MCINTYRE DK FEDERAL COM
U.S.G.S. TOPOGRAPHIC MAP
LOCO HILLS, N.M.

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #82 AND CO. RD. #217 (HAGERMAN CUTOFF) GO NORTH ON CO. RD. #217 APPROX. 0.6 MILES. TURN LEFT AND GO WEST APPROX. 0.8 MILES TO THE MCINTYRE DK FEDERAL #7 WELL PAD. THE LOCATION STAKE IS APPROX. 142 FEET NORTHWEST OF WELL HEAD.



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TBPLS# 10021000



COG Operating LLC

Eddy County, NM (NAD-27 2015)

McIntyre DK Federal Com #28H

SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M

PP: 464' FSL, 330' FWL, Sec 17, T17S, R30E, Unit M

BHL: 330' FSL, 590' FWL, Sec 16, T17S, R30E, Unit M

Plan: Design #1

Standard Planning Report

03 February, 2016



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M
Company:	COG Operating LLC	TVD Reference:	KB @ 3664.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3664.00usft (Silver Oak 3)
Site:	McIntyre DK Federal Com #28H	North Reference:	Grid
Well:	SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330' FSL, 590' FWL, Sec 16, T17S, R30E, Unit M		
Design:	Design #1		

Project	Eddy County, NM (NAD-27 2015)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	McIntyre DK Federal Com #28H			
Site Position:		Northing:	665,262.20 usft	Latitude: 32° 49' 42.428 N
From: Map		Easting:	601,988.90 usft	Longitude: 104° 0' 4.724 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence: 0.18 °

Well	SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M			
Well Position	+N/-S	0.00 usft	Northing:	665,262.20 usft
	+E/-W	0.00 usft	Easting:	601,988.90 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 3,646.00 usft

Wellbore	BHL: 330' FSL, 590' FWL, Sec 16, T17S, R30E, Unit M			
Magnetics	Model Name	Sample Date	Declination	Dip Angle
	IGRF2015	1/26/2016	7.35	60.56
				Field Strength (nT) 48,393

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	91.22

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,472.61	0.00	0.00	4,472.61	0.00	0.00	0.00	0.00	0.00	0.00	
5,230.94	91.00	91.22	4,950.00	-10.35	485.69	12.00	12.00	12.03	91.22	
10,332.19	91.00	91.22	4,860.97	-119.00	5,585.00	0.00	0.00	0.00	0.00	PBHL (MDFC #28H/L)

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M
Company:	COG Operating LLC	TVD Reference:	KB @ 3664.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3664.00usft (Silver Oak 3)
Site:	McIntyre DK Federal Com #28H	North Reference:	Grid
Well:	SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330' FSL, 590' FWL, Sec 16, T17S, R30E, Unit M		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,472.61	0.00	0.00	4,472.61	0.00	0.00	0.00	0.00	0.00	0.00
KOP - Start DLS 12.00 TFO 91.22									
4,475.00	0.29	91.22	4,475.00	0.00	0.01	0.01	12.00	12.00	0.00
4,500.00	3.29	91.22	4,499.99	-0.02	0.79	0.79	12.00	12.00	0.00
4,525.00	6.29	91.22	4,524.90	-0.06	2.87	2.87	12.00	12.00	0.00
4,550.00	9.29	91.22	4,549.66	-0.13	6.26	6.26	12.00	12.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M
Company:	COG Operating LLC	TVD Reference:	KB @ 3664.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3664.00usft (Silver Oak 3)
Site:	McIntyre DK Federal Com #28H	North Reference:	Grid
Well:	SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330' FSL, 590' FWL, Sec 16, T17S, R30E, Unit M		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,575.00	12.29	91.22	4,574.22	-0.23	10.93	10.94	12.00	12.00	0.00
4,600.00	15.29	91.22	4,598.49	-0.36	16.89	16.89	12.00	12.00	0.00
4,625.00	18.29	91.22	4,622.43	-0.51	24.11	24.11	12.00	12.00	0.00
4,650.00	21.29	91.22	4,645.95	-0.69	32.57	32.58	12.00	12.00	0.00
4,675.00	24.29	91.22	4,668.99	-0.90	42.25	42.26	12.00	12.00	0.00
4,700.00	27.29	91.22	4,691.50	-1.13	53.12	53.13	12.00	12.00	0.00
4,725.00	30.29	91.22	4,713.41	-1.39	65.15	65.17	12.00	12.00	0.00
4,750.00	33.29	91.22	4,734.66	-1.67	78.32	78.34	12.00	12.00	0.00
4,775.00	36.29	91.22	4,755.19	-1.97	92.58	92.60	12.00	12.00	0.00
4,800.00	39.29	91.22	4,774.94	-2.30	107.89	107.91	12.00	12.00	0.00
4,825.00	42.29	91.22	4,793.87	-2.65	124.21	124.24	12.00	12.00	0.00
4,850.00	45.29	91.22	4,811.91	-3.02	141.51	141.54	12.00	12.00	0.00
4,875.00	48.29	91.22	4,829.03	-3.40	159.72	159.76	12.00	12.00	0.00
4,900.00	51.29	91.22	4,845.17	-3.81	178.81	178.85	12.00	12.00	0.00
4,925.00	54.29	91.22	4,860.29	-4.23	198.71	198.76	12.00	12.00	0.00
4,950.00	57.29	91.22	4,874.34	-4.67	219.38	219.43	12.00	12.00	0.00
4,975.00	60.29	91.22	4,887.30	-5.13	240.75	240.81	12.00	12.00	0.00
5,000.00	63.29	91.22	4,899.11	-5.60	262.77	262.83	12.00	12.00	0.00
5,025.00	66.29	91.22	4,909.76	-6.08	285.38	285.45	12.00	12.00	0.00
5,050.00	69.29	91.22	4,919.21	-6.57	308.52	308.59	12.00	12.00	0.00
5,075.00	72.29	91.22	4,927.44	-7.08	332.12	332.19	12.00	12.00	0.00
5,100.00	75.29	91.22	4,934.42	-7.59	356.12	356.20	12.00	12.00	0.00
5,125.00	78.29	91.22	4,940.13	-8.11	380.45	380.53	12.00	12.00	0.00
5,150.00	81.29	91.22	4,944.56	-8.63	405.04	405.13	12.00	12.00	0.00
5,175.00	84.29	91.22	4,947.70	-9.16	429.84	429.93	12.00	12.00	0.00
5,200.00	87.29	91.22	4,949.54	-9.69	454.76	454.86	12.00	12.00	0.00
5,225.00	90.29	91.22	4,950.07	-10.22	479.75	479.85	12.00	12.00	0.00
5,230.94	91.00	91.22	4,950.00	-10.35	485.69	485.80	12.00	12.00	0.00
EOC - Start 5101.25 hold at 5230.94 MD									
5,300.00	91.00	91.22	4,948.80	-11.82	554.72	554.84	0.00	0.00	0.00
5,400.00	91.00	91.22	4,947.05	-13.95	654.68	654.83	0.00	0.00	0.00
5,500.00	91.00	91.22	4,945.31	-16.08	754.64	754.81	0.00	0.00	0.00
5,600.00	91.00	91.22	4,943.56	-18.21	854.60	854.80	0.00	0.00	0.00
5,700.00	91.00	91.22	4,941.82	-20.34	954.57	954.78	0.00	0.00	0.00
5,800.00	91.00	91.22	4,940.07	-22.47	1,054.53	1,054.77	0.00	0.00	0.00
5,900.00	91.00	91.22	4,938.33	-24.60	1,154.49	1,154.75	0.00	0.00	0.00
6,000.00	91.00	91.22	4,936.58	-26.73	1,254.45	1,254.74	0.00	0.00	0.00
6,100.00	91.00	91.22	4,934.83	-28.86	1,354.41	1,354.72	0.00	0.00	0.00
6,200.00	91.00	91.22	4,933.09	-30.99	1,454.38	1,454.71	0.00	0.00	0.00
6,300.00	91.00	91.22	4,931.34	-33.12	1,554.34	1,554.69	0.00	0.00	0.00
6,400.00	91.00	91.22	4,929.60	-35.25	1,654.30	1,654.68	0.00	0.00	0.00
6,500.00	91.00	91.22	4,927.85	-37.38	1,754.26	1,754.66	0.00	0.00	0.00
6,600.00	91.00	91.22	4,926.11	-39.51	1,854.23	1,854.65	0.00	0.00	0.00
6,700.00	91.00	91.22	4,924.36	-41.64	1,954.19	1,954.63	0.00	0.00	0.00
6,800.00	91.00	91.22	4,922.62	-43.77	2,054.15	2,054.62	0.00	0.00	0.00
6,900.00	91.00	91.22	4,920.87	-45.90	2,154.11	2,154.60	0.00	0.00	0.00
7,000.00	91.00	91.22	4,919.13	-48.03	2,254.07	2,254.59	0.00	0.00	0.00
7,100.00	91.00	91.22	4,917.38	-50.16	2,354.04	2,354.57	0.00	0.00	0.00
7,200.00	91.00	91.22	4,915.64	-52.29	2,454.00	2,454.55	0.00	0.00	0.00
7,300.00	91.00	91.22	4,913.89	-54.42	2,553.96	2,554.54	0.00	0.00	0.00
7,400.00	91.00	91.22	4,912.15	-56.55	2,653.92	2,654.52	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M
Company:	COG Operating LLC	TVD Reference:	KB @ 3664.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3664.00usft (Silver Oak 3)
Site:	McIntyre DK Federal Com #28H	North Reference:	Grid
Well:	SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330' FSL, 590' FWL, Sec 16, T17S, R30E, Unit M		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,500.00	91.00	91.22	4,910.40	-58.68	2,753.88	2,754.51	0.00	0.00	0.00
7,600.00	91.00	91.22	4,908.66	-60.81	2,853.85	2,854.49	0.00	0.00	0.00
7,700.00	91.00	91.22	4,906.91	-62.94	2,953.81	2,954.48	0.00	0.00	0.00
7,800.00	91.00	91.22	4,905.16	-65.07	3,053.77	3,054.46	0.00	0.00	0.00
7,900.00	91.00	91.22	4,903.42	-67.20	3,153.73	3,154.45	0.00	0.00	0.00
8,000.00	91.00	91.22	4,901.67	-69.33	3,253.69	3,254.43	0.00	0.00	0.00
8,100.00	91.00	91.22	4,899.93	-71.46	3,353.66	3,354.42	0.00	0.00	0.00
8,200.00	91.00	91.22	4,898.18	-73.59	3,453.62	3,454.40	0.00	0.00	0.00
8,300.00	91.00	91.22	4,896.44	-75.72	3,553.58	3,554.39	0.00	0.00	0.00
8,400.00	91.00	91.22	4,894.69	-77.85	3,653.54	3,654.37	0.00	0.00	0.00
8,500.00	91.00	91.22	4,892.95	-79.98	3,753.50	3,754.36	0.00	0.00	0.00
8,600.00	91.00	91.22	4,891.20	-82.11	3,853.47	3,854.34	0.00	0.00	0.00
8,700.00	91.00	91.22	4,889.46	-84.24	3,953.43	3,954.33	0.00	0.00	0.00
8,800.00	91.00	91.22	4,887.71	-86.37	4,053.39	4,054.31	0.00	0.00	0.00
8,900.00	91.00	91.22	4,885.97	-88.50	4,153.35	4,154.30	0.00	0.00	0.00
9,000.00	91.00	91.22	4,884.22	-90.63	4,253.32	4,254.28	0.00	0.00	0.00
9,100.00	91.00	91.22	4,882.48	-92.76	4,353.28	4,354.27	0.00	0.00	0.00
9,200.00	91.00	91.22	4,880.73	-94.89	4,453.24	4,454.25	0.00	0.00	0.00
9,300.00	91.00	91.22	4,878.99	-97.02	4,553.20	4,554.23	0.00	0.00	0.00
9,400.00	91.00	91.22	4,877.24	-99.15	4,653.16	4,654.22	0.00	0.00	0.00
9,500.00	91.00	91.22	4,875.50	-101.28	4,753.13	4,754.20	0.00	0.00	0.00
9,600.00	91.00	91.22	4,873.75	-103.41	4,853.09	4,854.19	0.00	0.00	0.00
9,700.00	91.00	91.22	4,872.00	-105.53	4,953.05	4,954.17	0.00	0.00	0.00
9,800.00	91.00	91.22	4,870.26	-107.66	5,053.01	5,054.16	0.00	0.00	0.00
9,900.00	91.00	91.22	4,868.51	-109.79	5,152.97	5,154.14	0.00	0.00	0.00
10,000.00	91.00	91.22	4,866.77	-111.92	5,252.94	5,254.13	0.00	0.00	0.00
10,100.00	91.00	91.22	4,865.02	-114.05	5,352.90	5,354.11	0.00	0.00	0.00
10,200.00	91.00	91.22	4,863.28	-116.18	5,452.86	5,454.10	0.00	0.00	0.00
10,300.00	91.00	91.22	4,861.53	-118.31	5,552.82	5,554.08	0.00	0.00	0.00
10,332.19	91.00	91.22	4,860.97	-119.00	5,585.00	5,586.27	0.00	0.00	0.00

TD at 10332.19

Design Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude Longitude
KOP (MDFC #28H/L1 D)	- plan hits target center	0.00	0.00	4,472.61	0.00	0.00	665,262.20	601,988.90	32° 49' 42.428 N 104° 0' 4.724 W
- Point									
PP (MDFC #28H/L1 Des)	- plan hits target center	0.00	0.00	4,674.99	-0.96	45.00	665,261.25	602,033.90	32° 49' 42.417 N 104° 0' 4.196 W
- Point									
PBHL (MDFC #28H/L1)	- plan hits target center	0.00	0.00	4,860.97	-119.00	5,585.00	665,143.20	607,573.90	32° 49' 41.072 N 103° 58' 59.275 W
- Point									
EOC (MDFC #28H/L1 D)	- plan hits target center	0.00	0.00	4,950.00	-10.35	485.68	665,251.86	602,474.59	32° 49' 42.310 N 103° 59' 59.032 W
- Point									

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M
Company:	COG Operating LLC	TVD Reference:	KB @ 3664.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3664.00usft (Silver Oak 3)
Site:	McIntyre DK Federal Com #28H	North Reference:	Grid
Well:	SHL: 465' FSL, 285' FWL, Sec 17, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330' FSL, 590' FWL, Sec 16, T17S, R30E, Unit M		
Design:	Design #1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,472.61	4,472.61	0.00	0.00	KOP - Start DLS 12.00 TFO 91.22
5,230.94	4,950.00	-10.35	485.69	EOC - Start 5101.25 hold at 5230.94 MD
10,332.19	4,860.97	-119.00	5,585.00	TD at 10332.19

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM-86025
WELL NAME & NO.:	McIntyre DK Federal Com 28H
SURFACE HOLE FOOTAGE:	0465' FSL & 0285' FWL
BOTTOM HOLE FOOTAGE:	0330' FSL & 0590' FWL Sec. 16, T. 17 S., R 30 E.
LOCATION:	Section 17, T. 17 S., R 30 E., NMPM
COUNTY:	Eddy County, New Mexico

The original COAs still stand with the following drilling modifications:

Communitization Agreement

The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220; at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.

In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

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

1. A Hydrogen Sulfide (H₂S) Drilling Plan shall 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. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall 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 or are Non-API. 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.). The initial wellhead installed on the well will remain on the well with spools used as needed.

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

Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

Possibility of water and brine flows in the Artesia and Salado Groups.

Possibility of lost circulation in the Grayburg and San Andres formations.

- 1. The 13-3/8 inch surface casing shall be set at approximately 275 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, which shall be set at approximately **1100** feet, is:

Option #1:

- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option #2:

Operator has proposed DV tool at depth of 325', 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.

- b. Second stage above DV tool:

- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch **tapered** production casing is:

Option #1:

- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option #2:

Operator has proposed two DV tools at depths of 4429' and 1210', but will adjust cement proportionately if moved. DV tool at 1210' shall be set a minimum of 50' below previous shoe. DV tool at 4429' shall be set a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depths cannot be set in this range.

Contingency cement plan with two DV tools:

- 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.
 - b. Second stage above DV tool:
 - ☒ Cement to 2nd DV tool @ 1210'. If cement does not circulate, contact the appropriate BLM office before proceeding with third stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.
 - c. Third stage above DV tool:
 - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office.
-
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. In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).

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, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. 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.**
-
- f. 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. This test shall be performed prior to the test at full stack pressure.

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.

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