NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 23 2016

OCD Hobbs

HOBBS OCD

JUN 20 2016

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ATS-16-972
279

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
SL: LC-029419A; Sec 15: LC-029420A;
Sec 14 S2: LC-029418A; BL: NM-098120

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
NMNM-71030X

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
Skelly Unit #422H

2. Name of Operator COG Operating LLC

9. API Well No.
30-015- 43832

3a. Address One Concho Center, 600 W. Illinois Ave
Midland, TX 79701

3b. Phone No. *(include area code)*
432-685-4385

10. Field and Pool, or Exploratory
Fren; Glorieta-Yeso 26770

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface SHL: 20' FNL & 2510' FWL, Unit C, Sec 22

At proposed prod. zone BHL: 990' FNL & 1650' FWL, Unit C, Sec 14

NORTHODOX LOCATION

11. Sec., T. R. M. or Blk. and Survey or Area
SHL: Sec 22, T17S, R31E
BHL: Sec 14, T17S, R31E

14. Distance in miles and direction from nearest town or post office*
5.7 miles SW from Maljamar, NM

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
20'	SL: 640; Sec 15: 640; Sec 14 S2: 640; BL: 720	520
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	**19. Proposed Depth**	**20. BLM/BIA Bond No. on file**
231.4'	TVD: 5751'; MD:11802' EOC: 5850' TVD	NMB000740; NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3855' GL	09/03/2016	15 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name *(Printed Typed)*	Date
	Robyn M. Odom	03/30/2016

Title
Regulatory Analyst

Approved by *(Signature)*	Name *(Printed Typed)*	Date
James A. Amos		JUN 16 2016
Title	**Office**	
FIELD MANAGER	CARLSBAD FIELD OFFICE	

Application approval 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.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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.

(Continued on page 2)

*(Instructions on page 2)

Roswell Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

6/22/16

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 1st day of February, 2016.

Signed: Carl Bird

Printed Name: Carl Bird

Position: Drilling Engineer

Address: One Concho Center, 600 W. Illinois, 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, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015- 43832	26770	FREN; GLORIETA-YESO

4 Property Code	5 Property Name	6 Well Number
305607	SKELLY UNIT	422H

7 OGRID NO.	8 Operator Name	9 Elevation
229137	COG OPERATING, LLC	3855'

10 Surface Location

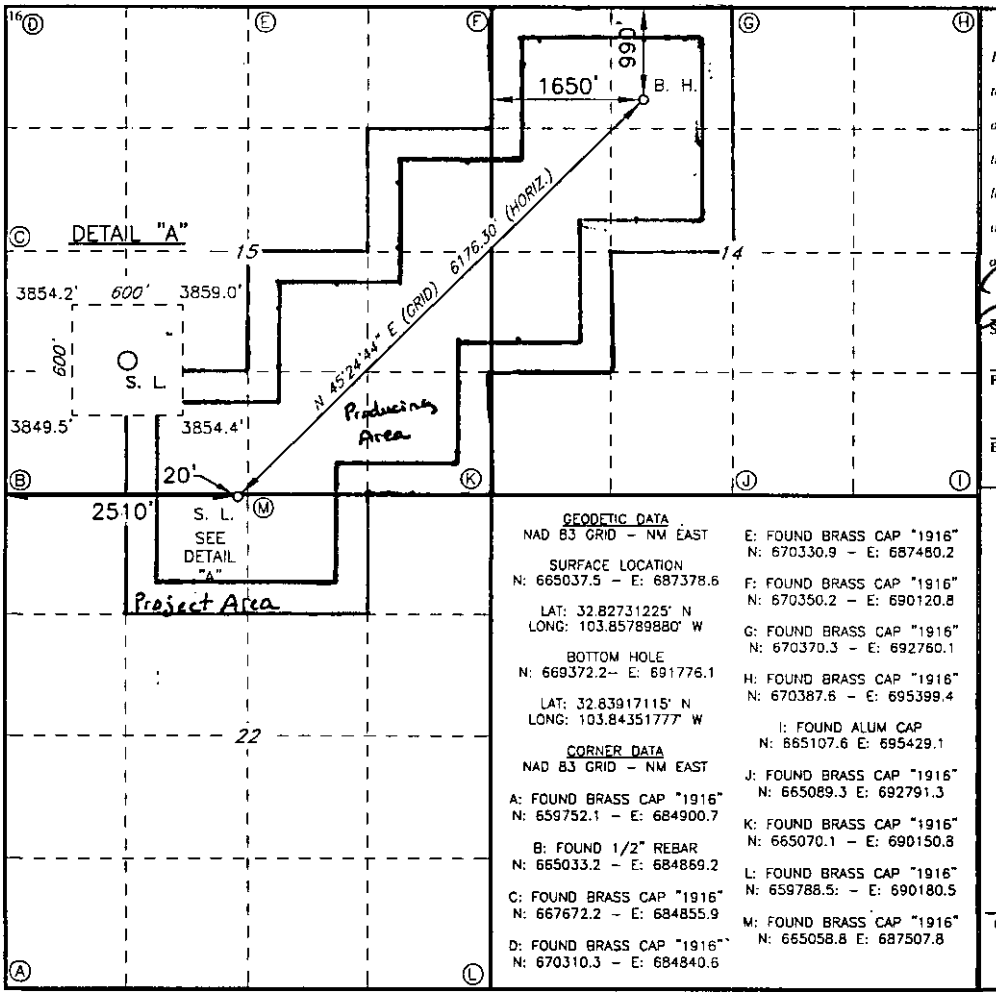
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet From the	East/West line	County
C	22	17S	31E		20	NORTH	2510	WEST	EDDY

11 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
C	14	17S	31E		990	NORTH	1650	WEST	EDDY

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
520			

No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.



GEODETIC DATA
NAD 83 GRID – NM EAST

SURFACE LOCATION
N: 665037.5 – E: 687378.6

LAT: 32.82731225° N
LONG: 103.85789880° W

BOTTOM HOLE
N: 669372.2 – E: 691776.1

LAT: 32.83917115° N
LONG: 103.84351777° W

CORNER DATA
NAD 83 GRID – NM EAST

A: FOUND BRASS CAP "1916"
N: 659752.1 – E: 684900.7

B: FOUND 1/2" REBAR
N: 665033.2 – E: 684869.2

C: FOUND BRASS CAP "1916"
N: 667672.2 – E: 684855.9

D: FOUND BRASS CAP "1916"
N: 670310.3 – E: 684840.6

E: FOUND BRASS CAP "1916"
N: 670330.9 – E: 687480.2

F: FOUND BRASS CAP "1916"
N: 670350.2 – E: 690120.8

G: FOUND BRASS CAP "1916"
N: 670370.3 – E: 692760.1

H: FOUND BRASS CAP "1916"
N: 670387.6 – E: 695399.4

I: FOUND ALUM CAP
N: 665107.6 E: 695429.1

J: FOUND BRASS CAP "1916"
N: 665089.3 E: 692791.3

K: FOUND BRASS CAP "1916"
N: 665070.1 – E: 690150.8

L: FOUND BRASS CAP "1916"
N: 659788.5: – E: 690180.5

M: FOUND BRASS CAP "1916"
N: 665058.8 E: 687507.8

17 OPERATOR CERTIFICATION

I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division

Signature 3/29/2016 Date

Robyn M. Odom
Printed Name

Rodom@concho.com
E-mail Address

18 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.

2-04-2016
Date of Survey

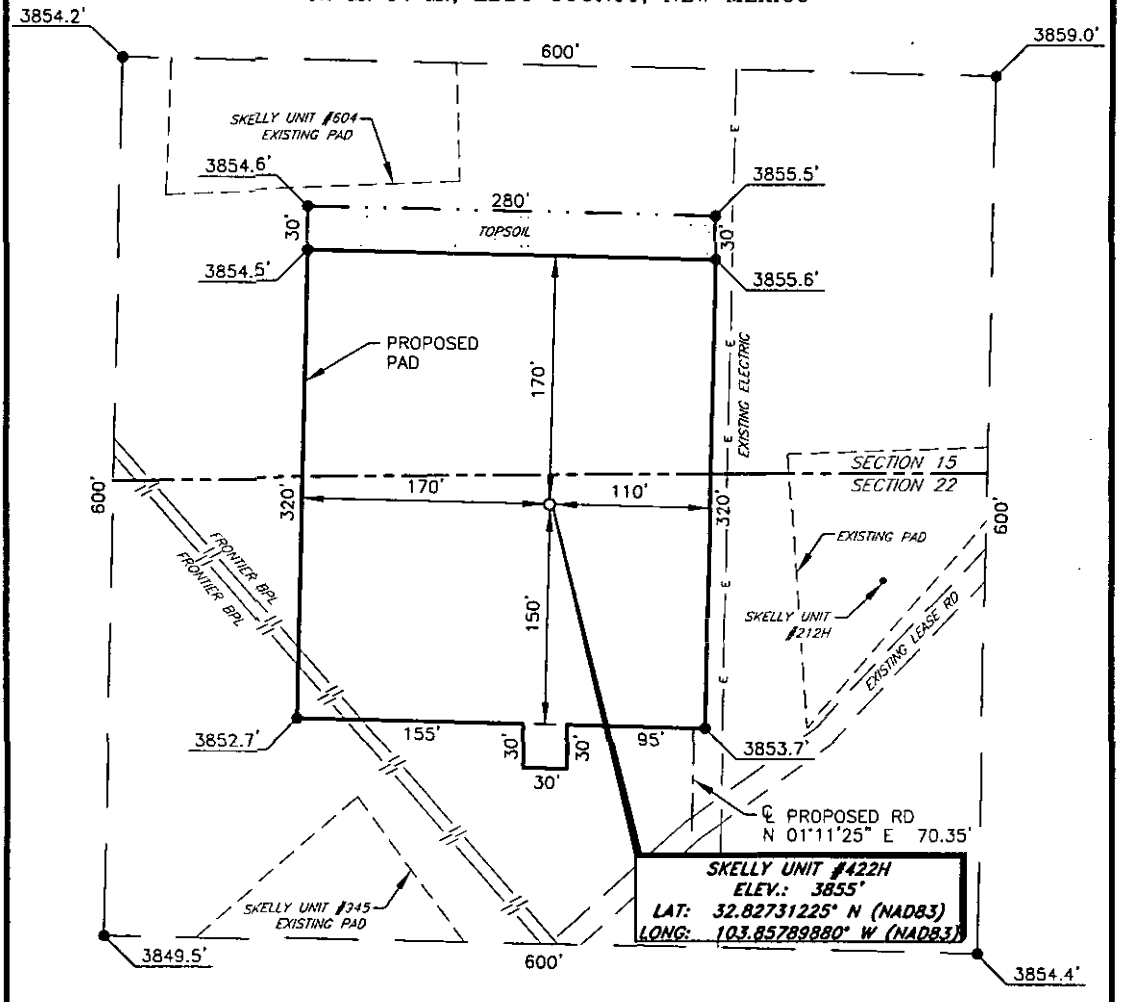
Signature and Seal of Professional Surveyor

ROBERT M. HOWETT
NEW MEXICO
19680
PROFESSIONAL SURVEYOR

19680
Certificate Number

RRC – Firm No.: TX 10193838 NM 4655451 – Job No.: LS1601041

COG OPERATING, LLC
SKELLY UNIT #422H
(20' FNL & 2510' FWL)
SECTION 22, T17S, R31E
N. M. P. M., EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of US Hwy. 82 and NM HWY-529 (Bermuda Road) Go East on US Hwy. 82 approx. 1.3 miles to a lease road on the left; Turn left and go Northwest approx. 0.2 miles to a lease road on the left; Turn left and go West approx. 0.2 miles to a lease road on the right; Turn right and go North approx. 0.4 miles to a curve to the right; Continue right and go Northeast approx. 0.2 miles to location on the left.

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY. BOUNDARY DATA IS SHOWN FROM A PREVIOUS SURVEY REFERENCED HEREON.

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that prepared this unclassified survey of a well location from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett NM PS 19680

ROBERT M. HOWETT NEW MEXICO 19680 PROFESSIONAL SURVEYOR 2/10/16

SCALE: 1" = 100'
0 50 100
BEARINGS ARE NAD 83 GRID – NM EAST
DISTANCES ARE GROUND

Firm No.: TX 10193838 NM 4655451

NO.	REVISION	DATE

JOB NO.: LS1601041
DWG. NO.: 1601041PAD

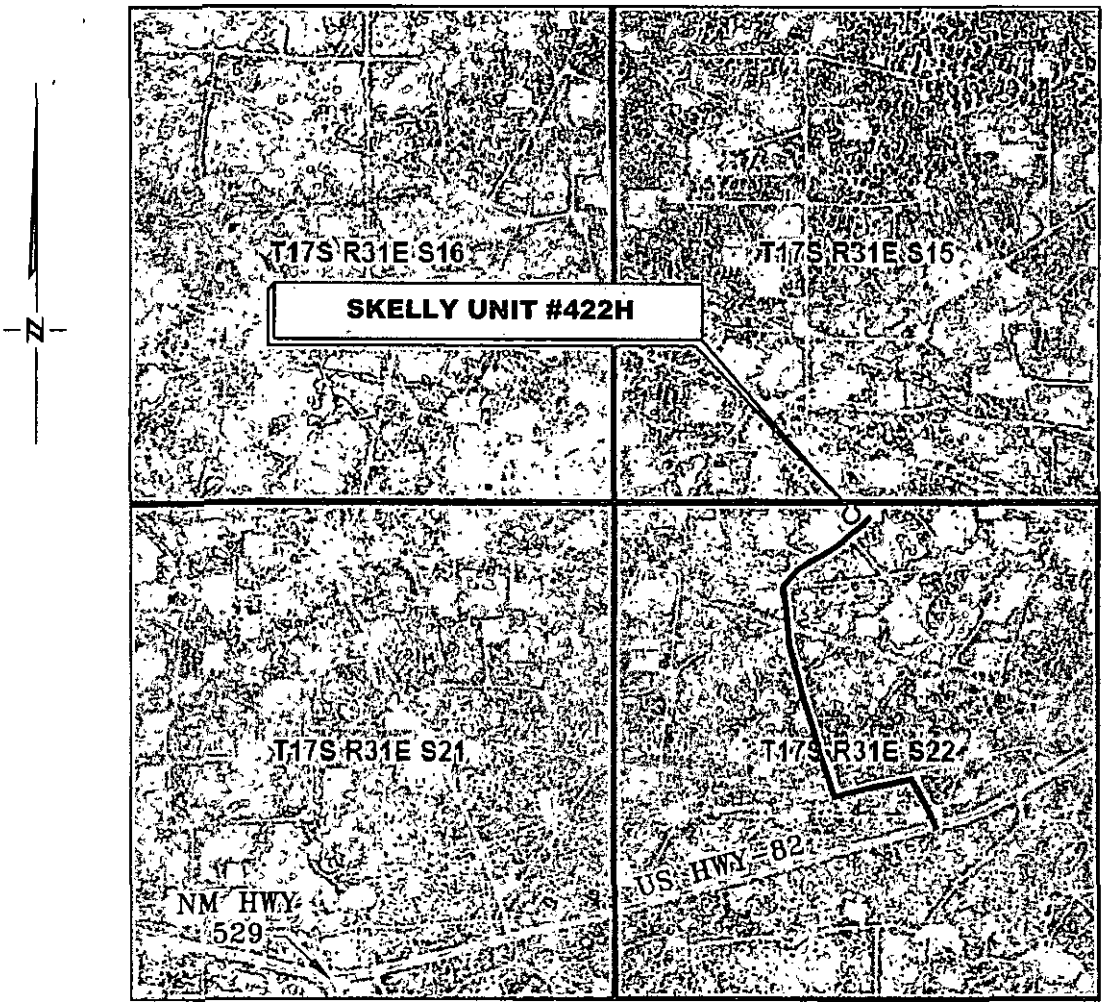
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 2-04-2016
SURVEYED BY: ML/CE
DRAWN BY: LPS
APPROVED BY: RMH
SHEET : 1 OF 1

VICINITY MAP

NOT TO SCALE



SECTION 22, TWP. 17 SOUTH, RGE. 31 EAST, N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Skelly Unit
WELL NO.: 422H

LOCATION: 20' FNL & 2510' FWL
ELEVATION: 3855'

NO.	REVISION	DATE

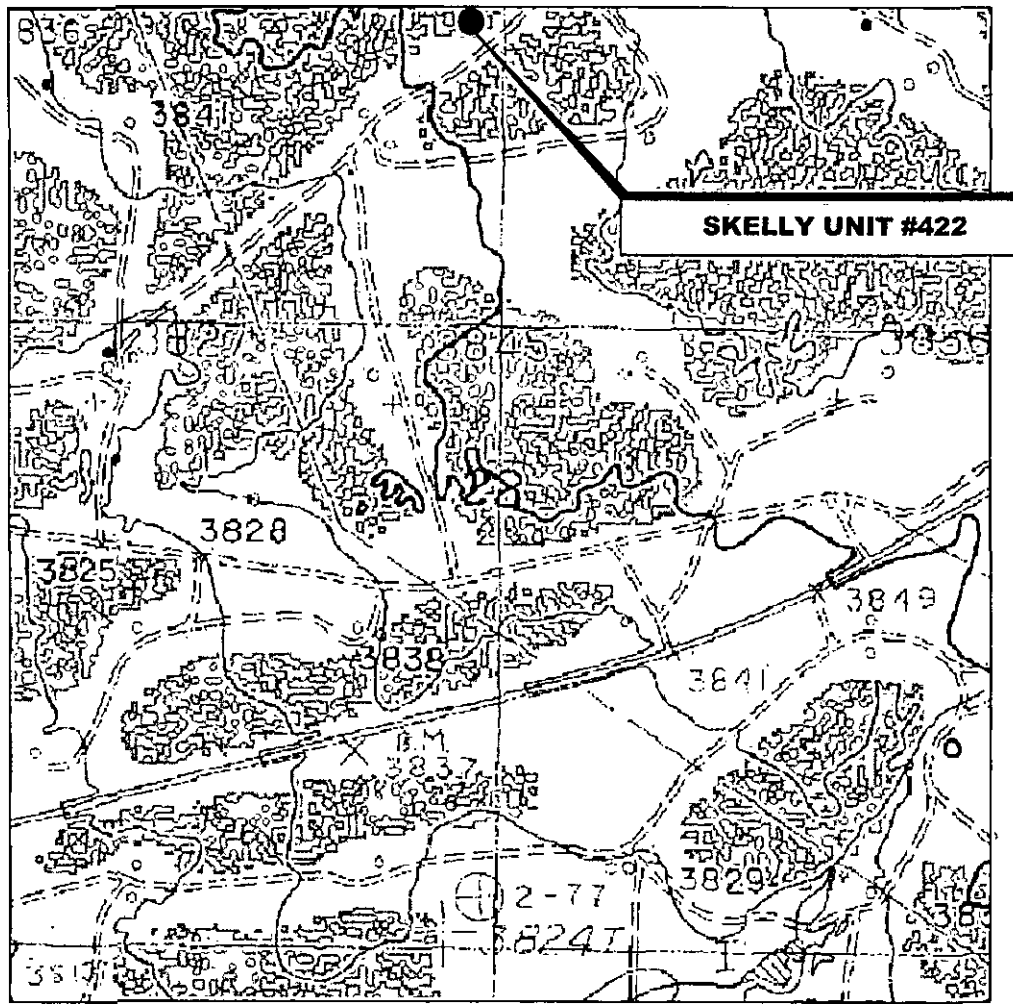
JOB NO.: LS1601041
DWG. NO.: 1601041VM

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: NTS
DATE: 2-04-2016
SURVEYED BY: ML/CE
DRAWN BY: LPS
APPROVED BY: RMH
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 22, TWP. 17 SOUTH, RGE. 31 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Skelly Unit
WELL NO.: 422
ELEVATION: 3855'

LOCATION: 20' FNL & 2510' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Maljamar, NM (P. E. 1985)

NO.	REVISION	DATE

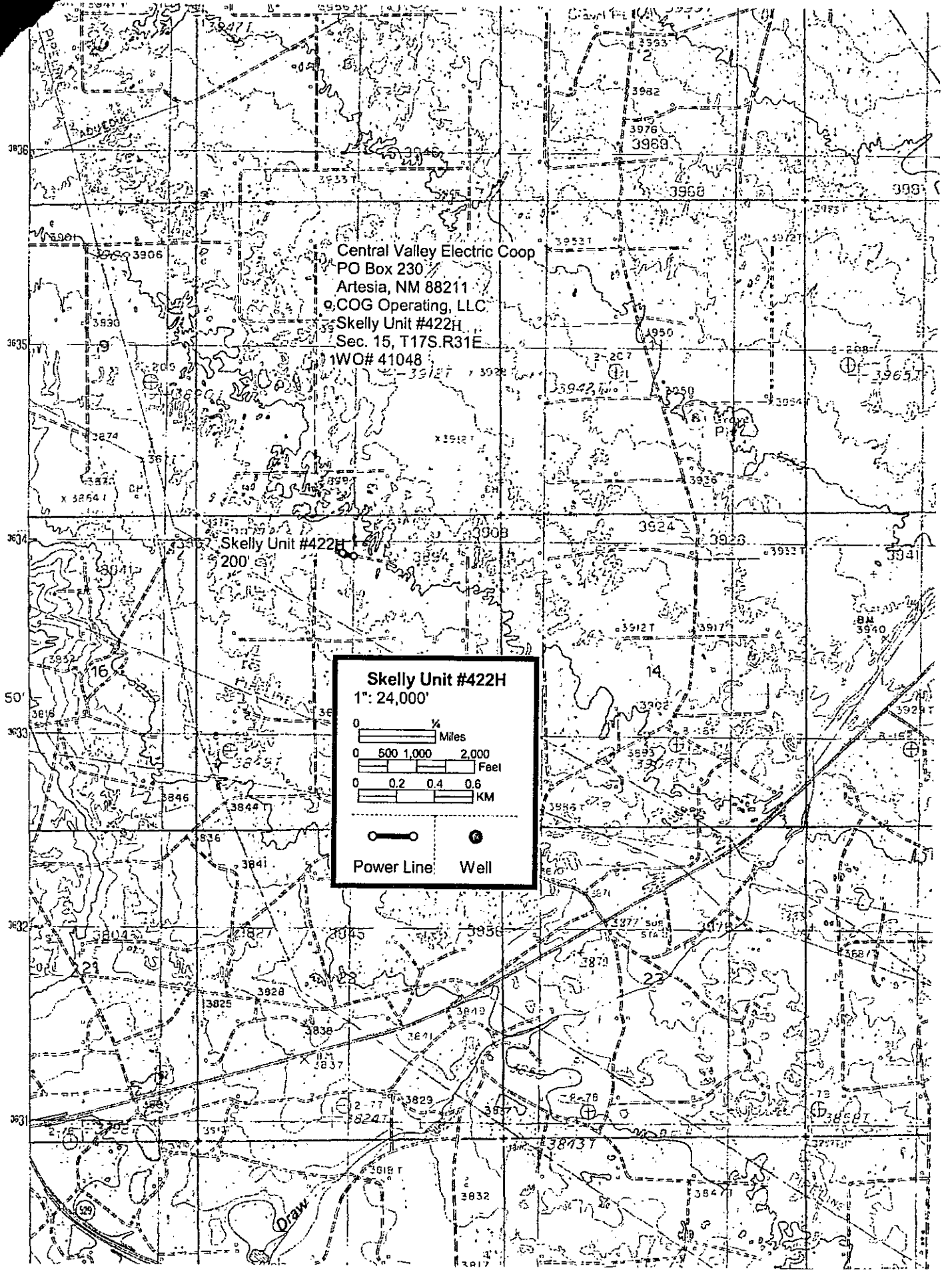
JOB NO.: LS1601041
DWG. NO.: 1601041LVM

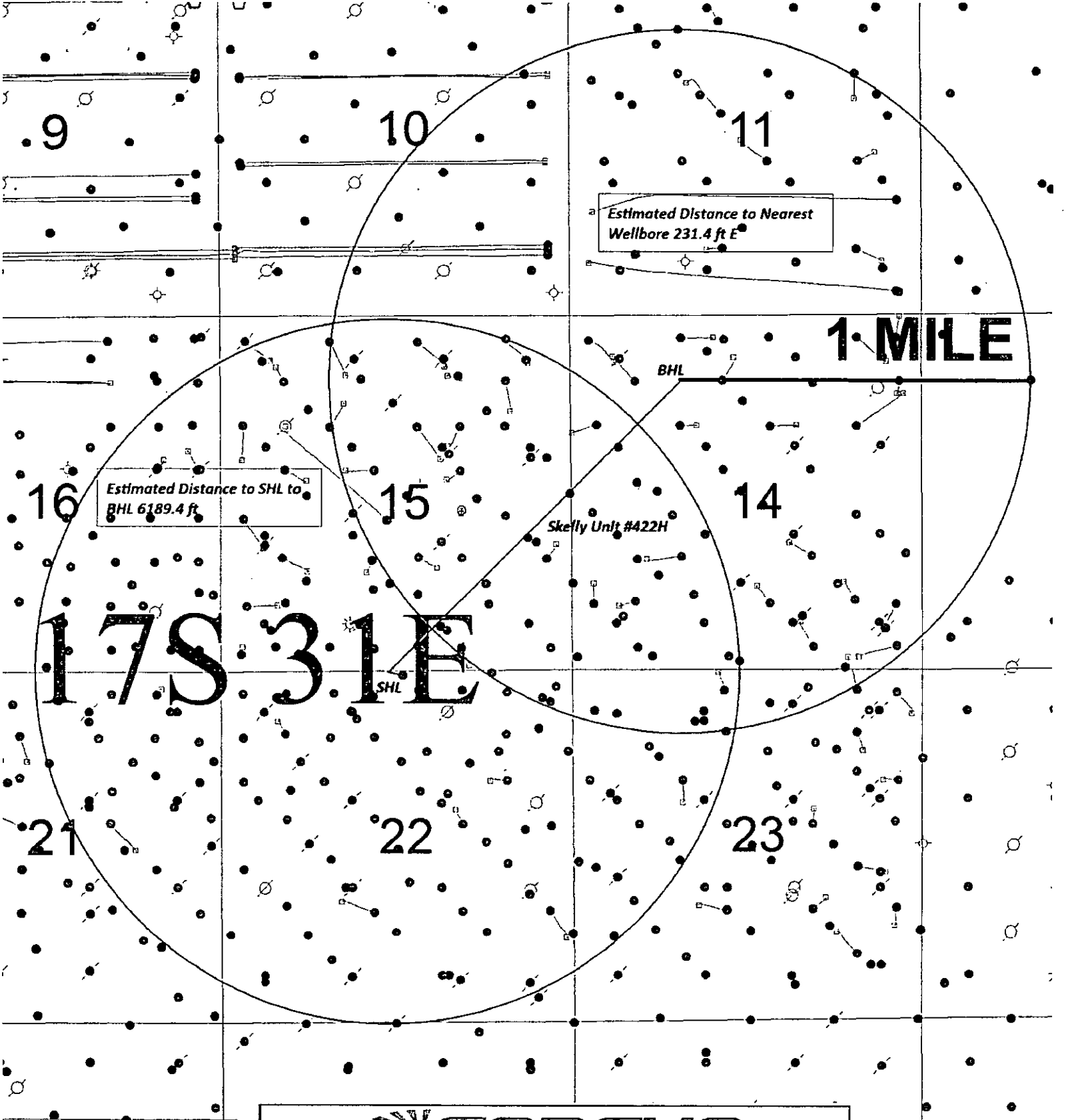
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 2-04-2016
SURVEYED BY: ML/CE
DRAWN BY: LPS
APPROVED BY: RMH
SHEET : 1 OF 1

Electric Line Plat





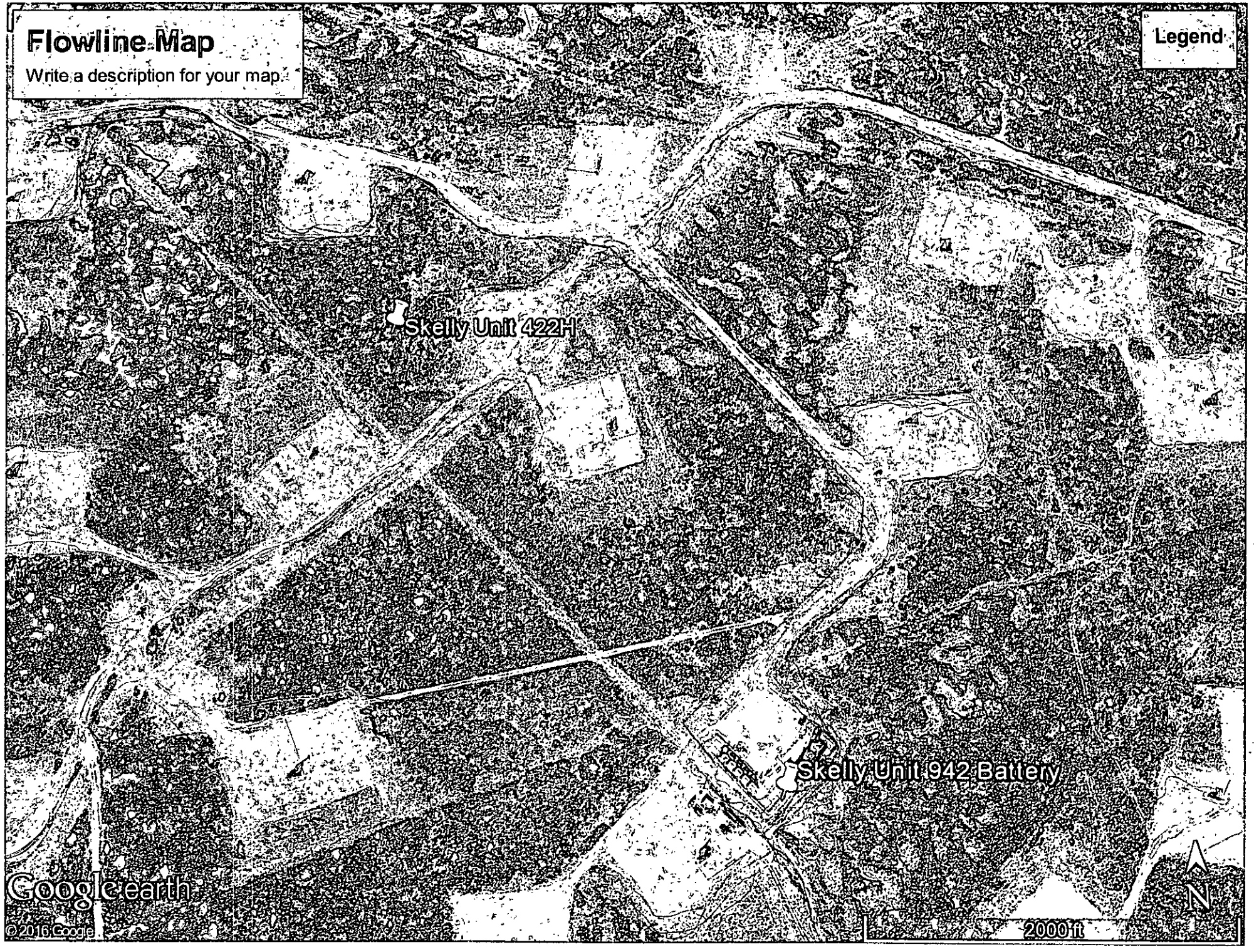
CONCHO

SENM SHELF AREA

Skelly Unit #422H

Sec. 22,T17S-R31E SHL 20 FNL 2510 FWL, Unit C
Sec. 14,T17S-R31E SHL 990 FNL 1650 FWL, Unit C

Author:	All Wells	Date:
L. Marley		22 February, 2016


Flowline Map
Write a description for your map.
Legend
Skelly Unit 422H
Skelly Unit 942 Battery
Google earth
© 2016 Google
2000 ft
N

SWD Well Exhibit

Well Name	API Number	Section	Twn (S)	Rng (E)	County
Aid State 14 #1 SWD	30-015-29569	14	17	28	Eddy
Bate Federal #3 SWD	30-025-22597	35	19	33	Lea
Big George #3 SWD	30-015-28759	12	17	28	Eddy
Biscuit Hills #1 SWD	30-015-28142	29	17	31	Eddy
Burch Keely Unit #113 SWD	30-015-03068	24	17	29	Eddy
Chase 21 State Com #1 SWD	30-015-30874	21	17	29	Eddy
Curly Fed #2 SWD	30-025-38442	34	17	32	Lea
Delta Wing Fed #1 SWD	30-015-26309	15	17	29	Eddy
Durango 15 State Com #1 SWD	30-015-31557	15	17	29	Eddy
Empire Federal #3 SWD	30-015-37831	10	17	29	Eddy
Empire Fed 10 #5 SWD	30-015-39446	10	17	29	Eddy
Empire State 2 SWD	30-015-37787	9	17	29	Eddy
Empire State 9 #4 SWD	30-015-38972	9	17	29	Eddy
Empire State SWD 15 #1	30-015-39771	15	17	29	Eddy
Empire State SWD 8 #1	30-015-38973	8	17	29	Eddy
Federal 18-4 SWD	30-025-01671	18	19	33	Lea
Federal BI #1 SWD	30-025-27068	28	17	32	Lea
Loco Hills 33 #4 SWD	30-015-37269	33	17	30	Eddy
Loco Hills 33 #6 SWD	30-015-39478	33	17	30	Eddy
Loco Hills 34 #3 SWD	30-015-37270	34	17	30	Eddy
Loco Hills 34 #5 SWD	30-015-39477	34	17	30	Eddy
Loco Hills 35 #1 SWD	30-015-31635	36	17	30	Eddy
Loco Hills 35 #2 SWD	30-015-37268	35	17	30	Eddy
Maljamar 29 #1 SWD	30-025-39519	29	17	32	Lea
Maljamar SWD 30 #2	30-025-40310	30	17	32	Lea
Mary Dodd A #47 SWD	30-015-20408	22	17	29	Eddy
Mary Dodd B Deep Fed #2 SWD	30-015-31041	14	17	29	Eddy
Muskegon 16 State Com #1	30-015-27108	16	17	29	Eddy
Oxy Spumoni St #1 SWD	30-015-33089	16	17	31	Eddy
Pronghorn SWD #1	30-025-32735	24	19	32	Lea
Saber Fed #1SWD	30-015-27882	11	17	29	Eddy

Water Well Description

LOCO HILLS WATER SOLUTIONS

OSE #	SEC	TWNSHP	RNGE	COUNTY
L-5125-S1	21	15S	32E	LEA
L-5125-S2	21	15S	32E	LEA
L-5125-S5	31	15S	32E	LEA
L-5125-S11	20	15S	32E	LEA
L-5125-S12	21	15S	32E	LEA
L-5125-S14	20	15S	32E	LEA
L-5125-S16	20	15S	32E	LEA
L-5125-S17	20	15S	32E	LEA
L-5125-S19	20	15S	32E	LEA
L-5125-S20	21	15S	32E	LEA

COG Operating LLC
Skelly Unit #422H

1. Geologic Formations

TVD of target	5850'	Pilot hole depth	NA
MD at TD:	11802'	Deepest expected fresh water:	129'

Back Reef

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Fresh Water	
Rustler	420'	Brackish Water	
Top of Salt	610'	Salt	
Tansill	1660'	Barren	
Yates	1760'	Oil/Gas	
Seven Rivers	2100'	Oil/Gas	
Queen	2700'	Oil/Gas	
Grayburg	3100'	Oil/Gas	
San Andres	3450'	Oil/Gas	
Glorieta	4940'	Oil/Gas	
Paddock	4980'	Oil/Gas	
Blinebry	5500'	Target	
Tubb	6465'	Will not penetrate	

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

2. Casing Program

See COA

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	~~450~~ 510	13.375"	48	H40	STC	4.38	4.35	14.1
12.25"	0	~~1800'~~ 1740'	9.625"	40	J55	LTC	3.1	3.86	7.5
8.75"	0	5229'	7.0"	29	L80	LTC	2.69	1.48	4.27
8.75"	5229'	6156'	5.5"	17	L80	LTC	2.86	1.55	5.03
7.875"	6382'	11802'	5.5"	17	L80	LTC	2.86	1.55	5.03
				BLM Minimum Safety Factor			1.125	1	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
BLM standard formulas where used on all SF calculations
Assumed 9.2 ppg MW equivalent pore pressure from 9 5/8" shoe to Deepest TVD in wellbore.

COG Operating LLC
Skelly Unit #422H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? 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 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?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd 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 2nd 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?	

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sk	H_20 gal/sk	500 psi Comp. Strength (hours)	Slurry Description
Surface Single Stage	250	13.5	1.75	9.2	13	Lead: Class C + 4% Gel + 2% $CaCl_2$ + 0.25 pps CF
	200	14.8	1.32	6.3	6	Tail: Class C + 2% $CaCl_2$ + 0.25 pps CF
Inter. Single stage	350	11.8	2.45	14.4	72	Lead: 50:50:10 C: Poz:Gel w/ 5% Salt + 5 pps LCM + 0.25 pps CF
	200	14.8	1.32	6.3	6	Tail: Class C w/ 2% $CaCl_2$
	IF DV Tool +/- 1055'					
Inter. Multi-Stage						
	150	11.8	2.45	14.4	72	1st stage Lead: 50:50:10 C: Poz:Gel w/ 5% Salt + 5 pps LCM + 0.25 pps CF
	200	14.8	1.32	6.3	6	1st stage Tail: Class C w/ 2% Cacl2
	200	11.8	2.45	14.4	72	2nd stage Lead: 50:50:10 C: Poz:Gel w/ 5% Salt + 5 pps LCM + 0.25 pps CF

Prod. Single Stage	625	12.5	2.01	11.4	22	Lead: 35:65:6 C:Poz Gel w/5% salt + 5 pps LCM + 0.2% SMS + 1% FL-25 + 1% Ba-58+0.3% FL-52A + 0.125 pps CF
	1400	14	1.37	6.4	10	Tail: 50:50:2 C:Pox Gel w/5% salt+3 pps LCM + 0.6% SMS + 1% FL-25 +1% BA-58+ 0.125 pps CF
	IF DV/ECP Tool +/- 4000'					
Prod Multi-Stage	650	12.5	2.01	11.4	22	2nd Stage Lead: 35:65;6 C:Poz Gel w/5% salt+5 pps LCM+0.2% SMS + 1% FL-25+1% BA-58+0.3% FL-52A+ 0.125 pps CF
	150	16.8	.99	4.8	6	2nd Stage Tail: Class"C" w/0.3% R-3 + 1.5% CD-32
	200	12.5	2.01	11.4	22	1st stage Lead: 35:65:6 C: PozGel w/5% salt + 5 pp LCM + 0.2% SMS + 1% FL-25+ 1% BA-58 + 0.3% FL-52A + 0.125 pps CF
	1150	14	1.37	6.4	10	1st stage Tail: 50:50:2 C: PozGel w/5% salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.125 pps CF

Casing String	TOC	%Excess
Surface	0'	50%
Intermediate	0'	50%
Production	0'	35%

4. Pressure Control Equipment * See attachment for further details*****

No	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	X	2000 psi
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4" & 7 7/8"	13-5/8"	2M	Annular	X	2000 psi
			Blind Ram		
			Pipe Ram		
			Double Ram		
			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.

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 (inside BOP) and choke lines and choke manifold. See attached schematics.

NA	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.
NA	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.
NA	Are anchors required by manufacturer?
NA	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. • Provide description here See attached schematic.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.6-8.8	28-34	N/C
Surf shoe	Int shoe	Saturated Brine	10.0-10.2	28-34	N/C
Int shoe	TD	FW-Cut Brine	8.5-9.2	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

6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run Cased hole GR/CNL from KOP to surface. Stated logs run will be in the Completion Report and submitted to the BLM.
No	Open hole logs are planned from KOP to Intermediate casing shoe.
No	Drill stem test? If yes, explain
No	Coring? If yes, explain

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	2574 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S 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.	
NO	H2S is present
Yes	H2S Plan attached

See COA

8. Other facets of operation

Is this a walking operation? No.
Will be pre-setting casing? No
Completed intervals will be fracture stimulated

Attachments:
Directional Plan
Multi-stage Cement details
BOP description

Multi-stage Cement details:

Discussion of DV Tool cement options:

9 5/8" DV tool cement option is proposed for approval. This may become necessary if lost circulation occurs while drilling the 12 ¼" intermediate hole. DV tool depth will be based on hole conditions. 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.

7" DV tool cement option is proposed for approval. This may become necessary if water flows in the San Andres are encountered. These water flows normally occur in areas where produced water disposal is happening. This dense cement is used to combat water flows. This cement recipe also has a right angle set time and is mixed a little under saturated so the water flow will be absorbed by cement. DV tool depth will be based on hole conditions. 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.

CUB 3/29/16

CONCHO

COG Operating LLC

Eddy County, NM (NAD-27 2015)
Skelly Unit #422H
SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
PP: 428' FSL, 2969' FWL, Sec 15, T17S, R31E, Unit O
BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C

Plan: Design #2

Standard Planning Report

07 March, 2016

TDS
TERRA DIRECTIONAL SERVICES, L.L.C.

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site:	Skelly Unit #422H	**North Reference:**	Grid
Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C		
Design:	Design #2		

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	Skelly Unit #422H				
Site Position:		**Northing:**	664,973.50 usft	**Latitude:**	32° 49' 37.899 N
From:	Map	**Easting:**	646,200.00 usft	**Longitude:**	103° 51' 26.613 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	0.26 °

Well	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C					
Well Position	**+N/-S**	0.00 usft	**Northing:**	664,973.50 usft	**Latitude:**	32° 49' 37.899 N
	+E/-W	0.00 usft	**Easting:**	646,200.00 usft	**Longitude:**	103° 51' 26.613 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	3,855.00 usft

Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	3/6/2016	7.27	60.59	48,395

Design	Design #2				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	45.41	

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	
5,329.21	0.00	0.00	5,329.21	0.00	0.00	0.00	0.00	0.00	0.00	
6,156.48	91.00	45.41	5,850.00	372.03	377.43	11.00	11.00	5.49	45.41	
11,802.14	91.00	45.41	5,751.47	4,334.60	4,397.60	0.00	0.00	0.00	0.00	PBHL (SKU #422H/L1

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site:	Skelly Unit #422H	**North Reference:**	Grid
Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C		
Design:	Design #2		

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
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
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Wellbore:	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C		
Design:	Design #2		

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)
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,329.21	0.00	0.00	5,329.21	0.00	0.00	0.00	0.00	0.00	0.00
KOP - Start DLS 11.00 TFO 45.41									
5,350.00	2.29	45.41	5,349.99	0.29	0.30	0.41	11.00	11.00	0.00
5,400.00	7.79	45.41	5,399.78	3.37	3.42	4.80	11.00	11.00	0.00
5,450.00	13.29	45.41	5,448.92	9.79	9.93	13.94	11.00	11.00	0.00
5,500.00	18.79	45.41	5,496.96	19.48	19.76	27.75	11.00	11.00	0.00
5,550.00	24.29	45.41	5,543.45	32.36	32.83	46.10	11.00	11.00	0.00
5,600.00	29.79	45.41	5,587.97	48.31	49.01	68.82	11.00	11.00	0.00
5,650.00	35.29	45.41	5,630.10	67.18	68.16	95.70	11.00	11.00	0.00
5,700.00	40.79	45.41	5,669.47	88.80	90.09	126.50	11.00	11.00	0.00
5,750.00	46.29	45.41	5,705.70	112.97	114.61	160.92	11.00	11.00	0.00
5,800.00	51.79	45.41	5,738.47	139.46	141.49	198.67	11.00	11.00	0.00
5,850.00	57.29	45.41	5,767.46	168.04	170.48	239.38	11.00	11.00	0.00
5,900.00	62.79	45.41	5,792.43	198.43	201.32	282.68	11.00	11.00	0.00
5,950.00	68.29	45.41	5,813.12	230.37	233.72	328.17	11.00	11.00	0.00
6,000.00	73.79	45.41	5,829.37	263.55	267.38	375.44	11.00	11.00	0.00
6,050.00	79.29	45.41	5,841.00	297.67	302.00	424.05	11.00	11.00	0.00
6,100.00	84.79	45.41	5,847.93	332.42	337.25	473.54	11.00	11.00	0.00
6,150.00	90.29	45.41	5,850.07	367.48	372.82	523.48	11.00	11.00	0.00
6,156.48	91.00	45.41	5,850.00	372.03	377.43	529.96	11.00	11.00	0.00
EOC - Start 5645.66 hold at 6156.48 MD									
6,200.00	91.00	45.41	5,849.24	402.57	408.42	573.47	0.00	0.00	0.00
6,300.00	91.00	45.41	5,847.50	472.76	479.63	673.46	0.00	0.00	0.00
6,400.00	91.00	45.41	5,845.75	542.95	550.84	773.44	0.00	0.00	0.00
6,500.00	91.00	45.41	5,844.01	613.13	622.05	873.43	0.00	0.00	0.00
6,600.00	91.00	45.41	5,842.26	683.32	693.25	973.41	0.00	0.00	0.00
6,700.00	91.00	45.41	5,840.52	753.51	764.46	1,073.40	0.00	0.00	0.00
6,800.00	91.00	45.41	5,838.77	823.70	835.67	1,173.38	0.00	0.00	0.00
6,900.00	91.00	45.41	5,837.03	893.89	906.88	1,273.37	0.00	0.00	0.00
7,000.00	91.00	45.41	5,835.28	964.07	978.09	1,373.35	0.00	0.00	0.00
7,100.00	91.00	45.41	5,833.53	1,034.26	1,049.29	1,473.33	0.00	0.00	0.00
7,200.00	91.00	45.41	5,831.79	1,104.45	1,120.50	1,573.32	0.00	0.00	0.00
7,300.00	91.00	45.41	5,830.04	1,174.64	1,191.71	1,673.30	0.00	0.00	0.00
7,400.00	91.00	45.41	5,828.30	1,244.83	1,262.92	1,773.29	0.00	0.00	0.00
7,500.00	91.00	45.41	5,826.55	1,315.01	1,334.13	1,873.27	0.00	0.00	0.00
7,600.00	91.00	45.41	5,824.81	1,385.20	1,405.33	1,973.26	0.00	0.00	0.00
7,700.00	91.00	45.41	5,823.06	1,455.39	1,476.54	2,073.24	0.00	0.00	0.00
7,800.00	91.00	45.41	5,821.32	1,525.58	1,547.75	2,173.23	0.00	0.00	0.00
7,900.00	91.00	45.41	5,819.57	1,595.77	1,618.96	2,273.21	0.00	0.00	0.00
8,000.00	91.00	45.41	5,817.83	1,665.95	1,690.17	2,373.20	0.00	0.00	0.00
8,100.00	91.00	45.41	5,816.08	1,736.14	1,761.38	2,473.18	0.00	0.00	0.00
8,200.00	91.00	45.41	5,814.34	1,806.33	1,832.58	2,573.17	0.00	0.00	0.00
8,300.00	91.00	45.41	5,812.59	1,876.52	1,903.79	2,673.15	0.00	0.00	0.00
8,400.00	91.00	45.41	5,810.85	1,946.71	1,975.00	2,773.14	0.00	0.00	0.00
8,500.00	91.00	45.41	5,809.10	2,016.89	2,046.21	2,873.12	0.00	0.00	0.00
8,600.00	91.00	45.41	5,807.36	2,087.08	2,117.42	2,973.11	0.00	0.00	0.00
8,700.00	91.00	45.41	5,805.61	2,157.27	2,188.62	3,073.09	0.00	0.00	0.00
8,800.00	91.00	45.41	5,803.87	2,227.46	2,259.83	3,173.08	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
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Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site:	Skelly Unit #422H	**North Reference:**	Grid
Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C		
Design:	Design #2		

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)
8,900.00	91.00	45.41	5,802.12	2,297.65	2,331.04	3,273.06	0.00	0.00	0.00
9,000.00	91.00	45.41	5,800.37	2,367.83	2,402.25	3,373.05	0.00	0.00	0.00
9,100.00	91.00	45.41	5,798.63	2,438.02	2,473.46	3,473.03	0.00	0.00	0.00
9,200.00	91.00	45.41	5,796.88	2,508.21	2,544.66	3,573.01	0.00	0.00	0.00
9,300.00	91.00	45.41	5,795.14	2,578.40	2,615.87	3,673.00	0.00	0.00	0.00
9,400.00	91.00	45.41	5,793.39	2,648.59	2,687.08	3,772.98	0.00	0.00	0.00
9,500.00	91.00	45.41	5,791.65	2,718.77	2,758.29	3,872.97	0.00	0.00	0.00
9,600.00	91.00	45.41	5,789.90	2,788.96	2,829.50	3,972.95	0.00	0.00	0.00
9,700.00	91.00	45.41	5,788.16	2,859.15	2,900.71	4,072.94	0.00	0.00	0.00
9,800.00	91.00	45.41	5,786.41	2,929.34	2,971.91	4,172.92	0.00	0.00	0.00
9,900.00	91.00	45.41	5,784.67	2,999.53	3,043.12	4,272.91	0.00	0.00	0.00
10,000.00	91.00	45.41	5,782.92	3,069.71	3,114.33	4,372.89	0.00	0.00	0.00
10,100.00	91.00	45.41	5,781.18	3,139.90	3,185.54	4,472.88	0.00	0.00	0.00
10,200.00	91.00	45.41	5,779.43	3,210.09	3,256.75	4,572.86	0.00	0.00	0.00
10,300.00	91.00	45.41	5,777.69	3,280.28	3,327.95	4,672.85	0.00	0.00	0.00
10,400.00	91.00	45.41	5,775.94	3,350.47	3,399.16	4,772.83	0.00	0.00	0.00
10,500.00	91.00	45.41	5,774.20	3,420.65	3,470.37	4,872.82	0.00	0.00	0.00
10,600.00	91.00	45.41	5,772.45	3,490.84	3,541.58	4,972.80	0.00	0.00	0.00
10,700.00	91.00	45.41	5,770.71	3,561.03	3,612.79	5,072.79	0.00	0.00	0.00
10,800.00	91.00	45.41	5,768.96	3,631.22	3,683.99	5,172.77	0.00	0.00	0.00
10,900.00	91.00	45.41	5,767.21	3,701.41	3,755.20	5,272.76	0.00	0.00	0.00
11,000.00	91.00	45.41	5,765.47	3,771.59	3,826.41	5,372.74	0.00	0.00	0.00
11,100.00	91.00	45.41	5,763.72	3,841.78	3,897.62	5,472.73	0.00	0.00	0.00
11,200.00	91.00	45.41	5,761.98	3,911.97	3,968.83	5,572.71	0.00	0.00	0.00
11,300.00	91.00	45.41	5,760.23	3,982.16	4,040.04	5,672.70	0.00	0.00	0.00
11,400.00	91.00	45.41	5,758.49	4,052.35	4,111.24	5,772.68	0.00	0.00	0.00
11,500.00	91.00	45.41	5,756.74	4,122.53	4,182.45	5,872.66	0.00	0.00	0.00
11,600.00	91.00	45.41	5,755.00	4,192.72	4,253.66	5,972.65	0.00	0.00	0.00
11,700.00	91.00	45.41	5,753.25	4,262.91	4,324.87	6,072.63	0.00	0.00	0.00
11,802.14	91.00	45.41	5,751.47	4,334.60	4,397.60	6,174.76	0.00	0.00	0.00
TD at 11802.14									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP (SKU #422H/L1 De - plan hits target center - Point	0.00	0.00	5,329.21	0.00	0.00	664,973.50	646,200.00	32° 49' 37.899 N	103° 51' 26.613 W
PBHL (SKU #422H/L1) - plan hits target center - Point	0.00	0.00	5,751.47	4,334.60	4,397.60	669,308.10	650,597.60	32° 50' 20.591 N	103° 50' 34.841 W
PP (SKU #422H/L1 Des - plan hits target center - Point	0.00	0.00	5,848.05	450.37	456.92	665,423.88	646,656.92	32° 49' 42.335 N	103° 51' 21.234 W
EOC (SKU #422/L1 Des - plan hits target center - Point	0.00	0.00	5,850.00	372.02	377.43	665,345.53	646,577.44	32° 49' 41.563 N	103° 51' 22.170 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site:	Skelly Unit #422H	**North Reference:**	Grid
Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C		
Design:	Design #2		

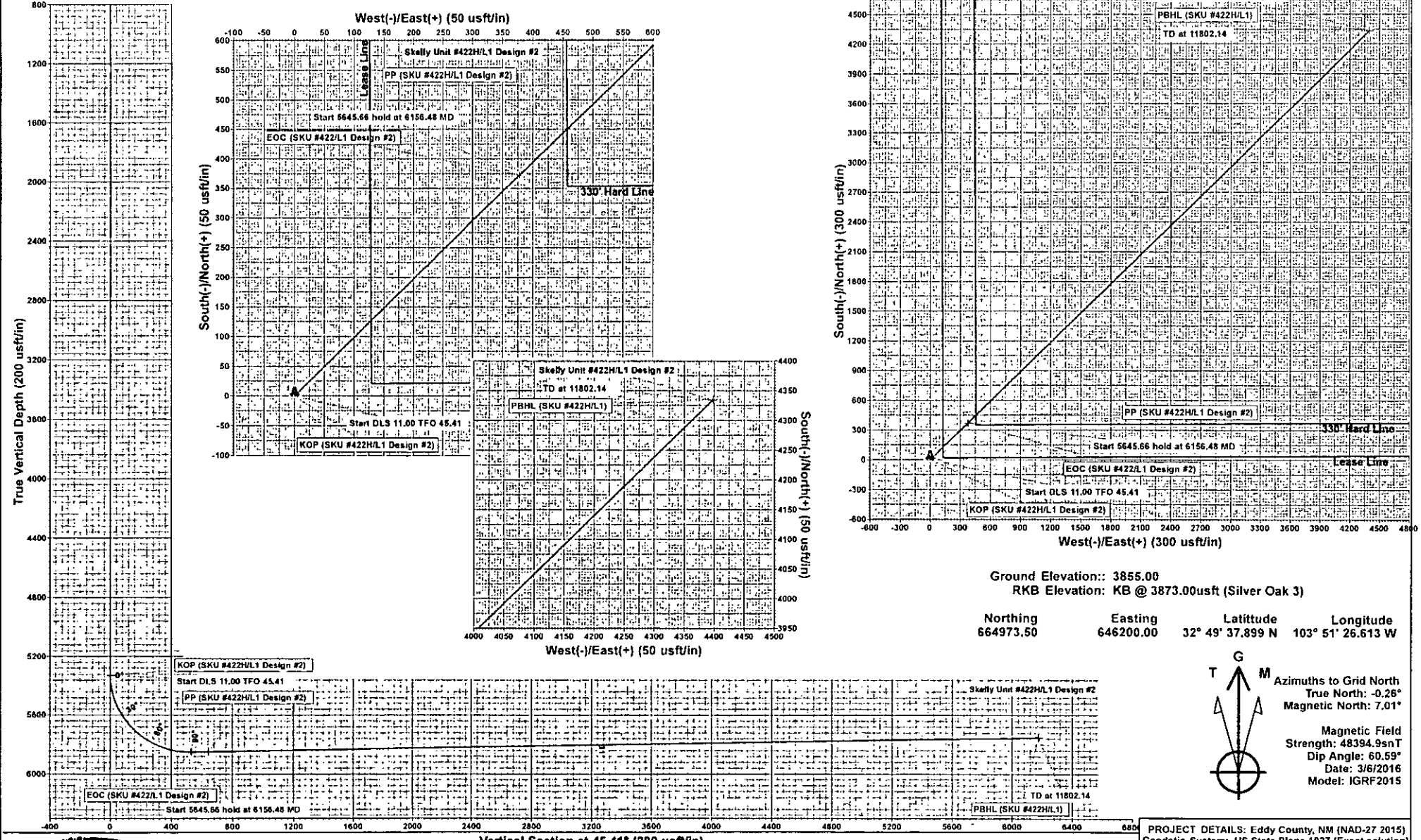
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,329.21	5,329.21	0.00	0.00	KOP - Start DLS 11.00 TFO 45.41
6,156.48	5,850.00	372.03	377.43	EOC - Start 5645.66 hold at 6156.48 MD
11,802.14	5,751.47	4,334.60	4,397.60	TD at 11802.14

COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Skelly Unit #422H
Well: SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Wellbore: BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C
Plan: Design #2 (SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C/BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5329.21	0.00	0.00	5329.21	0.00	0.00	0.00	0.00	0.00	
3	6156.48	91.00	45.41	5850.00	372.03	377.43	11.00	45.41	529.96	
4	11802.14	91.00	45.41	5751.47	4334.60	4397.60	0.00	0.00	6174.76	PBHL (SKU #422H/L1)



Ground Elevation:: 3855.00
RKB Elevation: KB @ 3873.00usft (Silver Oak 3)

Northing	Easting	Latitude	Longitude
664973.50	646200.00	32° 49' 37.899 N	103° 51' 26.613 W

Azimuths to Grid North
True North: -0.26°
Magnetic North: 7.01°

Magnetic Field
Strength: 48394.9snT
Dip Angle: 60.59°
Date: 3/6/2016
Model: IGRF2015

Terra Directional Services LLC
3705 South County Road 1210, Midland, TX 79706
Phone: 432-618-1210

PROJECT DETAILS: Eddy County, NM (NAD-27 2015)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

CONCHO

COG Operating LLC

Eddy County, NM (NAD-27 2015)
Skelly Unit #422H
SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
PP: 427' FSL, 2969' FWL, Sec 15, T17S, R31E, Unit O
BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C
Design #2

Anticollision Report

01 June, 2016

TDS
TERRA DIRECTIONAL SERVICES, L.L.C.

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Reference Design #2

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	**Casing Method:**	Not applied

Survey Tool Program **Date** 6/1/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	11,802.14	Design #2 (BHL: 990' FNL, 1650' FWL, Se	MWD	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Skelly Unit #422H						
Skelly Unit #604 - OH - OH	5,676.39	5,642.82	247.36	119.89	1.941	CC
Skelly Unit #604 - OH - OH	5,950.00	5,803.89	331.99	-20.30	0.942	Level 1, ES, SF
Skelly Unit #623 - OH - OH	11,802.14	5,275.00	865.66	777.60	9.830	CC, ES, SF
Skelly Unit #636 - OH - OH	8,514.78	5,557.00	545.08	479.74	8.342	CC, ES
Skelly Unit #636 - OH - OH	8,600.00	5,557.00	551.70	485.40	8.320	SF
Skelly Unit #651 - OH - OH	11,802.14	5,273.00	3,343.84	3,239.68	32.104	CC, ES, SF
Skelly Unit #654 - OH - OH	11,332.14	5,871.25	537.37	401.05	3.942	CC, ES, SF
Skelly Unit #658 - OH - OH	11,802.14	5,744.00	645.11	541.15	6.206	CC, ES, SF
Skelly Unit #678 - OH - OH	10,275.28	5,808.48	558.04	339.33	2.552	CC
Skelly Unit #678 - OH - OH	10,300.00	5,808.05	558.59	339.10	2.545	ES
Skelly Unit #678 - OH - OH	10,400.00	5,806.30	571.80	345.08	2.522	SF
Skelly Unit #750 - OH - OH	5,571.20	5,983.52	4,478.01	4,455.99	203.365	CC, ES
Skelly Unit #750 - OH - OH	9,700.00	6,314.97	6,539.54	6,466.85	89.969	SF
Skelly Unit #828 - OH - OH	6,683.48	5,140.00	888.93	868.13	42.732	CC
Skelly Unit #828 - OH - OH	6,700.00	5,140.00	889.08	868.10	42.374	ES
Skelly Unit #828 - OH - OH	7,100.00	5,140.00	981.68	956.27	38.638	SF
Skelly Unit #847 - OH - OH	7,595.35	5,819.33	333.15	170.91	2.053	CC
Skelly Unit #847 - OH - OH	7,700.00	5,817.50	349.19	165.45	1.900	ES
Skelly Unit #847 - OH - OH	7,800.00	5,815.75	390.97	174.08	1.803	SF
Skelly Unit #849 - OH - OH	7,148.49	5,296.00	1,030.40	992.65	27.295	CC, ES
Skelly Unit #849 - OH - OH	7,400.00	5,296.00	1,060.65	1,019.33	25.671	SF
Skelly Unit #945 - OH - OH	100.00	79.06	374.58	374.42	2,331.768	CC
Skelly Unit #945 - OH - OH	2,200.00	2,178.32	380.35	373.91	59.058	ES
Skelly Unit #945 - OH - OH	5,350.00	5,321.48	417.88	400.81	24.471	SF
Skelly Unit #960 - OH - OH	9,473.21	5,810.38	478.01	387.44	5.277	CC, ES
Skelly Unit #960 - OH - OH	9,500.00	5,809.94	478.76	387.72	5.258	SF
Skelly Unit #963 - OH - OH	5,058.82	5,045.00	479.11	366.78	4.265	CC, ES, SF
Skelly Unit #967 - OH - OH	7,788.16	5,828.87	224.00	58.82	1.356	Level 3, CC
Skelly Unit #967 - OH - OH	8,000.00	5,825.15	308.28	-0.42	0.999	Level 1, ES, SF
Skelly Unit #970 - OH - OH	8,527.94	5,819.88	332.12	149.90	1.823	CC
Skelly Unit #970 - OH - OH	8,700.00	5,816.86	374.03	136.42	1.574	ES, SF
Skelly Unit #978 - OH - OH	0.00	0.00	557.27			
Skelly Unit #978 - OH - OH	600.00	10.00	797.64	793.36	186.281	SF
Skelly Unit #992 - OH - OH	10,452.52	5,341.00	638.38	556.41	7.788	CC, ES

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	*0.00 usft*	***Output errors are at***	*2.00 sigma*
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Skelly Unit #422H						
Skelly Unit #992 - OH - OH	10,500.00	5,341.00	640.14	557.83	7.777	SF
Skelly Unit #993 - OH - OH	11,352.82	5,154.00	805.78	719.45	9.334	CC, ES
Skelly Unit #993 - OH - OH	11,400.00	5,154.00	807.16	720.23	9.285	SF
Skelly Unit #998 - OH - OH	6,762.62	5,827.38	404.81	261.24	2.820	CC
Skelly Unit #998 - OH - OH	6,900.00	5,825.00	427.48	245.97	2.355	ES
Skelly Unit #998 - OH - OH	7,100.00	5,821.53	526.94	270.33	2.053	SF

Offset Design Skelly Unit #422H - Skelly Unit #604 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 202-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-30.10	348.00	-201.70	402.68				
100.00	100.00	86.84	86.83	0.09	4.90	-30.07	347.54	-201.24	401.84	399.88	1.76	227.783	
200.00	200.00	193.99	193.95	0.32	10.94	-29.98	345.68	-199.42	399.29	395.24	4.05	98.520	
300.00	300.00	294.46	294.36	0.54	21.70	-29.85	343.19	-196.96	395.92	388.31	7.61	52.018	
400.00	400.00	394.40	394.24	0.77	32.84	-29.72	340.71	-194.51	392.55	381.20	11.35	34.595	
500.00	500.00	491.75	491.55	0.99	40.66	-29.61	338.51	-192.34	389.48	375.16	14.32	27.202	
600.00	600.00	588.94	588.70	1.22	48.21	-29.52	336.82	-190.68	387.13	369.90	17.23	22.468	
700.00	700.00	687.00	686.75	1.44	55.83	-29.45	335.65	-189.52	385.50	365.34	20.16	19.118	
800.00	800.00	785.36	785.10	1.67	59.61	-29.41	334.80	-188.69	384.34	361.80	22.54	17.053	
900.00	900.00	884.59	884.33	1.89	63.43	-29.37	334.09	-187.99	383.37	358.47	24.90	15.399	
1,000.00	1,000.00	984.49	984.22	2.12	66.69	-29.33	333.47	-187.38	382.52	355.42	27.10	14.113	
1,100.00	1,100.00	1,084.48	1,084.21	2.34	69.86	-29.30	332.85	-186.77	381.68	352.41	29.27	13.038	
1,200.00	1,200.00	1,185.41	1,185.13	2.56	74.03	-29.26	332.16	-186.09	380.76	349.01	31.74	11.995	
1,300.00	1,300.00	1,286.75	1,286.46	2.79	78.65	-29.21	331.22	-185.15	379.49	345.14	34.36	11.045	
1,400.00	1,400.00	1,388.03	1,387.73	3.01	84.32	-29.14	330.01	-183.96	377.88	340.70	37.18	10.163	
1,500.00	1,500.00	1,489.19	1,488.87	3.24	92.24	-29.05	328.56	-182.54	375.94	335.50	40.45	9.295	
1,600.00	1,600.00	1,590.33	1,589.99	3.46	100.16	-28.96	326.88	-180.88	373.69	329.96	43.74	8.544	
1,700.00	1,700.00	1,691.46	1,691.08	3.69	108.08	-28.85	324.96	-178.99	371.13	324.07	47.06	7.886	
1,800.00	1,800.00	1,791.64	1,791.22	3.91	115.73	-28.72	322.86	-176.92	368.30	317.98	50.32	7.319	
1,900.00	1,900.00	1,889.48	1,889.02	4.14	122.70	-28.61	321.06	-175.14	365.82	312.49	53.33	6.860	
2,000.00	2,000.00	1,987.34	1,986.86	4.36	129.67	-28.53	319.68	-173.79	363.91	307.59	56.32	6.462	
2,100.00	2,100.00	2,086.05	2,085.56	4.59	135.68	-28.47	318.68	-172.80	362.55	303.42	59.13	6.132	
2,200.00	2,200.00	2,186.04	2,185.54	4.81	140.20	-28.41	317.75	-171.88	361.29	299.62	61.67	5.858	
2,300.00	2,300.00	2,286.03	2,285.52	5.04	144.71	-28.35	316.82	-170.96	360.03	295.81	64.22	5.606	
2,400.00	2,400.00	2,386.02	2,385.51	5.26	149.23	-28.29	315.89	-170.04	358.78	292.00	66.77	5.373	
2,500.00	2,500.00	2,486.01	2,485.49	5.49	153.75	-28.24	314.96	-169.13	357.52	288.19	69.33	5.157	
2,600.00	2,600.00	2,587.04	2,586.51	5.71	160.33	-28.17	313.91	-168.09	356.12	283.71	72.41	4.918	
2,700.00	2,700.00	2,688.05	2,687.50	5.94	166.91	-28.09	312.64	-166.84	354.43	278.91	75.52	4.693	
2,800.00	2,800.00	2,789.06	2,788.49	6.16	173.49	-27.99	311.15	-165.38	352.45	273.78	78.67	4.480	
2,900.00	2,900.00	2,890.05	2,889.45	6.39	180.07	-27.88	309.45	-163.70	350.18	268.33	81.85	4.278	
3,000.00	3,000.00	2,990.34	2,989.71	6.61	187.91	-27.75	307.59	-161.87	347.69	262.36	85.33	4.075	
3,100.00	3,100.00	3,090.31	3,089.64	6.84	196.37	-27.63	305.73	-160.03	345.19	256.24	88.94	3.881	
3,200.00	3,200.00	3,190.28	3,189.57	7.06	204.83	-27.50	303.86	-158.19	342.68	250.09	92.59	3.701	
3,300.00	3,300.00	3,290.24	3,289.51	7.28	213.29	-27.37	302.00	-156.35	340.18	243.91	96.27	3.534	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #604 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 202-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,400.00	3,400.00	3,390.21	3,389.44	7.51	221.75	-27.24	300.14	-154.52	337.68	237.71	99.97	3.378	
3,500.00	3,500.00	3,490.49	3,489.68	7.73	230.88	-27.10	298.23	-152.64	335.14	231.27	103.87	3.226	
3,600.00	3,600.00	3,590.77	3,589.92	7.96	240.02	-26.96	296.26	-150.69	332.50	224.68	107.82	3.084	
3,700.00	3,700.00	3,691.04	3,690.16	8.18	249.16	-26.81	294.21	-148.67	329.77	217.95	111.82	2.949	
3,800.00	3,800.00	3,791.31	3,790.38	8.41	258.31	-26.65	292.09	-146.59	326.95	211.07	115.88	2.821	
3,900.00	3,900.00	3,891.76	3,890.79	8.63	268.68	-26.48	289.89	-144.41	324.01	203.71	120.30	2.693	
4,000.00	4,000.00	3,992.33	3,991.29	8.86	279.84	-26.30	287.54	-142.10	320.90	195.89	125.01	2.567	
4,100.00	4,100.00	4,092.87	4,091.78	9.08	290.99	-26.10	285.05	-139.64	317.60	187.78	129.82	2.446	
4,200.00	4,200.00	4,193.41	4,192.25	9.31	302.15	-25.89	282.41	-137.04	314.11	179.36	134.75	2.331	
4,300.00	4,300.00	4,293.76	4,292.53	9.53	313.65	-25.66	279.64	-134.32	310.44	170.55	139.90	2.219	
4,400.00	4,400.00	4,393.69	4,392.38	9.76	326.06	-25.42	276.85	-131.56	306.73	161.34	145.39	2.110	
4,500.00	4,500.00	4,493.61	4,492.22	9.98	338.48	-25.17	274.06	-128.81	303.03	152.02	151.00	2.007	
4,600.00	4,600.00	4,593.17	4,591.70	10.21	350.52	-24.93	271.29	-126.08	299.35	142.73	156.62	1.911	
4,700.00	4,700.00	4,692.32	4,690.79	10.43	362.18	-24.69	268.71	-123.54	295.91	133.75	162.17	1.825	
4,800.00	4,800.00	4,792.18	4,790.59	10.66	373.33	-24.46	266.23	-121.09	292.63	124.99	167.64	1.746	
4,900.00	4,900.00	4,891.66	4,890.00	10.88	383.97	-24.22	263.78	-118.67	289.38	116.32	173.06	1.672	
5,000.00	5,000.00	4,990.12	4,988.43	11.11	393.60	-24.01	261.64	-116.57	286.53	108.39	178.14	1.608	
5,100.00	5,100.00	5,090.23	5,088.49	11.33	403.39	-23.82	259.71	-114.66	283.99	100.76	183.24	1.550	
5,200.00	5,200.00	5,190.93	5,189.15	11.56	413.24	-23.61	257.58	-112.57	281.23	92.70	188.52	1.492	Level 3
5,300.00	5,300.00	5,291.61	5,289.77	11.78	423.09	-23.37	255.26	-110.28	278.20	84.20	194.00	1.434	Level 3
5,329.21	5,329.21	5,321.01	5,319.16	11.85	425.97	-23.29	254.54	-109.57	277.27	81.63	195.64	1.417	Level 3
5,350.00	5,349.99	5,341.85	5,339.99	11.89	428.16	-68.81	254.03	-109.06	276.44	80.02	196.43	1.407	Level 3
5,400.00	5,399.78	5,391.60	5,389.71	12.00	433.70	-69.87	252.79	-107.84	273.25	78.55	194.70	1.403	Level 3
5,450.00	5,448.92	5,440.71	5,438.79	12.11	439.16	-72.04	251.57	-106.64	268.56	81.08	187.48	1.432	Level 3
5,500.00	5,496.96	5,488.72	5,486.77	12.23	444.50	-75.31	250.37	-105.46	262.81	88.20	174.62	1.505	
5,550.00	5,543.45	5,535.18	5,533.20	12.35	449.67	-79.58	249.22	-104.32	256.74	99.90	156.84	1.637	
5,600.00	5,587.97	5,579.67	5,577.67	12.48	454.62	-84.66	248.11	-103.23	251.35	113.90	137.44	1.829	
5,650.00	5,630.10	5,621.78	5,619.74	12.63	459.29	-90.22	247.07	-102.20	247.90	122.28	125.63	1.973	
5,676.39	5,651.25	5,642.82	5,640.77	12.72	461.49	-93.19	246.55	-101.69	247.36	119.89	127.47	1.941	CC
5,700.00	5,669.47	5,660.94	5,658.89	12.81	463.38	-95.81	246.11	-101.25	247.85	112.34	135.51	1.829	
5,750.00	5,705.70	5,697.00	5,694.92	13.03	467.15	-100.99	245.24	-100.40	252.57	82.38	170.19	1.484	Level 3
5,800.00	5,738.47	5,729.60	5,727.51	13.30	470.56	-105.34	244.47	-99.64	263.12	44.82	218.30	1.205	Level 2
5,850.00	5,767.46	5,758.46	5,756.35	13.62	473.57	-108.56	243.79	-98.97	280.01	11.50	268.51	1.043	Level 2
5,900.00	5,792.43	5,783.30	5,781.17	14.02	476.17	-110.40	243.22	-98.41	303.16	-10.95	314.11	0.965	Level 1
5,950.00	5,813.12	5,803.89	5,801.76	14.47	478.32	-110.69	242.76	-97.95	331.99	-20.30	352.29	0.942	Level 1, ES, SF
6,000.00	5,829.37	5,820.06	5,817.92	15.00	480.01	-109.20	242.40	-97.60	365.67	-17.00	382.67	0.956	Level 1
6,050.00	5,841.00	5,831.64	5,829.49	15.59	481.22	-105.65	242.14	-97.34	403.26	-2.86	406.12	0.993	Level 1
6,100.00	5,847.93	5,838.53	5,836.38	16.23	481.94	-99.74	241.99	-97.19	443.82	19.95	423.87	1.047	Level 2
6,150.00	5,850.07	5,840.67	5,838.52	16.92	482.17	-91.27	241.94	-97.15	486.50	49.41	437.09	1.113	Level 2
6,156.48	5,850.00	5,840.59	5,838.44	17.01	482.16	-89.99	241.94	-97.15	492.14	53.61	438.53	1.122	Level 2
6,200.00	5,849.24	5,839.84	5,837.69	17.65	482.08	-89.81	241.96	-97.17	530.54	83.56	446.98	1.187	Level 2
6,300.00	5,847.50	5,838.10	5,835.95	19.22	481.90	-89.39	242.00	-97.20	621.32	160.63	460.69	1.349	Level 3
6,400.00	5,845.75	5,836.36	5,834.22	20.91	481.72	-88.98	242.03	-97.24	714.57	245.17	469.40	1.522	
6,500.00	5,844.01	5,834.63	5,832.48	22.70	481.54	-88.57	242.07	-97.28	809.42	334.23	475.20	1.703	
6,600.00	5,842.26	5,832.89	5,830.74	24.57	481.35	-88.16	242.11	-97.32	905.39	426.17	479.21	1.889	
6,700.00	5,840.52	5,831.15	5,829.01	26.49	481.17	-87.74	242.15	-97.35	1,002.13	520.06	482.08	2.079	
6,800.00	5,838.77	5,829.42	5,827.27	28.46	480.99	-87.33	242.19	-97.39	1,099.46	615.29	484.17	2.271	
6,900.00	5,837.03	5,827.68	5,825.54	30.47	480.81	-86.92	242.23	-97.43	1,197.23	711.48	485.74	2.465	
7,000.00	5,835.28	5,825.94	5,823.80	32.51	480.63	-86.51	242.27	-97.47	1,295.33	808.41	486.92	2.660	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #604 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 202-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,100.00	5,833.53	5,824.21	5,822.07	34.57	480.45	-86.10	242.30	-97.51	1,393.70	905.87	487.83	2.857	
7,200.00	5,831.79	5,822.47	5,820.33	36.66	480.26	-85.69	242.34	-97.54	1,492.29	1,003.76	488.53	3.055	
7,300.00	5,830.04	5,820.73	5,818.59	38.76	480.08	-85.28	242.38	-97.58	1,591.05	1,101.97	489.08	3.253	
7,400.00	5,828.30	5,819.00	5,816.86	40.88	479.90	-84.87	242.42	-97.62	1,689.95	1,200.45	489.50	3.452	
7,500.00	5,826.55	5,817.26	5,815.12	43.01	479.72	-84.47	242.46	-97.66	1,788.98	1,299.15	489.83	3.652	
7,600.00	5,824.81	5,815.52	5,813.39	45.15	479.54	-84.06	242.50	-97.70	1,888.10	1,398.03	490.08	3.853	
7,700.00	5,823.06	5,813.79	5,811.65	47.30	479.36	-83.65	242.54	-97.74	1,987.32	1,497.05	490.27	4.054	
7,800.00	5,821.32	5,812.05	5,809.91	49.46	479.18	-83.25	242.58	-97.77	2,086.60	1,596.19	490.41	4.255	
7,900.00	5,819.57	5,810.31	5,808.18	51.62	478.99	-82.84	242.61	-97.81	2,185.95	1,695.44	490.51	4.457	
8,000.00	5,817.83	5,808.58	5,806.44	53.79	478.81	-82.44	242.65	-97.85	2,285.36	1,794.78	490.57	4.659	
8,100.00	5,816.08	5,806.84	5,804.71	55.97	478.63	-82.04	242.69	-97.89	2,384.81	1,894.20	490.61	4.861	
8,200.00	5,814.34	5,805.10	5,802.97	58.15	478.45	-81.64	242.73	-97.93	2,484.30	1,993.68	490.62	5.064	
8,300.00	5,812.59	5,803.37	5,801.24	60.34	478.27	-81.24	242.77	-97.97	2,583.84	2,093.22	490.62	5.267	
8,400.00	5,810.85	5,801.63	5,799.50	62.53	478.09	-80.84	242.81	-98.00	2,683.41	2,192.81	490.59	5.470	
8,500.00	5,809.10	5,799.89	5,797.76	64.73	477.91	-80.44	242.85	-98.04	2,783.00	2,292.45	490.56	5.673	
8,600.00	5,807.36	5,798.16	5,796.03	66.92	477.72	-80.04	242.89	-98.08	2,882.63	2,392.12	490.50	5.877	
8,700.00	5,805.61	5,796.42	5,794.29	69.12	477.54	-79.65	242.93	-98.12	2,982.28	2,491.83	490.44	6.081	
8,800.00	5,803.87	5,794.68	5,792.56	71.33	477.36	-79.25	242.97	-98.16	3,081.95	2,591.57	490.37	6.285	
8,900.00	5,802.12	5,792.95	5,790.82	73.53	477.18	-78.86	243.01	-98.20	3,181.64	2,691.34	490.29	6.489	
9,000.00	5,800.37	5,791.21	5,789.09	75.74	477.00	-78.46	243.04	-98.24	3,281.34	2,791.13	490.21	6.694	
9,100.00	5,798.63	5,789.47	5,787.35	77.95	476.82	-78.07	243.08	-98.28	3,381.07	2,890.95	490.12	6.899	
9,200.00	5,796.88	5,787.74	5,785.61	80.16	476.63	-77.68	243.12	-98.31	3,480.81	2,990.79	490.02	7.103	
9,300.00	5,795.14	5,786.00	5,783.88	82.38	476.45	-77.30	243.16	-98.35	3,580.56	3,090.64	489.92	7.309	
9,400.00	5,793.39	5,784.27	5,782.14	84.59	476.27	-76.91	243.20	-98.39	3,680.32	3,190.52	489.81	7.514	
9,500.00	5,791.65	5,782.53	5,780.41	86.81	476.09	-76.52	243.24	-98.43	3,780.10	3,290.40	489.70	7.719	
9,600.00	5,789.90	5,780.79	5,778.67	89.02	475.91	-76.14	243.28	-98.47	3,879.89	3,390.30	489.59	7.925	
9,700.00	5,788.16	5,779.06	5,776.94	91.24	475.73	-75.75	243.32	-98.51	3,979.69	3,490.22	489.47	8.131	
9,800.00	5,786.41	5,777.32	5,775.20	93.46	475.55	-75.37	243.36	-98.55	4,079.49	3,590.14	489.35	8.337	
9,900.00	5,784.67	5,775.58	5,773.46	95.68	475.36	-74.99	243.40	-98.59	4,179.31	3,690.08	489.23	8.543	
10,000.00	5,782.92	5,773.85	5,771.73	97.91	475.18	-74.62	243.44	-98.63	4,279.13	3,790.03	489.10	8.749	
10,100.00	5,781.18	5,772.11	5,769.99	100.13	475.00	-74.24	243.48	-98.67	4,378.96	3,889.98	488.98	8.955	
10,200.00	5,779.43	5,770.37	5,768.26	102.35	474.82	-73.86	243.52	-98.70	4,478.80	3,989.95	488.85	9.162	
10,300.00	5,777.69	5,768.64	5,766.52	104.58	474.64	-73.49	243.56	-98.74	4,578.64	4,089.92	488.72	9.369	
10,400.00	5,775.94	5,766.90	5,764.79	106.80	474.46	-73.12	243.60	-98.78	4,678.49	4,189.90	488.59	9.575	
10,500.00	5,774.20	5,765.18	5,763.05	109.03	474.28	-72.75	243.64	-98.82	4,778.35	4,289.89	488.46	9.782	
10,600.00	5,772.45	5,763.43	5,761.31	111.25	474.09	-72.38	243.68	-98.86	4,878.21	4,389.88	488.33	9.990	
10,700.00	5,770.71	5,761.69	5,759.58	113.48	473.91	-72.01	243.72	-98.90	4,978.08	4,489.88	488.20	10.197	
10,800.00	5,768.96	5,759.95	5,757.84	115.71	473.73	-71.65	243.76	-98.94	5,077.95	4,589.88	488.06	10.404	
10,900.00	5,767.21	5,758.22	5,756.11	117.94	473.55	-71.28	243.80	-98.98	5,177.82	4,689.89	487.93	10.612	
11,000.00	5,765.47	5,756.48	5,754.37	120.17	473.37	-70.92	243.84	-99.02	5,277.70	4,789.90	487.80	10.819	
11,100.00	5,763.72	5,754.74	5,752.64	122.40	473.19	-70.56	243.88	-99.06	5,377.58	4,889.92	487.66	11.027	
11,200.00	5,761.98	5,753.01	5,750.90	124.63	473.00	-70.20	243.92	-99.10	5,477.47	4,989.95	487.52	11.235	
11,300.00	5,760.23	5,751.27	5,749.17	126.86	472.82	-69.84	243.96	-99.14	5,577.36	5,089.97	487.39	11.443	
11,400.00	5,758.49	5,749.53	5,747.43	129.09	472.64	-69.49	244.00	-99.18	5,677.25	5,190.00	487.25	11.652	
11,500.00	5,756.74	5,747.80	5,745.69	131.32	472.46	-69.14	244.04	-99.22	5,777.15	5,290.04	487.11	11.860	
11,600.00	5,755.00	5,746.06	5,743.96	133.55	472.28	-68.79	244.08	-99.26	5,877.05	5,390.07	486.98	12.068	
11,700.00	5,753.25	5,744.32	5,742.22	135.78	472.10	-68.44	244.12	-99.30	5,976.95	5,490.11	486.84	12.277	
11,802.14	5,751.47	5,742.55	5,740.45	138.06	471.91	-68.08	244.16	-99.34	6,079.00	5,592.30	486.70	12.490	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	***Output errors are at***	*2.00 sigma*
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design — Skelly Unit #422H - Skelly Unit #623 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1875-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	109.84	109.84	0.00	0.10	44.39	4,998.89	4,892.79	6,895.12				
100.00	100.00	204.84	204.83	0.09	0.22	44.38	4,998.68	4,891.95	6,994.34	6,994.04	0.30	N/A	
200.00	200.00	317.53	317.52	0.32	0.34	44.38	4,997.81	4,891.43	6,993.46	6,992.81	0.65	N/A	
300.00	300.00	407.31	407.30	0.54	0.43	44.39	4,996.74	4,891.42	6,992.60	6,991.62	0.97	7,185.553	
400.00	400.00	500.00	499.98	0.77	0.53	44.40	4,995.62	4,891.59	6,991.86	6,990.58	1.29	5,432.555	
500.00	500.00	594.43	594.40	0.99	0.63	44.40	4,994.60	4,891.77	6,991.22	6,989.62	1.60	4,365.458	
600.00	600.00	704.91	704.87	1.22	0.76	44.41	4,993.50	4,891.83	6,990.55	6,988.61	1.94	3,604.879	
700.00	700.00	827.96	827.92	1.44	0.92	44.42	4,992.11	4,891.65	6,989.65	6,987.35	2.30	3,035.615	
800.00	800.00	943.55	943.49	1.67	1.07	44.42	4,990.63	4,891.08	6,988.38	6,985.71	2.67	2,620.016	
900.00	900.00	1,031.27	1,031.21	1.89	1.19	44.43	4,989.59	4,890.57	6,987.13	6,984.13	3.00	2,328.262	
1,000.00	1,000.00	1,112.91	1,112.85	2.12	1.29	44.43	4,988.78	4,890.26	6,986.15	6,982.82	3.33	2,100.513	
1,100.00	1,100.00	1,200.00	1,199.93	2.34	1.41	44.43	4,987.95	4,890.01	6,985.28	6,981.62	3.66	1,911.055	
1,200.00	1,200.00	1,272.35	1,272.28	2.56	1.49	44.43	4,987.45	4,889.91	6,984.72	6,980.77	3.95	1,768.616	
1,261.19	1,261.19	1,313.26	1,313.19	2.70	1.53	44.43	4,987.36	4,889.93	6,984.64	6,980.52	4.12	1,696.786	
1,300.00	1,300.00	1,342.54	1,342.47	2.79	1.54	44.44	4,987.36	4,889.96	6,984.66	6,980.45	4.21	1,658.887	
1,400.00	1,400.00	1,420.61	1,420.54	3.01	1.55	44.43	4,987.61	4,890.05	6,984.97	6,980.53	4.44	1,571.769	
1,500.00	1,500.00	1,507.17	1,507.09	3.24	1.52	44.43	4,987.99	4,890.34	6,985.52	6,980.87	4.65	1,502.451	
1,600.00	1,600.00	1,600.00	1,599.92	3.46	1.51	44.43	4,988.42	4,890.88	6,986.26	6,981.40	4.86	1,437.694	
1,700.00	1,700.00	1,681.31	1,681.23	3.69	1.52	44.44	4,988.84	4,891.53	6,987.17	6,982.09	5.08	1,375.413	
1,800.00	1,800.00	2,845.80	2,838.19	3.91	3.23	43.86	4,986.02	4,792.04	6,985.45	6,978.67	6.79	1,029.031	
1,900.00	1,900.00	2,884.00	2,875.79	4.14	3.33	43.83	4,985.25	4,785.33	6,971.77	6,964.66	7.11	981.207	
2,000.00	2,000.00	2,947.00	2,937.81	4.36	3.52	43.76	4,984.77	4,774.24	6,958.88	6,951.39	7.49	928.910	
2,100.00	2,100.00	2,994.66	2,984.70	4.59	3.68	43.71	4,984.94	4,765.73	6,946.80	6,938.75	7.85	885.021	
2,200.00	2,200.00	3,072.00	3,060.75	4.81	3.93	43.62	4,985.87	4,751.72	6,934.83	6,926.53	8.30	835.917	
2,300.00	2,300.00	3,251.88	3,237.34	5.04	4.57	43.40	4,988.28	4,717.56	6,922.58	6,913.52	9.06	763.936	
2,400.00	2,400.00	3,479.00	3,460.20	5.26	5.41	43.14	4,987.99	4,673.84	6,909.51	6,899.53	9.98	692.681	
2,500.00	2,500.00	3,542.00	3,521.94	5.49	5.65	43.07	4,987.28	4,661.31	6,895.04	6,884.64	10.40	663.131	
2,600.00	2,600.00	3,636.00	3,614.14	5.71	5.99	42.96	4,986.51	4,643.01	6,881.02	6,870.12	10.91	630.910	
2,700.00	2,700.00	3,693.36	3,670.44	5.94	6.20	42.89	4,986.21	4,632.05	6,867.44	6,856.13	11.31	607.083	
2,800.00	2,800.00	3,762.25	3,738.09	6.16	6.45	42.81	4,986.00	4,619.05	6,854.27	6,842.52	11.75	583.213	
2,900.00	2,900.00	3,825.00	3,799.78	6.39	6.67	42.74	4,985.92	4,607.54	6,841.60	6,829.43	12.18	561.928	
3,000.00	3,000.00	3,897.27	3,870.88	6.61	6.93	42.68	4,985.94	4,594.62	6,829.40	6,816.78	12.63	540.941	
3,100.00	3,100.00	3,979.87	3,952.20	6.84	7.23	42.57	4,986.15	4,580.09	6,817.56	6,804.45	13.11	520.081	
3,200.00	3,200.00	4,120.76	4,090.86	7.06	7.74	42.41	4,986.26	4,555.16	6,805.58	6,791.82	13.77	494.320	
3,300.00	3,300.00	4,200.00	4,168.88	7.28	8.02	42.33	4,986.04	4,541.28	6,793.46	6,779.22	14.24	477.063	
3,400.00	3,400.00	4,356.24	4,322.49	7.51	8.61	42.15	4,985.58	4,512.81	6,780.80	6,765.85	14.96	453.360	
3,500.00	3,500.00	4,462.14	4,426.52	7.73	9.02	42.03	4,985.34	4,492.96	6,767.95	6,752.42	15.53	435.805	
3,600.00	3,600.00	4,532.64	4,495.78	7.96	9.29	41.94	4,985.22	4,479.76	6,755.19	6,739.20	15.99	422.489	
3,700.00	3,700.00	4,607.00	4,568.93	8.18	9.56	41.86	4,985.13	4,466.44	6,742.99	6,726.53	16.46	409.695	
3,800.00	3,800.00	4,637.73	4,599.21	8.41	9.67	41.83	4,985.13	4,461.19	6,731.43	6,714.64	16.79	400.933	
3,900.00	3,900.00	4,684.24	4,645.12	8.63	9.83	41.78	4,985.24	4,453.74	6,720.77	6,703.61	17.16	391.579	
4,000.00	4,000.00	4,753.23	4,713.30	8.86	10.06	41.71	4,985.24	4,443.25	6,710.62	6,693.03	17.59	381.436	
4,100.00	4,100.00	4,794.00	4,753.87	9.08	10.18	41.67	4,985.19	4,437.49	6,701.15	6,683.21	17.94	373.499	
4,200.00	4,200.00	4,856.00	4,815.15	9.31	10.37	41.62	4,984.92	4,429.51	6,692.32	6,673.99	18.34	364.974	
4,300.00	4,300.00	4,894.25	4,853.15	9.53	10.47	41.60	4,984.65	4,425.20	6,684.33	6,665.67	18.66	358.176	
4,400.00	4,400.00	4,919.00	4,877.78	9.76	10.54	41.58	4,984.49	4,422.72	6,677.35	6,658.39	18.95	352.280	
4,500.00	4,500.00	4,959.63	4,918.25	9.98	10.63	41.56	4,984.35	4,419.13	6,671.33	6,652.05	19.28	346.100	
4,600.00	4,600.00	4,981.00	4,939.55	10.21	10.69	41.55	4,984.35	4,417.47	6,666.37	6,646.82	19.55	340.946	
4,700.00	4,700.00	5,044.00	5,002.42	10.43	10.82	41.52	4,984.68	4,413.41	6,662.42	6,642.51	19.91	334.594	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #623 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1875-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,800.00	5,073.65	5,032.03	10.68	10.88	41.51	4,984.90	4,411.88	6,659.30	6,639.11	20.20	329.742	
4,900.00	4,900.00	5,127.98	5,086.32	10.88	10.98	41.49	4,985.19	4,409.58	6,656.92	6,636.39	20.52	324.360	
5,000.00	5,000.00	5,169.00	5,127.31	11.11	11.05	41.48	4,985.39	4,408.31	6,655.30	6,634.48	20.82	319.654	
5,100.00	5,100.00	5,232.00	5,190.30	11.33	11.15	41.48	4,985.70	4,407.12	6,654.42	6,633.28	21.15	314.634	
5,181.30	5,181.30	5,275.00	5,233.30	11.51	11.21	41.47	4,985.89	4,406.61	6,654.12	6,632.72	21.40	310.948	
5,200.00	5,200.00	5,275.00	5,233.30	11.56	11.21	41.47	4,985.89	4,406.61	6,654.15	6,632.71	21.44	310.363	
5,300.00	5,300.00	5,275.00	5,233.30	11.78	11.21	41.47	4,985.89	4,406.61	6,655.18	6,633.53	21.65	307.362	
5,329.21	5,329.21	5,275.00	5,233.30	11.85	11.21	41.47	4,985.89	4,406.61	6,655.77	6,634.05	21.71	306.523	
5,350.00	5,349.99	5,275.00	5,233.30	11.89	11.21	-3.94	4,985.89	4,406.61	6,655.85	6,634.09	21.76	305.929	
5,400.00	5,399.78	5,275.00	5,233.30	12.00	11.21	-3.96	4,985.89	4,406.61	6,652.92	6,631.06	21.86	304.393	
5,450.00	5,448.92	5,275.00	5,233.30	12.11	11.21	-4.02	4,985.89	4,406.61	6,645.60	6,623.64	21.96	302.651	
5,500.00	5,496.96	5,275.00	5,233.30	12.23	11.21	-4.11	4,985.89	4,406.61	6,633.95	6,611.89	22.06	300.737	
5,550.00	5,543.45	5,275.00	5,233.30	12.35	11.21	-4.25	4,985.89	4,406.61	6,618.05	6,595.89	22.16	298.670	
5,600.00	5,587.97	5,275.00	5,233.30	12.48	11.21	-4.43	4,985.89	4,406.61	6,598.01	6,575.76	22.26	296.468	
5,650.00	5,630.10	5,275.00	5,233.30	12.63	11.21	-4.67	4,985.89	4,406.61	6,573.99	6,551.64	22.35	294.147	
5,700.00	5,669.47	5,275.00	5,233.30	12.81	11.21	-4.98	4,985.89	4,406.61	6,546.16	6,523.72	22.44	291.726	
5,750.00	5,705.70	5,275.00	5,233.30	13.03	11.21	-5.38	4,985.89	4,406.61	6,514.73	6,492.20	22.52	289.222	
5,800.00	5,738.47	5,275.00	5,233.30	13.30	11.21	-5.91	4,985.89	4,406.61	6,479.94	6,457.33	22.61	286.655	
5,850.00	5,767.46	5,275.00	5,233.30	13.62	11.21	-6.60	4,985.89	4,406.61	6,442.06	6,419.38	22.68	284.047	
5,900.00	5,792.43	5,275.00	5,233.30	14.02	11.21	-7.55	4,985.89	4,406.61	6,401.38	6,378.64	22.75	281.419	
5,950.00	5,813.12	5,275.00	5,233.30	14.47	11.21	-8.90	4,985.89	4,406.61	6,358.24	6,335.43	22.81	278.793	
6,000.00	5,829.37	5,275.00	5,233.30	15.00	11.21	-10.92	4,985.89	4,406.61	6,312.98	6,290.12	22.86	276.190	
6,050.00	5,841.00	5,275.00	5,233.30	15.59	11.21	-14.24	4,985.89	4,406.61	6,265.97	6,243.07	22.90	273.630	
6,100.00	5,847.93	5,275.00	5,233.30	16.23	11.21	-20.50	4,985.89	4,406.61	6,217.62	6,194.69	22.93	271.128	
6,150.00	5,850.07	5,275.00	5,233.30	16.92	11.21	-35.64	4,985.89	4,406.61	6,168.35	6,145.39	22.96	268.694	
6,156.48	5,850.00	5,275.00	5,233.30	17.01	11.21	-39.15	4,985.89	4,406.61	6,161.92	6,138.95	22.96	268.356	
6,200.00	5,849.24	5,275.00	5,233.30	17.65	11.21	-39.15	4,985.89	4,406.61	6,118.70	6,095.73	22.97	266.324	
6,300.00	5,847.50	5,275.00	5,233.30	19.22	11.21	-39.15	4,985.89	4,406.61	6,019.42	5,996.41	23.01	261.637	
6,400.00	5,845.75	5,275.00	5,233.30	20.91	11.21	-39.15	4,985.89	4,406.61	5,920.16	5,897.11	23.04	256.913	
6,500.00	5,844.01	5,275.00	5,233.30	22.70	11.21	-39.15	4,985.89	4,406.61	5,820.92	5,797.84	23.09	252.151	
6,600.00	5,842.26	5,275.00	5,233.30	24.57	11.21	-39.15	4,985.89	4,406.61	5,721.71	5,698.58	23.13	247.352	
6,700.00	5,840.52	5,275.00	5,233.30	26.49	11.21	-39.15	4,985.89	4,406.61	5,622.53	5,599.35	23.18	242.514	
6,800.00	5,838.77	5,275.00	5,233.30	28.46	11.21	-39.15	4,985.89	4,406.61	5,523.38	5,500.14	23.24	237.637	
6,900.00	5,837.03	5,275.00	5,233.30	30.47	11.21	-39.15	4,985.89	4,406.61	5,424.26	5,400.95	23.31	232.721	
7,000.00	5,835.28	5,275.00	5,233.30	32.51	11.21	-39.15	4,985.89	4,406.61	5,325.18	5,301.80	23.38	227.765	
7,100.00	5,833.53	5,275.00	5,233.30	34.57	11.21	-39.15	4,985.89	4,406.61	5,226.12	5,202.66	23.46	222.770	
7,200.00	5,831.79	5,275.00	5,233.30	36.66	11.21	-39.15	4,985.89	4,406.61	5,127.11	5,103.56	23.55	217.736	
7,300.00	5,830.04	5,275.00	5,233.30	38.78	11.21	-39.15	4,985.89	4,406.61	5,028.13	5,004.49	23.64	212.661	
7,400.00	5,828.30	5,275.00	5,233.30	40.88	11.21	-39.15	4,985.89	4,406.61	4,929.20	4,905.45	23.75	207.548	
7,500.00	5,826.55	5,275.00	5,233.30	43.01	11.21	-39.15	4,985.89	4,406.61	4,830.31	4,806.44	23.87	202.396	
7,600.00	5,824.81	5,275.00	5,233.30	45.15	11.21	-39.15	4,985.89	4,406.61	4,731.46	4,707.47	23.99	197.205	
7,700.00	5,823.06	5,275.00	5,233.30	47.30	11.21	-39.15	4,985.89	4,406.61	4,632.67	4,608.54	24.13	191.977	
7,800.00	5,821.32	5,275.00	5,233.30	49.46	11.21	-39.15	4,985.89	4,406.61	4,533.93	4,509.64	24.28	186.713	
7,900.00	5,819.57	5,275.00	5,233.30	51.62	11.21	-39.15	4,985.89	4,406.61	4,435.24	4,410.79	24.45	181.414	
8,000.00	5,817.83	5,275.00	5,233.30	53.79	11.21	-39.15	4,985.89	4,406.61	4,336.61	4,311.99	24.63	176.082	
8,100.00	5,816.08	5,275.00	5,233.30	55.97	11.21	-39.15	4,985.89	4,406.61	4,238.05	4,213.23	24.82	170.719	
8,200.00	5,814.34	5,275.00	5,233.30	58.15	11.21	-39.15	4,985.89	4,406.61	4,139.56	4,114.52	25.04	165.327	
8,300.00	5,812.59	5,275.00	5,233.30	60.34	11.21	-39.15	4,985.89	4,406.61	4,041.14	4,015.87	25.27	159.909	
8,400.00	5,810.85	5,275.00	5,233.30	62.53	11.21	-39.15	4,985.89	4,406.61	3,942.81	3,917.28	25.52	154.469	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #623 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1875-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,500.00	5,809.10	5,275.00	5,233.30	64.73	11.21	-39.15	4,985.89	4,406.61	3,844.55	3,818.75	25.80	149.011	
8,600.00	5,807.36	5,275.00	5,233.30	66.92	11.21	-39.15	4,985.89	4,406.61	3,748.39	3,720.29	26.10	143.538	
8,700.00	5,805.61	5,275.00	5,233.30	69.12	11.21	-39.15	4,985.89	4,406.61	3,648.33	3,621.91	26.43	138.055	
8,800.00	5,803.87	5,275.00	5,233.30	71.33	11.21	-39.15	4,985.89	4,406.61	3,550.38	3,523.60	26.78	132.568	
8,900.00	5,802.12	5,275.00	5,233.30	73.53	11.21	-39.15	4,985.89	4,406.61	3,452.55	3,425.38	27.17	127.083	
9,000.00	5,800.37	5,275.00	5,233.30	75.74	11.21	-39.15	4,985.89	4,406.61	3,354.84	3,327.25	27.59	121.607	
9,100.00	5,798.63	5,275.00	5,233.30	77.95	11.21	-39.15	4,985.89	4,406.61	3,257.27	3,229.23	28.04	116.145	
9,200.00	5,796.88	5,275.00	5,233.30	80.16	11.21	-39.15	4,985.89	4,406.61	3,159.86	3,131.32	28.54	110.706	
9,300.00	5,795.14	5,275.00	5,233.30	82.38	11.21	-39.15	4,985.89	4,406.61	3,062.61	3,033.52	29.08	105.299	
9,400.00	5,793.39	5,275.00	5,233.30	84.59	11.21	-39.15	4,985.89	4,406.61	2,965.54	2,935.87	29.68	99.931	
9,500.00	5,791.65	5,275.00	5,233.30	86.81	11.21	-39.15	4,985.89	4,406.61	2,868.68	2,838.36	30.32	94.612	
9,600.00	5,789.90	5,275.00	5,233.30	89.02	11.21	-39.15	4,985.89	4,406.61	2,772.04	2,741.01	31.02	89.353	
9,700.00	5,788.16	5,275.00	5,233.30	91.24	11.21	-39.15	4,985.89	4,406.61	2,675.64	2,643.85	31.79	84.162	
9,800.00	5,786.41	5,275.00	5,233.30	93.46	11.21	-39.15	4,985.89	4,406.61	2,579.52	2,546.89	32.63	79.050	
9,900.00	5,784.67	5,275.00	5,233.30	95.68	11.21	-39.15	4,985.89	4,406.61	2,483.71	2,450.16	33.55	74.028	
10,000.00	5,782.92	5,275.00	5,233.30	97.91	11.21	-39.15	4,985.89	4,406.61	2,388.24	2,353.68	34.56	69.108	
10,100.00	5,781.18	5,275.00	5,233.30	100.13	11.21	-39.15	4,985.89	4,406.61	2,293.15	2,257.49	35.66	64.301	
10,200.00	5,779.43	5,275.00	5,233.30	102.35	11.21	-39.15	4,985.89	4,406.61	2,198.51	2,161.63	36.88	59.617	
10,300.00	5,777.69	5,275.00	5,233.30	104.58	11.21	-39.15	4,985.89	4,406.61	2,104.35	2,066.14	38.21	55.068	
10,400.00	5,775.94	5,275.00	5,233.30	106.80	11.21	-39.15	4,985.89	4,406.61	2,010.76	1,971.08	39.69	50.666	
10,500.00	5,774.20	5,275.00	5,233.30	109.03	11.21	-39.15	4,985.89	4,406.61	1,917.82	1,876.51	41.31	46.421	
10,600.00	5,772.45	5,275.00	5,233.30	111.25	11.21	-39.15	4,985.89	4,406.61	1,825.63	1,782.51	43.11	42.344	
10,700.00	5,770.71	5,275.00	5,233.30	113.48	11.21	-39.15	4,985.89	4,406.61	1,734.30	1,689.19	45.11	38.446	
10,800.00	5,768.96	5,275.00	5,233.30	115.71	11.21	-39.15	4,985.89	4,406.61	1,643.98	1,596.65	47.33	34.738	
10,900.00	5,767.21	5,275.00	5,233.30	117.94	11.21	-39.15	4,985.89	4,406.61	1,554.84	1,505.05	49.79	31.227	
11,000.00	5,765.47	5,275.00	5,233.30	120.17	11.21	-39.15	4,985.89	4,406.61	1,467.11	1,414.57	52.54	27.925	
11,100.00	5,763.72	5,275.00	5,233.30	122.40	11.21	-39.15	4,985.89	4,406.61	1,381.05	1,325.44	55.60	24.839	
11,200.00	5,761.98	5,275.00	5,233.30	124.63	11.21	-39.15	4,985.89	4,406.61	1,296.98	1,237.97	59.02	21.977	
11,300.00	5,760.23	5,275.00	5,233.30	126.86	11.21	-39.15	4,985.89	4,406.61	1,215.33	1,152.51	62.82	19.346	
11,400.00	5,758.49	5,275.00	5,233.30	129.09	11.21	-39.15	4,985.89	4,406.61	1,136.62	1,069.58	67.04	16.953	
11,500.00	5,756.74	5,275.00	5,233.30	131.32	11.21	-39.15	4,985.89	4,406.61	1,061.50	989.79	71.70	14.804	
11,600.00	5,755.00	5,275.00	5,233.30	133.55	11.21	-39.15	4,985.89	4,406.61	990.78	913.99	76.79	12.902	
11,700.00	5,753.25	5,275.00	5,233.30	135.78	11.21	-39.15	4,985.89	4,406.61	925.49	843.24	82.25	11.253	
11,802.14	5,751.47	5,275.00	5,233.30	138.06	11.21	-39.15	4,985.89	4,406.61	865.66	777.60	88.06	9.830	CC, ES, SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #636 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1840-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	11.86	11.86	0.00	0.01	52.90	1,911.00	2,526.49	3,167.82				
100.00	100.00	127.07	127.07	0.09	0.11	52.89	1,910.78	2,525.96	3,167.32	3,167.11	0.21	N/A	
200.00	200.00	211.22	211.22	0.32	0.19	52.90	1,910.24	2,526.08	3,167.03	3,166.53	0.50	6,324.840	
300.00	300.00	316.79	316.78	0.54	0.30	52.92	1,909.35	2,526.56	3,166.89	3,166.09	0.80	3,976.254	
400.00	400.00	424.05	424.04	0.77	0.43	52.94	1,908.40	2,526.72	3,166.47	3,165.36	1.11	2,844.738	
500.00	500.00	518.51	518.49	0.99	0.55	52.95	1,907.63	2,526.86	3,166.10	3,164.68	1.42	2,230.929	
600.00	600.00	617.93	617.91	1.22	0.68	52.96	1,906.86	2,527.09	3,165.81	3,164.09	1.72	1,836.481	
700.00	700.00	720.61	720.59	1.44	0.81	52.98	1,906.08	2,527.27	3,165.50	3,163.47	2.03	1,556.421	
800.00	800.00	825.86	825.84	1.67	0.95	52.99	1,905.18	2,527.34	3,165.04	3,162.68	2.35	1,344.855	
900.00	900.00	925.72	925.68	1.89	1.08	53.00	1,904.20	2,527.41	3,164.49	3,161.82	2.67	1,185.590	
1,000.00	1,000.00	1,023.58	1,023.54	2.12	1.21	53.02	1,903.16	2,527.60	3,164.01	3,161.03	2.98	1,062.253	
1,100.00	1,100.00	1,122.19	1,122.15	2.34	1.33	53.04	1,902.11	2,527.81	3,163.54	3,160.26	3.28	963.095	
1,200.00	1,200.00	1,200.00	1,199.95	2.56	1.43	53.06	1,901.25	2,528.17	3,163.30	3,159.73	3.57	886.481	
1,206.93	1,206.93	1,215.98	1,215.93	2.58	1.45	53.06	1,901.08	2,528.28	3,163.28	3,159.68	3.59	880.754	
1,300.00	1,300.00	1,285.55	1,285.49	2.79	1.52	53.07	1,900.55	2,529.00	3,163.62	3,159.79	3.83	825.545	
1,400.00	1,400.00	1,367.06	1,367.00	3.01	1.59	53.09	1,900.23	2,530.33	3,164.68	3,160.59	4.08	775.078	
1,500.00	1,500.00	1,456.08	1,455.99	3.24	1.66	53.12	1,899.86	2,532.32	3,166.21	3,161.88	4.34	730.041	
1,600.00	1,600.00	1,540.29	1,540.17	3.46	1.73	53.15	1,899.55	2,534.49	3,168.07	3,163.48	4.59	689.657	
1,700.00	1,700.00	1,620.37	1,620.22	3.69	1.79	53.17	1,899.75	2,536.89	3,170.61	3,165.75	4.85	653.393	
1,800.00	1,800.00	1,716.99	1,716.78	3.91	1.87	53.20	1,900.08	2,540.14	3,173.51	3,168.38	5.13	619.165	
1,900.00	1,900.00	1,842.86	1,842.59	4.14	1.92	53.24	1,900.47	2,543.85	3,176.06	3,170.68	5.38	590.773	
2,000.00	2,000.00	2,286.65	2,285.74	4.36	2.22	53.42	1,883.02	2,537.47	3,171.93	3,165.92	6.00	528.503	
2,100.00	2,100.00	2,399.30	2,397.92	4.59	2.37	53.45	1,875.71	2,530.10	3,162.78	3,156.38	6.40	494.483	
2,200.00	2,200.00	2,491.66	2,489.90	4.81	2.50	53.47	1,869.97	2,524.12	3,153.87	3,147.11	6.76	466.476	
2,300.00	2,300.00	2,577.36	2,575.24	5.04	2.64	53.49	1,864.23	2,518.84	3,144.97	3,137.84	7.13	441.033	
2,400.00	2,400.00	2,647.63	2,645.27	5.26	2.75	53.52	1,859.63	2,515.28	3,136.98	3,129.51	7.48	419.570	
2,500.00	2,500.00	2,786.54	2,783.71	5.49	3.01	53.57	1,850.84	2,508.07	3,129.13	3,121.18	7.96	393.339	
2,600.00	2,600.00	2,899.88	2,896.58	5.71	3.24	53.62	1,842.78	2,501.58	3,120.33	3,111.93	8.40	371.620	
2,700.00	2,700.00	2,977.00	2,973.36	5.94	3.40	53.66	1,836.91	2,497.34	3,111.40	3,102.63	8.77	354.583	
2,800.00	2,800.00	3,129.83	3,125.44	6.16	3.74	53.73	1,825.30	2,487.83	3,101.80	3,092.49	9.30	333.434	
2,900.00	2,900.00	3,237.48	3,232.50	6.39	3.99	53.78	1,816.65	2,480.69	3,091.72	3,081.97	9.75	317.247	
3,000.00	3,000.00	3,340.38	3,334.78	6.61	4.25	53.85	1,807.54	2,473.91	3,081.16	3,070.97	10.19	302.344	
3,100.00	3,100.00	3,394.94	3,389.05	6.84	4.38	53.88	1,803.02	2,470.44	3,071.22	3,060.68	10.54	291.431	
3,200.00	3,200.00	3,477.00	3,470.75	7.06	4.57	53.92	1,796.87	2,466.04	3,062.45	3,051.51	10.94	279.996	
3,300.00	3,300.00	3,540.00	3,533.53	7.28	4.71	53.95	1,792.66	2,462.99	3,054.57	3,043.27	11.30	270.317	
3,400.00	3,400.00	3,639.94	3,633.19	7.51	4.94	53.99	1,786.66	2,458.52	3,047.42	3,035.69	11.73	259.734	
3,500.00	3,500.00	3,742.60	3,735.54	7.73	5.17	54.04	1,780.20	2,453.85	3,040.04	3,027.87	12.17	249.737	
3,600.00	3,600.00	3,838.96	3,831.61	7.96	5.39	54.08	1,774.37	2,449.27	3,032.63	3,020.03	12.60	240.687	
3,700.00	3,700.00	3,993.20	3,985.22	8.18	5.77	54.15	1,763.33	2,440.81	3,023.77	3,010.63	13.14	230.100	
3,800.00	3,800.00	4,089.65	4,081.23	8.41	6.00	54.21	1,755.95	2,435.30	3,014.66	3,001.08	13.57	222.118	
3,900.00	3,900.00	4,174.59	4,165.82	8.63	6.21	54.25	1,749.84	2,430.49	3,005.86	2,991.88	13.98	214.987	
4,000.00	4,000.00	4,281.76	4,272.56	8.86	6.47	54.30	1,742.35	2,424.60	2,997.32	2,982.88	14.43	207.649	
4,100.00	4,100.00	4,394.35	4,384.64	9.08	6.76	54.36	1,733.83	2,418.15	2,988.24	2,973.34	14.90	200.488	
4,200.00	4,200.00	4,488.20	4,478.06	9.31	7.00	54.41	1,726.56	2,412.85	2,979.13	2,963.79	15.34	194.235	
4,300.00	4,300.00	4,606.00	4,595.28	9.53	7.31	54.47	1,717.70	2,405.23	2,969.44	2,953.63	15.82	187.756	
4,400.00	4,400.00	4,690.69	4,679.58	9.76	7.52	54.50	1,711.65	2,399.77	2,960.05	2,943.82	16.23	182.419	
4,500.00	4,500.00	4,783.68	4,772.15	9.98	7.76	54.55	1,704.81	2,394.20	2,950.90	2,934.25	16.65	177.178	
4,600.00	4,600.00	4,842.82	4,831.06	10.21	7.90	54.58	1,700.70	2,391.12	2,942.65	2,925.63	17.02	172.906	
4,700.00	4,700.00	4,887.00	4,875.13	10.43	8.01	54.59	1,698.21	2,389.13	2,935.89	2,918.54	17.35	169.239	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #636 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1840-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,800.00	4,950.00	4,938.02	10.66	8.14	54.61	1,695.39	2,386.78	2,930.48	2,912.77	17.71	165.501	
4,900.00	4,900.00	5,012.00	4,999.96	10.88	8.27	54.63	1,693.19	2,385.15	2,926.45	2,908.40	18.06	162.044	
5,000.00	5,000.00	5,075.00	5,062.94	11.11	8.39	54.64	1,691.96	2,384.40	2,924.21	2,905.80	18.41	158.844	
5,100.00	5,100.00	5,135.46	5,123.40	11.33	8.50	54.65	1,691.53	2,384.23	2,923.37	2,904.62	18.75	155.923	
5,200.00	5,200.00	5,228.41	5,216.35	11.56	8.66	54.65	1,691.00	2,384.23	2,923.02	2,903.87	19.16	152.598	
5,300.00	5,300.00	5,334.85	5,322.79	11.78	8.85	54.67	1,690.21	2,384.39	2,922.73	2,903.13	19.59	149.173	
5,329.21	5,329.21	5,365.83	5,353.76	11.85	8.90	54.67	1,689.85	2,384.45	2,922.57	2,902.85	19.72	148.198	
5,350.00	5,349.99	5,385.21	5,373.15	11.89	8.94	9.28	1,689.62	2,384.49	2,922.06	2,902.25	19.81	147.537	
5,400.00	5,399.78	5,431.65	5,419.58	12.00	9.02	9.38	1,689.14	2,384.59	2,917.52	2,897.51	20.01	145.817	
5,450.00	5,448.92	5,487.17	5,475.10	12.11	9.12	9.59	1,688.61	2,384.68	2,908.29	2,888.06	20.23	143.742	
5,500.00	5,496.96	5,540.47	5,528.39	12.23	9.22	9.92	1,688.07	2,384.58	2,894.32	2,873.86	20.45	141.513	
5,550.00	5,543.45	5,557.00	5,544.92	12.35	9.25	10.33	1,687.90	2,384.54	2,876.01	2,855.42	20.59	139.678	
5,600.00	5,587.97	5,557.00	5,544.92	12.48	9.25	10.82	1,687.90	2,384.54	2,854.07	2,833.38	20.69	137.969	
5,650.00	5,630.10	5,557.00	5,544.92	12.63	9.25	11.45	1,687.90	2,384.54	2,828.65	2,807.88	20.78	136.155	
5,700.00	5,669.47	5,557.00	5,544.92	12.81	9.25	12.24	1,687.90	2,384.54	2,799.91	2,779.05	20.86	134.237	
5,750.00	5,705.70	5,557.00	5,544.92	13.03	9.25	13.25	1,687.90	2,384.54	2,768.01	2,747.07	20.93	132.221	
5,800.00	5,738.47	5,557.00	5,544.92	13.30	9.25	14.54	1,687.90	2,384.54	2,733.13	2,712.12	21.01	130.112	
5,850.00	5,767.46	5,557.00	5,544.92	13.62	9.25	16.20	1,687.90	2,384.54	2,695.49	2,674.42	21.07	127.916	
5,900.00	5,792.43	5,557.00	5,544.92	14.02	9.25	18.41	1,687.90	2,384.54	2,655.33	2,634.20	21.13	125.640	
5,950.00	5,813.12	5,557.00	5,544.92	14.47	9.25	21.42	1,687.90	2,384.54	2,612.91	2,591.72	21.19	123.293	
6,000.00	5,829.37	5,557.00	5,544.92	15.00	9.25	25.66	1,687.90	2,384.54	2,568.51	2,547.26	21.25	120.885	
6,050.00	5,841.00	5,557.00	5,544.92	15.59	9.25	31.94	1,687.90	2,384.54	2,522.46	2,501.16	21.30	118.428	
6,100.00	5,847.93	5,557.00	5,544.92	16.23	9.25	41.69	1,687.90	2,384.54	2,475.09	2,453.74	21.35	115.927	
6,150.00	5,850.07	5,557.00	5,544.92	16.92	9.25	57.35	1,687.90	2,384.54	2,426.78	2,405.38	21.40	113.400	
6,156.48	5,850.00	5,557.00	5,544.92	17.01	9.25	59.95	1,687.90	2,384.54	2,420.47	2,399.06	21.41	113.056	
6,200.00	5,849.24	5,557.00	5,544.92	17.65	9.25	59.95	1,687.90	2,384.54	2,378.09	2,356.64	21.45	110.862	
6,300.00	5,847.50	5,557.00	5,544.92	19.22	9.25	59.95	1,687.90	2,384.54	2,280.87	2,259.30	21.57	105.751	
6,400.00	5,845.75	5,557.00	5,544.92	20.91	9.25	59.95	1,687.90	2,384.54	2,183.90	2,162.17	21.72	100.538	
6,500.00	5,844.01	5,557.00	5,544.92	22.70	9.25	59.95	1,687.90	2,384.54	2,087.21	2,065.29	21.92	95.220	
6,600.00	5,842.26	5,557.00	5,544.92	24.57	9.25	59.95	1,687.90	2,384.54	1,990.85	1,968.88	22.17	89.795	
6,700.00	5,840.52	5,557.00	5,544.92	26.49	9.25	59.95	1,687.90	2,384.54	1,894.87	1,872.38	22.49	84.267	
6,800.00	5,838.77	5,557.00	5,544.92	28.46	9.25	59.95	1,687.90	2,384.54	1,799.33	1,776.45	22.88	78.644	
6,900.00	5,837.03	5,557.00	5,544.92	30.47	9.25	59.95	1,687.90	2,384.54	1,704.30	1,680.93	23.37	72.941	
7,000.00	5,835.28	5,557.00	5,544.92	32.51	9.25	59.95	1,687.90	2,384.54	1,609.87	1,585.90	23.96	67.179	
7,100.00	5,833.53	5,557.00	5,544.92	34.57	9.25	59.95	1,687.90	2,384.54	1,516.15	1,491.45	24.70	61.390	
7,200.00	5,831.79	5,557.00	5,544.92	36.66	9.25	59.95	1,687.90	2,384.54	1,423.29	1,397.70	25.59	55.615	
7,300.00	5,830.04	5,557.00	5,544.92	38.76	9.25	59.95	1,687.90	2,384.54	1,331.47	1,304.78	26.68	49.903	
7,400.00	5,828.30	5,557.00	5,544.92	40.88	9.25	59.95	1,687.90	2,384.54	1,240.90	1,212.90	28.00	44.313	
7,500.00	5,826.55	5,557.00	5,544.92	43.01	9.25	59.95	1,687.90	2,384.54	1,151.91	1,122.30	29.60	38.912	
7,600.00	5,824.81	5,557.00	5,544.92	45.15	9.25	59.95	1,687.90	2,384.54	1,064.86	1,033.33	31.53	33.769	
7,700.00	5,823.06	5,557.00	5,544.92	47.30	9.25	59.95	1,687.90	2,384.54	980.29	946.44	33.86	28.954	
7,800.00	5,821.32	5,557.00	5,544.92	49.46	9.25	59.95	1,687.90	2,384.54	898.90	862.26	36.64	24.534	
7,900.00	5,819.57	5,557.00	5,544.92	51.62	9.25	59.95	1,687.90	2,384.54	821.62	781.69	39.94	20.572	
8,000.00	5,817.83	5,557.00	5,544.92	53.79	9.25	59.95	1,687.90	2,384.54	749.74	705.94	43.80	17.118	
8,100.00	5,816.08	5,557.00	5,544.92	55.97	9.25	59.95	1,687.90	2,384.54	684.95	636.76	48.19	14.213	
8,200.00	5,814.34	5,557.00	5,544.92	58.15	9.25	59.95	1,687.90	2,384.54	629.44	576.48	52.97	11.883	
8,300.00	5,812.59	5,557.00	5,544.92	60.34	9.25	59.95	1,687.90	2,384.54	585.67	528.09	57.78	10.140	
8,400.00	5,810.85	5,557.00	5,544.92	62.53	9.25	59.95	1,687.90	2,384.54	557.03	495.00	62.03	8.980	
8,500.00	5,809.10	5,557.00	5,544.92	64.73	9.25	59.95	1,687.90	2,384.54	545.28	480.24	65.04	8.384	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 1 Skelly Unit #422H - Skelly Unit #636 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1840-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,514.78	5,808.84	5,557.00	5,544.92	65.05	9.25	59.95	1,687.90	2,384.54	545.08	479.74	65.34	8.342	CC, ES
8,600.00	5,807.36	5,557.00	5,544.92	66.92	9.25	59.95	1,687.90	2,384.54	551.70	485.40	66.31	8.320	SF
8,700.00	5,805.61	5,557.00	5,544.92	69.12	9.25	59.95	1,687.90	2,384.54	575.69	509.66	65.83	8.745	
8,800.00	5,803.87	5,557.00	5,544.92	71.33	9.25	59.95	1,687.90	2,384.54	615.19	551.17	64.03	9.608	
8,900.00	5,802.12	5,557.00	5,544.92	73.53	9.25	59.95	1,687.90	2,384.54	667.46	605.99	61.47	10.858	
9,000.00	5,800.37	5,557.00	5,544.92	75.74	9.25	59.95	1,687.90	2,384.54	729.76	671.13	58.64	12.445	
9,100.00	5,798.63	5,557.00	5,544.92	77.95	9.25	59.95	1,687.90	2,384.54	799.75	743.92	55.83	14.324	
9,200.00	5,796.88	5,557.00	5,544.92	80.16	9.25	59.95	1,687.90	2,384.54	875.58	822.36	53.22	16.453	
9,300.00	5,795.14	5,557.00	5,544.92	82.38	9.25	59.95	1,687.90	2,384.54	955.87	905.02	50.85	18.798	
9,400.00	5,793.39	5,557.00	5,544.92	84.59	9.25	59.95	1,687.90	2,384.54	1,039.56	990.84	48.74	21.328	
9,500.00	5,791.65	5,557.00	5,544.92	86.81	9.25	59.95	1,687.90	2,384.54	1,125.95	1,079.07	46.88	24.017	
9,600.00	5,789.90	5,557.00	5,544.92	89.02	9.25	59.95	1,687.90	2,384.54	1,214.42	1,169.18	45.24	26.843	
9,700.00	5,788.16	5,557.00	5,544.92	91.24	9.25	59.95	1,687.90	2,384.54	1,304.55	1,260.76	43.80	29.786	
9,800.00	5,786.41	5,557.00	5,544.92	93.46	9.25	59.95	1,687.90	2,384.54	1,396.03	1,353.51	42.52	32.832	
9,900.00	5,784.67	5,557.00	5,544.92	95.68	9.25	59.95	1,687.90	2,384.54	1,488.61	1,447.22	41.39	35.965	
10,000.00	5,782.92	5,557.00	5,544.92	97.91	9.25	59.95	1,687.90	2,384.54	1,582.09	1,541.70	40.39	39.173	
10,100.00	5,781.18	5,557.00	5,544.92	100.13	9.25	59.95	1,687.90	2,384.54	1,676.32	1,636.83	39.49	42.448	
10,200.00	5,779.43	5,557.00	5,544.92	102.35	9.25	59.95	1,687.90	2,384.54	1,771.18	1,732.49	38.69	45.780	
10,300.00	5,777.69	5,557.00	5,544.92	104.58	9.25	59.95	1,687.90	2,384.54	1,866.58	1,828.61	37.97	49.161	
10,400.00	5,775.94	5,557.00	5,544.92	106.80	9.25	59.95	1,687.90	2,384.54	1,962.44	1,925.12	37.32	52.585	
10,500.00	5,774.20	5,557.00	5,544.92	109.03	9.25	59.95	1,687.90	2,384.54	2,058.69	2,021.98	36.73	56.046	
10,600.00	5,772.45	5,557.00	5,544.92	111.25	9.25	59.95	1,687.90	2,384.54	2,155.29	2,119.09	36.20	59.540	
10,700.00	5,770.71	5,557.00	5,544.92	113.48	9.25	59.95	1,687.90	2,384.54	2,252.18	2,216.46	35.71	63.061	
10,800.00	5,768.96	5,557.00	5,544.92	115.71	9.25	59.95	1,687.90	2,384.54	2,349.33	2,314.06	35.27	66.607	
10,900.00	5,767.21	5,557.00	5,544.92	117.94	9.25	59.95	1,687.90	2,384.54	2,446.71	2,411.84	34.87	70.173	
11,000.00	5,765.47	5,557.00	5,544.92	120.17	9.25	59.95	1,687.90	2,384.54	2,544.30	2,509.80	34.50	73.757	
11,100.00	5,763.72	5,557.00	5,544.92	122.40	9.25	59.95	1,687.90	2,384.54	2,642.06	2,607.91	34.15	77.356	
11,200.00	5,761.98	5,557.00	5,544.92	124.63	9.25	59.95	1,687.90	2,384.54	2,739.99	2,706.15	33.84	80.968	
11,300.00	5,760.23	5,557.00	5,544.92	126.86	9.25	59.95	1,687.90	2,384.54	2,838.06	2,804.51	33.55	84.590	
11,400.00	5,758.49	5,557.00	5,544.92	129.09	9.25	59.95	1,687.90	2,384.54	2,936.26	2,902.98	33.28	88.221	
11,500.00	5,756.74	5,557.00	5,544.92	131.32	9.25	59.95	1,687.90	2,384.54	3,034.58	3,001.54	33.04	91.859	
11,600.00	5,755.00	5,557.00	5,544.92	133.55	9.25	59.95	1,687.90	2,384.54	3,133.00	3,100.20	32.81	95.503	
11,700.00	5,753.25	5,557.00	5,544.92	135.78	9.25	59.95	1,687.90	2,384.54	3,231.52	3,198.93	32.59	99.151	
11,802.14	5,751.47	5,557.00	5,544.92	138.06	9.25	59.95	1,687.90	2,384.54	3,332.25	3,299.86	32.39	102.880	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #651 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-ISCWSA-GYRO-3, 1900-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	50.01	50.01	0.00	0.05	61.46	4,164.73	7,658.61	8,717.77				
100.00	100.00	145.51	145.51	0.09	0.18	61.46	4,164.96	7,658.69	8,717.95	8,717.69	0.27	N/A	
200.00	200.00	248.09	248.09	0.32	0.37	61.46	4,165.21	7,658.70	8,718.07	8,717.40	0.67	N/A	
300.00	300.00	346.08	346.08	0.54	0.55	61.46	4,165.41	7,658.78	8,718.24	8,717.16	1.07	8,112.458	
400.00	400.00	438.00	438.00	0.77	0.72	61.46	4,165.75	7,658.76	8,718.40	8,716.94	1.46	5,954.199	
500.00	500.00	519.12	519.11	0.99	0.88	61.46	4,166.15	7,658.89	8,718.78	8,716.94	1.84	4,750.289	
600.00	600.00	618.90	618.89	1.22	1.06	61.45	4,166.55	7,659.24	8,719.28	8,717.04	2.24	3,886.643	
700.00	700.00	762.67	762.67	1.44	1.31	61.45	4,167.23	7,659.25	8,719.52	8,716.80	2.72	3,209.293	
800.00	800.00	864.30	864.30	1.67	1.48	61.45	4,167.11	7,659.19	8,719.41	8,716.30	3.11	2,803.984	
829.89	829.89	889.89	889.89	1.73	1.51	61.45	4,167.02	7,659.24	8,719.40	8,716.18	3.22	2,708.525	
900.00	900.00	951.19	951.18	1.89	1.61	61.45	4,166.77	7,659.41	8,719.44	8,715.95	3.48	2,503.549	
1,000.00	1,000.00	1,056.06	1,056.05	2.12	1.78	61.46	4,166.39	7,659.77	8,719.56	8,715.67	3.89	2,241.678	
1,100.00	1,100.00	1,176.51	1,176.50	2.34	1.98	61.46	4,165.98	7,659.87	8,719.48	8,715.16	4.32	2,018.016	
1,200.00	1,200.00	1,272.18	1,272.17	2.56	2.14	61.46	4,165.45	7,659.96	8,719.29	8,714.58	4.71	1,851.539	
1,297.05	1,297.05	1,357.06	1,357.05	2.78	2.29	61.47	4,164.92	7,660.17	8,719.22	8,714.14	5.07	1,718.406	
1,300.00	1,300.00	1,359.60	1,359.59	2.79	2.30	61.47	4,164.90	7,660.18	8,719.22	8,714.13	5.09	1,714.671	
1,400.00	1,400.00	1,451.12	1,451.11	3.01	2.46	61.47	4,164.37	7,660.54	8,719.29	8,713.82	5.47	1,594.316	
1,500.00	1,500.00	1,538.52	1,538.50	3.24	2.61	61.47	4,163.91	7,660.94	8,719.43	8,713.59	5.85	1,491.005	
1,600.00	1,600.00	1,616.18	1,616.16	3.46	2.75	61.48	4,163.65	7,661.40	8,719.81	8,713.60	6.21	1,404.229	
1,700.00	1,700.00	1,700.00	1,699.98	3.69	2.90	61.48	4,163.50	7,662.11	8,720.46	8,713.87	6.58	1,324.442	
1,800.00	1,800.00	1,782.26	1,782.23	3.91	3.05	61.48	4,163.33	7,663.00	8,721.30	8,714.34	6.96	1,253.667	
1,900.00	1,900.00	1,868.54	1,868.51	4.14	3.14	61.49	4,163.17	7,664.04	8,722.26	8,715.00	7.27	1,200.185	
2,000.00	2,000.00	1,929.62	1,929.58	4.36	3.18	61.49	4,163.26	7,664.82	8,723.48	8,715.96	7.52	1,159.291	
2,100.00	2,100.00	1,962.00	1,961.96	4.59	3.18	61.49	4,163.51	7,665.31	8,725.31	8,717.56	7.75	1,125.381	
2,200.00	2,200.00	2,014.15	2,014.09	4.81	3.19	61.49	4,164.25	7,666.31	8,727.76	8,719.77	7.99	1,092.244	
2,300.00	2,300.00	2,056.00	2,055.92	5.04	3.21	61.49	4,165.17	7,667.33	8,730.92	8,722.70	8.22	1,061.533	
2,400.00	2,400.00	2,108.50	2,108.37	5.26	3.23	61.48	4,167.02	7,668.58	8,734.69	8,726.22	8.47	1,031.336	
2,500.00	2,500.00	2,263.83	2,263.39	5.49	3.31	61.43	4,176.50	7,670.15	8,738.56	8,729.78	8.78	995.754	
2,600.00	2,600.00	2,335.00	2,334.42	5.71	3.36	61.41	4,181.09	7,670.71	8,742.27	8,733.22	9.05	966.492	
2,700.00	2,700.00	2,429.00	2,428.24	5.94	3.43	61.38	4,186.72	7,671.79	8,746.15	8,736.81	9.34	936.560	
2,800.00	2,800.00	2,495.05	2,494.15	6.16	3.49	61.36	4,190.92	7,672.44	8,750.08	8,740.46	9.62	909.439	
2,900.00	2,900.00	2,642.79	2,641.52	6.39	3.65	61.30	4,201.46	7,673.52	8,754.23	8,744.23	10.00	875.596	
3,000.00	3,000.00	2,748.16	2,746.67	6.61	3.78	61.26	4,208.25	7,673.90	8,757.64	8,747.30	10.34	846.685	
3,100.00	3,100.00	2,810.18	2,808.54	6.84	3.86	61.24	4,212.53	7,674.27	8,761.47	8,750.82	10.64	823.149	
3,200.00	3,200.00	2,896.00	2,894.16	7.06	3.98	61.21	4,218.24	7,674.75	8,765.23	8,754.25	10.98	798.203	
3,300.00	3,300.00	2,952.39	2,950.44	7.28	4.06	61.19	4,221.80	7,675.39	8,769.43	8,758.15	11.28	777.362	
3,400.00	3,400.00	2,990.00	2,987.96	7.51	4.12	61.18	4,224.19	7,676.26	8,774.48	8,762.93	11.55	759.460	
3,500.00	3,500.00	3,177.00	3,174.57	7.73	4.41	61.13	4,235.36	7,680.58	8,779.42	8,767.37	12.06	728.248	
3,600.00	3,600.00	3,270.00	3,267.39	7.96	4.56	61.10	4,240.88	7,682.22	8,783.84	8,771.41	12.43	706.930	
3,700.00	3,700.00	3,461.59	3,458.63	8.18	4.90	61.04	4,252.44	7,684.28	8,787.62	8,774.65	12.97	677.396	
3,800.00	3,800.00	3,550.00	3,546.89	8.41	5.05	61.01	4,257.50	7,684.79	8,790.92	8,777.57	13.35	658.486	
3,900.00	3,900.00	3,643.00	3,639.71	8.63	5.23	60.98	4,263.21	7,685.48	8,794.56	8,780.82	13.74	640.107	
4,000.00	4,000.00	3,736.00	3,732.52	8.86	5.40	60.95	4,269.08	7,686.20	8,798.29	8,784.16	14.13	622.581	
4,100.00	4,100.00	3,804.99	3,801.37	9.08	5.53	60.93	4,273.39	7,686.73	8,802.06	8,787.57	14.48	607.802	
4,200.00	4,200.00	3,888.55	3,884.75	9.31	5.70	60.90	4,278.84	7,687.78	8,806.31	8,791.45	14.86	592.568	
4,300.00	4,300.00	4,029.58	4,025.48	9.53	5.98	60.85	4,287.88	7,689.24	8,810.35	8,794.99	15.36	573.736	
4,400.00	4,400.00	4,122.38	4,118.10	9.76	6.16	60.82	4,293.57	7,690.17	8,814.21	8,798.46	15.76	559.364	
4,500.00	4,500.00	4,245.79	4,241.28	9.98	6.41	60.78	4,301.12	7,691.14	8,817.87	8,801.64	16.22	543.483	
4,600.00	4,600.00	4,327.06	4,322.39	10.21	6.58	60.76	4,306.17	7,691.74	8,821.56	8,804.95	16.61	531.140	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #651 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-ISCWSA-GYRO-3, 1900-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,700.00	4,700.00	4,401.04	4,396.22	10.43	6.73	60.73	4,310.84	7,692.51	8,825.55	8,808.58	16.98	519.840	
4,800.00	4,800.00	4,537.66	4,532.57	10.66	7.01	60.69	4,319.31	7,694.07	8,829.63	8,812.15	17.47	505.277	
4,900.00	4,900.00	4,648.24	4,642.94	10.88	7.25	60.65	4,326.09	7,694.73	8,833.15	8,815.22	17.92	492.810	
5,000.00	5,000.00	4,781.96	4,776.41	11.11	7.53	60.61	4,334.22	7,695.43	8,836.60	8,818.18	18.42	479.641	
5,100.00	5,100.00	4,887.46	4,881.72	11.33	7.75	60.58	4,340.47	7,695.68	8,839.72	8,820.85	18.87	468.548	
5,200.00	5,200.00	5,142.38	5,136.34	11.56	8.27	60.51	4,352.36	7,696.50	8,842.76	8,823.16	19.60	451.050	
5,300.00	5,300.00	5,273.00	5,266.94	11.78	8.52	60.50	4,354.80	7,696.74	8,843.80	8,823.72	20.08	440.488	
5,329.21	5,329.21	5,273.00	5,266.94	11.85	8.52	60.50	4,354.80	7,696.74	8,844.15	8,824.01	20.14	439.071	
5,350.00	5,349.99	5,273.00	5,266.94	11.89	8.52	15.09	4,354.80	7,696.74	8,844.06	8,823.87	20.19	438.074	
5,400.00	5,399.78	5,273.00	5,266.94	12.00	8.52	15.18	4,354.80	7,696.74	8,840.77	8,820.48	20.30	435.587	
5,450.00	5,448.92	5,273.00	5,266.94	12.11	8.52	15.41	4,354.80	7,696.74	8,833.16	8,812.75	20.40	432.893	
5,500.00	5,496.96	5,273.00	5,266.94	12.23	8.52	15.77	4,354.80	7,696.74	8,821.28	8,800.77	20.51	430.036	
5,550.00	5,543.45	5,273.00	5,266.94	12.35	8.52	16.28	4,354.80	7,696.74	8,805.24	8,784.62	20.62	427.041	
5,600.00	5,587.97	5,273.00	5,266.94	12.48	8.52	16.97	4,354.80	7,696.74	8,785.14	8,764.42	20.72	423.923	
5,650.00	5,630.10	5,273.00	5,266.94	12.63	8.52	17.88	4,354.80	7,696.74	8,761.16	8,740.34	20.83	420.697	
5,700.00	5,669.47	5,273.00	5,266.94	12.81	8.52	19.03	4,354.80	7,696.74	8,733.49	8,712.56	20.92	417.375	
5,750.00	5,705.70	5,273.00	5,266.94	13.03	8.52	20.52	4,354.80	7,696.74	8,702.33	8,681.31	21.02	413.966	
5,800.00	5,738.47	5,273.00	5,266.94	13.30	8.52	22.43	4,354.80	7,696.74	8,667.95	8,646.84	21.12	410.484	
5,850.00	5,767.46	5,273.00	5,266.94	13.62	8.52	24.91	4,354.80	7,696.74	8,630.63	8,609.42	21.21	406.940	
5,900.00	5,792.43	5,273.00	5,266.94	14.02	8.52	28.18	4,354.80	7,696.74	8,590.66	8,569.36	21.30	403.350	
5,950.00	5,813.12	5,273.00	5,266.94	14.47	8.52	32.59	4,354.80	7,696.74	8,548.39	8,527.01	21.39	399.728	
6,000.00	5,829.37	5,273.00	5,266.94	15.00	8.52	38.66	4,354.80	7,696.74	8,504.18	8,482.71	21.47	396.091	
6,050.00	5,841.00	5,273.00	5,266.94	15.59	8.52	47.20	4,354.80	7,696.74	8,458.39	8,436.84	21.55	392.452	
6,100.00	5,847.93	5,273.00	5,266.94	16.23	8.52	59.22	4,354.80	7,696.74	8,411.44	8,389.81	21.63	388.827	
6,150.00	5,850.07	5,273.00	5,266.94	16.92	8.52	75.32	4,354.80	7,696.74	8,363.74	8,342.03	21.71	385.226	
6,156.48	5,850.00	5,273.00	5,266.94	17.01	8.52	77.67	4,354.80	7,696.74	8,357.53	8,335.80	21.72	384.730	
6,200.00	5,849.24	5,273.00	5,266.94	17.65	8.52	77.67	4,354.80	7,696.74	8,315.78	8,293.99	21.79	381.619	
6,300.00	5,847.50	5,273.00	5,266.94	19.22	8.52	77.67	4,354.80	7,696.74	8,219.93	8,197.96	21.97	374.126	
6,400.00	5,845.75	5,273.00	5,266.94	20.91	8.52	77.67	4,354.80	7,696.74	8,124.17	8,101.99	22.19	366.172	
6,500.00	5,844.01	5,273.00	5,266.94	22.70	8.52	77.67	4,354.80	7,696.74	8,028.52	8,006.09	22.44	357.794	
6,600.00	5,842.26	5,273.00	5,266.94	24.57	8.52	77.67	4,354.80	7,696.74	7,932.98	7,910.25	22.73	349.036	
6,700.00	5,840.52	5,273.00	5,266.94	26.49	8.52	77.67	4,354.80	7,696.74	7,837.55	7,814.49	23.06	339.947	
6,800.00	5,838.77	5,273.00	5,266.94	28.46	8.52	77.67	4,354.80	7,696.74	7,742.23	7,718.81	23.42	330.580	
6,900.00	5,837.03	5,273.00	5,266.94	30.47	8.52	77.67	4,354.80	7,696.74	7,647.03	7,623.21	23.82	320.988	
7,000.00	5,835.28	5,273.00	5,266.94	32.51	8.52	77.67	4,354.80	7,696.74	7,551.96	7,527.70	24.27	311.226	
7,100.00	5,833.53	5,273.00	5,266.94	34.57	8.52	77.67	4,354.80	7,696.74	7,457.02	7,432.27	24.75	301.348	
7,200.00	5,831.79	5,273.00	5,266.94	36.66	8.52	77.67	4,354.80	7,696.74	7,362.21	7,336.94	25.26	291.405	
7,300.00	5,830.04	5,273.00	5,266.94	38.76	8.52	77.67	4,354.80	7,696.74	7,267.54	7,241.71	25.82	281.446	
7,400.00	5,828.30	5,273.00	5,266.94	40.88	8.52	77.67	4,354.80	7,696.74	7,173.01	7,146.59	26.42	271.516	
7,500.00	5,826.55	5,273.00	5,266.94	43.01	8.52	77.67	4,354.80	7,696.74	7,078.63	7,051.58	27.05	261.655	
7,600.00	5,824.81	5,273.00	5,266.94	45.15	8.52	77.67	4,354.80	7,696.74	6,984.41	6,956.69	27.73	251.901	
7,700.00	5,823.06	5,273.00	5,266.94	47.30	8.52	77.67	4,354.80	7,696.74	6,890.36	6,861.92	28.44	242.283	
7,800.00	5,821.32	5,273.00	5,266.94	49.46	8.52	77.67	4,354.80	7,696.74	6,796.47	6,767.28	29.19	232.831	
7,900.00	5,819.57	5,273.00	5,266.94	51.62	8.52	77.67	4,354.80	7,696.74	6,702.76	6,672.78	29.98	223.567	
8,000.00	5,817.83	5,273.00	5,266.94	53.79	8.52	77.67	4,354.80	7,696.74	6,609.23	6,578.42	30.81	214.510	
8,100.00	5,816.08	5,273.00	5,266.94	55.97	8.52	77.67	4,354.80	7,696.74	6,515.90	6,484.22	31.68	205.678	
8,200.00	5,814.34	5,273.00	5,266.94	58.15	8.52	77.67	4,354.80	7,696.74	6,422.77	6,390.18	32.59	197.078	
8,300.00	5,812.59	5,273.00	5,266.94	60.34	8.52	77.67	4,354.80	7,696.74	6,329.84	6,296.30	33.54	188.720	
8,400.00	5,810.85	5,273.00	5,266.94	62.53	8.52	77.67	4,354.80	7,696.74	6,237.14	6,202.61	34.53	180.615	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #651 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-ISCWSA-GYRO-3, 1900-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,500.00	5,809.10	5,273.00	5,266.94	64.73	8.52	77.67	4,354.80	7,696.74	6,144.66	6,109.10	35.57	172.763	
8,600.00	5,807.36	5,273.00	5,266.94	66.92	8.52	77.67	4,354.80	7,696.74	6,052.43	6,015.78	36.64	165.168	
8,700.00	5,805.61	5,273.00	5,266.94	69.12	8.52	77.67	4,354.80	7,696.74	5,960.44	5,922.68	37.76	157.830	
8,800.00	5,803.87	5,273.00	5,266.94	71.33	8.52	77.67	4,354.80	7,696.74	5,868.72	5,829.79	38.93	150.748	
8,900.00	5,802.12	5,273.00	5,266.94	73.53	8.52	77.67	4,354.80	7,696.74	5,777.27	5,737.13	40.14	143.919	
9,000.00	5,800.37	5,273.00	5,266.94	75.74	8.52	77.67	4,354.80	7,696.74	5,686.11	5,644.71	41.40	137.340	
9,100.00	5,798.63	5,273.00	5,266.94	77.95	8.52	77.67	4,354.80	7,696.74	5,595.25	5,552.54	42.71	131.007	
9,200.00	5,796.88	5,273.00	5,266.94	80.16	8.52	77.67	4,354.80	7,696.74	5,504.71	5,460.64	44.07	124.916	
9,300.00	5,795.14	5,273.00	5,266.94	82.38	8.52	77.67	4,354.80	7,696.74	5,414.50	5,369.02	45.48	119.061	
9,400.00	5,793.39	5,273.00	5,266.94	84.59	8.52	77.67	4,354.80	7,696.74	5,324.64	5,277.70	46.94	113.436	
9,500.00	5,791.65	5,273.00	5,266.94	86.81	8.52	77.67	4,354.80	7,696.74	5,235.15	5,186.69	48.46	108.036	
9,600.00	5,789.90	5,273.00	5,266.94	89.02	8.52	77.67	4,354.80	7,696.74	5,146.04	5,096.01	50.03	102.855	
9,700.00	5,788.16	5,273.00	5,266.94	91.24	8.52	77.67	4,354.80	7,696.74	5,057.34	5,005.68	51.67	97.885	
9,800.00	5,786.41	5,273.00	5,266.94	93.46	8.52	77.67	4,354.80	7,696.74	4,969.07	4,915.71	53.36	93.122	
9,900.00	5,784.67	5,273.00	5,266.94	95.68	8.52	77.67	4,354.80	7,696.74	4,881.26	4,826.14	55.12	88.558	
10,000.00	5,782.92	5,273.00	5,266.94	97.91	8.52	77.67	4,354.80	7,696.74	4,793.92	4,736.98	56.94	84.188	
10,100.00	5,781.18	5,273.00	5,266.94	100.13	8.52	77.67	4,354.80	7,696.74	4,707.09	4,648.25	58.83	80.005	
10,200.00	5,779.43	5,273.00	5,266.94	102.35	8.52	77.67	4,354.80	7,696.74	4,620.78	4,559.99	60.80	76.003	
10,300.00	5,777.69	5,273.00	5,266.94	104.58	8.52	77.67	4,354.80	7,696.74	4,535.04	4,472.21	62.83	72.176	
10,400.00	5,775.94	5,273.00	5,266.94	106.80	8.52	77.67	4,354.80	7,696.74	4,449.90	4,384.95	64.95	68.518	
10,500.00	5,774.20	5,273.00	5,266.94	109.03	8.52	77.67	4,354.80	7,696.74	4,365.39	4,298.25	67.14	65.023	
10,600.00	5,772.45	5,273.00	5,266.94	111.25	8.52	77.67	4,354.80	7,696.74	4,281.54	4,212.13	69.41	61.686	
10,700.00	5,770.71	5,273.00	5,266.94	113.48	8.52	77.67	4,354.80	7,696.74	4,198.40	4,126.63	71.77	58.502	
10,800.00	5,768.96	5,273.00	5,266.94	115.71	8.52	77.67	4,354.80	7,696.74	4,116.01	4,041.80	74.21	55.465	
10,900.00	5,767.21	5,273.00	5,266.94	117.94	8.52	77.67	4,354.80	7,696.74	4,034.42	3,957.67	76.75	52.569	
11,000.00	5,765.47	5,273.00	5,266.94	120.17	8.52	77.67	4,354.80	7,696.74	3,953.67	3,874.30	79.37	49.811	
11,100.00	5,763.72	5,273.00	5,266.94	122.40	8.52	77.67	4,354.80	7,696.74	3,873.82	3,791.72	82.10	47.185	
11,200.00	5,761.98	5,273.00	5,266.94	124.63	8.52	77.67	4,354.80	7,696.74	3,794.93	3,710.01	84.92	44.687	
11,300.00	5,760.23	5,273.00	5,266.94	126.86	8.52	77.67	4,354.80	7,696.74	3,717.05	3,629.20	87.85	42.312	
11,400.00	5,758.49	5,273.00	5,266.94	129.09	8.52	77.67	4,354.80	7,696.74	3,640.25	3,549.38	90.88	40.056	
11,500.00	5,756.74	5,273.00	5,266.94	131.32	8.52	77.67	4,354.80	7,696.74	3,564.61	3,470.59	94.02	37.915	
11,600.00	5,755.00	5,273.00	5,266.94	133.55	8.52	77.67	4,354.80	7,696.74	3,490.19	3,392.93	97.26	35.885	
11,700.00	5,753.25	5,273.00	5,266.94	135.78	8.52	77.67	4,354.80	7,696.74	3,417.08	3,316.48	100.62	33.962	
11,802.14	5,751.47	5,273.00	5,266.94	138.08	8.52	77.67	4,354.80	7,696.74	3,343.84	3,239.68	104.15	32.104	CC, ES, SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #654 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1980-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	41.16	41.16	0.00	0.03	35.72	4,700.76	3,380.38	5,790.01				
100.00	100.00	124.89	124.89	0.09	0.11	35.72	4,701.22	3,380.26	5,790.37	5,790.18	0.19	N/A	
200.00	200.00	220.22	220.22	0.32	0.23	35.71	4,701.91	3,380.11	5,790.87	5,790.36	0.51	N/A	
300.00	300.00	311.70	311.69	0.54	0.35	35.71	4,702.75	3,379.95	5,791.50	5,790.68	0.82	7,026.026	
400.00	400.00	415.91	415.90	0.77	0.49	35.70	4,703.70	3,379.77	5,792.14	5,790.99	1.16	5,005.692	
500.00	500.00	508.03	508.01	0.99	0.61	35.69	4,704.58	3,379.65	5,792.85	5,791.37	1.48	3,915.512	
600.00	600.00	618.95	618.93	1.22	0.76	35.69	4,705.55	3,379.54	5,793.49	5,791.67	1.82	3,177.529	
700.00	700.00	716.52	716.50	1.44	0.88	35.68	4,706.33	3,379.43	5,794.08	5,791.92	2.15	2,692.478	
800.00	800.00	809.25	809.22	1.67	1.01	35.67	4,707.21	3,379.30	5,794.76	5,792.29	2.47	2,341.679	
900.00	900.00	915.17	915.14	1.89	1.14	35.67	4,708.21	3,379.09	5,795.42	5,792.61	2.81	2,063.014	
1,000.00	1,000.00	1,000.00	999.96	2.12	1.25	35.66	4,709.04	3,379.05	5,796.18	5,793.05	3.13	1,854.109	
1,100.00	1,100.00	1,069.59	1,069.54	2.34	1.33	35.66	4,709.82	3,379.34	5,797.34	5,793.90	3.44	1,686.643	
1,200.00	1,200.00	1,190.09	1,190.03	2.56	1.47	35.66	4,711.21	3,380.30	5,798.78	5,794.96	3.82	1,519.802	
1,300.00	1,300.00	1,282.57	1,282.51	2.79	1.58	35.66	4,712.08	3,380.83	5,799.87	5,795.71	4.16	1,393.861	
1,400.00	1,400.00	1,363.52	1,363.45	3.01	1.67	35.66	4,712.96	3,381.48	5,801.22	5,796.74	4.48	1,294.506	
1,500.00	1,500.00	1,444.16	1,444.08	3.24	1.76	35.66	4,714.04	3,382.33	5,802.92	5,798.11	4.82	1,204.655	
1,600.00	1,600.00	1,526.93	1,526.84	3.46	1.85	35.66	4,715.32	3,383.40	5,804.94	5,799.79	5.15	1,127.371	
1,700.00	1,700.00	1,616.08	1,615.95	3.69	1.95	35.67	4,716.68	3,385.00	5,807.22	5,801.73	5.49	1,058.385	
1,800.00	1,800.00	1,727.23	1,727.08	3.91	2.06	35.68	4,718.02	3,387.36	5,809.43	5,803.58	5.85	993.588	
1,900.00	1,900.00	1,819.94	1,819.75	4.14	2.15	35.69	4,719.05	3,389.40	5,811.62	5,805.44	6.18	939.959	
2,000.00	2,000.00	1,940.75	1,940.53	4.36	2.24	35.70	4,720.50	3,392.10	5,813.94	5,807.42	6.52	891.290	
2,100.00	2,100.00	2,060.36	2,060.08	4.59	2.27	35.73	4,720.67	3,395.44	5,815.68	5,808.90	6.78	857.662	
2,200.00	2,200.00	2,462.19	2,458.90	4.81	2.66	36.20	4,688.74	3,431.40	5,813.92	5,806.51	7.41	784.731	
2,300.00	2,300.00	2,571.00	2,567.03	5.04	2.82	36.31	4,678.68	3,438.32	5,810.19	5,802.38	7.81	744.098	
2,400.00	2,400.00	2,634.00	2,629.70	5.26	2.92	36.37	4,673.47	3,442.02	5,806.92	5,798.79	8.14	713.691	
2,500.00	2,500.00	2,673.05	2,668.53	5.49	2.98	36.41	4,670.39	3,444.71	5,804.49	5,796.06	8.43	688.476	
2,600.00	2,600.00	2,846.34	2,840.52	5.71	3.33	36.62	4,654.39	3,458.60	5,801.79	5,792.78	9.02	643.502	
2,700.00	2,700.00	2,941.81	2,935.24	5.94	3.54	36.73	4,645.14	3,466.14	5,798.71	5,789.25	9.46	613.201	
2,800.00	2,800.00	3,057.87	3,050.25	6.16	3.82	36.88	4,633.10	3,475.95	5,795.44	5,785.47	9.97	581.224	
2,900.00	2,900.00	3,148.21	3,139.75	6.39	4.05	37.00	4,623.52	3,483.66	5,792.07	5,781.64	10.43	555.415	
3,000.00	3,000.00	3,318.74	3,308.56	6.61	4.51	37.23	4,604.23	3,498.13	5,788.06	5,776.95	11.11	521.066	
3,100.00	3,100.00	3,397.00	3,385.94	6.84	4.72	37.34	4,594.81	3,505.12	5,783.85	5,772.30	11.55	500.877	
3,200.00	3,200.00	3,501.65	3,489.53	7.06	5.01	37.48	4,582.80	3,513.91	5,779.80	5,767.73	12.06	479.115	
3,300.00	3,300.00	3,606.75	3,593.61	7.28	5.31	37.62	4,570.86	3,522.37	5,775.66	5,763.07	12.58	458.979	
3,400.00	3,400.00	3,702.49	3,688.51	7.51	5.58	37.74	4,560.38	3,529.44	5,771.48	5,758.41	13.07	441.450	
3,500.00	3,500.00	3,744.97	3,730.63	7.73	5.70	37.79	4,555.95	3,532.62	5,767.84	5,754.42	13.42	429.848	
3,600.00	3,600.00	3,776.00	3,761.40	7.96	5.78	37.83	4,552.89	3,535.24	5,765.30	5,751.57	13.73	419.886	
3,700.00	3,700.00	3,846.62	3,831.43	8.18	5.98	37.92	4,546.40	3,541.62	5,763.60	5,749.45	14.15	407.327	
3,800.00	3,800.00	3,937.52	3,921.58	8.41	6.23	38.03	4,538.35	3,549.99	5,762.29	5,747.66	14.63	393.932	
3,900.00	3,900.00	4,049.91	4,033.09	8.63	6.55	38.17	4,528.59	3,560.12	5,761.00	5,745.83	15.17	379.781	
4,000.00	4,000.00	4,156.00	4,138.32	8.86	6.85	38.31	4,519.15	3,569.78	5,759.65	5,743.95	15.70	366.940	
4,100.00	4,100.00	4,229.51	4,211.04	9.08	7.08	38.41	4,511.79	3,577.61	5,758.38	5,742.23	16.15	356.622	
4,200.00	4,200.00	4,468.26	4,447.07	9.31	7.84	38.77	4,486.31	3,602.78	5,757.18	5,740.06	17.12	336.218	
4,300.00	4,300.00	4,568.09	4,545.89	9.53	8.15	38.90	4,475.09	3,611.42	5,753.81	5,736.16	17.65	325.919	
4,400.00	4,400.00	4,657.59	4,634.66	9.76	8.41	39.01	4,465.91	3,618.06	5,750.48	5,732.34	18.14	317.027	
4,500.00	4,500.00	4,765.52	4,741.79	9.98	8.72	39.14	4,455.20	3,625.66	5,747.20	5,728.53	18.67	307.846	
4,600.00	*4,600.00*	*4,855.00*	*4,830.60*	*10.21*	*8.97*	*39.24*	*4,446.33*	*3,632.09*	*5,744.02*	*5,724.88*	*19.14*	*300.040*	
4,700.00	4,700.00	4,955.89	4,930.76	10.43	9.26	39.36	4,436.54	3,639.24	5,740.99	5,721.33	19.65	292.111	
4,800.00	4,800.00	5,044.00	5,018.23	10.66	9.51	39.46	4,427.92	3,645.43	5,737.88	5,717.76	20.13	285.068	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #654 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1960-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	5,108.00	5,081.77	10.88	9.69	39.54	4,421.81	3,650.02	5,735.15	5,714.62	20.53	279.294	
5,000.00	5,000.00	5,173.00	5,146.40	11.11	9.87	39.61	4,416.47	3,654.42	5,733.14	5,712.20	20.93	273.857	
5,100.00	5,100.00	5,234.50	5,207.70	11.33	10.01	39.66	4,412.75	3,657.72	5,731.87	5,710.57	21.30	269.047	
5,200.00	5,200.00	5,316.24	5,289.30	11.56	10.19	39.70	4,409.39	3,660.83	5,731.12	5,709.42	21.71	264.004	
5,278.42	5,278.42	5,357.40	5,330.42	11.73	10.27	39.72	4,407.98	3,662.25	5,730.82	5,708.85	21.97	260.871	
5,300.00	5,300.00	5,366.44	5,339.46	11.78	10.29	39.72	4,407.73	3,662.56	5,730.85	5,708.81	22.03	260.087	
5,329.21	5,329.21	5,395.00	5,367.99	11.85	10.35	39.74	4,407.11	3,663.55	5,731.01	5,708.85	22.16	258.656	
5,350.00	5,349.99	5,395.00	5,367.99	11.89	10.35	-5.68	4,407.11	3,663.55	5,730.68	5,708.48	22.20	258.114	
5,400.00	5,399.78	5,451.11	5,424.05	12.00	10.46	-5.71	4,405.86	3,665.67	5,726.67	5,704.25	22.42	255.400	
5,450.00	5,448.92	5,548.24	5,521.03	12.11	10.66	-5.77	4,402.46	3,669.64	5,717.47	5,694.73	22.74	251.433	
5,500.00	5,496.96	5,588.96	5,561.66	12.23	10.75	-5.92	4,400.64	3,671.64	5,703.59	5,680.65	22.94	248.616	
5,550.00	5,543.45	5,630.28	5,602.87	12.35	10.84	-6.13	4,398.68	3,673.88	5,685.25	5,662.10	23.15	245.614	
5,600.00	5,587.97	5,673.18	5,645.65	12.48	10.94	-6.42	4,396.58	3,676.32	5,662.59	5,639.23	23.36	242.454	
5,650.00	5,630.10	5,715.69	5,688.04	12.63	11.04	-6.82	4,394.50	3,678.75	5,635.79	5,612.23	23.56	239.211	
5,700.00	5,669.47	5,751.23	5,723.48	12.81	11.13	-7.35	4,392.74	3,680.83	5,605.11	5,581.37	23.74	236.068	
5,750.00	5,705.70	5,801.38	5,773.48	13.03	11.24	-8.06	4,390.26	3,683.74	5,570.83	5,546.87	23.95	232.568	
5,800.00	5,738.47	5,880.48	5,852.43	13.30	11.42	-9.07	4,386.73	3,687.08	5,533.03	5,508.81	24.21	228.504	
5,850.00	5,767.46	5,919.76	5,891.65	13.62	11.51	-10.45	4,384.89	3,688.50	5,492.14	5,467.76	24.38	225.313	
5,900.00	5,792.43	5,941.88	5,913.73	14.02	11.56	-12.42	4,383.86	3,689.30	5,448.72	5,424.23	24.49	222.481	
5,950.00	5,813.12	5,960.20	5,932.01	14.47	11.60	-15.41	4,383.01	3,689.96	5,403.19	5,378.60	24.59	219.753	
6,000.00	5,829.37	5,967.00	5,938.80	15.00	11.61	-20.33	4,382.70	3,690.20	5,355.96	5,331.31	24.65	217.281	
6,050.00	5,841.00	5,982.27	5,954.04	15.59	11.64	-29.90	4,382.01	3,690.75	5,307.46	5,282.74	24.72	214.720	
6,100.00	5,847.93	5,987.42	5,959.19	16.23	11.65	-51.84	4,381.78	3,690.94	5,258.14	5,233.38	24.76	212.402	
6,150.00	5,850.07	5,988.88	5,960.64	16.92	11.66	-99.07	4,381.71	3,690.99	5,208.44	5,183.66	24.78	210.219	
6,156.48	5,850.00	5,988.79	5,960.56	17.01	11.66	-105.70	4,381.72	3,690.99	5,201.99	5,177.21	24.78	209.942	
6,200.00	5,849.24	5,988.02	5,959.78	17.65	11.66	-105.62	4,381.75	3,690.96	5,158.72	5,133.93	24.79	208.119	
6,300.00	5,847.50	5,986.21	5,957.98	19.22	11.65	-105.44	4,381.83	3,690.89	5,059.30	5,034.48	24.81	203.897	
6,400.00	5,845.75	5,984.40	5,956.17	20.91	11.65	-105.25	4,381.91	3,690.83	4,959.90	4,935.06	24.85	199.628	
6,500.00	5,844.01	5,982.57	5,954.35	22.70	11.64	-105.07	4,381.99	3,690.76	4,860.53	4,835.64	24.89	195.312	
6,600.00	5,842.26	5,980.73	5,952.51	24.57	11.64	-104.88	4,382.08	3,690.70	4,761.18	4,736.25	24.93	190.945	
6,700.00	5,840.52	5,978.87	5,950.65	26.49	11.64	-104.69	4,382.16	3,690.63	4,661.86	4,636.87	24.99	186.528	
6,800.00	5,838.77	5,977.00	5,948.79	28.46	11.63	-104.50	4,382.24	3,690.56	4,562.57	4,537.51	25.06	182.059	
6,900.00	5,837.03	5,975.12	5,946.91	30.47	11.63	-104.30	4,382.33	3,690.49	4,463.31	4,438.17	25.14	177.537	
7,000.00	5,835.28	5,973.22	5,945.01	32.51	11.62	-104.11	4,382.42	3,690.43	4,364.08	4,338.85	25.23	172.961	
7,100.00	5,833.53	5,967.00	5,938.80	34.57	11.61	-103.47	4,382.70	3,690.20	4,264.89	4,239.56	25.33	168.376	
7,200.00	5,831.79	5,967.00	5,938.80	36.66	11.61	-103.47	4,382.70	3,690.20	4,165.73	4,140.28	25.45	163.668	
7,300.00	5,830.04	5,967.00	5,938.80	38.76	11.61	-103.47	4,382.70	3,690.20	4,066.61	4,041.02	25.59	158.908	
7,400.00	5,828.30	5,967.00	5,938.80	40.88	11.61	-103.47	4,382.70	3,690.20	3,967.54	3,941.79	25.75	154.096	
7,500.00	5,826.55	5,963.06	5,934.87	43.01	11.60	-103.08	4,382.88	3,690.06	3,868.51	3,842.60	25.92	149.264	
7,600.00	5,824.81	5,960.83	5,932.64	45.15	11.60	-102.83	4,382.98	3,689.98	3,769.54	3,743.43	26.11	144.365	
7,700.00	5,823.06	5,958.59	5,930.41	47.30	11.59	-102.60	4,383.09	3,689.90	3,670.61	3,644.29	26.33	139.415	
7,800.00	5,821.32	5,956.35	5,928.17	49.46	11.59	-102.36	4,383.19	3,689.82	3,571.75	3,545.18	26.57	134.416	
7,900.00	5,819.57	5,954.10	5,925.92	51.62	11.58	-102.13	4,383.29	3,689.74	3,472.95	3,446.11	26.84	129.374	
8,000.00	5,817.83	5,951.84	5,923.66	53.79	11.58	-101.89	4,383.40	3,689.65	3,374.22	3,347.07	27.15	124.291	
8,100.00	5,816.08	5,949.57	5,921.40	55.97	11.57	-101.66	4,383.50	3,689.57	3,275.56	3,248.08	27.49	119.173	
8,200.00	5,814.34	5,947.29	5,919.13	58.15	11.57	-101.42	4,383.61	3,689.49	3,176.99	3,149.13	27.86	114.026	
8,300.00	5,812.59	5,945.00	5,916.84	60.34	11.56	-101.18	4,383.72	3,689.41	3,078.51	3,050.23	28.28	108.857	
8,400.00	5,810.85	5,942.71	5,914.55	62.53	11.56	-100.94	4,383.82	3,689.33	2,980.12	2,951.38	28.74	103.675	
8,500.00	5,809.10	5,940.41	5,912.26	64.73	11.55	-100.70	4,383.93	3,689.24	2,881.85	2,852.59	29.26	98.488	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #654 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1980-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	5,938.10	5,909.95	66.92	11.55	-100.45	4,384.04	3,689.16	2,783.69	2,753.86	29.83	93.308	
8,700.00	5,805.61	5,935.78	5,907.63	69.12	11.54	-100.21	4,384.14	3,689.08	2,685.67	2,655.20	30.47	88.143	
8,800.00	5,803.87	5,933.45	5,905.31	71.33	11.54	-99.97	4,384.25	3,688.99	2,587.80	2,556.63	31.18	83.008	
8,900.00	5,802.12	5,931.11	5,902.98	73.53	11.53	-99.72	4,384.36	3,688.91	2,490.10	2,458.14	31.96	77.915	
9,000.00	5,800.37	5,928.77	5,900.64	75.74	11.53	-99.47	4,384.47	3,688.83	2,392.58	2,359.75	32.83	72.877	
9,100.00	5,798.63	5,926.41	5,898.29	77.95	11.52	-99.23	4,384.58	3,688.74	2,295.27	2,261.47	33.80	67.909	
9,200.00	5,796.88	5,924.05	5,895.93	80.16	11.52	-98.98	4,384.69	3,688.66	2,198.21	2,163.33	34.88	63.026	
9,300.00	5,795.14	5,921.68	5,893.56	82.38	11.51	-98.73	4,384.80	3,688.57	2,101.41	2,065.33	36.08	58.242	
9,400.00	5,793.39	5,919.30	5,891.18	84.59	11.51	-98.47	4,384.92	3,688.49	2,004.93	1,967.51	37.42	53.574	
9,500.00	5,791.65	5,916.91	5,888.80	86.81	11.50	-98.22	4,385.03	3,688.40	1,908.81	1,869.88	38.93	49.036	
9,600.00	5,789.90	5,914.51	5,886.40	89.02	11.50	-97.97	4,385.14	3,688.31	1,813.10	1,772.49	40.61	44.644	
9,700.00	5,788.16	5,912.10	5,884.00	91.24	11.49	-97.71	4,385.25	3,688.23	1,717.88	1,675.37	42.51	40.413	
9,800.00	5,786.41	5,909.69	5,881.59	93.46	11.48	-97.46	4,385.37	3,688.14	1,623.23	1,578.58	44.65	36.358	
9,900.00	5,784.67	5,907.26	5,879.17	95.68	11.48	-97.20	4,385.48	3,688.06	1,529.26	1,482.19	47.07	32.492	
10,000.00	5,782.92	5,904.83	5,876.74	97.91	11.47	-96.94	4,385.60	3,687.97	1,436.09	1,388.28	49.81	28.830	
10,100.00	5,781.18	5,902.27	5,874.19	100.13	11.47	-96.67	4,385.72	3,687.88	1,343.91	1,290.96	52.95	25.383	
10,200.00	5,779.43	5,899.43	5,871.35	102.35	11.46	-96.37	4,385.85	3,687.78	1,252.92	1,196.38	56.53	22.163	
10,300.00	5,777.69	5,896.65	5,868.58	104.58	11.46	-96.07	4,385.98	3,687.67	1,163.40	1,102.74	60.65	19.181	
10,400.00	5,775.94	5,893.94	5,865.86	106.80	11.45	-95.78	4,386.11	3,687.58	1,075.72	1,010.32	65.41	16.447	
10,500.00	5,774.20	5,891.28	5,863.21	109.03	11.44	-95.50	4,386.23	3,687.48	990.38	919.48	70.90	13.969	
10,600.00	5,772.45	5,888.68	5,860.62	111.25	11.44	-95.22	4,386.35	3,687.38	908.03	830.78	77.24	11.755	
10,700.00	5,770.71	5,886.14	5,858.08	113.48	11.43	-94.95	4,386.47	3,687.29	829.55	745.01	84.55	9.812	
10,800.00	5,768.96	5,883.65	5,855.59	115.71	11.43	-94.69	4,386.59	3,687.20	756.17	663.31	92.86	8.143	
10,900.00	5,767.21	5,881.21	5,853.16	117.94	11.42	-94.43	4,386.70	3,687.11	689.50	587.39	102.11	6.752	
11,000.00	5,765.47	5,878.83	5,850.78	120.17	11.42	-94.17	4,386.81	3,687.02	631.69	519.72	111.96	5.642	
11,100.00	5,763.72	5,876.49	5,848.45	122.40	11.41	-93.92	4,386.91	3,686.93	585.35	463.69	121.66	4.812	
11,200.00	5,761.98	5,874.20	5,846.16	124.63	11.41	-93.68	4,387.02	3,686.85	553.37	423.42	129.95	4.258	
11,300.00	5,760.23	5,871.96	5,843.93	126.86	11.40	-93.44	4,387.12	3,686.76	538.33	402.95	135.39	3.976	
11,332.14	5,759.67	5,871.25	5,843.22	127.57	11.40	-93.37	4,387.15	3,686.73	537.37	401.05	136.32	3.942	CC, ES, SF
11,400.00	5,758.49	5,869.76	5,841.73	129.09	11.40	-93.21	4,387.22	3,686.68	541.64	404.75	136.89	3.957	
11,500.00	5,756.74	5,867.61	5,839.58	131.32	11.39	-92.98	4,387.31	3,686.60	562.97	428.52	134.45	4.187	
11,600.00	5,755.00	5,865.50	5,837.48	133.55	11.39	-92.75	4,387.41	3,686.51	600.40	471.36	129.05	4.653	
11,700.00	5,753.25	5,863.43	5,835.41	135.78	11.38	-92.53	4,387.50	3,686.43	651.18	529.16	122.01	5.337	
11,802.14	5,751.47	5,861.36	5,833.34	138.06	11.38	-92.31	4,387.59	3,686.35	713.84	599.52	114.33	6.244	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #658 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-ISCWSA-GYRO-3_1980-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	5,186.06	5,157.16	10.88	10.13	49.15	4,355.65	5,038.00	6,663.01	6,643.87	19.14	348.116	
5,000.00	5,000.00	5,220.00	5,191.09	11.11	10.19	49.15	4,355.37	5,037.11	6,660.43	6,641.01	19.42	342.946	
5,100.00	5,100.00	5,253.24	5,224.32	11.33	10.24	49.15	4,355.20	5,036.58	6,658.85	6,639.15	19.70	338.015	
5,200.00	5,200.00	5,316.00	5,287.08	11.56	10.33	49.15	4,354.73	5,036.75	6,658.36	6,638.33	20.03	332.403	
5,300.00	5,300.00	5,411.00	5,382.07	11.78	10.47	49.15	4,354.65	5,036.62	6,658.19	6,637.77	20.42	326.056	
5,329.21	5,329.21	5,439.59	5,410.65	11.85	10.51	49.15	4,354.83	5,036.21	6,658.00	6,637.46	20.54	324.221	
5,350.00	5,349.99	5,450.74	5,421.81	11.89	10.53	3.74	4,354.89	5,036.11	6,657.51	6,636.91	20.60	323.185	
5,400.00	5,399.78	5,477.46	5,448.52	12.00	10.57	3.77	4,354.98	5,035.98	6,653.06	6,632.30	20.75	320.583	
5,450.00	5,448.92	5,505.00	5,476.07	12.11	10.61	3.84	4,355.01	5,036.04	6,644.04	6,623.13	20.91	317.745	
5,500.00	5,496.96	5,563.57	5,534.64	12.23	10.69	3.96	4,354.99	5,036.28	6,630.40	6,609.28	21.13	313.835	
5,550.00	5,543.45	5,628.25	5,599.32	12.35	10.79	4.13	4,354.93	5,036.40	6,612.14	6,590.78	21.35	309.629	
5,600.00	5,587.97	5,697.04	5,668.11	12.48	10.90	4.36	4,354.60	5,036.45	6,589.35	6,567.78	21.59	305.217	
5,650.00	5,630.10	5,739.05	5,710.11	12.63	10.96	4.66	4,354.30	5,036.46	6,562.34	6,540.57	21.77	301.450	
5,700.00	5,669.47	5,744.00	5,715.06	12.81	10.97	5.03	4,354.27	5,036.46	6,531.53	6,509.65	21.87	298.521	
5,750.00	5,705.70	5,744.00	5,715.06	13.03	10.97	5.50	4,354.27	5,036.46	6,497.31	6,475.35	21.96	295.876	
5,800.00	5,738.47	5,744.00	5,715.06	13.30	10.97	6.13	4,354.27	5,036.46	6,459.94	6,437.90	22.04	293.104	
5,850.00	5,767.46	5,744.00	5,715.06	13.62	10.97	6.98	4,354.27	5,036.46	6,419.73	6,397.62	22.11	290.327	
5,900.00	5,792.43	5,744.00	5,715.06	14.02	10.97	8.18	4,354.27	5,036.46	6,376.99	6,354.81	22.18	287.567	
5,950.00	5,813.12	5,744.00	5,715.06	14.47	10.97	9.96	4,354.27	5,036.46	6,332.07	6,309.84	22.23	284.846	
6,000.00	5,829.37	5,744.00	5,715.06	15.00	10.97	12.82	4,354.27	5,036.46	6,285.33	6,263.06	22.27	282.182	
6,050.00	5,841.00	5,744.00	5,715.06	15.59	10.97	18.09	4,354.27	5,036.46	6,237.18	6,214.87	22.31	279.593	
6,100.00	5,847.93	5,744.00	5,715.06	16.23	10.97	30.29	4,354.27	5,036.46	6,188.02	6,165.69	22.33	277.091	
6,150.00	5,850.07	5,744.00	5,715.06	16.92	10.97	70.32	4,354.27	5,036.46	6,138.30	6,115.95	22.35	274.683	
6,156.48	5,850.00	5,744.00	5,715.06	17.01	10.97	79.67	4,354.27	5,036.46	6,131.83	6,109.48	22.35	274.364	
6,200.00	5,849.24	5,744.00	5,715.06	17.65	10.97	79.67	4,354.27	5,036.46	6,088.43	6,066.07	22.36	272.344	
6,300.00	5,847.50	5,744.00	5,715.06	19.22	10.97	79.67	4,354.27	5,036.46	5,988.70	5,966.32	22.37	267.678	
6,400.00	5,845.75	5,744.00	5,715.06	20.91	10.97	79.67	4,354.27	5,036.46	5,888.97	5,866.58	22.39	262.977	
6,500.00	5,844.01	5,744.00	5,715.06	22.70	10.97	79.67	4,354.27	5,036.46	5,789.26	5,766.84	22.42	258.242	
6,600.00	5,842.26	5,744.00	5,715.06	24.57	10.97	79.67	4,354.27	5,036.46	5,689.55	5,667.11	22.45	253.471	
6,700.00	5,840.52	5,744.00	5,715.06	26.49	10.97	79.67	4,354.27	5,036.46	5,589.86	5,567.38	22.48	248.664	
6,800.00	5,838.77	5,744.00	5,715.06	28.46	10.97	79.67	4,354.27	5,036.46	5,490.18	5,467.66	22.52	243.820	
6,900.00	5,837.03	5,744.00	5,715.06	30.47	10.97	79.67	4,354.27	5,036.46	5,390.51	5,367.95	22.56	238.938	
7,000.00	5,835.28	5,744.00	5,715.06	32.51	10.97	79.67	4,354.27	5,036.46	5,290.85	5,268.24	22.61	234.018	
7,100.00	5,833.53	5,744.00	5,715.06	34.57	10.97	79.67	4,354.27	5,036.46	5,191.21	5,168.55	22.66	229.058	
7,200.00	5,831.79	5,744.00	5,715.06	36.66	10.97	79.67	4,354.27	5,036.46	5,091.58	5,068.85	22.72	224.059	
7,300.00	5,830.04	5,744.00	5,715.06	38.76	10.97	79.67	4,354.27	5,036.46	4,991.96	4,969.17	22.79	219.019	
7,400.00	5,828.30	5,744.00	5,715.06	40.88	10.97	79.67	4,354.27	5,036.46	4,892.36	4,869.49	22.87	213.939	
7,500.00	5,826.55	5,744.00	5,715.06	43.01	10.97	79.67	4,354.27	5,036.46	4,792.78	4,769.83	22.95	208.817	
7,600.00	5,824.81	5,744.00	5,715.06	45.15	10.97	79.67	4,354.27	5,036.46	4,693.21	4,670.17	23.05	203.654	
7,700.00	5,823.06	5,744.00	5,715.06	47.30	10.97	79.67	4,354.27	5,036.46	4,593.67	4,570.52	23.15	198.449	
7,800.00	5,821.32	5,744.00	5,715.06	49.46	10.97	79.67	4,354.27	5,036.46	4,494.14	4,470.88	23.26	193.202	
7,900.00	5,819.57	5,744.00	5,715.06	51.62	10.97	79.67	4,354.27	5,036.46	4,394.64	4,371.25	23.39	187.915	
8,000.00	5,817.83	5,744.00	5,715.06	53.79	10.97	79.67	4,354.27	5,036.46	4,295.15	4,271.63	23.52	182.586	
8,100.00	5,816.08	5,744.00	5,715.06	55.97	10.97	79.67	4,354.27	5,036.46	4,195.70	4,172.02	23.68	177.218	
8,200.00	5,814.34	5,744.00	5,715.06	58.15	10.97	79.67	4,354.27	5,036.46	4,096.27	4,072.42	23.84	171.810	
8,300.00	5,812.59	5,744.00	5,715.06	60.34	10.97	79.67	4,354.27	5,036.46	3,996.86	3,972.84	24.02	166.365	
8,400.00	5,810.85	5,744.00	5,715.06	62.53	10.97	79.67	4,354.27	5,036.46	3,897.49	3,873.26	24.23	160.884	
8,500.00	5,809.10	5,744.00	5,715.06	64.73	10.97	79.67	4,354.27	5,036.46	3,798.15	3,773.71	24.45	155.369	
8,600.00	5,807.36	5,744.00	5,715.06	66.92	10.97	79.67	4,354.27	5,036.46	3,698.85	3,674.16	24.69	149.824	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #658 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-SCWSA-GYRO-3, 1980-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,700.00	5,805.61	5,744.00	5,715.06	69.12	10.97	79.67	4,354.27	5,036.46	3,599.58	3,574.63	24.95	144.251	
8,800.00	5,803.87	5,744.00	5,715.06	71.33	10.97	79.67	4,354.27	5,036.46	3,500.36	3,475.11	25.25	138.655	
8,900.00	5,802.12	5,744.00	5,715.06	73.53	10.97	79.67	4,354.27	5,036.46	3,401.18	3,375.62	25.56	133.041	
9,000.00	5,800.37	5,744.00	5,715.06	75.74	10.97	79.67	4,354.27	5,036.46	3,302.05	3,276.14	25.92	127.412	
9,100.00	5,798.63	5,744.00	5,715.06	77.95	10.97	79.67	4,354.27	5,036.46	3,202.98	3,176.68	26.30	121.776	
9,200.00	5,796.88	5,744.00	5,715.06	80.16	10.97	79.67	4,354.27	5,036.46	3,103.97	3,077.24	26.73	116.139	
9,300.00	5,795.14	5,744.00	5,715.06	82.38	10.97	79.67	4,354.27	5,036.46	3,005.02	2,977.83	27.19	110.509	
9,400.00	5,793.39	5,744.00	5,715.06	84.59	10.97	79.67	4,354.27	5,036.46	2,906.14	2,878.44	27.71	104.894	
9,500.00	5,791.65	5,744.00	5,715.06	86.81	10.97	79.67	4,354.27	5,036.46	2,807.34	2,779.07	28.27	99.303	
9,600.00	5,789.90	5,744.00	5,715.06	89.02	10.97	79.67	4,354.27	5,036.46	2,708.63	2,679.74	28.89	93.747	
9,700.00	5,788.16	5,744.00	5,715.06	91.24	10.97	79.67	4,354.27	5,036.46	2,610.02	2,580.44	29.58	88.236	
9,800.00	5,786.41	5,744.00	5,715.06	93.46	10.97	79.67	4,354.27	5,036.46	2,511.52	2,481.18	30.34	82.782	
9,900.00	5,784.67	5,744.00	5,715.06	95.68	10.97	79.67	4,354.27	5,036.46	2,413.14	2,381.96	31.18	77.397	
10,000.00	5,782.92	5,744.00	5,715.06	97.91	10.97	79.67	4,354.27	5,036.46	2,314.90	2,282.80	32.11	72.093	
10,100.00	5,781.18	5,744.00	5,715.06	100.13	10.97	79.67	4,354.27	5,036.46	2,216.82	2,183.68	33.14	66.885	
10,200.00	5,779.43	5,744.00	5,715.06	102.35	10.97	79.67	4,354.27	5,036.46	2,118.92	2,084.63	34.29	61.786	
10,300.00	5,777.69	5,744.00	5,715.06	104.58	10.97	79.67	4,354.27	5,036.46	2,021.23	1,985.65	35.58	56.811	
10,400.00	5,775.94	5,744.00	5,715.06	106.80	10.97	79.67	4,354.27	5,036.46	1,923.77	1,886.75	37.01	51.974	
10,500.00	5,774.20	5,744.00	5,715.06	109.03	10.97	79.67	4,354.27	5,036.46	1,826.58	1,787.95	38.63	47.289	
10,600.00	5,772.45	5,744.00	5,715.06	111.25	10.97	79.67	4,354.27	5,036.46	1,729.72	1,689.27	40.44	42.771	
10,700.00	5,770.71	5,744.00	5,715.06	113.48	10.97	79.67	4,354.27	5,036.46	1,633.23	1,590.74	42.49	38.434	
10,800.00	5,768.96	5,744.00	5,715.06	115.71	10.97	79.67	4,354.27	5,036.46	1,537.19	1,492.37	44.82	34.293	
10,900.00	5,767.21	5,744.00	5,715.06	117.94	10.97	79.67	4,354.27	5,036.46	1,441.69	1,394.21	47.49	30.361	
11,000.00	5,765.47	5,744.00	5,715.06	120.17	10.97	79.67	4,354.27	5,036.46	1,346.85	1,296.31	50.54	26.650	
11,100.00	5,763.72	5,744.00	5,715.06	122.40	10.97	79.67	4,354.27	5,036.46	1,252.81	1,198.75	54.06	23.174	
11,200.00	5,761.98	5,744.00	5,715.06	124.63	10.97	79.67	4,354.27	5,036.46	1,159.76	1,101.61	58.15	19.943	
11,300.00	5,760.23	5,744.00	5,715.06	126.86	10.97	79.67	4,354.27	5,036.46	1,067.98	1,005.04	62.94	16.969	
11,400.00	5,758.49	5,744.00	5,715.06	129.09	10.97	79.67	4,354.27	5,036.46	977.80	909.23	68.57	14.260	
11,500.00	5,756.74	5,744.00	5,715.06	131.32	10.97	79.67	4,354.27	5,036.46	889.73	814.49	75.24	11.826	
11,600.00	5,755.00	5,744.00	5,715.06	133.55	10.97	79.67	4,354.27	5,036.46	804.45	721.28	83.18	9.673	
11,700.00	5,753.25	5,744.00	5,715.06	135.78	10.97	79.67	4,354.27	5,036.46	722.95	630.38	92.59	7.808	
11,802.14	5,751.47	5,744.00	5,715.06	138.06	10.97	79.67	4,354.27	5,036.46	645.11	541.15	103.96	6.206	CC, ES, SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #678 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 265-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	24.42	24.42	0.00	0.43	53.02	2,821.01	3,746.09	4,689.49				
100.00	100.00	126.17	126.17	0.09	2.22	53.02	2,821.16	3,745.95	4,689.46	4,687.16	2.30	2,034.716	
200.00	200.00	227.91	227.91	0.32	4.01	53.01	2,821.51	3,745.60	4,689.40	4,685.08	4.31	1,087.105	
300.00	300.00	328.52	328.52	0.54	6.50	53.00	2,822.02	3,745.09	4,689.30	4,682.29	7.01	668.762	
400.00	400.00	428.48	428.47	0.77	9.39	52.99	2,822.54	3,744.58	4,689.21	4,679.09	10.11	463.748	
500.00	500.00	528.44	528.43	0.99	12.28	52.98	2,823.05	3,744.08	4,689.11	4,675.90	13.21	354.857	
600.00	600.00	629.55	629.53	1.22	16.11	52.97	2,823.62	3,743.51	4,689.01	4,671.76	17.24	271.953	
700.00	700.00	730.81	730.79	1.44	20.07	52.96	2,824.34	3,742.80	4,688.87	4,667.48	21.40	219.121	
800.00	800.00	832.06	832.03	1.67	24.03	52.95	2,825.21	3,741.95	4,688.72	4,663.16	25.56	183.442	
900.00	900.00	932.97	932.93	1.89	28.14	52.93	2,826.22	3,740.95	4,688.53	4,658.66	29.87	156.974	
1,000.00	1,000.00	1,032.66	1,032.62	2.12	32.77	52.91	2,827.24	3,739.95	4,688.35	4,653.65	34.69	135.134	
1,100.00	1,100.00	1,132.36	1,132.30	2.34	37.41	52.90	2,828.22	3,738.98	4,688.16	4,648.64	39.52	118.616	
1,200.00	1,200.00	1,232.06	1,231.99	2.56	42.05	52.88	2,829.17	3,738.05	4,687.99	4,643.64	44.36	105.690	
1,300.00	1,300.00	1,331.76	1,331.68	2.79	46.69	52.86	2,830.08	3,737.15	4,687.82	4,638.63	49.19	95.300	
1,400.00	1,400.00	1,432.98	1,432.90	3.01	52.36	52.85	2,831.02	3,736.22	4,687.66	4,632.61	55.04	85.161	
1,500.00	1,500.00	1,535.73	1,535.64	3.24	59.08	52.83	2,832.26	3,735.00	4,687.44	4,625.50	61.94	75.678	
1,600.00	1,600.00	1,638.47	1,638.35	3.46	65.81	52.80	2,833.83	3,733.45	4,687.16	4,618.32	68.84	68.089	
1,700.00	1,700.00	1,740.85	1,740.70	3.69	72.49	52.77	2,835.73	3,731.57	4,686.82	4,611.12	75.71	61.909	
1,800.00	1,800.00	1,837.97	1,837.78	3.91	78.59	52.74	2,837.49	3,729.84	4,686.50	4,604.51	81.99	57.161	
1,900.00	1,900.00	1,935.11	1,934.90	4.14	84.70	52.71	2,838.92	3,728.43	4,686.24	4,597.96	88.27	53.088	
2,000.00	2,000.00	2,032.26	2,032.05	4.36	90.80	52.69	2,840.03	3,727.35	4,686.03	4,591.47	94.56	49.556	
2,100.00	2,100.00	2,130.25	2,130.02	4.59	96.26	52.68	2,840.82	3,726.56	4,685.89	4,585.68	100.21	46.763	
2,200.00	2,200.00	2,230.31	2,230.08	4.81	100.07	52.67	2,841.54	3,725.85	4,685.76	4,581.54	104.22	44.961	
2,300.00	2,300.00	2,330.38	2,330.14	5.04	103.87	52.66	2,842.28	3,725.12	4,685.63	4,577.40	108.23	43.292	
2,400.00	2,400.00	2,430.44	2,430.20	5.26	107.68	52.64	2,843.03	3,724.39	4,685.50	4,573.25	112.25	41.743	
2,500.00	2,500.00	2,530.51	2,530.26	5.49	111.49	52.63	2,843.78	3,723.65	4,685.37	4,569.10	116.26	40.300	
2,600.00	2,600.00	2,631.25	2,631.00	5.71	116.23	52.62	2,844.58	3,722.85	4,685.23	4,564.03	121.19	38.659	
2,700.00	2,700.00	2,732.13	2,731.87	5.94	121.15	52.60	2,845.49	3,721.96	4,685.07	4,558.76	126.31	37.092	
2,800.00	2,800.00	2,833.00	2,832.73	6.16	126.06	52.58	2,846.51	3,720.98	4,684.89	4,553.47	131.42	35.648	
2,900.00	2,900.00	2,933.87	2,933.59	6.39	130.98	52.57	2,847.63	3,719.85	4,684.69	4,548.16	136.54	34.311	
3,000.00	3,000.00	3,033.98	3,033.68	6.61	135.83	52.54	2,848.84	3,718.66	4,684.48	4,542.89	141.59	33.085	
3,100.00	3,100.00	3,133.11	3,132.79	6.84	140.61	52.53	2,849.96	3,717.55	4,684.29	4,537.72	146.57	31.960	
3,200.00	3,200.00	3,232.24	3,231.92	7.06	145.39	52.51	2,850.98	3,716.55	4,684.11	4,532.57	151.54	30.910	
3,300.00	3,300.00	3,331.37	3,331.04	7.28	150.16	52.49	2,851.89	3,715.65	4,683.95	4,527.43	156.51	29.927	
3,400.00	3,400.00	3,430.51	3,430.18	7.51	154.94	52.48	2,852.70	3,714.85	4,683.81	4,522.32	161.49	29.004	
3,500.00	3,500.00	3,529.82	3,529.48	7.73	158.17	52.47	2,853.41	3,714.15	4,683.68	4,518.75	164.93	28.397	
3,600.00	3,600.00	3,629.15	3,628.80	7.96	161.33	52.46	2,854.05	3,713.52	4,683.57	4,515.26	168.31	27.827	
3,700.00	3,700.00	3,728.47	3,728.12	8.18	164.50	52.45	2,854.60	3,712.98	4,683.48	4,511.79	171.68	27.280	
3,800.00	3,800.00	3,827.80	3,827.45	8.41	167.66	52.44	2,855.06	3,712.52	4,683.40	4,508.34	175.06	26.753	
3,900.00	3,900.00	3,927.57	3,927.22	8.63	170.60	52.43	2,855.46	3,712.13	4,683.33	4,505.12	178.21	26.279	
4,000.00	4,000.00	4,027.82	4,027.46	8.86	173.29	52.42	2,855.88	3,711.72	4,683.26	4,502.13	181.13	25.856	
4,100.00	4,100.00	4,128.06	4,127.71	9.08	175.99	52.42	2,856.33	3,711.28	4,683.18	4,499.14	184.04	25.446	
4,200.00	4,200.00	4,228.31	4,227.95	9.31	178.69	52.41	2,856.81	3,710.80	4,683.10	4,496.14	186.96	25.049	
4,300.00	4,300.00	4,328.51	4,328.15	9.53	181.38	52.40	2,857.31	3,710.30	4,683.01	4,493.15	189.86	24.666	
4,400.00	4,400.00	4,427.99	4,427.63	9.76	183.79	52.39	2,857.80	3,709.82	4,682.93	4,490.44	192.49	24.328	
4,500.00	4,500.00	4,527.48	4,527.12	9.98	186.20	52.38	2,858.22	3,709.41	4,682.86	4,487.74	195.12	24.000	
4,600.00	4,600.00	4,626.97	4,626.60	10.21	188.61	52.38	2,858.58	3,709.06	4,682.80	4,485.05	197.75	23.680	
4,700.00	4,700.00	4,726.46	4,726.09	10.43	191.02	52.37	2,858.87	3,708.77	4,682.75	4,482.37	200.38	23.369	
4,800.00	4,800.00	4,826.81	4,826.44	10.66	193.74	52.37	2,859.13	3,708.51	4,682.70	4,479.39	203.31	23.032	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #678 - OH - OH — **Offset Site Error:** 0.00 usft

Survey Program: 265-INC — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	4,927.75	4,927.38	10.88	196.66	52.36	2,859.50	3,708.15	4,682.64	4,476.19	206.45	22.682	
5,000.00	5,000.00	5,028.69	5,028.32	11.11	199.58	52.35	2,859.99	3,707.67	4,682.56	4,472.97	209.58	22.342	
5,100.00	5,100.00	5,129.63	5,129.25	11.33	202.50	52.34	2,860.60	3,707.07	4,682.45	4,469.73	212.72	22.012	
5,200.00	5,200.00	5,230.37	5,230.00	11.56	205.59	52.33	2,861.32	3,706.35	4,682.33	4,466.31	216.03	21.675	
5,300.00	5,300.00	5,330.30	5,329.92	11.78	209.41	52.32	2,862.07	3,705.61	4,682.21	4,462.15	220.06	21.277	
5,329.21	5,329.21	5,359.49	5,359.11	11.85	210.53	52.32	2,862.29	3,705.40	4,682.17	4,460.93	221.23	21.164	
5,350.00	5,349.99	5,380.26	5,379.87	11.89	211.33	6.91	2,862.45	3,705.24	4,681.73	4,459.66	222.07	21.082	
5,400.00	5,399.78	5,430.01	5,429.62	12.00	213.23	6.96	2,862.81	3,704.88	4,677.31	4,453.24	224.07	20.874	
5,450.00	5,448.92	5,479.12	5,478.72	12.11	215.11	7.10	2,863.18	3,704.52	4,668.18	4,442.12	226.05	20.651	
5,500.00	5,496.96	5,527.12	5,526.72	12.23	216.94	7.31	2,863.53	3,704.18	4,654.41	4,426.43	227.99	20.415	
5,550.00	5,543.45	5,573.58	5,573.18	12.35	218.72	7.61	2,863.87	3,703.84	4,636.14	4,406.28	229.85	20.170	
5,600.00	5,587.97	5,618.06	5,617.66	12.48	220.42	8.03	2,864.19	3,703.52	4,613.53	4,381.89	231.64	19.916	
5,650.00	5,630.10	5,660.18	5,659.78	12.63	222.04	8.57	2,864.50	3,703.22	4,586.80	4,353.46	233.34	19.657	
5,700.00	5,669.47	5,699.62	5,699.22	12.81	223.60	9.29	2,864.78	3,702.94	4,556.18	4,321.20	234.98	19.390	
5,750.00	5,705.70	5,735.92	5,735.52	13.03	225.05	10.23	2,865.05	3,702.68	4,521.97	4,285.48	236.49	19.121	
5,800.00	5,738.47	5,768.75	5,768.34	13.30	226.35	11.49	2,865.29	3,702.44	4,484.48	4,246.63	237.85	18.855	
5,850.00	5,767.46	5,797.81	5,797.40	13.62	227.50	13.21	2,865.51	3,702.22	4,444.05	4,205.00	239.05	18.591	
5,900.00	5,792.43	5,822.82	5,822.41	14.02	228.49	15.65	2,865.70	3,702.03	4,401.06	4,160.99	240.07	18.332	
5,950.00	5,813.12	5,843.55	5,843.14	14.47	229.32	19.30	2,865.86	3,701.88	4,355.91	4,114.99	240.92	18.080	
6,000.00	5,829.37	5,859.83	5,859.41	15.00	229.96	25.15	2,865.99	3,701.75	4,309.01	4,067.43	241.58	17.837	
6,050.00	5,841.00	5,871.48	5,871.07	15.59	230.43	35.57	2,866.08	3,701.66	4,260.80	4,018.75	242.05	17.603	
6,100.00	5,847.93	5,878.42	5,878.01	16.23	230.70	56.19	2,866.13	3,701.61	4,211.72	3,969.40	242.32	17.381	
6,150.00	5,850.07	5,880.57	5,880.16	16.92	230.79	92.75	2,866.15	3,701.59	4,162.23	3,919.84	242.39	17.172	
6,156.48	5,850.00	5,880.50	5,880.09	17.01	230.78	97.96	2,866.15	3,701.59	4,155.81	3,913.42	242.39	17.145	
6,200.00	5,849.24	5,879.74	5,879.33	17.65	230.75	97.89	2,866.14	3,701.60	4,112.69	3,870.36	242.34	16.971	
6,300.00	5,847.50	5,877.99	5,877.58	19.22	230.68	97.71	2,866.13	3,701.61	4,013.66	3,771.42	242.24	16.569	
6,400.00	5,845.75	5,876.24	5,875.83	20.91	230.61	97.53	2,866.11	3,701.63	3,914.67	3,672.53	242.14	16.167	
6,500.00	5,844.01	5,874.49	5,874.08	22.70	230.54	97.36	2,866.10	3,701.64	3,815.73	3,573.68	242.05	15.764	
6,600.00	5,842.26	5,872.75	5,872.33	24.57	230.48	97.18	2,866.09	3,701.65	3,716.85	3,474.88	241.97	15.361	
6,700.00	5,840.52	5,871.00	5,870.58	26.49	230.41	97.00	2,866.07	3,701.67	3,618.03	3,376.13	241.90	14.957	
6,800.00	5,838.77	5,869.25	5,868.83	28.46	230.34	96.83	2,866.06	3,701.68	3,519.28	3,277.44	241.83	14.552	
6,900.00	5,837.03	5,867.50	5,867.09	30.47	230.27	96.65	2,866.05	3,701.69	3,420.59	3,178.81	241.79	14.147	
7,000.00	5,835.28	5,865.75	5,865.34	32.51	230.20	96.47	2,866.03	3,701.71	3,321.99	3,080.23	241.75	13.741	
7,100.00	5,833.53	5,864.00	5,863.59	34.57	230.13	96.29	2,866.02	3,701.72	3,223.47	2,981.73	241.73	13.335	
7,200.00	5,831.79	5,862.25	5,861.84	36.66	230.06	96.11	2,866.01	3,701.73	3,125.04	2,883.31	241.73	12.928	
7,300.00	5,830.04	5,860.51	5,860.09	38.76	229.99	95.94	2,865.99	3,701.75	3,026.71	2,784.98	241.75	12.520	
7,400.00	5,828.30	5,858.76	5,858.34	40.88	229.92	95.76	2,865.98	3,701.76	2,928.50	2,686.71	241.79	12.112	
7,500.00	5,826.55	5,857.01	5,856.59	43.01	229.85	95.58	2,865.96	3,701.77	2,830.41	2,588.56	241.85	11.703	
7,600.00	5,824.81	5,855.26	5,854.85	45.15	229.78	95.40	2,865.95	3,701.79	2,732.46	2,490.52	241.94	11.294	
7,700.00	5,823.06	5,853.51	5,853.10	47.30	229.71	95.22	2,865.94	3,701.80	2,634.66	2,392.60	242.06	10.884	
7,800.00	5,821.32	5,851.76	5,851.35	49.46	229.64	95.05	2,865.92	3,701.81	2,537.04	2,294.82	242.22	10.474	
7,900.00	5,819.57	5,850.01	5,849.60	51.62	229.57	94.87	2,865.91	3,701.83	2,439.60	2,197.20	242.40	10.064	
8,000.00	5,817.83	5,848.26	5,847.85	53.79	229.50	94.69	2,865.90	3,701.84	2,342.38	2,099.75	242.62	9.654	
8,100.00	5,816.08	5,846.52	5,846.10	55.97	229.43	94.51	2,865.88	3,701.85	2,245.40	2,002.51	242.89	9.245	
8,200.00	5,814.34	5,844.77	5,844.35	58.15	229.37	94.33	2,865.87	3,701.87	2,148.69	1,905.50	243.19	8.835	
8,300.00	5,812.59	5,843.02	5,842.61	60.34	229.30	94.15	2,865.86	3,701.88	2,052.30	1,808.76	243.54	8.427	
8,400.00	5,810.85	5,841.27	5,840.86	62.53	229.23	93.97	2,865.84	3,701.89	1,956.28	1,712.34	243.94	8.020	
8,500.00	5,809.10	5,839.52	5,839.11	64.73	229.16	93.79	2,865.83	3,701.91	1,860.66	1,616.28	244.38	7.614	
8,600.00	5,807.36	5,837.77	5,837.36	66.92	229.09	93.62	2,865.82	3,701.92	1,765.54	1,520.66	244.88	7.210	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #678 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 265-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,700.00	5,805.61	5,836.02	5,835.61	69.12	229.02	93.44	2,865.80	3,701.93	1,670.98	1,425.56	245.42	6.809	
8,800.00	5,803.67	5,834.26	5,833.86	71.33	228.95	93.26	2,865.79	3,701.95	1,577.09	1,331.09	246.00	6.411	
8,900.00	5,802.12	5,832.53	5,832.11	73.53	228.88	93.08	2,865.78	3,701.96	1,483.99	1,237.38	246.61	6.017	
9,000.00	5,800.37	5,830.78	5,830.37	75.74	228.81	92.90	2,865.76	3,701.97	1,391.85	1,144.61	247.24	5.630	
9,100.00	5,798.63	5,829.03	5,828.62	77.95	228.74	92.72	2,865.75	3,701.99	1,300.87	1,053.01	247.86	5.248	
9,200.00	5,796.88	5,827.28	5,826.87	80.16	228.67	92.54	2,865.74	3,702.00	1,211.31	962.89	248.43	4.876	
9,300.00	5,795.14	5,825.53	5,825.12	82.38	228.60	92.36	2,865.72	3,702.01	1,123.52	874.64	248.88	4.514	
9,400.00	5,793.39	5,823.78	5,823.37	84.59	228.53	92.18	2,865.71	3,702.03	1,037.93	788.82	249.10	4.167	
9,500.00	5,791.65	5,822.03	5,821.62	86.81	228.46	92.00	2,865.70	3,702.04	955.14	706.18	248.95	3.837	
9,600.00	5,789.90	5,820.29	5,819.87	89.02	228.39	91.82	2,865.68	3,702.05	875.94	627.74	248.20	3.529	
9,700.00	5,788.16	5,818.54	5,818.13	91.24	228.32	91.64	2,865.67	3,702.06	801.41	554.90	246.51	3.251	
9,800.00	5,786.41	5,816.79	5,816.38	93.46	228.25	91.46	2,865.66	3,702.08	732.96	489.48	243.48	3.010	
9,900.00	5,784.67	5,815.04	5,814.63	95.68	228.19	91.28	2,865.64	3,702.09	672.46	433.76	238.70	2.817	
10,000.00	5,782.92	5,813.29	5,812.88	97.91	228.12	91.11	2,865.63	3,702.10	622.23	390.14	232.09	2.681	
10,100.00	5,781.18	5,811.54	5,811.13	100.13	228.05	90.93	2,865.62	3,702.12	584.91	360.30	224.61	2.604	
10,200.00	5,779.43	5,809.79	5,809.38	102.35	227.98	90.75	2,865.60	3,702.13	563.09	343.97	219.12	2.570	
10,275.28	5,778.12	5,808.48	5,808.07	104.03	227.92	90.61	2,865.59	3,702.14	558.04	339.33	218.71	2.552 CC	
10,300.00	5,777.69	5,808.05	5,807.63	104.58	227.91	90.57	2,865.59	3,702.14	558.59	339.10	219.48	2.545 ES	
10,400.00	5,775.94	5,806.30	5,805.89	106.80	227.84	90.39	2,865.58	3,702.16	571.80	345.08	226.72	2.522 SF	
10,500.00	5,774.20	5,804.55	5,804.14	109.03	227.77	90.21	2,865.56	3,702.17	601.57	364.09	237.48	2.533	
10,600.00	5,772.45	5,802.80	5,802.39	111.25	227.70	90.03	2,865.55	3,702.18	645.61	397.74	247.88	2.605	
10,700.00	5,770.71	5,801.05	5,800.64	113.48	227.63	89.85	2,865.54	3,702.20	701.24	445.19	256.05	2.739	
10,800.00	5,768.96	5,799.30	5,798.89	115.71	227.56	89.67	2,865.52	3,702.21	765.93	504.19	261.74	2.926	
10,900.00	5,767.21	5,797.55	5,797.14	117.94	227.49	89.49	2,865.51	3,702.22	837.59	572.21	265.38	3.156	
11,000.00	5,765.47	5,795.80	5,795.39	120.17	227.42	89.31	2,865.50	3,702.23	914.58	647.07	267.52	3.419	
11,100.00	5,763.72	5,794.06	5,793.65	122.40	227.35	89.13	2,865.48	3,702.25	995.67	727.06	268.61	3.707	
11,200.00	5,761.98	5,792.31	5,791.90	124.63	227.28	88.95	2,865.47	3,702.26	1,079.93	810.92	269.01	4.014	
11,300.00	5,760.23	5,790.56	5,790.15	126.86	227.21	88.77	2,865.46	3,702.27	1,166.68	897.72	268.96	4.338	
11,400.00	5,758.49	5,788.81	5,788.40	129.09	227.14	88.59	2,865.44	3,702.29	1,255.39	986.78	268.62	4.674	
11,500.00	5,756.74	5,787.06	5,786.65	131.32	227.07	88.41	2,865.43	3,702.30	1,345.69	1,077.60	268.09	5.019	
11,600.00	5,755.00	5,785.31	5,784.90	133.55	227.01	88.23	2,865.42	3,702.31	1,437.27	1,169.81	267.46	5.374	
11,700.00	5,753.25	5,783.56	5,783.15	135.78	226.94	88.06	2,865.41	3,702.33	1,529.91	1,263.13	266.78	5.735	
11,802.14	5,751.47	5,781.78	5,781.37	138.06	226.87	87.87	2,865.39	3,702.34	1,625.42	1,359.37	266.05	6.109	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #750 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-ISCWSA-GYRO-3, 1866-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	145.96	-3,997.90	2,700.70	4,824.68				
100.00	100.00	63.91	63.91	0.09	0.06	145.96	-3,998.01	2,700.69	4,824.73	4,824.58	0.15	N/A	
200.00	200.00	157.68	157.68	0.32	0.20	145.96	-3,998.46	2,700.67	4,825.11	4,824.60	0.52	9,356.996	
300.00	300.00	258.91	258.91	0.54	0.39	145.96	-3,998.83	2,700.82	4,825.50	4,824.57	0.93	5,198.900	
400.00	400.00	357.88	357.88	0.77	0.58	145.97	-3,999.21	2,700.93	4,825.87	4,824.54	1.34	3,607.189	
500.00	500.00	458.44	458.44	0.99	0.76	145.97	-3,999.58	2,701.10	4,826.28	4,824.53	1.75	2,756.482	
600.00	600.00	566.33	566.33	1.22	0.97	145.97	-3,999.90	2,701.25	4,826.60	4,824.42	2.18	2,216.404	
700.00	700.00	675.88	675.87	1.44	1.16	145.97	-4,000.04	2,701.28	4,826.72	4,824.12	2.60	1,859.433	
800.00	800.00	767.92	767.92	1.67	1.33	145.97	-4,000.12	2,701.27	4,826.79	4,823.81	2.98	1,619.890	
900.00	900.00	867.22	867.21	1.89	1.51	145.97	-4,000.36	2,701.34	4,827.03	4,823.64	3.39	1,425.949	
1,000.00	1,000.00	969.68	969.68	2.12	1.70	145.97	-4,000.53	2,701.38	4,827.19	4,823.39	3.80	1,270.098	
1,100.00	1,100.00	1,061.86	1,061.86	2.34	1.87	145.97	-4,000.67	2,701.51	4,827.40	4,823.20	4.20	1,150.600	
1,200.00	1,200.00	1,153.97	1,153.97	2.56	2.03	145.97	-4,000.79	2,702.02	4,827.81	4,823.22	4.59	1,052.183	
1,300.00	1,300.00	1,249.83	1,249.82	2.79	2.20	145.96	-4,000.92	2,702.73	4,828.33	4,823.35	4.99	968.228	
1,400.00	1,400.00	1,350.21	1,350.20	3.01	2.38	145.95	-4,001.00	2,703.63	4,828.91	4,823.52	5.39	895.610	
1,500.00	1,500.00	1,462.51	1,462.49	3.24	2.57	145.94	-4,000.75	2,704.94	4,829.38	4,823.57	5.81	830.758	
1,600.00	1,600.00	1,577.32	1,577.27	3.46	2.77	145.91	-3,999.47	2,707.10	4,829.51	4,823.28	6.23	774.820	
1,700.00	1,700.00	1,683.49	1,683.39	3.69	2.95	145.87	-3,997.53	2,709.61	4,829.43	4,822.79	6.64	727.725	
1,800.00	1,800.00	1,797.72	1,797.57	3.91	3.12	145.83	-3,995.39	2,712.22	4,829.04	4,822.02	7.02	687.617	
1,900.00	1,900.00	1,889.58	1,889.40	4.14	3.18	145.80	-3,993.87	2,714.02	4,828.77	4,821.47	7.31	660.683	
2,000.00	2,000.00	2,062.54	2,062.30	4.36	3.22	145.75	-3,990.17	2,716.50	4,827.85	4,820.27	7.57	637.447	
2,100.00	2,100.00	2,627.10	2,625.29	4.59	3.67	145.65	-3,954.91	2,702.91	4,821.58	4,813.39	8.19	588.799	
2,200.00	2,200.00	2,711.51	2,709.19	4.81	3.78	145.65	-3,947.02	2,697.96	4,810.53	4,802.02	8.51	565.468	
2,300.00	2,300.00	2,825.89	2,822.84	5.04	3.95	145.65	-3,936.55	2,690.28	4,799.16	4,790.29	8.87	541.153	
2,400.00	2,400.00	2,901.05	2,897.51	5.26	4.07	145.66	-3,929.84	2,685.17	4,787.97	4,778.78	9.19	521.142	
2,500.00	2,500.00	3,008.46	3,004.32	5.49	4.25	145.66	-3,920.72	2,678.31	4,777.39	4,767.84	9.55	500.301	
2,600.00	2,600.00	3,109.14	3,104.34	5.71	4.44	145.67	-3,911.85	2,671.05	4,766.05	4,756.13	9.91	480.721	
2,700.00	2,700.00	3,193.73	3,188.44	5.94	4.60	145.68	-3,904.74	2,665.24	4,755.21	4,744.95	10.26	463.261	
2,800.00	2,800.00	3,284.94	3,279.12	6.16	4.78	145.69	-3,897.18	2,659.00	4,744.51	4,733.88	10.63	446.418	
2,900.00	2,900.00	3,433.89	3,427.17	6.39	5.10	145.70	-3,884.17	2,649.17	4,733.66	4,722.59	11.08	427.315	
3,000.00	3,000.00	3,516.00	3,508.74	6.61	5.28	145.71	-3,876.57	2,643.61	4,722.20	4,710.76	11.44	412.720	
3,100.00	3,100.00	3,591.55	3,583.83	6.84	5.45	145.71	-3,869.84	2,638.68	4,711.17	4,699.38	11.80	399.398	
3,200.00	3,200.00	3,748.67	3,739.86	7.06	5.82	145.73	-3,855.46	2,627.30	4,699.37	4,687.09	12.28	382.822	
3,300.00	3,300.00	3,824.08	3,814.76	7.28	6.00	145.74	-3,848.57	2,621.83	4,687.72	4,675.07	12.65	370.711	
3,400.00	3,400.00	3,923.28	3,913.30	7.51	6.24	145.74	-3,839.50	2,614.93	4,676.24	4,663.19	13.05	358.416	
3,500.00	3,500.00	4,025.27	4,014.62	7.73	6.50	145.75	-3,830.39	2,607.53	4,664.77	4,651.31	13.46	346.567	
3,600.00	3,600.00	4,109.58	4,098.37	7.96	6.71	145.76	-3,822.82	2,601.41	4,653.28	4,639.44	13.85	336.073	
3,700.00	3,700.00	4,173.82	4,162.23	8.18	6.86	145.77	-3,817.18	2,597.39	4,642.47	4,628.27	14.20	326.976	
3,800.00	3,800.00	4,271.72	4,259.60	8.41	7.10	145.77	-3,808.73	2,591.58	4,632.02	4,617.41	14.61	317.095	
3,900.00	3,900.00	4,357.00	4,344.42	8.63	7.31	145.77	-3,801.53	2,586.61	4,621.76	4,606.76	15.00	308.168	
4,000.00	4,000.00	4,450.00	4,436.95	8.86	7.54	145.77	-3,794.01	2,580.99	4,611.68	4,596.28	15.40	299.423	
4,100.00	4,100.00	4,543.00	4,529.48	9.08	7.77	145.77	-3,786.13	2,576.20	4,601.77	4,585.97	15.81	291.108	
4,200.00	4,200.00	4,649.39	4,635.34	9.31	8.03	145.74	-3,776.40	2,571.82	4,591.90	4,575.66	16.24	282.762	
4,300.00	4,300.00	4,749.27	4,734.71	9.53	8.28	145.72	-3,767.29	2,567.47	4,581.91	4,565.25	16.66	274.981	
4,400.00	4,400.00	4,836.83	4,821.82	9.76	8.50	145.71	-3,759.35	2,563.70	4,572.00	4,554.94	17.06	267.958	
4,500.00	4,500.00	4,918.67	4,903.29	9.98	8.70	145.69	-3,752.21	2,560.35	4,562.48	4,545.03	17.45	261.427	
4,600.00	4,600.00	5,004.07	4,988.32	10.21	8.91	145.68	-3,745.05	2,556.92	4,553.29	4,535.44	17.85	255.090	
4,700.00	4,700.00	5,087.95	5,071.86	10.43	9.12	145.66	-3,738.22	2,553.73	4,544.42	4,526.18	18.24	249.079	
4,800.00	4,800.00	5,171.82	5,155.42	10.66	9.32	145.65	-3,731.87	2,550.40	4,535.92	4,517.28	18.64	243.332	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #750 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-ISCWSA-GYRO-3, 1966-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	5,276.77	5,260.00	10.88	9.57	145.64	-3,724.33	2,545.88	4,527.56	4,508.48	19.08	237.324	
5,000.00	5,000.00	5,392.47	5,375.25	11.11	9.86	145.64	-3,715.82	2,540.41	4,518.81	4,499.28	19.53	231.326	
5,100.00	5,100.00	5,475.19	5,457.66	11.33	10.06	145.64	-3,709.86	2,536.38	4,510.12	4,490.19	19.93	226.286	
5,200.00	5,200.00	5,574.26	5,556.40	11.56	10.30	145.64	-3,703.06	2,532.04	4,501.98	4,481.63	20.36	221.156	
5,300.00	5,300.00	5,705.67	5,687.27	11.78	10.62	145.63	-3,692.98	2,525.57	4,492.77	4,471.92	20.84	215.573	
5,329.21	5,329.21	5,734.38	5,715.85	11.85	10.69	145.63	-3,690.77	2,524.19	4,490.11	4,469.14	20.97	214.167	
5,350.00	5,349.99	5,767.30	5,748.63	11.89	10.78	100.43	-3,688.26	2,522.45	4,488.26	4,467.18	21.08	212.956	
5,400.00	5,399.78	5,833.33	5,814.35	12.00	10.94	100.94	-3,683.39	2,518.29	4,484.22	4,462.91	21.32	210.375	
5,450.00	5,448.92	5,873.09	5,853.92	12.11	11.05	101.38	-3,680.51	2,515.70	4,481.11	4,459.60	21.51	208.343	
5,500.00	5,496.96	5,913.00	5,893.65	12.23	11.15	101.74	-3,677.66	2,513.19	4,479.08	4,457.37	21.70	206.365	
5,550.00	5,543.45	5,962.55	5,942.98	12.35	11.27	102.08	-3,674.11	2,510.13	4,478.11	4,456.18	21.92	204.254	
5,571.20	5,562.59	5,983.52	5,963.85	12.40	11.32	102.21	-3,672.59	2,508.83	4,478.01	4,455.99	22.02	203.365	CC, ES
5,600.00	5,587.97	6,011.84	5,992.04	12.48	11.40	102.36	-3,670.52	2,507.08	4,478.19	4,456.04	22.16	202.120	
5,650.00	5,630.10	6,063.50	6,043.46	12.63	11.53	102.59	-3,666.67	2,503.88	4,479.37	4,456.96	22.41	199.859	
5,700.00	5,669.47	6,113.43	6,093.14	12.81	11.65	102.73	-3,662.82	2,500.78	4,481.69	4,459.00	22.69	197.481	
5,750.00	5,705.70	6,163.44	6,142.90	13.03	11.78	102.79	-3,658.78	2,497.70	4,485.20	4,462.19	23.01	194.894	
5,800.00	5,738.47	6,204.41	6,183.65	13.30	11.89	102.67	-3,655.35	2,495.19	4,489.95	4,466.59	23.36	192.193	
5,850.00	5,767.46	6,234.00	6,213.07	13.62	11.97	102.31	-3,652.84	2,493.38	4,496.06	4,472.32	23.74	189.372	
5,900.00	5,792.43	6,259.62	6,238.55	14.02	12.04	101.78	-3,650.66	2,491.82	4,503.55	4,479.38	24.17	186.314	
5,950.00	5,813.12	6,281.04	6,259.85	14.47	12.09	101.05	-3,648.84	2,490.52	4,512.43	4,487.78	24.65	183.037	
6,000.00	5,829.37	6,296.32	6,275.05	15.00	12.13	100.11	-3,647.53	2,489.60	4,522.67	4,497.48	25.18	179.609	
6,050.00	5,841.00	6,306.98	6,285.66	15.59	12.16	98.96	-3,646.63	2,488.96	4,534.20	4,508.45	25.75	176.071	
6,100.00	5,847.93	6,313.63	6,292.27	16.23	12.18	97.61	-3,646.07	2,488.56	4,546.97	4,520.61	26.36	172.489	
6,150.00	5,850.07	6,316.20	6,294.83	16.92	12.18	96.08	-3,645.85	2,488.41	4,560.84	4,533.85	27.00	168.939	
6,156.48	5,850.00	6,316.23	6,294.86	17.01	12.18	95.85	-3,645.85	2,488.40	4,562.72	4,535.64	27.08	168.481	
6,200.00	5,849.24	6,316.22	6,294.84	17.65	12.18	95.85	-3,645.85	2,488.40	4,575.54	4,547.89	27.66	165.425	
6,300.00	5,847.50	6,316.18	6,294.81	19.22	12.18	95.85	-3,645.85	2,488.41	4,606.44	4,577.37	29.07	158.464	
6,400.00	5,845.75	6,316.15	6,294.77	20.91	12.18	95.85	-3,645.85	2,488.41	4,639.29	4,608.73	30.57	151.782	
6,500.00	5,844.01	6,316.11	6,294.74	22.70	12.18	95.85	-3,645.86	2,488.41	4,674.05	4,641.93	32.12	145.521	
6,600.00	5,842.28	6,316.08	6,294.70	24.57	12.18	95.85	-3,645.86	2,488.41	4,710.68	4,676.97	33.71	139.741	
6,700.00	5,840.52	6,316.05	6,294.67	26.49	12.18	95.84	-3,645.86	2,488.41	4,749.12	4,713.80	35.32	134.457	
6,800.00	5,838.77	6,316.01	6,294.64	28.46	12.18	95.84	-3,645.87	2,488.42	4,789.35	4,752.41	36.94	129.657	
6,900.00	5,837.03	6,315.98	6,294.60	30.47	12.18	95.84	-3,645.87	2,488.42	4,831.31	4,792.76	38.55	125.311	
7,000.00	5,835.28	6,315.94	6,294.57	32.51	12.18	95.84	-3,645.87	2,488.42	4,874.97	4,834.81	40.16	121.387	
7,100.00	5,833.53	6,315.91	6,294.53	34.57	12.18	95.84	-3,645.88	2,488.42	4,920.27	4,878.52	41.75	117.848	
7,200.00	5,831.79	6,315.87	6,294.50	36.66	12.18	95.84	-3,645.88	2,488.43	4,967.17	4,923.84	43.32	114.659	
7,300.00	5,830.04	6,315.83	6,294.46	38.76	12.18	95.84	-3,645.88	2,488.43	5,015.62	4,970.75	44.87	111.787	
7,400.00	5,828.30	6,315.80	6,294.43	40.88	12.18	95.84	-3,645.88	2,488.43	5,065.59	5,019.20	46.39	109.201	
7,500.00	5,826.55	6,315.76	6,294.39	43.01	12.18	95.84	-3,645.89	2,488.43	5,117.02	5,069.14	47.88	106.874	
7,600.00	5,824.81	6,315.73	6,294.36	45.15	12.18	95.84	-3,645.89	2,488.43	5,169.87	5,120.53	49.34	104.781	
7,700.00	5,823.06	6,315.69	6,294.32	47.30	12.18	95.84	-3,645.89	2,488.44	5,224.11	5,173.34	50.77	102.899	
7,800.00	5,821.32	6,315.66	6,294.29	49.46	12.18	95.84	-3,645.90	2,488.44	5,279.68	5,227.51	52.17	101.208	
7,900.00	5,819.57	6,315.62	6,294.25	51.62	12.18	95.84	-3,645.90	2,488.44	5,336.55	5,283.02	53.53	99.691	
8,000.00	5,817.83	6,315.59	6,294.21	53.79	12.18	95.84	-3,645.90	2,488.44	5,394.67	5,339.81	54.86	98.332	
8,100.00	5,816.08	6,315.55	6,294.18	55.97	12.18	95.84	-3,645.90	2,488.44	5,454.00	5,397.84	56.16	97.118	
8,200.00	5,814.34	6,315.52	6,294.14	58.15	12.18	95.84	-3,645.91	2,488.45	5,514.51	5,457.09	57.42	96.032	
8,300.00	5,812.59	6,315.48	6,294.11	60.34	12.18	95.84	-3,645.91	2,488.45	5,576.16	5,517.51	58.65	95.067	
8,400.00	5,810.85	6,315.44	6,294.07	62.53	12.18	95.84	-3,645.91	2,488.45	5,638.91	5,579.06	59.85	94.212	
8,500.00	5,809.10	6,315.41	6,294.04	64.73	12.18	95.84	-3,645.92	2,488.45	5,702.72	5,641.70	61.02	93.458	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore:	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #750 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-ISCWSA-GYRO-3, 1868-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	6,315.37	6,294.00	66.92	12.18	95.84	-3,645.92	2,488.45	5,767.56	5,705.41	62.15	92.797	
8,700.00	5,805.61	6,315.34	6,293.97	69.12	12.18	95.84	-3,645.92	2,488.46	5,833.39	5,770.13	63.25	92.221	
8,800.00	5,803.87	6,315.30	6,293.93	71.33	12.18	95.83	-3,645.93	2,488.46	5,900.18	5,835.86	64.33	91.723	
8,900.00	5,802.12	6,315.26	6,293.89	73.53	12.18	95.83	-3,645.93	2,488.46	5,967.90	5,902.54	65.37	91.299	
9,000.00	5,800.37	6,315.23	6,293.86	75.74	12.18	95.83	-3,645.93	2,488.46	6,036.52	5,970.14	66.38	90.941	
9,100.00	5,798.63	6,315.19	6,293.82	77.95	12.18	95.83	-3,645.94	2,488.47	6,106.00	6,038.64	67.36	90.647	
9,200.00	5,796.88	6,315.16	6,293.79	80.16	12.18	95.83	-3,645.94	2,488.47	6,176.33	6,108.01	68.31	90.410	
9,300.00	5,795.14	6,315.12	6,293.75	82.38	12.18	95.83	-3,645.94	2,488.47	6,247.46	6,178.22	69.24	90.228	
9,400.00	5,793.39	6,315.08	6,293.71	84.59	12.18	95.83	-3,645.94	2,488.47	6,319.37	6,249.23	70.14	90.095	
9,500.00	5,791.65	6,315.05	6,293.68	86.81	12.18	95.83	-3,645.95	2,488.47	6,392.04	6,321.02	71.01	90.010	
9,600.00	5,789.90	6,315.01	6,293.64	89.02	12.18	95.83	-3,645.95	2,488.48	6,465.43	6,393.57	71.86	89.969	
9,700.00	5,788.16	6,314.97	6,293.61	91.24	12.18	95.83	-3,645.95	2,488.48	6,539.54	6,466.85	72.69	89.969 SF	
9,800.00	5,786.41	6,314.94	6,293.57	93.46	12.18	95.83	-3,645.96	2,488.48	6,614.32	6,540.84	73.49	90.007	
9,900.00	5,784.67	6,314.90	6,293.53	95.68	12.18	95.83	-3,645.96	2,488.48	6,689.77	6,615.50	74.26	90.082	
10,000.00	5,782.92	6,314.86	6,293.50	97.91	12.18	95.83	-3,645.96	2,488.49	6,765.85	6,690.83	75.02	90.190	
10,100.00	5,781.18	6,314.83	6,293.46	100.13	12.18	95.83	-3,645.97	2,488.49	6,842.54	6,766.79	75.75	90.330	
10,200.00	5,779.43	6,314.79	6,293.42	102.35	12.18	95.83	-3,645.97	2,488.49	6,919.84	6,843.37	76.46	90.501	
10,300.00	5,777.69	6,314.75	6,293.39	104.58	12.18	95.83	-3,645.97	2,488.49	6,997.70	6,920.55	77.15	90.700	
10,400.00	5,775.94	6,314.72	6,293.35	106.80	12.18	95.83	-3,645.98	2,488.49	7,076.13	6,998.30	77.82	90.925	
10,500.00	5,774.20	6,314.68	6,293.31	109.03	12.18	95.83	-3,645.98	2,488.50	7,155.09	7,076.61	78.48	91.176	
10,600.00	5,772.45	6,314.64	6,293.28	111.25	12.18	95.83	-3,645.98	2,488.50	7,234.57	7,155.46	79.11	91.450	
10,700.00	5,770.71	6,314.61	6,293.24	113.48	12.18	95.83	-3,645.98	2,488.50	7,314.55	7,234.83	79.73	91.747	
10,800.00	5,768.96	6,314.57	6,293.20	115.71	12.18	95.83	-3,645.99	2,488.50	7,395.03	7,314.70	80.32	92.066	
10,900.00	5,767.21	6,314.53	6,293.16	117.94	12.18	95.82	-3,645.99	2,488.50	7,475.97	7,395.06	80.91	92.404	
11,000.00	5,765.47	6,314.49	6,293.13	120.17	12.18	95.82	-3,645.99	2,488.51	7,557.37	7,475.90	81.47	92.762	
11,100.00	5,763.72	6,314.46	6,293.09	122.40	12.18	95.82	-3,646.00	2,488.51	7,639.21	7,557.19	82.02	93.138	
11,200.00	5,761.98	6,314.42	6,293.05	124.63	12.18	95.82	-3,646.00	2,488.51	7,721.48	7,638.93	82.55	93.532	
11,300.00	5,760.23	6,314.38	6,293.02	126.86	12.18	95.82	-3,646.00	2,488.51	7,804.16	7,721.09	83.07	93.942	
11,400.00	5,758.49	6,314.34	6,292.98	129.09	12.18	95.82	-3,646.01	2,488.52	7,887.25	7,803.67	83.58	94.367	
11,500.00	5,756.74	6,314.31	6,292.94	131.32	12.18	95.82	-3,646.01	2,488.52	7,970.72	7,886.65	84.07	94.808	
11,600.00	5,755.00	6,314.27	6,292.90	133.55	12.18	95.82	-3,646.01	2,488.52	8,054.57	7,970.02	84.55	95.262	
11,700.00	5,753.25	6,314.23	6,292.87	135.78	12.18	95.82	-3,646.02	2,488.52	8,138.78	8,053.77	85.02	95.731	
11,802.14	5,751.47	6,314.19	6,292.83	138.06	12.18	95.82	-3,646.02	2,488.53	8,225.17	8,139.69	85.48	96.222	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #828 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1840-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	85.25	101.10	1,217.00	1,221.21				
100.00	100.00	93.05	93.05	0.09	0.08	85.24	101.45	1,217.47	1,221.75	1,221.59	0.17	7,351.659	
200.00	200.00	195.75	195.74	0.32	0.20	85.20	102.26	1,218.43	1,222.75	1,222.25	0.50	2,452.268	
300.00	300.00	300.00	299.99	0.54	0.34	85.17	102.94	1,219.06	1,223.41	1,222.58	0.83	1,466.358	
400.00	400.00	399.79	399.77	0.77	0.47	85.15	103.47	1,219.51	1,223.91	1,222.75	1.16	1,051.136	
500.00	500.00	498.43	498.41	0.99	0.60	85.13	103.97	1,220.03	1,224.48	1,222.98	1.50	817.431	
600.00	600.00	601.23	601.21	1.22	0.73	85.11	104.33	1,220.52	1,224.98	1,223.14	1.84	663.976	
700.00	700.00	700.00	699.98	1.44	0.86	85.11	104.52	1,220.95	1,225.43	1,223.23	2.19	558.741	
800.00	800.00	799.29	799.26	1.67	0.98	85.10	104.78	1,221.44	1,225.95	1,223.41	2.54	482.465	
900.00	900.00	899.59	899.56	1.89	1.11	85.09	105.03	1,221.96	1,226.49	1,223.60	2.89	424.215	
1,000.00	1,000.00	1,000.95	1,000.92	2.12	1.24	85.08	105.17	1,222.43	1,226.96	1,223.71	3.25	377.911	
1,100.00	1,100.00	1,100.00	1,099.97	2.34	1.36	85.08	105.25	1,222.87	1,227.41	1,223.81	3.60	340.890	
1,200.00	1,200.00	1,198.97	1,198.94	2.56	1.49	85.08	105.31	1,223.39	1,227.94	1,223.98	3.96	310.475	
1,300.00	1,300.00	1,297.80	1,297.77	2.79	1.61	85.08	105.46	1,224.00	1,228.56	1,224.25	4.31	285.200	
1,400.00	1,400.00	1,392.54	1,392.50	3.01	1.74	85.08	105.60	1,224.81	1,229.44	1,224.79	4.65	264.253	
1,500.00	1,500.00	1,491.36	1,491.32	3.24	1.86	85.03	106.61	1,225.88	1,230.60	1,225.61	4.99	246.484	
1,600.00	1,600.00	1,585.37	1,585.31	3.46	1.98	84.97	107.93	1,227.11	1,232.02	1,226.70	5.32	231.612	
1,700.00	1,700.00	1,685.67	1,685.58	3.69	2.11	84.91	109.48	1,228.69	1,233.73	1,228.07	5.66	218.154	
1,800.00	1,800.00	1,789.40	1,789.29	3.91	2.20	84.85	110.86	1,230.25	1,235.35	1,229.39	5.96	207.208	
1,900.00	1,900.00	1,898.00	1,897.88	4.14	2.24	84.79	112.16	1,231.15	1,236.27	1,230.05	6.22	198.742	
2,000.00	2,000.00	1,997.53	1,997.38	4.36	2.27	84.69	114.40	1,231.81	1,236.94	1,230.46	6.48	190.822	
2,100.00	2,100.00	2,098.45	2,098.23	4.59	2.33	84.52	118.27	1,231.97	1,237.65	1,230.89	6.77	182.852	
2,200.00	2,200.00	2,206.39	2,206.00	4.81	2.41	84.24	124.29	1,231.79	1,238.04	1,230.95	7.09	174.639	
2,300.00	2,300.00	2,330.35	2,329.59	5.04	2.54	83.80	133.54	1,229.83	1,237.28	1,229.82	7.46	165.879	
2,400.00	2,400.00	2,451.50	2,450.21	5.26	2.71	83.30	143.84	1,225.22	1,234.42	1,226.57	7.86	157.076	
2,500.00	2,500.00	2,550.60	2,548.86	5.49	2.86	82.90	152.14	1,220.66	1,230.85	1,222.61	8.24	149.398	
2,600.00	2,600.00	2,642.10	2,639.99	5.71	3.00	82.53	159.46	1,216.87	1,227.75	1,219.14	8.61	142.567	
2,700.00	2,700.00	2,741.48	2,738.94	5.94	3.17	82.12	167.81	1,213.08	1,225.07	1,216.05	9.02	135.830	
2,800.00	2,800.00	2,849.07	2,846.01	6.16	3.38	81.65	177.40	1,208.41	1,222.02	1,212.55	9.46	129.162	
2,900.00	2,900.00	2,949.45	2,945.91	6.39	3.59	81.22	186.00	1,203.80	1,218.74	1,208.85	9.89	123.201	
3,000.00	3,000.00	3,048.93	3,044.84	6.61	3.80	80.75	195.30	1,199.06	1,215.48	1,205.15	10.33	117.638	
3,100.00	3,100.00	3,147.15	3,142.50	6.84	4.01	80.27	204.71	1,194.42	1,212.39	1,201.61	10.78	112.479	
3,200.00	3,200.00	3,246.74	3,241.51	7.06	4.24	79.79	214.36	1,189.76	1,209.44	1,198.20	11.24	107.627	
3,300.00	3,300.00	3,346.72	3,340.89	7.28	4.49	79.29	224.12	1,184.99	1,206.50	1,194.80	11.71	103.046	
3,400.00	3,400.00	3,446.14	3,439.72	7.51	4.73	78.79	233.91	1,180.24	1,203.67	1,191.49	12.18	98.833	
3,500.00	3,500.00	3,544.05	3,537.05	7.73	4.97	78.30	243.45	1,175.60	1,200.94	1,188.30	12.64	94.984	
3,600.00	3,600.00	3,640.53	3,632.96	7.96	5.20	77.81	253.00	1,171.20	1,198.52	1,185.41	13.11	91.420	
3,700.00	3,700.00	3,744.84	3,736.63	8.18	5.47	77.27	263.46	1,166.47	1,196.24	1,182.64	13.60	87.946	
3,800.00	3,800.00	3,851.07	3,842.18	8.41	5.74	76.71	274.13	1,160.94	1,193.42	1,179.32	14.10	84.636	
3,900.00	3,900.00	3,952.18	3,942.65	8.63	6.01	76.19	284.07	1,155.36	1,190.33	1,175.74	14.59	81.580	
4,000.00	4,000.00	4,045.11	4,035.00	8.86	6.25	75.70	293.15	1,150.43	1,187.54	1,172.48	15.06	78.849	
4,100.00	4,100.00	4,145.20	4,134.54	9.08	6.50	75.21	302.43	1,145.57	1,185.17	1,169.63	15.54	76.271	
4,200.00	4,200.00	4,245.54	4,234.34	9.31	6.76	74.72	311.62	1,140.62	1,182.76	1,166.74	16.02	73.814	
4,300.00	4,300.00	4,346.11	4,334.33	9.53	7.03	74.21	321.04	1,135.51	1,180.36	1,163.84	16.52	71.458	
4,400.00	4,400.00	4,445.95	4,433.67	9.76	7.28	73.74	329.74	1,130.56	1,178.00	1,161.00	17.00	69.293	
4,500.00	4,500.00	4,547.75	4,535.02	9.98	7.53	73.29	337.93	1,125.60	1,175.59	1,158.11	17.48	67.255	
4,600.00	4,600.00	4,647.58	4,634.41	10.21	7.79	72.85	345.89	1,120.56	1,173.07	1,155.11	17.96	65.324	
4,700.00	4,700.00	4,740.33	4,726.83	10.43	8.01	72.48	352.42	1,116.52	1,171.01	1,152.60	18.41	63.619	
4,800.00	4,800.00	4,836.73	4,823.05	10.66	8.22	72.20	357.40	1,113.25	1,169.34	1,150.50	18.84	62.063	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #828 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1840-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	4,928.96	4,915.19	10.88	8.40	72.01	360.75	1,111.16	1,168.29	1,149.04	19.25	60.686	
5,000.00	5,000.00	5,029.95	5,016.15	11.11	8.58	71.92	362.25	1,109.69	1,167.36	1,147.70	19.66	59.382	
5,100.00	5,100.00	5,124.27	5,110.47	11.33	8.74	71.90	362.47	1,109.09	1,166.83	1,146.78	20.04	58.216	
5,120.20	5,120.20	5,140.00	5,126.20	11.38	8.77	71.90	362.49	1,109.02	1,166.76	1,146.64	20.12	58.004	
5,200.00	5,200.00	5,140.00	5,126.20	11.56	8.77	71.90	362.49	1,109.02	1,169.48	1,149.24	20.25	57.762	
5,300.00	5,300.00	5,140.00	5,126.20	11.78	8.77	71.90	362.49	1,109.02	1,180.53	1,160.24	20.29	58.190	
5,329.21	5,329.21	5,140.00	5,126.20	11.85	8.77	71.90	362.49	1,109.02	1,185.33	1,165.06	20.27	58.465	
5,350.00	5,349.99	5,140.00	5,126.20	11.89	8.77	26.31	362.49	1,109.02	1,188.81	1,168.55	20.26	58.691	
5,400.00	5,399.78	5,140.00	5,126.20	12.00	8.77	25.98	362.49	1,109.02	1,195.61	1,175.43	20.18	59.240	
5,450.00	5,448.92	5,140.00	5,126.20	12.11	8.77	25.76	362.49	1,109.02	1,200.19	1,180.12	20.07	59.789	
5,500.00	5,496.96	5,140.00	5,126.20	12.23	8.77	25.65	362.49	1,109.02	1,202.53	1,182.60	19.93	60.332	
5,550.00	5,543.45	5,140.00	5,126.20	12.35	8.77	25.64	362.49	1,109.02	1,202.62	1,182.87	19.76	60.866	
5,600.00	5,587.97	5,140.00	5,126.20	12.48	8.77	25.75	362.49	1,109.02	1,200.47	1,180.91	19.56	61.382	
5,650.00	5,630.10	5,140.00	5,126.20	12.63	8.77	25.96	362.49	1,109.02	1,196.08	1,176.75	19.33	61.870	
5,700.00	5,669.47	5,140.00	5,126.20	12.81	8.77	26.28	362.49	1,109.02	1,189.46	1,170.37	19.09	62.315	
5,750.00	5,705.70	5,140.00	5,126.20	13.03	8.77	26.72	362.49	1,109.02	1,180.65	1,161.81	18.83	62.694	
5,800.00	5,738.47	5,140.00	5,126.20	13.30	8.77	27.28	362.49	1,109.02	1,169.66	1,151.09	18.57	62.981	
5,850.00	5,767.46	5,140.00	5,126.20	13.62	8.77	27.98	362.49	1,109.02	1,156.55	1,138.24	18.32	63.142	
5,900.00	5,792.43	5,140.00	5,126.20	14.02	8.77	28.81	362.49	1,109.02	1,141.37	1,123.29	18.08	63.141	
5,950.00	5,813.12	5,140.00	5,126.20	14.47	8.77	29.80	362.49	1,109.02	1,124.17	1,106.30	17.86	62.935	
6,000.00	5,829.37	5,140.00	5,126.20	15.00	8.77	30.95	362.49	1,109.02	1,105.01	1,087.33	17.69	62.479	
6,050.00	5,841.00	5,140.00	5,126.20	15.59	8.77	32.29	362.49	1,109.02	1,083.99	1,066.43	17.56	61.732	
6,100.00	5,847.93	5,140.00	5,126.20	16.23	8.77	33.82	362.49	1,109.02	1,061.18	1,043.69	17.49	60.660	
6,150.00	5,850.07	5,140.00	5,126.20	16.92	8.77	35.58	362.49	1,109.02	1,036.69	1,019.19	17.50	59.238	
6,156.48	5,850.00	5,140.00	5,126.20	17.01	8.77	35.83	362.49	1,109.02	1,033.40	1,015.89	17.51	59.003	
6,200.00	5,849.24	5,140.00	5,126.20	17.65	8.77	35.83	362.49	1,109.02	1,011.90	994.33	17.57	57.591	
6,300.00	5,847.50	5,140.00	5,126.20	19.22	8.77	35.83	362.49	1,109.02	968.12	950.27	17.85	54.248	
6,400.00	5,845.75	5,140.00	5,126.20	20.91	8.77	35.83	362.49	1,109.02	933.04	914.70	18.34	50.878	
6,500.00	5,844.01	5,140.00	5,126.20	22.70	8.77	35.83	362.49	1,109.02	907.67	888.62	19.04	47.664	
6,600.00	5,842.26	5,140.00	5,126.20	24.57	8.77	35.83	362.49	1,109.02	892.84	872.90	19.94	44.784	
6,683.48	5,840.80	5,140.00	5,126.20	26.17	8.77	35.83	362.49	1,109.02	888.93	868.13	20.80	42.732 CC	
6,700.00	5,840.52	5,140.00	5,126.20	26.49	8.77	35.83	362.49	1,109.02	889.08	868.10	20.98	42.374 ES	
6,800.00	5,838.77	5,140.00	5,126.20	28.46	8.77	35.83	362.49	1,109.02	896.53	874.41	22.12	40.523	
6,900.00	5,837.03	5,140.00	5,126.20	30.47	8.77	35.83	362.49	1,109.02	914.92	891.63	23.29	39.283	
7,000.00	5,835.28	5,140.00	5,126.20	32.51	8.77	35.83	362.49	1,109.02	943.60	919.20	24.40	38.664	
7,100.00	5,833.53	5,140.00	5,126.20	34.57	8.77	35.83	362.49	1,109.02	981.68	956.27	25.41	38.638 SF	
7,200.00	5,831.79	5,140.00	5,126.20	36.66	8.77	35.83	362.49	1,109.02	1,028.10	1,001.84	26.26	39.145	
7,300.00	5,830.04	5,140.00	5,126.20	38.76	8.77	35.83	362.49	1,109.02	1,081.80	1,054.84	26.97	40.114	
7,400.00	5,828.30	5,140.00	5,126.20	40.88	8.77	35.83	362.49	1,109.02	1,141.75	1,114.22	27.53	41.474	
7,500.00	5,826.55	5,140.00	5,126.20	43.01	8.77	35.83	362.49	1,109.02	1,207.02	1,179.06	27.97	43.160	
7,600.00	5,824.81	5,140.00	5,126.20	45.15	8.77	35.83	362.49	1,109.02	1,276.80	1,248.50	28.30	45.117	
7,700.00	5,823.06	5,140.00	5,126.20	47.30	8.77	35.83	362.49	1,109.02	1,350.38	1,321.83	28.55	47.300	
7,800.00	5,821.32	5,140.00	5,126.20	49.46	8.77	35.83	362.49	1,109.02	1,427.17	1,398.44	28.73	49.672	
7,900.00	5,819.57	5,140.00	5,126.20	51.62	8.77	35.83	362.49	1,109.02	1,506.69	1,477.83	28.86	52.202	
8,000.00	5,817.83	5,140.00	5,126.20	53.79	8.77	35.83	362.49	1,109.02	1,588.53	1,559.58	28.95	54.864	
8,100.00	5,816.08	5,140.00	5,126.20	55.97	8.77	35.83	362.49	1,109.02	1,672.34	1,643.33	29.01	57.638	
8,200.00	5,814.34	5,140.00	5,126.20	58.15	8.77	35.83	362.49	1,109.02	1,757.85	1,728.80	29.05	60.508	
8,300.00	5,812.59	5,140.00	5,126.20	60.34	8.77	35.83	362.49	1,109.02	1,844.82	1,815.75	29.07	63.460	
8,400.00	5,810.85	5,140.00	5,126.20	62.53	8.77	35.83	362.49	1,109.02	1,933.04	1,903.97	29.08	66.481	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #828 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1840-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,500.00	5,809.10	5,140.00	5,126.20	64.73	8.77	35.83	362.49	1,109.02	2,022.36	1,993.29	29.07	69.562	
8,600.00	5,807.36	5,140.00	5,126.20	66.92	8.77	35.83	362.49	1,109.02	2,112.64	2,083.58	29.06	72.695	
8,700.00	5,805.61	5,140.00	5,126.20	69.12	8.77	35.83	362.49	1,109.02	2,203.76	2,174.72	29.05	75.873	
8,800.00	5,803.87	5,140.00	5,126.20	71.33	8.77	35.83	362.49	1,109.02	2,295.62	2,266.59	29.03	79.090	
8,900.00	5,802.12	5,140.00	5,126.20	73.53	8.77	35.83	362.49	1,109.02	2,388.13	2,359.13	29.00	82.341	
9,000.00	5,800.37	5,140.00	5,126.20	75.74	8.77	35.83	362.49	1,109.02	2,481.23	2,452.25	28.98	85.621	
9,100.00	5,798.63	5,140.00	5,126.20	77.95	8.77	35.83	362.49	1,109.02	2,574.84	2,545.88	28.95	88.927	
9,200.00	5,796.88	5,140.00	5,126.20	80.16	8.77	35.83	362.49	1,109.02	2,668.91	2,639.98	28.93	92.255	
9,300.00	5,795.14	5,140.00	5,126.20	82.38	8.77	35.83	362.49	1,109.02	2,763.40	2,734.50	28.91	95.603	
9,400.00	5,793.39	5,140.00	5,126.20	84.59	8.77	35.83	362.49	1,109.02	2,858.27	2,829.39	28.88	98.967	
9,500.00	5,791.65	5,140.00	5,126.20	86.81	8.77	35.83	362.49	1,109.02	2,953.47	2,924.62	28.86	102.347	
9,600.00	5,789.90	5,140.00	5,126.20	89.02	8.77	35.83	362.49	1,109.02	3,048.99	3,020.15	28.84	105.739	
9,700.00	5,788.16	5,140.00	5,126.20	91.24	8.77	35.83	362.49	1,109.02	3,144.78	3,115.96	28.81	109.141	
9,800.00	5,786.41	5,140.00	5,126.20	93.46	8.77	35.83	362.49	1,109.02	3,240.82	3,212.03	28.79	112.553	
9,900.00	5,784.67	5,140.00	5,126.20	95.68	8.77	35.83	362.49	1,109.02	3,337.10	3,308.32	28.77	115.973	
10,000.00	5,782.92	5,140.00	5,126.20	97.91	8.77	35.83	362.49	1,109.02	3,433.59	3,404.83	28.76	119.399	
10,100.00	5,781.18	5,140.00	5,126.20	100.13	8.77	35.83	362.49	1,109.02	3,530.27	3,501.53	28.74	122.830	
10,200.00	5,779.43	5,140.00	5,126.20	102.35	8.77	35.83	362.49	1,109.02	3,627.14	3,598.41	28.73	126.266	
10,300.00	5,777.69	5,140.00	5,126.20	104.58	8.77	35.83	362.49	1,109.02	3,724.17	3,695.46	28.71	129.705	
10,400.00	5,775.94	5,140.00	5,126.20	106.80	8.77	35.83	362.49	1,109.02	3,821.35	3,792.65	28.70	133.146	
10,500.00	5,774.20	5,140.00	5,126.20	109.03	8.77	35.83	362.49	1,109.02	3,918.68	3,889.99	28.69	136.589	
10,600.00	5,772.45	5,140.00	5,126.20	111.25	8.77	35.83	362.49	1,109.02	4,016.14	3,987.46	28.68	140.032	
10,700.00	5,770.71	5,140.00	5,126.20	113.48	8.77	35.83	362.49	1,109.02	4,113.72	4,085.04	28.67	143.476	
10,800.00	5,768.96	5,140.00	5,126.20	115.71	8.77	35.83	362.49	1,109.02	4,211.41	4,182.74	28.66	146.919	
10,900.00	5,767.21	5,140.00	5,126.20	117.94	8.77	35.83	362.49	1,109.02	4,309.21	4,280.55	28.66	150.360	
11,000.00	5,765.47	5,140.00	5,126.20	120.17	8.77	35.83	362.49	1,109.02	4,407.11	4,378.45	28.65	153.801	
11,100.00	5,763.72	5,140.00	5,126.20	122.40	8.77	35.83	362.49	1,109.02	4,505.10	4,476.44	28.65	157.238	
11,200.00	5,761.98	5,140.00	5,126.20	124.63	8.77	35.83	362.49	1,109.02	4,603.17	4,574.52	28.65	160.673	
11,300.00	5,760.23	5,140.00	5,126.20	126.86	8.77	35.83	362.49	1,109.02	4,701.33	4,672.68	28.65	164.105	
11,400.00	5,758.49	5,140.00	5,126.20	129.09	8.77	35.83	362.49	1,109.02	4,799.56	4,770.91	28.65	167.534	
11,500.00	5,756.74	5,140.00	5,126.20	131.32	8.77	35.83	362.49	1,109.02	4,897.87	4,869.22	28.65	170.958	
11,600.00	5,755.00	5,140.00	5,126.20	133.55	8.77	35.83	362.49	1,109.02	4,996.24	4,967.59	28.65	174.378	
11,700.00	5,753.25	5,140.00	5,126.20	135.78	8.77	35.83	362.49	1,109.02	5,094.67	5,066.02	28.66	177.793	
11,802.14	5,751.47	5,140.00	5,126.20	138.06	8.77	35.83	362.49	1,109.02	5,195.28	5,166.62	28.66	181.276	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #847 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 85-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	33.60	1,675.10	1,113.10	2,011.22				
100.00	100.00	95.11	95.11	0.09	1.89	33.61	1,674.84	1,113.36	2,011.13	2,009.17	1.97	1,022.104	
200.00	200.00	197.54	197.53	0.32	6.26	33.64	1,674.07	1,114.12	2,010.92	2,004.42	6.50	309.488	
300.00	300.00	297.92	297.90	0.54	10.90	33.69	1,673.00	1,115.17	2,010.62	1,999.33	11.28	178.241	
400.00	400.00	397.12	397.09	0.77	15.50	33.72	1,672.05	1,116.10	2,010.34	1,994.31	16.03	125.435	
500.00	500.00	496.44	496.41	0.99	19.35	33.76	1,671.23	1,116.92	2,010.11	1,990.06	20.04	100.282	
600.00	600.00	595.78	595.74	1.22	23.07	33.78	1,670.52	1,117.62	2,009.90	1,985.96	23.95	83.934	
700.00	700.00	695.13	695.08	1.44	26.80	33.81	1,669.92	1,118.21	2,009.73	1,981.88	27.85	72.166	
800.00	800.00	794.96	794.91	1.67	30.15	33.83	1,669.41	1,118.71	2,009.59	1,978.20	31.39	64.027	
900.00	900.00	895.12	895.07	1.89	33.26	33.85	1,668.88	1,119.23	2,009.44	1,974.76	34.68	57.943	
1,000.00	1,000.00	995.27	995.22	2.12	36.36	33.87	1,668.32	1,119.78	2,009.28	1,971.31	37.97	52.913	
1,100.00	1,100.00	1,095.43	1,095.38	2.34	39.47	33.89	1,667.74	1,120.36	2,009.12	1,967.85	41.27	48.685	
1,200.00	1,200.00	1,195.92	1,195.86	2.56	43.20	33.92	1,667.11	1,120.97	2,008.95	1,963.77	45.17	44.471	
1,300.00	1,300.00	1,297.53	1,297.47	2.79	49.09	33.95	1,666.27	1,121.81	2,008.71	1,957.53	51.19	39.243	
1,400.00	1,400.00	1,399.14	1,399.06	3.01	54.98	33.99	1,665.13	1,122.93	2,008.40	1,951.20	57.21	35.108	
1,500.00	1,500.00	1,500.73	1,500.63	3.24	60.88	34.05	1,663.70	1,124.34	2,008.01	1,944.78	63.23	31.756	
1,600.00	1,600.00	1,602.30	1,602.17	3.46	66.78	34.12	1,661.97	1,126.04	2,007.54	1,938.28	69.26	28.984	
1,700.00	1,700.00	1,701.57	1,701.41	3.69	73.82	34.19	1,660.19	1,127.79	2,007.05	1,930.63	76.42	26.264	
1,800.00	1,800.00	1,800.66	1,800.48	3.91	80.97	34.25	1,658.57	1,129.39	2,006.60	1,922.93	83.67	23.982	
1,900.00	1,900.00	1,899.76	1,899.56	4.14	88.12	34.31	1,657.11	1,130.83	2,006.21	1,915.27	90.93	22.063	
2,000.00	2,000.00	1,998.48	1,998.26	4.36	93.49	34.36	1,655.85	1,132.08	2,005.86	1,909.41	96.45	20.797	
2,100.00	2,100.00	2,097.13	2,096.90	4.59	98.50	34.40	1,654.82	1,133.09	2,005.58	1,903.96	101.62	19.736	
2,200.00	2,200.00	2,196.33	2,196.09	4.81	103.29	34.43	1,654.03	1,133.87	2,005.37	1,898.80	106.56	18.818	
2,300.00	2,300.00	2,296.61	2,296.37	5.04	107.61	34.46	1,653.24	1,134.65	2,005.15	1,894.10	111.06	18.056	
2,400.00	2,400.00	2,396.89	2,396.64	5.26	111.93	34.50	1,652.39	1,135.49	2,004.93	1,889.38	115.55	17.352	
2,500.00	2,500.00	2,497.16	2,496.91	5.49	116.25	34.53	1,651.49	1,136.37	2,004.69	1,884.65	120.04	16.700	
2,600.00	2,600.00	2,597.44	2,597.17	5.71	120.57	34.57	1,650.54	1,137.31	2,004.44	1,879.90	124.54	16.095	
2,700.00	2,700.00	2,697.42	2,697.15	5.94	125.04	34.61	1,649.55	1,138.28	2,004.18	1,875.00	129.19	15.514	
2,800.00	2,800.00	2,797.27	2,796.98	6.16	129.60	34.65	1,648.59	1,139.23	2,003.93	1,870.02	133.91	14.964	
2,900.00	2,900.00	2,897.11	2,896.81	6.39	134.15	34.68	1,647.66	1,140.15	2,003.68	1,865.04	138.64	14.452	
3,000.00	3,000.00	2,996.95	2,996.65	6.61	138.71	34.72	1,646.76	1,141.04	2,003.45	1,860.08	143.37	13.974	
3,100.00	3,100.00	3,097.02	3,096.71	6.84	143.54	34.75	1,645.87	1,141.91	2,003.22	1,854.85	148.37	13.502	
3,200.00	3,200.00	3,197.71	3,197.39	7.06	149.13	34.79	1,644.90	1,142.88	2,002.97	1,848.85	154.12	12.996	
3,300.00	3,300.00	3,298.39	3,298.05	7.28	154.73	34.84	1,643.78	1,143.97	2,002.68	1,842.81	159.87	12.527	
3,400.00	3,400.00	3,399.06	3,398.71	7.51	160.32	34.88	1,642.53	1,145.20	2,002.36	1,836.74	165.62	12.090	
3,500.00	3,500.00	3,499.72	3,499.36	7.73	165.91	34.94	1,641.15	1,146.56	2,002.01	1,830.63	171.38	11.681	
3,600.00	3,600.00	3,599.88	3,599.49	7.96	172.09	35.00	1,639.67	1,148.02	2,001.64	1,823.92	177.72	11.263	
3,700.00	3,700.00	3,699.71	3,699.31	8.18	178.64	35.06	1,638.22	1,149.46	2,001.27	1,816.84	184.42	10.852	
3,800.00	3,800.00	3,799.55	3,799.12	8.41	185.19	35.11	1,636.79	1,150.87	2,000.91	1,809.78	191.13	10.469	
3,900.00	3,900.00	3,899.39	3,898.94	8.63	191.75	35.17	1,635.39	1,152.25	2,000.55	1,802.72	197.84	10.112	
4,000.00	4,000.00	3,999.12	3,998.65	8.86	198.00	35.22	1,634.02	1,153.60	2,000.21	1,795.96	204.25	9.793	
4,100.00	4,100.00	4,098.41	4,097.93	9.08	203.06	35.27	1,632.76	1,154.84	1,999.90	1,790.40	209.50	9.546	
4,200.00	4,200.00	4,197.70	4,197.21	9.31	208.12	35.32	1,631.64	1,155.95	1,999.62	1,784.87	214.74	9.312	
4,300.00	4,300.00	4,297.01	4,296.50	9.53	213.19	35.35	1,630.65	1,156.91	1,999.38	1,779.39	219.99	9.089	
4,400.00	4,400.00	4,396.31	4,395.80	9.76	218.25	35.39	1,629.81	1,157.74	1,999.17	1,773.94	225.23	8.876	
4,500.00	4,500.00	4,496.15	4,495.63	9.98	222.35	35.42	1,629.06	1,158.48	1,998.99	1,769.46	229.53	8.709	
4,600.00	4,600.00	4,596.14	4,595.62	10.21	226.17	35.45	1,628.32	1,159.22	1,998.80	1,765.26	233.54	8.559	
4,700.00	4,700.00	4,696.14	4,695.61	10.43	229.99	35.48	1,627.57	1,159.95	1,998.62	1,761.07	237.56	8.413	
4,800.00	4,800.00	4,796.13	4,795.60	10.66	233.80	35.51	1,626.83	1,160.69	1,998.44	1,756.87	241.57	8.273	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #847 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 85-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	4,896.23	4,895.69	10.88	237.81	35.54	1,626.08	1,161.43	1,998.26	1,752.48	245.78	8.130	
5,000.00	5,000.00	4,996.49	4,995.95	11.11	242.17	35.57	1,625.28	1,162.21	1,998.07	1,747.74	250.33	7.982	
5,100.00	5,100.00	5,096.76	5,096.21	11.33	246.53	35.60	1,624.43	1,163.05	1,997.87	1,742.98	254.88	7.838	
5,200.00	5,200.00	5,197.02	5,196.46	11.56	250.89	35.64	1,623.52	1,163.95	1,997.65	1,738.21	259.44	7.700	
5,300.00	5,300.00	5,297.28	5,296.71	11.78	255.24	35.68	1,622.55	1,164.90	1,997.42	1,733.43	264.00	7.566	
5,329.21	5,329.21	5,326.31	5,325.74	11.85	256.29	35.69	1,622.27	1,165.18	1,997.35	1,732.24	265.11	7.534	
5,350.00	5,349.99	5,346.95	5,346.38	11.89	257.03	-9.73	1,622.07	1,165.38	1,996.90	1,731.01	265.89	7.510	
5,400.00	5,399.78	5,396.41	5,395.83	12.00	258.80	-9.82	1,621.63	1,165.81	1,992.47	1,724.72	267.75	7.442	
5,450.00	5,448.92	5,445.21	5,444.63	12.11	260.54	-10.02	1,621.23	1,166.20	1,983.36	1,713.80	269.57	7.358	
5,500.00	5,496.96	5,492.93	5,492.34	12.23	262.25	-10.35	1,620.87	1,166.56	1,969.67	1,698.34	271.33	7.259	
5,550.00	5,543.45	5,539.11	5,538.52	12.35	263.90	-10.83	1,620.55	1,166.87	1,951.52	1,678.49	273.03	7.148	
5,600.00	5,587.97	5,583.33	5,582.74	12.48	265.48	-11.48	1,620.28	1,167.14	1,929.07	1,654.43	274.64	7.024	
5,650.00	5,630.10	5,625.19	5,624.60	12.63	266.98	-12.35	1,620.04	1,167.37	1,902.54	1,626.41	276.14	6.890	
5,700.00	5,669.47	5,664.29	5,663.70	12.81	268.38	-13.48	1,619.85	1,167.57	1,872.18	1,594.67	277.51	6.746	
5,750.00	5,705.70	5,700.28	5,699.69	13.03	269.66	-14.98	1,619.68	1,167.73	1,838.28	1,559.52	278.76	6.595	
5,800.00	5,738.47	5,732.83	5,732.24	13.30	270.83	-16.97	1,619.55	1,167.86	1,801.14	1,521.29	279.85	6.436	
5,850.00	5,767.46	5,761.83	5,761.24	13.62	271.62	-19.67	1,619.44	1,167.96	1,761.12	1,480.58	280.55	6.277	
5,900.00	5,792.43	5,786.83	5,786.23	14.02	272.27	-23.42	1,619.35	1,168.06	1,718.60	1,437.53	281.07	6.114	
5,950.00	5,813.12	5,807.55	5,806.96	14.47	272.80	-28.84	1,619.27	1,168.14	1,673.97	1,392.52	281.45	5.948	
6,000.00	5,829.37	5,823.81	5,823.22	15.00	273.23	-36.94	1,619.20	1,168.20	1,627.66	1,345.97	281.68	5.778	
6,050.00	5,841.00	5,835.46	5,834.87	15.59	273.53	-49.42	1,619.16	1,168.25	1,580.10	1,298.33	281.76	5.608	
6,100.00	5,847.93	5,842.39	5,841.80	16.23	273.71	-68.08	1,619.13	1,168.27	1,531.74	1,250.05	281.68	5.438	
6,150.00	5,850.07	5,844.54	5,843.95	16.92	273.76	-91.57	1,619.12	1,168.28	1,483.03	1,201.59	281.44	5.269	
6,156.48	5,850.00	5,844.47	5,843.88	17.01	273.76	-94.63	1,619.12	1,168.28	1,476.72	1,195.32	281.40	5.248	
6,200.00	5,849.24	5,843.71	5,843.12	17.65	273.74	-94.50	1,619.12	1,168.28	1,434.36	1,153.27	281.10	5.103	
6,300.00	5,847.50	5,841.96	5,841.37	19.22	273.70	-94.20	1,619.13	1,168.27	1,337.31	1,057.00	280.31	4.771	
6,400.00	5,845.75	5,840.22	5,839.62	20.91	273.65	-93.90	1,619.14	1,168.27	1,240.73	961.35	279.38	4.441	
6,500.00	5,844.01	5,838.47	5,837.88	22.70	273.61	-93.61	1,619.15	1,168.26	1,144.73	866.48	278.25	4.114	
6,600.00	5,842.26	5,836.72	5,836.13	24.57	273.56	-93.31	1,619.15	1,168.25	1,049.48	772.62	276.86	3.791	
6,700.00	5,840.52	5,834.97	5,834.38	26.49	273.52	-93.01	1,619.16	1,168.25	955.19	680.11	275.08	3.472	
6,800.00	5,838.77	5,833.23	5,832.63	28.46	273.47	-92.71	1,619.17	1,168.24	862.19	589.44	272.76	3.161	
6,900.00	5,837.03	5,831.48	5,830.89	30.47	273.43	-92.41	1,619.17	1,168.23	770.94	501.36	269.58	2.860	
7,000.00	5,835.28	5,829.73	5,829.14	32.51	273.38	-92.11	1,619.18	1,168.22	682.14	417.07	265.07	2.573	
7,100.00	5,833.53	5,827.99	5,827.39	34.57	273.33	-91.81	1,619.19	1,168.22	596.90	338.52	258.37	2.310	
7,200.00	5,831.79	5,826.24	5,825.64	36.66	273.29	-91.51	1,619.19	1,168.21	516.95	268.91	248.04	2.084	
7,300.00	5,830.04	5,824.49	5,823.90	38.76	273.24	-91.20	1,619.20	1,168.20	445.19	213.38	231.80	1.921	
7,400.00	5,828.30	5,822.74	5,822.15	40.88	273.20	-90.90	1,619.21	1,168.20	386.18	178.95	207.24	1.863	
7,500.00	5,826.55	5,821.00	5,820.40	43.01	273.15	-90.60	1,619.22	1,168.19	346.52	169.49	177.03	1.957	
7,595.35	5,824.89	5,819.33	5,818.74	45.05	273.11	-90.32	1,619.22	1,168.18	333.15	170.91	162.24	2.053 CC	
7,600.00	5,824.81	5,819.25	5,818.65	45.15	273.11	-90.30	1,619.22	1,168.18	333.18	170.80	162.38	2.052	
7,700.00	5,823.06	5,817.50	5,816.91	47.30	273.06	-90.00	1,619.23	1,168.18	349.19	165.45	183.75	1.900 ES	
7,800.00	5,821.32	5,815.75	5,815.16	49.46	273.02	-89.70	1,619.24	1,168.17	390.97	174.08	216.89	1.803 SF	
7,900.00	5,819.57	5,814.01	5,813.41	51.62	272.97	-89.40	1,619.24	1,168.16	451.41	208.95	242.46	1.862	
8,000.00	5,817.83	5,812.26	5,811.67	53.79	272.93	-89.10	1,619.25	1,168.16	524.10	265.11	258.99	2.024	
8,100.00	5,816.08	5,810.51	5,809.92	55.97	272.88	-88.80	1,619.26	1,168.15	604.63	335.34	269.29	2.245	
8,200.00	5,814.34	5,808.76	5,808.17	58.15	272.84	-88.50	1,619.26	1,168.14	690.27	414.51	275.77	2.503	
8,300.00	5,812.59	5,807.02	5,806.42	60.34	272.79	-88.20	1,619.27	1,168.14	779.34	499.40	279.93	2.784	
8,400.00	5,810.85	5,805.27	5,804.68	62.53	272.75	-87.90	1,619.28	1,168.13	870.78	588.09	282.69	3.080	
8,500.00	5,809.10	5,803.52	5,802.93	64.73	272.70	-87.60	1,619.28	1,168.12	963.91	679.37	284.55	3.388	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	*BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C*	***Database:***	*EDM 5000.1 Single User Db*
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #847 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 85-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	5,801.77	5,801.18	66.92	272.66	-87.30	1,619.29	1,168.12	1,058.30	772.47	285.83	3.703	
8,700.00	5,805.61	5,800.03	5,799.43	69.12	272.61	-87.00	1,619.30	1,168.11	1,153.63	866.90	286.73	4.023	
8,800.00	5,803.87	5,798.28	5,797.69	71.33	272.56	-86.70	1,619.30	1,168.10	1,249.69	962.32	287.37	4.349	
8,900.00	5,802.12	5,796.53	5,795.94	73.53	272.52	-86.40	1,619.31	1,168.10	1,346.32	1,058.49	287.83	4.677	
9,000.00	5,800.37	5,794.79	5,794.19	75.74	272.47	-86.10	1,619.32	1,168.09	1,443.41	1,155.24	288.16	5.009	
9,100.00	5,798.63	5,793.04	5,792.44	77.95	272.43	-85.81	1,619.32	1,168.08	1,540.87	1,252.46	288.40	5.343	
9,200.00	5,796.88	5,791.29	5,790.70	80.16	272.38	-85.51	1,619.33	1,168.08	1,638.63	1,350.06	288.57	5.678	
9,300.00	*5,795.14*	*5,789.54*	*5,788.95*	*82.36*	*272.34*	*-85.21*	*1,619.34*	*1,168.07*	*1,736.64*	*1,447.95*	*288.69*	*6.016*	
9,400.00	5,793.39	5,787.80	5,787.20	84.59	272.29	-84.91	1,619.34	1,168.06	1,834.87	1,546.10	288.77	6.354	
9,500.00	5,791.65	5,786.05	5,785.46	86.81	272.25	-84.61	1,619.35	1,168.06	1,933.28	1,644.45	288.83	6.694	
9,600.00	5,789.90	5,784.30	5,783.71	89.02	272.20	-84.32	1,619.36	1,168.05	2,031.84	1,742.98	288.86	7.034	
9,700.00	5,788.16	5,782.55	5,781.96	91.24	272.16	-84.02	1,619.37	1,168.04	2,130.54	1,841.66	288.88	7.375	
9,800.00	5,786.41	5,780.81	5,780.21	93.46	272.11	-83.72	1,619.37	1,168.04	2,229.35	1,940.47	288.88	7.717	
9,900.00	5,784.67	5,779.06	5,778.47	95.68	272.07	-83.43	1,619.38	1,168.03	2,328.26	2,039.39	288.87	8.060	
10,000.00	5,782.92	5,777.31	5,776.72	97.91	272.02	-83.13	1,619.39	1,168.02	2,427.25	2,138.40	288.86	8.403	
10,100.00	5,781.18	5,775.56	5,774.97	100.13	271.98	-82.83	1,619.39	1,168.02	2,526.33	2,237.49	288.84	8.747	
10,200.00	5,779.43	5,773.82	5,773.22	102.35	271.93	-82.54	1,619.40	1,168.01	2,625.48	2,336.66	288.81	9.091	
10,300.00	5,777.69	5,772.07	5,771.48	104.58	271.88	-82.24	1,619.41	1,168.00	2,724.68	2,435.90	288.78	9.435	
10,400.00	5,775.94	5,770.32	5,769.73	106.80	271.84	-81.95	1,619.41	1,168.00	2,823.94	2,535.19	288.75	9.780	
10,500.00	5,774.20	5,768.57	5,767.98	109.03	271.79	-81.66	1,619.42	1,167.99	2,923.25	2,634.53	288.72	10.125	
10,600.00	5,772.45	5,766.83	5,766.23	111.25	271.75	-81.36	1,619.43	1,167.98	3,022.61	2,733.92	288.68	10.470	
10,700.00	5,770.71	5,765.08	5,764.49	113.48	271.70	-81.07	1,619.43	1,167.98	3,122.00	2,833.35	288.65	10.816	
10,800.00	5,768.96	5,763.33	5,762.74	115.71	271.66	-80.78	1,619.44	1,167.97	3,221.43	2,932.82	288.61	11.162	
10,900.00	5,767.21	5,761.59	5,760.99	117.94	271.61	-80.49	1,619.45	1,167.96	3,320.90	3,032.32	288.58	11.508	
11,000.00	5,765.47	5,759.84	5,759.25	120.17	271.57	-80.19	1,619.45	1,167.96	3,420.39	3,131.85	288.54	11.854	
11,100.00	5,763.72	5,758.09	5,757.50	122.40	271.52	-79.90	1,619.46	1,167.95	3,519.92	3,231.41	288.50	12.201	
11,200.00	5,761.98	5,756.34	5,755.75	124.63	271.48	-79.61	1,619.47	1,167.94	3,619.47	3,331.00	288.47	12.547	
11,300.00	5,760.23	5,754.60	5,754.00	126.86	271.43	-79.32	1,619.47	1,167.94	3,719.04	3,430.60	288.43	12.894	
11,400.00	5,758.49	5,752.85	5,752.26	129.09	271.39	-79.03	1,619.48	1,167.93	3,818.63	3,530.23	288.40	13.241	
11,500.00	5,756.74	5,751.10	5,750.51	131.32	271.34	-78.74	1,619.48	1,167.92	3,918.24	3,629.88	288.36	13.588	
11,600.00	5,755.00	5,749.35	5,748.76	133.55	271.30	-78.46	1,619.49	1,167.92	4,017.88	3,729.55	288.33	13.935	
11,700.00	5,753.25	5,747.61	5,747.01	135.78	271.25	-78.17	1,619.50	1,167.91	4,117.52	3,829.23	288.29	14.282	
11,802.14	5,751.47	5,745.82	5,745.23	138.06	271.20	-77.88	1,619.50	1,167.91	4,219.32	3,931.06	288.26	14.637	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #849 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1832-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	26.02	1,524.50	744.10	1,696.40				
100.00	100.00	98.76	98.76	0.09	0.07	26.02	1,524.58	744.09	1,696.47	1,696.30	0.17	N/A	
200.00	200.00	201.35	201.35	0.32	0.15	26.02	1,524.61	744.16	1,696.53	1,696.05	0.47	3,589.171	
222.34	222.34	223.34	223.34	0.37	0.17	26.02	1,524.59	744.20	1,696.52	1,695.99	0.54	3,161.727	
300.00	300.00	300.00	300.00	0.54	0.24	26.03	1,524.50	744.43	1,696.55	1,695.79	0.76	2,232.465	
400.00	400.00	402.49	402.49	0.77	0.36	26.04	1,524.32	744.78	1,696.54	1,695.49	1.05	1,614.059	
500.00	500.00	504.30	504.30	0.99	0.47	26.05	1,524.06	744.98	1,696.40	1,695.07	1.34	1,269.114	
600.00	600.00	605.64	605.64	1.22	0.57	26.06	1,523.76	745.06	1,696.16	1,694.53	1.63	1,037.645	
700.00	700.00	704.34	704.34	1.44	0.66	26.06	1,523.51	745.04	1,695.92	1,693.98	1.95	870.572	
775.56	775.56	776.56	776.56	1.61	0.73	26.06	1,523.41	745.07	1,695.85	1,693.68	2.18	779.681	
800.00	800.00	800.00	800.00	1.67	0.76	26.06	1,523.39	745.12	1,695.86	1,693.61	2.25	754.195	
900.00	900.00	901.01	901.01	1.89	0.88	26.07	1,523.29	745.42	1,695.89	1,693.36	2.54	668.714	
1,000.00	1,000.00	1,007.02	1,007.01	2.12	1.01	26.09	1,522.91	745.69	1,695.68	1,692.84	2.84	596.462	
1,068.42	1,068.42	1,069.43	1,069.42	2.27	1.07	26.10	1,522.71	745.83	1,695.56	1,692.52	3.04	557.839	
1,100.00	1,100.00	1,100.00	1,099.99	2.34	1.11	26.10	1,522.70	745.91	1,695.59	1,692.45	3.13	541.462	
1,200.00	1,200.00	1,199.98	1,199.97	2.56	1.22	26.12	1,522.47	746.64	1,695.70	1,692.29	3.41	496.560	
1,300.00	1,300.00	1,291.77	1,291.75	2.79	1.33	26.16	1,522.24	747.76	1,696.01	1,692.31	3.70	458.715	
1,400.00	1,400.00	1,389.39	1,389.37	3.01	1.43	26.19	1,522.42	748.79	1,696.64	1,692.66	3.98	426.221	
1,500.00	1,500.00	1,482.93	1,482.90	3.24	1.51	26.21	1,522.89	749.65	1,697.50	1,693.23	4.27	397.863	
1,600.00	1,600.00	1,576.70	1,576.66	3.46	1.61	26.24	1,523.50	751.07	1,698.75	1,694.19	4.56	372.632	
1,700.00	1,700.00	1,674.29	1,674.23	3.69	1.71	26.29	1,524.20	753.03	1,700.28	1,695.42	4.86	349.918	
1,800.00	1,800.00	1,782.35	1,782.26	3.91	1.81	26.34	1,524.85	755.10	1,701.68	1,696.53	5.15	330.541	
1,900.00	1,900.00	1,885.78	1,885.68	4.14	1.84	26.38	1,525.18	756.60	1,702.60	1,697.21	5.39	315.665	
2,000.00	2,000.00	2,020.00	2,019.88	4.36	1.90	26.33	1,525.86	755.07	1,702.57	1,696.87	5.70	298.649	
2,100.00	2,100.00	2,108.38	2,108.11	4.59	1.97	26.16	1,527.37	750.27	1,701.71	1,695.70	6.02	282.827	
2,135.46	2,135.46	2,136.82	2,136.46	4.67	1.99	26.08	1,528.33	748.18	1,701.64	1,695.51	6.13	277.565	
2,200.00	2,200.00	2,194.63	2,193.99	4.81	2.05	25.89	1,530.94	743.14	1,701.79	1,695.43	6.36	267.625	
2,300.00	2,300.00	2,292.85	2,291.53	5.04	2.17	25.50	1,536.39	732.98	1,702.30	1,695.53	6.77	251.531	
2,400.00	2,400.00	2,396.45	2,394.20	5.26	2.30	25.04	1,542.77	720.73	1,702.83	1,695.63	7.21	236.257	
2,500.00	2,500.00	2,502.80	2,499.76	5.49	2.44	24.60	1,548.42	709.08	1,703.05	1,695.39	7.66	222.316	
2,600.00	2,600.00	2,604.61	2,600.92	5.71	2.58	24.22	1,553.18	698.70	1,703.09	1,694.98	8.11	209.945	
2,700.00	2,700.00	2,705.65	2,701.40	5.94	2.74	23.86	1,557.49	688.95	1,703.07	1,694.51	8.55	199.135	
2,724.07	2,724.07	2,729.44	2,725.07	5.99	2.78	23.78	1,558.45	686.79	1,703.06	1,694.41	8.66	196.725	
2,800.00	2,800.00	2,804.56	2,799.87	6.16	2.91	23.55	1,561.27	680.40	1,703.09	1,694.10	8.99	189.339	
2,900.00	2,900.00	2,915.21	2,910.13	6.39	3.13	23.24	1,564.89	671.92	1,703.07	1,693.58	9.48	179.611	
3,000.00	3,000.00	3,012.07	3,006.60	6.61	3.35	22.95	1,567.67	663.74	1,702.41	1,692.46	9.94	171.265	
3,022.20	3,022.20	3,028.76	3,023.22	6.66	3.39	22.89	1,568.27	662.26	1,702.37	1,692.34	10.03	169.704	
3,100.00	3,100.00	3,101.58	3,095.68	6.84	3.57	22.65	1,571.29	655.71	1,702.62	1,692.24	10.39	163.889	
3,200.00	3,200.00	3,205.62	3,199.01	7.06	3.85	22.24	1,576.08	644.62	1,702.81	1,691.92	10.90	156.252	
3,300.00	3,300.00	3,300.12	3,292.69	7.28	4.12	21.83	1,580.92	633.22	1,703.04	1,691.65	11.39	149.474	
3,400.00	3,400.00	3,379.28	3,371.21	7.51	4.34	21.49	1,585.46	624.28	1,704.20	1,692.36	11.84	143.977	
3,500.00	3,500.00	3,475.05	3,466.21	7.73	4.61	21.09	1,591.52	613.73	1,706.11	1,693.78	12.33	138.347	
3,600.00	3,600.00	3,574.67	3,565.06	7.96	4.89	20.68	1,597.78	603.08	1,708.18	1,695.35	12.84	133.066	
3,700.00	3,700.00	3,677.23	3,666.90	8.18	5.18	20.28	1,603.92	592.69	1,710.27	1,696.92	13.35	128.144	
3,800.00	3,800.00	3,782.20	3,771.19	8.41	5.47	19.88	1,609.83	582.22	1,712.14	1,698.28	13.86	123.539	
3,900.00	3,900.00	3,886.21	3,874.55	8.63	5.75	19.50	1,615.30	571.97	1,713.78	1,699.41	14.37	119.263	
4,000.00	4,000.00	3,973.75	3,961.55	8.86	6.00	19.18	1,619.86	563.39	1,715.49	1,700.66	14.83	115.645	
4,100.00	4,100.00	4,063.87	4,051.04	9.08	6.25	18.83	1,625.55	554.40	1,718.22	1,702.91	15.31	112.261	
4,200.00	4,200.00	4,160.25	4,146.78	9.31	6.52	18.48	1,631.70	545.31	1,721.26	1,705.47	15.79	108.977	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #849 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1832-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,300.00	4,300.00	4,261.59	4,247.47	9.53	6.80	18.11	1,638.16	535.79	1,724.39	1,708.09	16.30	105.807	
4,400.00	4,400.00	4,366.73	4,351.92	9.76	7.10	17.72	1,644.78	525.65	1,727.41	1,710.60	16.81	102.746	
4,500.00	4,500.00	4,474.16	4,458.68	9.98	7.40	17.34	1,650.92	515.43	1,730.03	1,712.70	17.33	99.807	
4,600.00	4,600.00	4,575.21	4,559.15	10.21	7.68	16.99	1,656.34	506.17	1,732.46	1,714.63	17.83	97.162	
4,700.00	4,700.00	4,679.32	4,662.74	10.43	7.96	16.66	1,661.63	497.10	1,734.81	1,716.48	18.33	94.634	
4,800.00	4,800.00	4,785.81	4,768.73	10.66	8.24	16.33	1,666.51	488.18	1,736.84	1,718.01	18.84	92.208	
4,900.00	4,900.00	4,875.65	4,858.21	10.86	8.47	16.06	1,670.51	480.99	1,738.91	1,719.62	19.29	90.153	
5,000.00	5,000.00	4,963.42	4,945.66	11.11	8.69	15.83	1,674.86	475.00	1,741.80	1,722.07	19.72	88.316	
5,100.00	5,100.00	5,098.20	5,080.21	11.33	8.99	15.61	1,679.79	469.30	1,744.24	1,723.99	20.25	86.156	
5,200.00	5,200.00	5,235.62	5,217.61	11.56	9.23	15.56	1,680.02	467.94	1,744.05	1,723.34	20.71	84.203	
5,276.99	5,276.99	5,296.00	5,277.99	11.73	9.33	15.57	1,679.43	467.83	1,743.37	1,722.38	20.99	83.062	
5,300.00	5,300.00	5,296.00	5,277.99	11.78	9.33	15.57	1,679.43	467.83	1,743.52	1,722.48	21.04	82.865	
5,329.21	5,329.21	5,296.00	5,277.99	11.85	9.33	15.57	1,679.43	467.83	1,744.15	1,723.05	21.10	82.656	
5,350.00	5,349.99	5,296.00	5,277.99	11.89	9.33	-29.83	1,679.43	467.83	1,744.54	1,723.40	21.14	82.522	
5,400.00	5,399.78	5,296.00	5,277.99	12.00	9.33	-29.88	1,679.43	467.83	1,743.54	1,722.32	21.22	82.165	
5,450.00	5,448.92	5,296.00	5,277.99	12.11	9.33	-30.09	1,679.43	467.83	1,739.81	1,718.52	21.28	81.741	
5,500.00	5,496.96	5,296.00	5,277.99	12.23	9.33	-30.45	1,679.43	467.83	1,733.37	1,712.04	21.33	81.249	
5,550.00	5,543.45	5,296.00	5,277.99	12.35	9.33	-30.97	1,679.43	467.83	1,724.26	1,702.88	21.37	80.685	
5,600.00	5,587.97	5,296.00	5,277.99	12.48	9.33	-31.66	1,679.43	467.83	1,712.50	1,691.11	21.40	80.041	
5,650.00	5,630.10	5,296.00	5,277.99	12.63	9.33	-32.53	1,679.43	467.83	1,698.17	1,676.75	21.41	79.304	
5,700.00	5,669.47	5,296.00	5,277.99	12.81	9.33	-33.61	1,679.43	467.83	1,681.32	1,659.89	21.43	78.462	
5,750.00	5,705.70	5,296.00	5,277.99	13.03	9.33	-34.90	1,679.43	467.83	1,662.03	1,640.59	21.45	77.498	
5,800.00	5,738.47	5,296.00	5,277.99	13.30	9.33	-36.44	1,679.43	467.83	1,640.41	1,618.94	21.47	76.394	
5,850.00	5,767.46	5,296.00	5,277.99	13.62	9.33	-38.25	1,679.43	467.83	1,616.56	1,595.05	21.52	75.131	
5,900.00	5,792.43	5,296.00	5,277.99	14.02	9.33	-40.37	1,679.43	467.83	1,590.61	1,569.03	21.58	73.693	
5,950.00	5,813.12	5,296.00	5,277.99	14.47	9.33	-42.83	1,679.43	467.83	1,562.69	1,541.01	21.68	72.067	
6,000.00	5,829.37	5,296.00	5,277.99	15.00	9.33	-45.66	1,679.43	467.83	1,532.97	1,511.15	21.82	70.243	
6,050.00	5,841.00	5,296.00	5,277.99	15.59	9.33	-48.92	1,679.43	467.83	1,501.62	1,479.60	22.01	68.220	
6,100.00	5,847.93	5,296.00	5,277.99	16.23	9.33	-52.62	1,679.43	467.83	1,468.82	1,446.57	22.25	66.007	
6,150.00	5,850.07	5,296.00	5,277.99	16.92	9.33	-56.78	1,679.43	467.83	1,434.81	1,412.25	22.55	63.617	
6,156.48	5,850.00	5,296.00	5,277.99	17.01	9.33	-57.36	1,679.43	467.83	1,430.32	1,407.72	22.60	63.282	
6,200.00	5,849.24	5,296.00	5,277.99	17.65	9.33	-57.36	1,679.43	467.83	1,400.49	1,377.58	22.91	61.124	
6,300.00	5,847.50	5,296.00	5,277.99	19.22	9.33	-57.36	1,679.43	467.83	1,334.79	1,311.01	23.78	56.124	
6,400.00	5,845.75	5,296.00	5,277.99	20.91	9.33	-57.36	1,679.43	467.83	1,273.57	1,248.68	24.88	51.184	
6,500.00	5,844.01	5,296.00	5,277.99	22.70	9.33	-57.36	1,679.43	467.83	1,217.49	1,191.28	26.21	46.458	
6,600.00	5,842.26	5,296.00	5,277.99	24.57	9.33	-57.36	1,679.43	467.83	1,167.29	1,139.55	27.74	42.083	
6,700.00	5,840.52	5,296.00	5,277.99	26.49	9.33	-57.36	1,679.43	467.83	1,123.78	1,094.33	29.44	38.166	
6,800.00	5,838.77	5,296.00	5,277.99	28.46	9.33	-57.36	1,679.43	467.83	1,087.74	1,056.46	31.28	34.774	
6,900.00	5,837.03	5,296.00	5,277.99	30.47	9.33	-57.36	1,679.43	467.83	1,059.94	1,026.76	33.18	31.942	
7,000.00	5,835.28	5,296.00	5,277.99	32.51	9.33	-57.36	1,679.43	467.83	1,041.05	1,005.96	35.09	29.672	
7,100.00	5,833.53	5,296.00	5,277.99	34.57	9.33	-57.36	1,679.43	467.83	1,031.54	994.63	36.91	27.947	
7,148.49	5,832.69	5,296.00	5,277.99	35.58	9.33	-57.36	1,679.43	467.83	1,030.40	992.65	37.75	27.295	CC, ES
7,200.00	5,831.79	5,296.00	5,277.99	36.66	9.33	-57.36	1,679.43	467.83	1,031.69	993.10	38.59	26.733	
7,300.00	5,830.04	5,296.00	5,277.99	38.76	9.33	-57.36	1,679.43	467.83	1,041.48	1,001.41	40.07	25.990	
7,400.00	5,828.30	5,296.00	5,277.99	40.88	9.33	-57.36	1,679.43	467.83	1,060.65	1,019.33	41.32	25.671	SF
7,500.00	5,826.55	5,296.00	5,277.99	43.01	9.33	-57.36	1,679.43	467.83	1,088.71	1,046.40	42.31	25.732	
7,600.00	5,824.81	5,296.00	5,277.99	45.15	9.33	-57.36	1,679.43	467.83	1,124.98	1,081.93	43.06	26.128	
7,700.00	5,823.06	5,296.00	5,277.99	47.30	9.33	-57.36	1,679.43	467.83	1,168.71	1,125.13	43.58	26.819	
7,800.00	5,821.32	5,296.00	5,277.99	49.46	9.33	-57.36	1,679.43	467.83	1,219.09	1,175.19	43.91	27.766	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #849 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1832-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,900.00	5,819.57	5,296.00	5,277.99	51.82	9.33	-57.36	1,679.43	467.83	1,275.34	1,231.27	44.07	28.939	
8,000.00	5,817.83	5,296.00	5,277.99	53.79	9.33	-57.36	1,679.43	467.83	1,336.71	1,292.60	44.11	30.306	
8,100.00	5,816.08	5,296.00	5,277.99	55.97	9.33	-57.36	1,679.43	467.83	1,402.53	1,358.49	44.04	31.843	
8,200.00	5,814.34	5,296.00	5,277.99	58.15	9.33	-57.36	1,679.43	467.83	1,472.21	1,428.30	43.91	33.529	
8,300.00	5,812.59	5,296.00	5,277.99	60.34	9.33	-57.36	1,679.43	467.83	1,545.22	1,501.50	43.72	35.344	
8,400.00	5,810.85	5,296.00	5,277.99	62.53	9.33	-57.36	1,679.43	467.83	1,621.11	1,577.61	43.49	37.272	
8,500.00	5,809.10	5,296.00	5,277.99	64.73	9.33	-57.36	1,679.43	467.83	1,699.50	1,656.25	43.25	39.299	
8,600.00	5,807.36	5,296.00	5,277.99	66.92	9.33	-57.36	1,679.43	467.83	1,780.06	1,737.07	42.98	41.413	
8,700.00	5,805.61	5,296.00	5,277.99	69.12	9.33	-57.36	1,679.43	467.83	1,862.50	1,819.78	42.71	43.604	
8,800.00	5,803.87	5,296.00	5,277.99	71.33	9.33	-57.36	1,679.43	467.83	1,946.59	1,904.14	42.44	45.863	
8,900.00	5,802.12	5,296.00	5,277.99	73.53	9.33	-57.36	1,679.43	467.83	2,032.12	1,989.94	42.18	48.182	
9,000.00	5,800.37	5,296.00	5,277.99	75.74	9.33	-57.36	1,679.43	467.83	2,118.92	2,077.00	41.91	50.554	
9,100.00	5,798.63	5,296.00	5,277.99	77.95	9.33	-57.36	1,679.43	467.83	2,206.83	2,165.17	41.66	52.975	
9,200.00	5,796.88	5,296.00	5,277.99	80.16	9.33	-57.36	1,679.43	467.83	2,295.74	2,254.32	41.41	55.437	
9,300.00	5,795.14	5,296.00	5,277.99	82.38	9.33	-57.36	1,679.43	467.83	2,385.52	2,344.35	41.17	57.938	
9,400.00	5,793.39	5,296.00	5,277.99	84.59	9.33	-57.36	1,679.43	467.83	2,476.09	2,435.14	40.95	60.473	
9,500.00	5,791.65	5,296.00	5,277.99	86.81	9.33	-57.36	1,679.43	467.83	2,567.35	2,526.63	40.73	63.038	
9,600.00	5,789.90	5,296.00	5,277.99	89.02	9.33	-57.36	1,679.43	467.83	2,659.25	2,618.73	40.52	65.631	
9,700.00	5,788.16	5,296.00	5,277.99	91.24	9.33	-57.36	1,679.43	467.83	2,751.71	2,711.39	40.32	68.248	
9,800.00	5,786.41	5,296.00	5,277.99	93.46	9.33	-57.36	1,679.43	467.83	2,844.68	2,804.55	40.13	70.888	
9,900.00	5,784.67	5,296.00	5,277.99	95.68	9.33	-57.36	1,679.43	467.83	2,938.11	2,898.17	39.95	73.548	
10,000.00	5,782.92	5,296.00	5,277.99	97.91	9.33	-57.36	1,679.43	467.83	3,031.97	2,992.19	39.78	76.226	
10,100.00	5,781.18	5,296.00	5,277.99	100.13	9.33	-57.36	1,679.43	467.83	3,126.20	3,086.59	39.61	78.920	
10,200.00	5,779.43	5,296.00	5,277.99	102.35	9.33	-57.36	1,679.43	467.83	3,220.78	3,181.32	39.46	81.629	
10,300.00	5,777.69	5,296.00	5,277.99	104.58	9.33	-57.36	1,679.43	467.83	3,315.68	3,276.37	39.31	84.351	
10,400.00	5,775.94	5,296.00	5,277.99	106.80	9.33	-57.36	1,679.43	467.83	3,410.87	3,371.70	39.17	87.085	
10,500.00	5,774.20	5,296.00	5,277.99	109.03	9.33	-57.36	1,679.43	467.83	3,506.33	3,467.29	39.03	89.830	
10,600.00	5,772.45	5,296.00	5,277.99	111.25	9.33	-57.36	1,679.43	467.83	3,602.03	3,563.13	38.91	92.585	
10,700.00	5,770.71	5,296.00	5,277.99	113.48	9.33	-57.36	1,679.43	467.83	3,697.96	3,659.18	38.78	95.348	
10,800.00	5,768.96	5,296.00	5,277.99	115.71	9.33	-57.36	1,679.43	467.83	3,794.10	3,755.44	38.67	98.119	
10,900.00	5,767.21	5,296.00	5,277.99	117.94	9.33	-57.36	1,679.43	467.83	3,890.44	3,851.88	38.56	100.897	
11,000.00	5,765.47	5,296.00	5,277.99	120.17	9.33	-57.36	1,679.43	467.83	3,986.96	3,948.50	38.45	103.681	
11,100.00	5,763.72	5,296.00	5,277.99	122.40	9.33	-57.36	1,679.43	467.83	4,083.64	4,045.29	38.35	106.471	
11,200.00	5,761.98	5,296.00	5,277.99	124.63	9.33	-57.36	1,679.43	467.83	4,180.48	4,142.22	38.26	109.265	
11,300.00	5,760.23	5,296.00	5,277.99	126.86	9.33	-57.36	1,679.43	467.83	4,277.47	4,239.30	38.17	112.063	
11,400.00	5,758.49	5,296.00	5,277.99	129.09	9.33	-57.36	1,679.43	467.83	4,374.59	4,336.51	38.08	114.866	
11,500.00	5,756.74	5,296.00	5,277.99	131.32	9.33	-57.36	1,679.43	467.83	4,471.84	4,433.84	38.00	117.671	
11,600.00	5,755.00	5,296.00	5,277.99	133.55	9.33	-57.36	1,679.43	467.83	4,569.21	4,531.28	37.93	120.478	
11,700.00	5,753.25	5,296.00	5,277.99	135.78	9.33	-57.36	1,679.43	467.83	4,666.68	4,628.83	37.85	123.288	
11,802.14	5,751.47	5,296.00	5,277.99	138.06	9.33	-57.36	1,679.43	467.83	4,766.36	4,728.58	37.78	126.160	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore:	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #945 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-148.15	-318.10	-197.60	375.01				
100.00	100.00	79.06	79.06	0.09	0.07	-148.16	-318.21	-197.61	374.58	374.42	0.16	2,331.768	CC
200.00	200.00	178.91	178.91	0.32	0.19	-148.19	-318.59	-197.57	374.88	374.39	0.49	769.688	
300.00	300.00	278.88	278.88	0.54	0.31	-148.27	-319.08	-197.33	375.17	374.36	0.81	465.803	
400.00	400.00	378.10	378.10	0.77	0.44	-148.36	-319.72	-197.01	375.55	374.43	1.12	335.041	
500.00	500.00	477.47	477.46	0.99	0.57	-148.47	-320.62	-196.68	376.15	374.71	1.44	260.642	
600.00	600.00	577.28	577.26	1.22	0.70	-148.59	-321.63	-196.40	376.86	375.09	1.77	212.889	
700.00	700.00	676.85	676.83	1.44	0.83	-148.71	-322.69	-196.15	377.64	375.54	2.10	179.791	
800.00	800.00	776.63	776.61	1.67	0.96	-148.82	-323.82	-195.97	378.51	376.08	2.43	155.469	
900.00	900.00	876.51	876.48	1.89	1.09	-148.92	-324.96	-195.84	379.43	376.65	2.77	136.872	
1,000.00	1,000.00	975.97	975.93	2.12	1.22	-149.02	-326.12	-195.81	380.41	377.30	3.11	122.199	
1,100.00	1,100.00	1,075.76	1,075.71	2.34	1.34	-149.09	-327.33	-195.95	381.52	378.06	3.46	110.274	
1,200.00	1,200.00	1,177.38	1,177.32	2.56	1.47	-149.15	-328.35	-196.16	382.49	378.68	3.81	100.443	
1,300.00	1,300.00	1,279.44	1,279.38	2.79	1.60	-149.19	-328.88	-196.12	382.92	378.77	4.14	92.455	
1,400.00	1,400.00	1,382.30	1,382.24	3.01	1.67	-149.21	-328.77	-195.92	382.73	378.32	4.41	86.768	
1,500.00	1,500.00	1,483.06	1,483.00	3.24	1.67	-149.22	-328.16	-195.50	381.99	377.37	4.62	82.677	
1,600.00	1,600.00	1,582.74	1,582.68	3.46	1.66	-149.22	-327.51	-195.12	381.23	376.40	4.83	78.916	
1,700.00	1,700.00	1,682.16	1,682.10	3.69	1.67	-149.23	-327.02	-194.70	380.60	375.55	5.05	75.311	
1,800.00	1,800.00	1,781.51	1,781.45	3.91	1.68	-149.23	-326.63	-194.45	380.14	374.85	5.29	71.883	
1,900.00	1,900.00	1,880.94	1,880.87	4.14	1.68	-149.23	-326.35	-194.33	379.83	374.30	5.54	68.606	
1,961.19	1,961.19	1,941.25	1,941.19	4.28	1.69	-149.22	-326.24	-194.38	379.75	374.04	5.70	66.567	
2,000.00	2,000.00	1,979.36	1,979.29	4.36	1.70	-149.20	-326.22	-194.46	379.78	373.97	5.82	65.307	
2,100.00	2,100.00	2,079.18	2,079.12	4.59	1.73	-149.15	-326.28	-194.87	380.04	373.92	6.12	62.069	
2,200.00	2,200.00	2,178.32	2,178.25	4.81	1.78	-149.11	-326.41	-195.25	380.35	373.91	6.44	59.058	ES
2,300.00	2,300.00	2,277.61	2,277.55	5.04	1.86	-149.09	-326.80	-195.69	380.92	374.15	6.77	56.290	
2,400.00	2,400.00	2,377.95	2,377.88	5.26	1.96	-149.08	-327.31	-196.06	381.55	374.45	7.10	53.731	
2,500.00	2,500.00	2,477.89	2,477.82	5.49	2.06	-149.07	-327.74	-196.40	382.09	374.65	7.44	51.372	
2,600.00	2,600.00	2,578.03	2,577.95	5.71	2.16	-149.06	-328.19	-196.76	382.66	374.88	7.78	49.203	
2,700.00	2,700.00	2,678.19	2,678.12	5.94	2.27	-149.05	-328.60	-197.07	383.17	375.05	8.11	47.225	
2,800.00	2,800.00	2,778.40	2,778.32	6.16	2.39	-149.05	-329.00	-197.31	383.63	375.18	8.46	45.359	
2,900.00	2,900.00	2,878.79	2,878.71	6.39	2.51	-149.07	-329.43	-197.36	384.03	375.23	8.80	43.662	
3,000.00	3,000.00	2,978.68	2,978.60	6.61	2.63	-149.11	-329.84	-197.33	384.36	375.23	9.13	42.099	
3,100.00	3,100.00	3,079.25	3,079.17	6.84	2.75	-149.14	-330.22	-197.29	384.67	375.21	9.46	40.663	
3,200.00	3,200.00	3,179.40	3,179.32	7.06	2.87	-149.18	-330.52	-197.15	384.85	375.07	9.78	39.361	
3,300.00	3,300.00	3,279.13	3,279.04	7.28	2.98	-149.24	-330.89	-196.93	385.05	374.96	10.10	38.142	
3,400.00	3,400.00	3,379.02	3,378.94	7.51	3.10	-149.32	-331.39	-196.60	385.32	374.92	10.40	37.038	
3,500.00	3,500.00	3,479.29	3,479.21	7.73	3.21	-149.44	-332.01	-196.05	385.57	374.87	10.71	36.013	
3,600.00	3,600.00	3,577.27	3,577.17	7.96	3.32	-149.58	-332.84	-195.41	385.98	374.96	11.01	35.047	
3,700.00	3,700.00	3,675.64	3,675.54	8.18	3.44	-149.73	-334.16	-195.08	386.95	375.61	11.34	34.132	
3,800.00	3,800.00	3,773.83	3,773.72	8.41	3.56	-149.85	-335.75	-195.00	388.32	376.65	11.67	33.271	
3,900.00	3,900.00	3,872.35	3,872.22	8.63	3.68	-149.94	-337.60	-195.39	390.15	378.13	12.01	32.478	
4,000.00	4,000.00	3,970.17	3,970.01	8.86	3.80	-149.98	-339.63	-196.26	392.38	380.03	12.36	31.758	
4,100.00	4,100.00	4,069.81	4,069.62	9.08	3.91	-149.98	-341.94	-197.58	395.06	382.35	12.70	31.101	
4,200.00	4,200.00	4,171.61	4,171.39	9.31	4.02	-149.96	-344.04	-198.92	397.50	384.45	13.05	30.451	
4,300.00	4,300.00	4,272.43	4,272.19	9.53	4.14	-149.95	-345.74	-200.02	399.51	386.10	13.40	29.804	
4,400.00	4,400.00	4,372.49	4,372.22	9.76	4.25	-149.95	-347.41	-201.01	401.45	387.70	13.75	29.201	
4,500.00	4,500.00	4,473.09	4,472.81	9.98	4.37	-149.95	-349.07	-201.92	403.33	389.23	14.10	28.600	
4,600.00	4,600.00	4,573.41	4,573.11	10.21	4.49	-149.97	-350.61	-202.71	405.05	390.60	14.45	28.025	
4,700.00	4,700.00	4,674.12	4,673.81	10.43	4.61	-149.96	-352.02	-203.55	406.68	391.88	14.80	27.470	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design | Skelly Unit #422H - Skelly Unit #945 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,800.00	4,773.78	4,773.46	10.66	4.73	-149.93	-353.23	-204.49	408.21	393.05	15.15	26.938	
4,900.00	4,900.00	4,873.92	4,873.58	10.88	4.84	-149.92	-354.57	-205.40	409.82	394.31	15.50	26.433	
5,000.00	5,000.00	4,973.85	4,973.50	11.11	4.97	-149.93	-355.95	-206.12	411.37	395.52	15.85	25.946	
5,100.00	5,100.00	5,073.31	5,072.95	11.33	5.09	-149.98	-357.57	-206.58	413.01	396.81	16.20	25.488	
5,200.00	5,200.00	5,173.59	5,173.21	11.56	5.22	-150.05	-359.29	-207.00	414.71	398.16	16.55	25.051	
5,300.00	5,300.00	5,272.23	5,271.83	11.78	5.34	-150.10	-360.94	-207.56	416.45	399.54	16.90	24.637	
5,329.21	5,329.21	5,300.84	5,300.44	11.85	5.38	-150.11	-361.48	-207.79	417.04	400.04	17.00	24.525	
5,350.00	5,349.99	5,321.48	5,321.07	11.89	5.41	164.46	-361.89	-207.97	417.88	400.81	17.08	24.471 SF	
5,400.00	5,399.78	5,370.84	5,370.42	12.00	5.47	164.44	-362.90	-208.35	423.19	405.95	17.25	24.538	
5,450.00	5,448.92	5,420.29	5,419.87	12.11	5.53	164.44	-363.97	-208.69	433.09	415.68	17.42	24.867	
5,500.00	5,496.96	5,469.84	5,469.40	12.23	5.59	164.48	-364.84	-209.05	447.35	429.76	17.58	25.439	
5,550.00	5,543.45	5,517.28	5,516.84	12.35	5.65	164.53	-365.46	-209.43	465.82	448.08	17.75	26.249	
5,600.00	5,587.97	5,561.84	5,561.39	12.48	5.70	164.51	-365.95	-209.80	488.51	470.61	17.90	27.291	
5,650.00	5,630.10	5,604.02	5,603.57	12.63	5.75	164.41	-366.37	-210.18	515.24	497.20	18.05	28.552	
5,700.00	5,669.47	5,644.05	5,643.60	12.81	5.79	164.19	-366.71	-210.52	545.79	527.60	18.18	30.018	
5,750.00	5,705.70	5,680.95	5,680.49	13.03	5.84	163.76	-366.95	-210.80	579.86	561.55	18.31	31.669	
5,800.00	5,738.47	5,714.01	5,713.56	13.30	5.87	163.03	-367.13	-211.03	617.19	598.77	18.43	33.496	
5,850.00	5,767.46	5,742.86	5,742.40	13.62	5.90	161.85	-367.28	-211.21	657.48	638.95	18.53	35.486	
5,900.00	5,792.43	5,767.65	5,767.19	14.02	5.93	160.00	-367.41	-211.34	700.36	681.74	18.62	37.621	
5,950.00	5,813.12	5,788.16	5,787.70	14.47	5.96	157.04	-367.53	-211.44	745.44	726.75	18.69	39.888	
6,000.00	5,829.37	5,804.23	5,803.77	15.00	5.97	152.05	-367.62	-211.51	792.31	773.56	18.74	42.268	
6,050.00	5,841.00	5,815.75	5,815.30	15.59	5.99	142.78	-367.68	-211.56	840.52	821.74	18.78	44.746	
6,100.00	5,847.93	5,822.48	5,822.02	16.23	5.99	123.24	-367.72	-211.59	889.64	870.83	18.81	47.302	
6,150.00	5,850.07	5,824.34	5,823.88	16.92	6.00	84.53	-367.73	-211.60	939.20	920.39	18.81	49.918	
6,156.48	5,850.00	5,824.22	5,823.76	17.01	6.00	78.71	-367.73	-211.60	945.64	926.82	18.82	50.259	
6,200.00	5,849.24	5,823.15	5,822.69	17.65	6.00	78.19	-367.72	-211.60	988.84	970.03	18.81	52.562	
6,300.00	5,847.50	5,820.69	5,820.23	19.22	5.99	77.01	-367.71	-211.58	1,088.21	1,069.41	18.81	57.857	
6,400.00	5,845.75	5,818.21	5,817.75	20.91	5.99	75.82	-367.70	-211.57	1,187.69	1,168.88	18.81	63.155	
6,500.00	5,844.01	5,815.72	5,815.26	22.70	5.99	74.65	-367.68	-211.56	1,287.24	1,268.43	18.80	68.453	
6,600.00	5,842.26	5,813.22	5,812.77	24.57	5.98	73.48	-367.67	-211.55	1,386.85	1,368.04	18.80	73.751	
6,700.00	5,840.52	5,810.72	5,810.26	26.49	5.98	72.32	-367.66	-211.54	1,486.51	1,467.70	18.80	79.049	
6,800.00	5,838.77	5,808.20	5,807.74	28.46	5.98	71.17	-367.64	-211.53	1,586.20	1,567.40	18.81	84.344	
6,900.00	5,837.03	5,805.67	5,805.21	30.47	5.98	70.03	-367.63	-211.52	1,685.93	1,667.12	18.81	89.636	
7,000.00	5,835.28	5,803.12	5,802.67	32.51	5.97	68.91	-367.61	-211.51	1,785.69	1,766.88	18.81	94.925	
7,100.00	5,833.53	5,800.57	5,800.11	34.57	5.97	67.79	-367.60	-211.50	1,885.47	1,866.65	18.82	100.210	
7,200.00	5,831.79	5,798.05	5,797.59	36.66	5.97	66.71	-367.58	-211.49	1,985.27	1,966.45	18.82	105.490	
7,300.00	5,830.04	5,795.52	5,795.07	38.76	5.96	65.64	-367.57	-211.48	2,085.08	2,066.26	18.82	110.765	
7,400.00	5,828.30	5,793.00	5,792.54	40.88	5.96	64.59	-367.56	-211.46	2,184.91	2,166.08	18.83	116.033	
7,500.00	5,826.55	5,790.46	5,790.00	43.01	5.96	63.55	-367.54	-211.45	2,284.75	2,265.91	18.84	121.295	
7,600.00	5,824.81	5,787.92	5,787.46	45.15	5.96	62.53	-367.53	-211.44	2,384.60	2,365.76	18.84	126.549	
7,700.00	5,823.06	5,785.37	5,784.91	47.30	5.95	61.52	-367.51	-211.43	2,484.46	2,465.61	18.85	131.796	
7,800.00	5,821.32	5,782.81	5,782.35	49.46	5.95	60.53	-367.50	-211.42	2,584.33	2,565.47	18.86	137.035	
7,900.00	5,819.57	5,780.24	5,779.78	51.62	5.95	59.56	-367.48	-211.41	2,684.21	2,665.34	18.87	142.265	
8,000.00	5,817.83	5,777.67	5,777.21	53.79	5.94	58.60	-367.47	-211.39	2,784.09	2,765.22	18.88	147.486	
8,100.00	5,816.08	5,775.09	5,774.63	55.97	5.94	57.66	-367.46	-211.38	2,883.98	2,865.09	18.89	152.697	
8,200.00	5,814.34	5,772.50	5,772.05	58.15	5.94	56.74	-367.44	-211.37	2,983.88	2,964.98	18.90	157.898	
8,300.00	5,812.59	5,769.91	5,769.45	60.34	5.94	55.83	-367.43	-211.35	3,083.77	3,064.87	18.91	163.088	
8,400.00	5,810.85	5,767.31	5,766.85	62.53	5.93	54.94	-367.41	-211.34	3,183.68	3,164.76	18.92	168.267	
8,500.00	5,809.10	5,764.70	5,764.24	64.73	5.93	54.06	-367.40	-211.33	3,283.59	3,264.65	18.93	173.435	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design — Skelly Unit #422H - Skelly Unit #945 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	5,762.08	5,761.62	66.92	5.93	53.21	-367.38	-211.31	3,383.50	3,364.55	18.95	178.590	
8,700.00	5,805.61	5,759.45	5,759.00	69.12	5.92	52.36	-367.37	-211.30	3,483.41	3,464.45	18.96	183.733	
8,800.00	5,803.87	5,756.82	5,756.36	71.33	5.92	51.54	-367.36	-211.29	3,583.33	3,564.35	18.97	188.863	
8,900.00	5,802.12	5,754.18	5,753.72	73.53	5.92	50.73	-367.34	-211.27	3,683.25	3,664.26	18.99	193.980	
9,000.00	5,800.37	5,751.53	5,751.08	75.74	5.91	49.94	-367.33	-211.26	3,783.17	3,764.17	19.00	199.083	
9,100.00	5,798.63	5,748.88	5,748.42	77.95	5.91	49.16	-367.31	-211.24	3,883.09	3,864.08	19.02	204.171	
9,200.00	5,796.88	5,746.22	5,745.76	80.16	5.91	48.40	-367.30	-211.23	3,983.02	3,963.99	19.04	209.246	
9,300.00	5,795.14	5,743.55	5,743.09	82.38	5.91	47.65	-367.28	-211.21	4,082.95	4,063.90	19.05	214.305	
9,400.00	5,793.39	5,740.87	5,740.41	84.59	5.90	46.92	-367.27	-211.19	4,182.88	4,163.81	19.07	219.349	
9,500.00	5,791.65	5,738.18	5,737.72	86.81	5.90	46.21	-367.26	-211.18	4,282.81	4,263.72	19.09	224.377	
9,600.00	5,789.90	5,735.49	5,735.03	89.02	5.90	45.51	-367.24	-211.16	4,382.74	4,363.64	19.11	229.389	
9,700.00	5,788.16	5,732.78	5,732.33	91.24	5.89	44.82	-367.23	-211.15	4,482.68	4,463.55	19.13	234.385	
9,800.00	5,786.41	5,730.07	5,729.62	93.46	5.89	44.15	-367.21	-211.13	4,582.62	4,563.47	19.15	239.364	
9,900.00	5,784.67	5,727.36	5,726.90	95.68	5.89	43.49	-367.20	-211.11	4,682.55	4,663.39	19.17	244.325	
10,000.00	5,782.92	5,724.63	5,724.17	97.91	5.88	42.84	-367.18	-211.10	4,782.49	4,763.31	19.19	249.270	
10,100.00	5,781.18	5,721.90	5,721.44	100.13	5.88	42.21	-367.17	-211.08	4,882.43	4,863.23	19.21	254.196	
10,200.00	5,779.43	5,719.15	5,718.70	102.35	5.88	41.60	-367.16	-211.06	4,982.37	4,963.14	19.23	259.105	
10,300.00	5,777.69	5,716.40	5,715.95	104.58	5.87	40.99	-367.14	-211.04	5,082.31	5,063.06	19.25	263.995	
10,400.00	5,775.94	5,713.65	5,713.19	106.80	5.87	40.40	-367.13	-211.03	5,182.26	5,162.98	19.27	268.868	
10,500.00	5,774.20	5,710.88	5,710.42	109.03	5.87	39.82	-367.11	-211.01	5,282.20	5,262.90	19.30	273.718	
10,600.00	5,772.45	5,708.10	5,707.65	111.25	5.87	39.25	-367.10	-210.99	5,382.15	5,362.82	19.32	278.552	
10,700.00	5,770.71	5,705.32	5,704.87	113.48	5.86	38.70	-367.09	-210.97	5,482.09	5,462.74	19.35	283.365	
10,800.00	5,768.96	5,702.53	5,702.07	115.71	5.86	38.15	-367.07	-210.95	5,582.04	5,562.66	19.37	288.159	
10,900.00	5,767.21	5,699.68	5,699.21	117.94	5.86	37.61	-367.06	-210.93	5,681.98	5,662.59	19.40	292.935	
11,000.00	5,765.47	5,696.11	5,695.68	120.17	5.85	36.95	-367.04	-210.91	5,781.93	5,762.51	19.42	297.708	
11,100.00	5,763.72	5,692.52	5,692.07	122.40	5.85	36.31	-367.02	-210.88	5,881.88	5,862.43	19.45	302.463	
11,200.00	5,761.98	5,688.88	5,688.43	124.63	5.84	35.67	-367.00	-210.86	5,981.82	5,962.35	19.47	307.198	
11,300.00	5,760.23	5,685.20	5,684.74	126.86	5.84	35.05	-366.98	-210.83	6,081.77	6,062.27	19.50	311.913	
11,400.00	5,758.49	5,681.47	5,681.01	129.09	5.84	34.44	-366.96	-210.80	6,181.72	6,162.19	19.52	316.609	
11,500.00	5,756.74	5,677.68	5,677.23	131.32	5.83	33.84	-366.93	-210.78	6,281.66	6,262.11	19.55	321.284	
11,600.00	5,755.00	5,673.85	5,673.40	133.55	5.83	33.25	-366.91	-210.75	6,381.61	6,362.03	19.58	325.940	
11,700.00	5,753.25	5,669.97	5,669.52	135.78	5.82	32.67	-366.89	-210.72	6,481.56	6,461.95	19.61	330.575	
11,802.14	5,751.47	5,665.95	5,665.50	138.06	5.82	32.08	-366.86	-210.69	6,583.65	6,564.01	19.64	335.288	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #960 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	20.07	20.07	0.00	0.02	52.80	2,344.30	3,088.90	3,877.76				
100.00	100.00	124.77	124.77	0.09	0.12	52.80	2,344.31	3,088.76	3,877.66	3,877.46	0.20	N/A	
200.00	200.00	234.94	234.94	0.32	0.25	52.80	2,344.20	3,088.56	3,877.46	3,876.92	0.55	7,084.005	
300.00	300.00	353.48	353.47	0.54	0.36	52.82	2,342.96	3,088.41	3,876.72	3,875.81	0.90	4,294.798	
400.00	400.00	456.75	456.73	0.77	0.47	52.83	2,341.50	3,088.31	3,875.76	3,874.55	1.23	3,143.753	
500.00	500.00	558.97	558.94	0.99	0.59	52.85	2,340.01	3,088.15	3,874.78	3,873.21	1.56	2,479.006	
600.00	600.00	657.77	657.73	1.22	0.71	52.86	2,338.59	3,087.95	3,873.74	3,871.85	1.89	2,047.768	
700.00	700.00	758.14	758.10	1.44	0.84	52.88	2,337.24	3,087.73	3,872.76	3,870.54	2.22	1,742.741	
800.00	800.00	857.93	857.87	1.67	0.96	52.89	2,335.74	3,087.58	3,871.74	3,869.19	2.55	1,518.361	
900.00	900.00	957.03	956.96	1.89	1.09	52.91	2,334.27	3,087.47	3,870.75	3,867.88	2.87	1,346.715	
1,000.00	1,000.00	1,049.91	1,049.83	2.12	1.20	52.93	2,332.83	3,087.47	3,869.82	3,866.64	3.19	1,214.136	
1,100.00	1,100.00	1,135.59	1,135.50	2.34	1.30	52.94	2,331.72	3,087.64	3,869.20	3,865.72	3.48	1,110.939	
1,180.91	1,180.91	1,200.00	1,199.91	2.52	1.38	52.95	2,330.97	3,087.99	3,869.00	3,865.29	3.71	1,042.805	
1,200.00	1,200.00	1,200.00	1,199.91	2.56	1.38	52.95	2,330.97	3,087.99	3,869.04	3,865.29	3.75	1,030.914	
1,300.00	1,300.00	1,278.63	1,278.53	2.79	1.42	52.97	2,330.49	3,088.82	3,869.58	3,865.59	3.99	968.955	
1,400.00	1,400.00	1,349.35	1,349.24	3.01	1.44	52.97	2,330.66	3,089.99	3,871.03	3,866.82	4.22	918.132	
1,500.00	1,500.00	1,425.22	1,425.09	3.24	1.46	52.98	2,331.29	3,091.54	3,873.16	3,868.73	4.43	874.031	
1,600.00	*1,600.00*	*1,505.82*	*1,505.66*	*3.46*	*1.47*	*52.99*	*2,332.35*	*3,093.46*	*3,875.85*	*3,871.18*	*4.67*	*830.621*	
1,700.00	1,700.00	1,600.00	1,599.80	3.69	1.48	52.99	2,333.77	3,095.93	3,878.85	3,873.94	4.90	791.020	
1,800.00	1,800.00	1,706.57	1,706.32	3.91	1.52	53.00	2,335.18	3,098.89	3,881.85	3,876.69	5.16	752.405	
1,900.00	1,900.00	1,830.80	1,830.50	4.14	1.59	53.01	2,336.30	3,102.04	3,884.43	3,878.99	5.44	714.274	
2,000.00	2,000.00	1,957.62	1,957.29	4.36	1.67	53.02	2,337.26	3,104.45	3,886.41	3,880.68	5.73	677.779	
2,100.00	2,100.00	2,087.58	2,087.24	4.59	1.74	53.03	2,338.07	3,105.77	3,887.59	3,881.54	6.05	642.995	
2,200.00	2,200.00	2,200.05	2,199.71	4.81	1.80	53.02	2,338.65	3,106.23	3,888.23	3,881.87	6.36	611.654	
2,300.00	2,300.00	2,324.77	2,324.43	5.04	1.84	53.02	2,339.14	3,106.17	3,888.43	3,881.75	6.67	582.624	
2,400.00	2,400.00	2,447.53	2,447.19	5.26	1.86	53.01	2,339.38	3,105.22	3,887.92	3,880.94	6.98	557.221	
2,500.00	2,500.00	2,552.91	2,552.56	5.49	1.90	52.99	2,339.51	3,104.05	3,887.10	3,879.83	7.27	534.641	
2,600.00	2,600.00	2,652.00	2,651.64	5.71	1.94	52.98	2,339.60	3,102.90	3,886.23	3,878.67	7.56	513.808	
2,700.00	2,700.00	2,749.89	2,749.52	5.94	1.98	52.97	2,339.84	3,101.74	3,885.43	3,877.57	7.86	494.400	
2,800.00	2,800.00	2,851.10	2,850.73	6.16	2.04	52.95	2,340.30	3,100.39	3,884.64	3,876.48	8.16	476.150	
2,900.00	2,900.00	2,951.38	2,951.00	6.39	2.09	52.93	2,340.92	3,098.87	3,883.80	3,875.34	8.46	459.169	
3,000.00	3,000.00	3,051.63	3,051.23	6.61	2.16	52.91	2,341.79	3,097.19	3,882.99	3,874.23	8.76	443.432	
3,100.00	3,100.00	3,151.88	3,151.46	6.84	2.22	52.88	2,342.79	3,095.37	3,882.14	3,873.09	9.06	428.635	
3,200.00	3,200.00	3,251.78	3,251.32	7.06	2.30	52.85	2,343.95	3,093.46	3,881.32	3,871.96	9.36	414.814	
3,300.00	3,300.00	3,351.28	3,350.80	7.28	2.37	52.81	2,345.25	3,091.43	3,880.48	3,870.82	9.66	401.870	
3,400.00	3,400.00	3,454.99	3,454.47	7.51	2.46	52.78	2,346.73	3,089.22	3,879.65	3,869.69	9.96	389.580	
3,500.00	3,500.00	3,575.24	3,574.68	7.73	2.56	52.73	2,348.27	3,086.35	3,878.53	3,868.26	10.28	377.464	
3,600.00	3,600.00	3,680.03	3,679.43	7.96	2.66	52.70	2,349.25	3,083.56	3,876.98	3,866.39	10.59	366.270	
3,700.00	3,700.00	3,775.01	3,774.38	8.18	2.75	52.67	2,349.98	3,081.20	3,875.47	3,864.59	10.89	355.975	
3,800.00	3,800.00	3,861.61	3,860.95	8.41	2.84	52.64	2,350.69	3,079.27	3,874.19	3,863.01	11.18	346.455	
3,900.00	3,900.00	3,950.30	3,949.63	8.63	2.93	52.62	2,351.44	3,077.68	3,873.28	3,861.81	11.48	337.444	
4,000.00	4,000.00	4,040.06	4,039.37	8.86	3.02	52.60	2,352.17	3,076.35	3,872.61	3,860.83	11.77	328.936	
4,100.00	4,100.00	4,131.94	4,131.24	9.08	3.11	52.58	2,352.93	3,075.35	3,872.23	3,860.17	12.07	320.877	
4,200.00	4,200.00	4,233.70	4,233.00	9.31	3.22	52.58	2,353.60	3,074.37	3,871.87	3,859.50	12.37	313.020	
4,300.00	4,300.00	4,330.09	4,329.38	9.53	3.32	52.55	2,354.23	3,073.51	3,871.55	3,858.89	12.67	305.624	
4,400.00	4,400.00	4,427.10	4,426.39	9.76	3.42	52.54	2,354.59	3,072.97	3,871.34	3,858.37	12.97	298.552	
4,500.00	4,500.00	4,528.84	4,528.12	9.98	3.53	52.53	2,354.88	3,072.47	3,871.13	3,857.86	13.27	291.688	
4,600.00	4,600.00	4,630.49	4,629.77	10.21	3.65	52.52	2,355.27	3,071.84	3,870.87	3,857.29	13.58	285.126	
4,700.00	4,700.00	4,731.15	4,730.44	10.43	3.76	52.51	2,355.62	3,071.21	3,870.58	3,856.70	13.88	278.846	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #960 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,800.00	4,827.29	4,826.57	10.66	3.87	52.50	2,355.92	3,070.64	3,870.30	3,856.12	14.18	272.933	
4,864.91	4,864.91	4,884.63	4,883.91	10.80	3.93	52.50	2,356.11	3,070.42	3,870.24	3,855.87	14.37	269.380	
4,900.00	4,900.00	4,914.80	4,914.08	10.88	3.96	52.50	2,356.22	3,070.36	3,870.26	3,855.79	14.46	267.564	
5,000.00	5,000.00	5,000.00	4,999.28	11.11	4.04	52.49	2,356.68	3,070.38	3,870.60	3,855.86	14.73	262.702	
5,100.00	5,100.00	5,090.51	5,089.79	11.33	4.09	52.49	2,357.33	3,070.62	3,871.25	3,856.25	15.00	258.129	
5,200.00	5,200.00	5,189.48	5,188.75	11.56	4.16	52.48	2,358.13	3,070.97	3,872.03	3,856.76	15.27	253.621	
5,300.00	5,300.00	5,282.91	5,282.18	11.78	4.21	52.48	2,358.87	3,071.42	3,872.89	3,857.35	15.54	249.285	
5,329.21	5,329.21	5,309.62	5,308.89	11.85	4.23	52.47	2,359.06	3,071.60	3,873.17	3,857.56	15.61	248.049	
5,350.00	5,349.99	5,328.19	5,327.45	11.89	4.24	7.06	2,359.19	3,071.75	3,872.98	3,857.31	15.67	247.164	
5,400.00	5,399.78	5,372.70	5,371.96	12.00	4.26	7.12	2,359.47	3,072.17	3,869.19	3,853.39	15.80	244.871	
5,450.00	5,448.92	5,428.12	5,427.38	12.11	4.28	7.26	2,359.77	3,072.79	3,860.72	3,844.78	15.94	242.174	
5,500.00	5,496.96	5,500.33	5,499.59	12.23	4.30	7.50	2,359.94	3,073.33	3,847.37	3,831.28	16.09	239.059	
5,550.00	5,543.45	5,549.91	5,549.16	12.35	4.31	7.83	2,359.95	3,073.57	3,829.35	3,813.11	16.23	235.891	
5,600.00	5,587.97	5,597.36	5,596.62	12.48	4.32	8.27	2,359.89	3,073.79	3,806.94	3,790.57	16.37	232.574	
5,650.00	5,630.10	5,639.05	5,638.31	12.63	4.33	8.84	2,359.82	3,073.99	3,780.39	3,763.89	16.50	229.142	
5,700.00	5,669.47	5,677.83	5,677.09	12.81	4.34	9.60	2,359.74	3,074.19	3,749.96	3,733.34	16.62	225.625	
5,750.00	5,705.70	5,714.79	5,714.04	13.03	4.35	10.59	2,359.67	3,074.39	3,715.93	3,699.19	16.74	222.036	
5,800.00	5,738.47	5,750.04	5,749.29	13.30	4.35	11.92	2,359.61	3,074.55	3,678.58	3,661.74	16.84	218.398	
5,850.00	5,767.46	5,781.20	5,780.45	13.62	4.36	13.74	2,359.56	3,074.66	3,638.28	3,621.34	16.94	214.769	
5,900.00	5,792.43	5,807.50	5,806.75	14.02	4.37	16.31	2,359.52	3,074.74	3,595.39	3,578.37	17.03	211.173	
5,950.00	5,813.12	5,828.33	5,827.58	14.47	4.37	20.11	2,359.48	3,074.80	3,550.34	3,533.24	17.10	207.633	
6,000.00	5,829.37	5,844.69	5,843.94	15.00	4.38	26.16	2,359.45	3,074.85	3,503.53	3,486.37	17.16	204.167	
6,050.00	5,841.00	5,856.41	5,855.66	15.59	4.38	36.75	2,359.43	3,074.88	3,455.39	3,438.18	17.21	200.790	
6,100.00	5,847.93	5,863.40	5,862.65	16.23	4.38	56.99	2,359.42	3,074.91	3,406.39	3,389.14	17.25	197.514	
6,150.00	5,850.07	5,865.60	5,864.85	16.92	4.38	91.49	2,359.41	3,074.91	3,356.96	3,339.68	17.27	194.345	
6,156.48	5,850.00	5,865.53	5,864.78	17.01	4.38	96.40	2,359.41	3,074.91	3,350.54	3,333.26	17.28	193.935	
6,200.00	5,849.24	5,864.80	5,864.05	17.65	4.38	96.32	2,359.42	3,074.91	3,307.48	3,290.19	17.29	191.239	
6,300.00	5,847.50	5,863.12	5,862.38	19.22	4.38	96.12	2,359.42	3,074.90	3,208.58	3,191.23	17.35	184.958	
6,400.00	5,845.75	5,861.45	5,860.70	20.91	4.38	95.92	2,359.42	3,074.90	3,109.74	3,092.33	17.42	178.555	
6,500.00	5,844.01	5,859.77	5,859.03	22.70	4.38	95.72	2,359.43	3,074.89	3,010.98	2,993.48	17.50	172.025	
6,600.00	5,842.26	5,858.10	5,857.35	24.57	4.38	95.52	2,359.43	3,074.89	2,912.31	2,894.70	17.61	165.362	
6,700.00	5,840.52	5,856.43	5,855.68	26.49	4.38	95.32	2,359.43	3,074.88	2,813.73	2,795.98	17.75	158.564	
6,800.00	5,838.77	5,854.76	5,854.01	28.46	4.38	95.12	2,359.44	3,074.88	2,715.25	2,697.34	17.91	151.630	
6,900.00	5,837.03	5,853.09	5,852.34	30.47	4.38	94.93	2,359.44	3,074.87	2,616.88	2,598.78	18.10	144.560	
7,000.00	5,835.28	5,851.41	5,850.67	32.51	4.38	94.73	2,359.44	3,074.87	2,518.64	2,500.31	18.34	137.358	
7,100.00	5,833.53	5,849.75	5,849.00	34.57	4.38	94.53	2,359.45	3,074.86	2,420.55	2,401.93	18.61	130.033	
7,200.00	5,831.79	5,848.08	5,847.33	36.66	4.38	94.33	2,359.45	3,074.86	2,322.62	2,303.67	18.95	122.595	
7,300.00	5,830.04	5,846.41	5,845.66	38.76	4.38	94.13	2,359.45	3,074.85	2,224.87	2,205.53	19.34	115.062	
7,400.00	5,828.30	5,844.74	5,843.99	40.88	4.38	93.93	2,359.45	3,074.85	2,127.32	2,107.53	19.80	107.457	
7,500.00	5,826.55	5,843.08	5,842.33	43.01	4.38	93.73	2,359.46	3,074.84	2,030.02	2,009.68	20.34	99.808	
7,600.00	5,824.81	5,841.41	5,840.66	45.15	4.38	93.54	2,359.46	3,074.84	1,932.99	1,912.01	20.98	92.153	
7,700.00	5,823.06	5,839.75	5,839.00	47.30	4.38	93.34	2,359.46	3,074.83	1,836.27	1,814.55	21.72	84.531	
7,800.00	5,821.32	5,838.08	5,837.34	49.46	4.38	93.14	2,359.47	3,074.83	1,739.93	1,717.33	22.60	76.990	
7,900.00	5,819.57	5,836.42	5,835.67	51.62	4.37	92.94	2,359.47	3,074.82	1,644.02	1,620.39	23.63	69.582	
8,000.00	5,817.83	5,834.76	5,834.01	53.79	4.37	92.74	2,359.47	3,074.82	1,548.62	1,523.79	24.83	62.363	
8,100.00	5,816.08	5,833.10	5,832.35	55.97	4.37	92.54	2,359.48	3,074.81	1,453.85	1,427.60	26.25	55.388	
8,200.00	5,814.34	5,831.44	5,830.69	58.15	4.37	92.34	2,359.48	3,074.81	1,359.82	1,331.91	27.91	48.715	
8,300.00	5,812.59	5,829.78	5,829.03	60.34	4.37	92.15	2,359.48	3,074.81	1,266.70	1,236.82	29.88	42.397	
8,400.00	5,810.85	5,828.12	5,827.37	62.53	4.37	91.95	2,359.48	3,074.80	1,174.71	1,142.52	32.20	36.485	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #960 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,500.00	5,809.10	5,826.47	5,825.72	64.73	4.37	91.75	2,359.49	3,074.80	1,084.14	1,049.20	34.95	31.021	
8,600.00	5,807.36	5,824.81	5,824.06	66.92	4.37	91.55	2,359.49	3,074.79	995.38	957.16	38.22	26.043	
8,700.00	5,805.61	5,823.15	5,822.40	69.12	4.37	91.35	2,359.49	3,074.79	908.95	866.82	42.12	21.579	
8,800.00	5,803.87	5,821.50	5,820.75	71.33	4.37	91.15	2,359.50	3,074.78	825.58	778.81	46.77	17.652	
8,900.00	5,802.12	5,819.85	5,819.10	73.53	4.37	90.96	2,359.50	3,074.78	746.31	694.01	52.29	14.271	
9,000.00	5,800.37	5,818.19	5,817.44	75.74	4.37	90.76	2,359.50	3,074.77	672.58	613.80	58.77	11.443	
9,100.00	5,798.63	5,816.54	5,815.79	77.95	4.37	90.56	2,359.50	3,074.77	606.42	540.25	66.17	9.165	
9,200.00	5,796.88	5,814.89	5,814.14	80.16	4.37	90.36	2,359.51	3,074.76	550.56	476.42	74.15	7.425	
9,300.00	5,795.14	5,813.24	5,812.49	82.38	4.37	90.16	2,359.51	3,074.76	508.42	426.55	81.87	6.210	
9,400.00	5,793.39	5,811.59	5,810.84	84.59	4.37	89.97	2,359.51	3,074.75	483.59	395.61	87.98	5.496	
9,473.21	5,792.12	5,810.38	5,809.63	86.21	4.37	89.82	2,359.51	3,074.75	478.01	387.44	90.58	5.277	CC, ES
9,500.00	5,791.65	5,809.94	5,809.19	86.81	4.37	89.77	2,359.51	3,074.75	478.76	387.72	91.05	5.258	SF
9,600.00	5,789.90	5,808.29	5,807.54	89.02	4.37	89.57	2,359.52	3,074.74	494.54	404.04	90.50	5.465	
9,700.00	5,788.16	5,806.64	5,805.90	91.24	4.37	89.37	2,359.52	3,074.74	529.07	442.07	87.01	6.081	
9,800.00	5,786.41	5,805.00	5,804.25	93.46	4.37	89.18	2,359.52	3,074.73	579.02	497.14	81.88	7.071	
9,900.00	5,784.67	5,803.35	5,802.60	95.68	4.37	88.98	2,359.53	3,074.73	640.78	564.51	76.27	8.401	
10,000.00	5,782.92	5,801.71	5,800.96	97.91	4.37	88.78	2,359.53	3,074.73	711.29	640.43	70.86	10.038	
10,100.00	5,781.18	5,800.00	5,799.25	100.13	4.37	88.58	2,359.53	3,074.72	788.20	722.24	65.96	11.949	
10,200.00	5,779.43	5,798.41	5,797.68	102.35	4.37	88.39	2,359.53	3,074.72	869.82	808.16	61.66	14.107	
10,300.00	5,777.69	5,796.77	5,796.02	104.58	4.36	88.19	2,359.53	3,074.71	954.93	897.01	57.93	16.485	
10,400.00	5,775.94	5,795.13	5,794.38	106.80	4.36	87.99	2,359.54	3,074.71	1,042.69	987.99	54.70	19.062	
10,500.00	5,774.20	5,793.49	5,792.74	109.03	4.36	87.80	2,359.54	3,074.70	1,132.48	1,080.57	51.91	21.815	
10,600.00	5,772.45	5,791.86	5,791.11	111.25	4.36	87.60	2,359.54	3,074.70	1,223.85	1,174.36	49.49	24.727	
10,700.00	5,770.71	5,790.23	5,789.48	113.48	4.36	87.41	2,359.54	3,074.69	1,316.48	1,269.09	47.39	27.781	
10,800.00	5,768.96	5,788.61	5,787.86	115.71	4.36	87.21	2,359.55	3,074.69	1,410.11	1,364.56	45.54	30.962	
10,900.00	5,767.21	5,786.99	5,786.25	117.94	4.36	87.02	2,359.55	3,074.68	1,504.56	1,460.63	43.92	34.256	
11,000.00	5,765.47	5,785.38	5,784.63	120.17	4.36	86.83	2,359.55	3,074.68	1,599.68	1,557.19	42.49	37.653	
11,100.00	5,763.72	5,783.78	5,783.03	122.40	4.36	86.64	2,359.55	3,074.67	1,695.36	1,654.15	41.21	41.140	
11,200.00	5,761.98	5,782.18	5,781.43	124.63	4.36	86.45	2,359.56	3,074.67	1,791.51	1,751.44	40.07	44.710	
11,300.00	5,760.23	5,780.58	5,779.83	126.86	4.36	86.26	2,359.56	3,074.66	1,888.06	1,849.01	39.05	48.352	
11,400.00	5,758.49	5,778.99	5,778.24	129.09	4.36	86.07	2,359.56	3,074.66	1,984.95	1,946.82	38.13	52.060	
11,500.00	5,756.74	5,777.40	5,776.65	131.32	4.36	85.88	2,359.56	3,074.65	2,082.13	2,044.84	37.30	55.827	
11,600.00	5,755.00	5,775.82	5,775.07	133.55	4.36	85.69	2,359.57	3,074.65	2,179.57	2,143.03	36.54	59.647	
11,700.00	5,753.25	5,774.25	5,773.50	135.78	4.36	85.50	2,359.57	3,074.64	2,277.23	2,241.37	35.85	63.513	
11,802.14	5,751.47	5,772.64	5,771.89	138.06	4.36	85.31	2,359.57	3,074.64	2,377.18	2,341.98	35.21	67.505	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #963 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 213-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	52.57	352.70	460.80	580.48				
100.00	100.00	88.14	88.14	0.09	2.16	52.57	352.55	460.61	580.06	578.79	1.27	457.559	
200.00	200.00	191.83	191.83	0.32	4.70	52.57	352.00	459.92	579.20	576.32	2.87	201.541	
300.00	300.00	291.86	291.85	0.54	8.28	52.57	351.22	458.94	577.95	573.12	4.84	119.506	
400.00	400.00	390.95	390.93	0.77	12.13	52.58	350.54	458.08	576.85	569.96	6.88	83.795	
500.00	500.00	490.05	490.02	0.99	15.98	52.58	349.95	457.35	575.89	568.96	8.93	64.492	
600.00	600.00	590.59	590.57	1.22	19.96	52.58	349.37	456.62	574.97	563.82	11.15	51.561	
700.00	700.00	691.14	691.10	1.44	23.95	52.58	348.73	455.82	573.98	560.59	13.37	42.920	
800.00	800.00	791.68	791.64	1.67	27.93	52.58	348.04	454.95	572.85	557.25	15.59	36.735	
900.00	900.00	892.22	892.17	1.89	31.91	52.59	347.28	454.00	571.64	553.82	17.82	32.087	
1,000.00	1,000.00	993.61	993.56	2.12	37.33	52.59	348.44	452.94	570.30	550.09	20.21	28.217	
1,100.00	1,100.00	1,096.11	1,096.04	2.34	44.64	52.59	345.34	451.56	568.58	545.80	22.78	24.955	
1,200.00	1,200.00	1,198.60	1,198.50	2.56	51.94	52.60	343.96	449.83	566.42	541.12	25.30	22.386	
1,300.00	1,300.00	1,301.06	1,300.93	2.79	59.25	52.60	342.29	447.74	563.82	536.03	27.78	20.295	
1,400.00	1,400.00	1,402.64	1,402.47	3.01	68.05	52.61	340.39	445.35	560.81	530.54	30.26	18.531	
1,500.00	1,500.00	1,503.31	1,503.08	3.24	78.43	52.62	338.39	442.85	557.63	524.94	32.68	17.062	
1,600.00	1,600.00	1,603.96	1,603.68	3.46	88.83	52.62	336.32	440.24	554.32	519.32	35.00	15.839	
1,700.00	1,700.00	1,704.43	1,704.09	3.69	99.16	52.63	334.17	437.54	550.89	513.66	37.22	14.799	
1,800.00	1,800.00	1,802.31	1,801.91	3.91	108.66	52.64	332.17	435.04	547.61	508.23	39.38	13.905	
1,900.00	1,900.00	1,900.21	1,899.77	4.14	118.16	52.64	330.40	432.81	544.71	503.21	41.50	13.126	
2,000.00	2,000.00	1,998.12	1,997.65	4.36	124.85	52.65	328.86	430.88	542.19	498.44	43.74	12.395	
2,100.00	2,100.00	2,096.03	2,095.55	4.59	130.60	52.65	327.55	429.24	540.05	494.01	46.04	11.731	
2,200.00	2,200.00	2,193.97	2,193.46	4.81	136.35	52.66	326.48	427.89	538.28	489.95	48.33	11.138	
2,300.00	2,300.00	2,291.91	2,291.40	5.04	142.09	52.66	325.63	426.83	536.90	486.28	50.62	10.606	
2,400.00	2,400.00	2,390.29	2,389.77	5.26	147.54	52.66	325.01	426.06	535.89	483.00	52.90	10.131	
2,500.00	2,500.00	2,490.86	2,490.34	5.49	151.44	52.66	324.42	425.31	534.95	479.85	55.10	9.709	
2,600.00	2,600.00	2,591.43	2,590.90	5.71	155.34	52.67	323.76	424.49	533.90	476.61	57.29	9.320	
2,700.00	2,700.00	2,692.00	2,691.46	5.94	159.24	52.67	323.04	423.58	532.74	473.27	59.47	8.958	
2,800.00	2,800.00	2,792.55	2,792.01	6.16	163.30	52.67	322.24	422.58	531.47	469.81	61.66	8.619	
2,900.00	2,900.00	2,893.01	2,892.46	6.39	168.55	52.68	321.39	421.51	530.11	466.12	63.98	8.285	
3,000.00	3,000.00	2,993.47	2,992.91	6.61	173.79	52.68	320.48	420.37	528.66	462.35	66.31	7.973	
3,100.00	3,100.00	3,093.93	3,093.36	6.84	179.04	52.68	319.51	419.16	527.12	458.49	68.62	7.681	
3,200.00	3,200.00	3,194.39	3,193.80	7.06	184.28	52.69	318.49	417.87	525.49	454.54	70.94	7.407	
3,300.00	3,300.00	3,295.05	3,294.45	7.28	190.08	52.69	317.41	416.52	523.76	450.50	73.26	7.149	
3,400.00	3,400.00	3,396.52	3,395.90	7.51	197.98	52.69	316.18	414.97	521.82	446.23	75.59	6.904	
3,500.00	3,500.00	3,497.97	3,497.33	7.73	205.88	52.70	314.77	413.20	519.59	441.68	77.90	6.670	
3,600.00	3,600.00	3,599.42	3,598.74	7.96	213.78	52.71	313.18	411.21	517.07	436.85	80.22	6.446	
3,700.00	3,700.00	3,700.84	3,700.12	8.18	221.69	52.71	311.41	408.99	514.27	431.75	82.52	6.232	
3,800.00	3,800.00	3,800.67	3,799.90	8.41	230.22	52.72	309.55	406.65	511.28	426.53	84.76	6.032	
3,900.00	3,900.00	3,899.46	3,898.66	8.63	239.17	52.73	307.83	404.49	508.48	421.55	86.93	5.849	
4,000.00	4,000.00	3,998.26	3,997.42	8.86	247.23	52.73	306.24	402.50	505.91	416.78	89.13	5.676	
4,100.00	4,100.00	4,097.07	4,096.21	9.08	254.92	52.74	304.80	400.69	503.57	412.23	91.34	5.513	
4,200.00	4,200.00	4,199.79	4,198.90	9.31	263.99	52.75	303.25	398.74	501.15	407.55	93.60	5.354	
4,300.00	4,300.00	4,301.00	4,300.06	9.53	273.17	52.75	301.27	396.26	498.01	402.20	95.81	5.198	
4,400.00	4,400.00	4,401.52	4,400.52	9.76	282.30	52.76	299.20	393.68	494.70	396.66	98.04	5.046	
4,500.00	4,500.00	4,499.78	4,498.74	9.98	291.22	52.77	297.38	391.38	491.73	391.51	100.23	4.906	
4,600.00	4,600.00	4,598.06	4,596.98	10.21	300.15	52.78	295.77	389.36	489.11	386.71	102.41	4.776	
4,700.00	4,700.00	4,696.72	4,695.62	10.43	308.69	52.78	294.37	387.60	486.83	382.24	104.59	4.655	
4,800.00	4,800.00	4,796.69	4,795.57	10.66	315.82	52.79	293.01	385.89	484.64	377.85	106.80	4.538	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #963 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 213-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	4,896.67	4,895.52	10.88	322.94	52.80	291.65	384.19	482.46	373.46	109.01	4.426	
5,000.00	5,000.00	4,996.65	4,995.47	11.11	330.07	52.80	290.29	382.48	480.28	369.06	111.22	4.318	
5,058.82	5,058.82	5,045.00	5,043.82	11.24	333.52	52.81	289.63	381.66	479.11	366.78	112.34	4.265	CC, ES, SF
5,100.00	5,100.00	5,045.00	5,043.82	11.33	333.52	52.81	289.63	381.66	480.88	368.86	112.02	4.293	
5,200.00	5,200.00	5,045.00	5,043.82	11.56	333.52	52.81	289.63	381.66	499.48	391.39	108.09	4.621	
5,300.00	5,300.00	5,045.00	5,043.82	11.78	333.52	52.81	289.63	381.66	536.40	435.50	100.90	5.316	
5,329.21	5,329.21	5,045.00	5,043.82	11.85	333.52	52.81	289.63	381.66	550.15	451.70	98.45	5.588	
5,350.00	5,349.99	5,045.00	5,043.82	11.89	333.52	7.23	289.63	381.66	560.30	463.67	96.64	5.798	
5,400.00	5,399.78	5,045.00	5,043.82	12.00	333.52	6.86	289.63	381.66	584.18	492.20	91.98	6.351	
5,450.00	5,448.92	5,045.00	5,043.82	12.11	333.52	6.53	289.63	381.66	607.19	520.22	86.97	6.981	
5,500.00	5,496.96	5,045.00	5,043.82	12.23	333.52	6.23	289.63	381.66	629.22	547.56	81.66	7.705	
5,550.00	5,543.45	5,045.00	5,043.82	12.35	333.52	5.96	289.63	381.66	650.18	574.07	76.11	8.543	
5,600.00	5,587.97	5,045.00	5,043.82	12.48	333.52	5.72	289.63	381.66	669.99	599.63	70.37	9.521	
5,650.00	5,630.10	5,045.00	5,043.82	12.63	333.52	5.50	289.63	381.66	688.58	624.08	64.49	10.677	
5,700.00	5,669.47	5,045.00	5,043.82	12.81	333.52	5.31	289.63	381.66	705.86	647.31	58.55	12.056	
5,750.00	5,705.70	5,045.00	5,043.82	13.03	333.52	5.14	289.63	381.66	721.79	669.16	52.63	13.714	
5,800.00	5,738.47	5,045.00	5,043.82	13.30	333.52	5.00	289.63	381.66	736.31	689.47	46.85	15.717	
5,850.00	5,767.46	5,045.00	5,043.82	13.62	333.52	4.87	289.63	381.66	749.38	708.01	41.36	18.118	
5,900.00	5,792.43	5,045.00	5,043.82	14.02	333.52	4.76	289.63	381.66	760.94	724.53	36.40	20.903	
5,950.00	5,813.12	5,045.00	5,043.82	14.47	333.52	4.67	289.63	381.66	770.96	738.64	32.31	23.858	
6,000.00	5,829.37	5,045.00	5,043.82	15.00	333.52	4.59	289.63	381.66	779.41	749.88	29.54	26.389	
6,050.00	5,841.00	5,045.00	5,043.82	15.59	333.52	4.53	289.63	381.66	786.27	757.77	28.51	27.582	
6,100.00	5,847.93	5,045.00	5,043.82	16.23	333.52	4.48	289.63	381.66	791.52	762.08	29.44	26.888	
6,150.00	5,850.07	5,045.00	5,043.82	16.92	333.52	4.45	289.63	381.66	795.13	762.97	32.16	24.724	
6,156.48	5,850.00	5,045.00	5,043.82	17.01	333.52	4.45	289.63	381.66	795.47	762.86	32.62	24.386	
6,200.00	5,849.24	5,045.00	5,043.82	17.65	333.52	4.45	289.63	381.66	798.90	762.71	36.19	22.076	
6,300.00	5,847.50	5,045.00	5,043.82	19.22	333.52	4.45	289.63	381.66	815.57	769.43	46.13	17.679	
6,400.00	5,845.75	5,045.00	5,043.82	20.91	333.52	4.45	289.63	381.66	843.83	787.21	56.62	14.903	
6,500.00	5,844.01	5,045.00	5,043.82	22.70	333.52	4.45	289.63	381.66	882.59	816.15	66.43	13.285	
6,600.00	5,842.26	5,045.00	5,043.82	24.57	333.52	4.45	289.63	381.66	930.52	855.44	75.08	12.394	
6,700.00	5,840.52	5,045.00	5,043.82	26.49	333.52	4.45	289.63	381.66	986.29	903.85	82.44	11.963	
6,800.00	5,838.77	5,045.00	5,043.82	28.46	333.52	4.45	289.63	381.66	1,048.66	960.06	88.59	11.837	
6,900.00	5,837.03	5,045.00	5,043.82	30.47	333.52	4.45	289.63	381.66	1,116.51	1,022.83	93.67	11.919	
7,000.00	5,835.28	5,045.00	5,043.82	32.51	333.52	4.45	289.63	381.66	1,188.90	1,091.05	97.85	12.150	
7,100.00	5,833.53	5,045.00	5,043.82	34.57	333.52	4.45	289.63	381.66	1,265.07	1,163.78	101.29	12.490	
7,200.00	5,831.79	5,045.00	5,043.82	36.66	333.52	4.45	289.63	381.66	1,344.36	1,240.24	104.12	12.912	
7,300.00	5,830.04	5,045.00	5,043.82	38.76	333.52	4.45	289.63	381.66	1,426.26	1,319.80	106.46	13.398	
7,400.00	5,828.30	5,045.00	5,043.82	40.88	333.52	4.45	289.63	381.66	1,510.34	1,401.94	108.40	13.933	
7,500.00	5,826.55	5,045.00	5,043.82	43.01	333.52	4.45	289.63	381.66	1,596.25	1,486.23	110.03	14.508	
7,600.00	5,824.81	5,045.00	5,043.82	45.15	333.52	4.45	289.63	381.66	1,683.72	1,572.33	111.39	15.115	
7,700.00	5,823.06	5,045.00	5,043.82	47.30	333.52	4.45	289.63	381.66	1,772.52	1,659.98	112.55	15.749	
7,800.00	5,821.32	5,045.00	5,043.82	49.46	333.52	4.45	289.63	381.66	1,862.46	1,748.93	113.53	16.405	
7,900.00	5,819.57	5,045.00	5,043.82	51.62	333.52	4.45	289.63	381.66	1,953.37	1,839.00	114.37	17.080	
8,000.00	5,817.83	5,045.00	5,043.82	53.79	333.52	4.45	289.63	381.66	2,045.13	1,930.04	115.09	17.770	
8,100.00	5,816.08	5,045.00	5,043.82	55.97	333.52	4.45	289.63	381.66	2,137.63	2,021.91	115.72	18.473	
8,200.00	5,814.34	5,045.00	5,043.82	58.15	333.52	4.45	289.63	381.66	2,230.78	2,114.52	116.26	19.188	
8,300.00	5,812.59	5,045.00	5,043.82	60.34	333.52	4.45	289.63	381.66	2,324.49	2,207.76	116.73	19.913	
8,400.00	5,810.85	5,045.00	5,043.82	62.53	333.52	4.45	289.63	381.66	2,418.71	2,301.56	117.15	20.646	
8,500.00	5,809.10	5,045.00	5,043.82	64.73	333.52	4.45	289.63	381.66	2,513.38	2,395.86	117.52	21.387	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #963 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 213-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	5,045.00	5,043.82	66.92	333.52	4.45	289.63	381.66	2,608.45	2,490.60	117.85	22.135	
8,700.00	5,805.61	5,045.00	5,043.82	69.12	333.52	4.45	289.63	381.66	2,703.67	2,585.73	118.14	22.888	
8,800.00	5,803.87	5,045.00	5,043.82	71.33	333.52	4.45	289.63	381.66	2,799.61	2,681.21	118.40	23.646	
8,900.00	5,802.12	5,045.00	5,043.82	73.53	333.52	4.45	289.63	381.66	2,895.64	2,777.01	118.63	24.409	
9,000.00	5,800.37	5,045.00	5,043.82	75.74	333.52	4.45	289.63	381.66	2,991.92	2,873.09	118.84	25.176	
9,100.00	5,798.63	5,045.00	5,043.82	77.95	333.52	4.45	289.63	381.66	3,088.45	2,969.42	119.03	25.947	
9,200.00	5,796.88	5,045.00	5,043.82	80.16	333.52	4.45	289.63	381.66	3,185.19	3,065.99	119.20	26.721	
9,300.00	5,795.14	5,045.00	5,043.82	82.38	333.52	4.45	289.63	381.66	3,282.12	3,162.76	119.36	27.498	
9,400.00	5,793.39	5,045.00	5,043.82	84.59	333.52	4.45	289.63	381.66	3,379.24	3,259.73	119.50	28.277	
9,500.00	5,791.65	5,045.00	5,043.82	86.81	333.52	4.45	289.63	381.66	3,476.51	3,356.88	119.64	29.059	
9,600.00	5,789.90	5,045.00	5,043.82	89.02	333.52	4.45	289.63	381.66	3,573.94	3,454.18	119.76	29.842	
9,700.00	5,788.16	5,045.00	5,043.82	91.24	333.52	4.45	289.63	381.66	3,671.51	3,551.63	119.87	30.628	
9,800.00	5,786.41	5,045.00	5,043.82	93.46	333.52	4.45	289.63	381.66	3,769.20	3,649.22	119.98	31.415	
9,900.00	5,784.67	5,045.00	5,043.82	95.68	333.52	4.45	289.63	381.66	3,867.01	3,746.93	120.08	32.204	
10,000.00	5,782.92	5,045.00	5,043.82	97.91	333.52	4.45	289.63	381.66	3,964.93	3,844.76	120.17	32.994	
10,100.00	5,781.18	5,045.00	5,043.82	100.13	333.52	4.45	289.63	381.66	4,062.95	3,942.69	120.26	33.785	
10,200.00	5,779.43	5,045.00	5,043.82	102.35	333.52	4.45	289.63	381.66	4,161.07	4,040.73	120.34	34.578	
10,300.00	5,777.69	5,045.00	5,043.82	104.58	333.52	4.45	289.63	381.66	4,259.27	4,138.85	120.42	35.371	
10,400.00	5,775.94	5,045.00	5,043.82	106.80	333.52	4.45	289.63	381.66	4,357.56	4,237.07	120.49	36.165	
10,500.00	5,774.20	5,045.00	5,043.82	109.03	333.52	4.45	289.63	381.66	4,455.92	4,335.36	120.56	36.960	
10,600.00	5,772.45	5,045.00	5,043.82	111.25	333.52	4.45	289.63	381.66	4,554.35	4,433.72	120.63	37.755	
10,700.00	5,770.71	5,045.00	5,043.82	113.48	333.52	4.45	289.63	381.66	4,652.85	4,532.16	120.69	38.551	
10,800.00	5,768.96	5,045.00	5,043.82	115.71	333.52	4.45	289.63	381.66	4,751.41	4,630.66	120.75	39.348	
10,900.00	5,767.21	5,045.00	5,043.82	117.94	333.52	4.45	289.63	381.66	4,850.03	4,729.22	120.81	40.145	
11,000.00	5,765.47	5,045.00	5,043.82	120.17	333.52	4.45	289.63	381.66	4,948.71	4,827.84	120.87	40.942	
11,100.00	5,763.72	5,045.00	5,043.82	122.40	333.52	4.45	289.63	381.66	5,047.44	4,926.51	120.93	41.740	
11,200.00	5,761.98	5,045.00	5,043.82	124.63	333.52	4.45	289.63	381.66	5,146.22	5,025.24	120.98	42.538	
11,300.00	5,760.23	5,045.00	5,043.82	126.86	333.52	4.45	289.63	381.66	5,245.04	5,124.01	121.03	43.336	
11,400.00	5,758.49	5,045.00	5,043.82	129.09	333.52	4.45	289.63	381.66	5,343.91	5,222.82	121.08	44.134	
11,500.00	5,756.74	5,045.00	5,043.82	131.32	333.52	4.45	289.63	381.66	5,442.82	5,321.68	121.13	44.932	
11,600.00	5,755.00	5,045.00	5,043.82	133.55	333.52	4.45	289.63	381.66	5,541.77	5,420.58	121.18	45.730	
11,700.00	5,753.25	5,045.00	5,043.82	135.78	333.52	4.45	289.63	381.66	5,640.75	5,519.52	121.23	46.529	
11,802.14	5,751.47	5,045.00	5,043.82	138.06	333.52	4.45	289.63	381.66	5,741.89	5,620.61	121.28	47.344	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #967 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 198-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	1.01	1.01	0.00	0.02	54.25	1,278.10	1,775.20	2,187.44				
100.00	100.00	101.75	101.75	0.09	1.52	54.24	1,278.18	1,775.12	2,187.42	2,185.81	1.61	1,356.822	
200.00	200.00	202.54	202.54	0.32	3.12	54.24	1,278.42	1,774.88	2,187.37	2,183.94	3.43	638.363	
300.00	300.00	304.17	304.17	0.54	6.61	54.22	1,278.93	1,774.38	2,187.26	2,180.14	7.12	307.367	
400.00	400.00	405.38	405.37	0.77	10.39	54.19	1,279.78	1,773.55	2,187.08	2,175.98	11.10	197.084	
500.00	500.00	505.37	505.35	0.99	14.97	54.15	1,280.71	1,772.63	2,186.88	2,171.02	15.86	137.861	
600.00	600.00	605.36	605.33	1.22	19.57	54.12	1,281.64	1,771.71	2,186.68	2,166.04	20.65	105.911	
700.00	700.00	705.35	705.32	1.44	24.18	54.08	1,282.57	1,770.79	2,186.48	2,161.05	25.44	85.953	
800.00	800.00	805.82	805.78	1.67	29.23	54.05	1,283.55	1,769.83	2,186.28	2,155.61	30.66	71.299	
900.00	900.00	906.40	906.34	1.89	34.38	54.01	1,284.66	1,768.74	2,186.05	2,150.05	35.99	60.732	
1,000.00	1,000.00	1,006.49	1,006.42	2.12	39.50	53.96	1,285.87	1,767.55	2,185.79	2,144.51	41.29	52.940	
1,100.00	1,100.00	1,105.79	1,105.71	2.34	44.55	53.92	1,286.97	1,766.46	2,185.56	2,139.05	46.52	46.986	
1,200.00	1,200.00	1,205.31	1,205.22	2.56	49.44	53.89	1,287.93	1,765.51	2,185.36	2,133.77	51.59	42.362	
1,300.00	1,300.00	1,305.30	1,305.20	2.79	53.96	53.86	1,288.86	1,764.59	2,185.17	2,128.87	56.30	38.815	
1,400.00	1,400.00	1,405.29	1,405.18	3.01	58.48	53.82	1,289.80	1,763.67	2,184.98	2,123.97	61.01	35.814	
1,500.00	1,500.00	1,506.42	1,506.30	3.24	64.46	53.78	1,290.83	1,762.65	2,184.77	2,117.61	67.15	32.533	
1,600.00	1,600.00	1,607.96	1,607.82	3.46	70.99	53.73	1,292.21	1,761.29	2,184.49	2,110.63	73.86	29.578	
1,700.00	1,700.00	1,709.62	1,709.45	3.69	77.74	53.67	1,293.96	1,759.57	2,184.14	2,103.37	80.77	27.041	
1,800.00	1,800.00	1,811.71	1,811.49	3.91	87.47	53.59	1,296.28	1,757.28	2,183.68	2,093.04	90.65	24.090	
1,900.00	1,900.00	1,910.56	1,910.28	4.14	96.95	53.50	1,298.53	1,755.06	2,183.23	2,082.96	100.27	21.774	
2,000.00	2,000.00	2,009.43	2,009.11	4.36	106.43	53.43	1,300.53	1,753.09	2,182.83	2,072.94	109.90	19.862	
2,100.00	2,100.00	2,107.80	2,107.46	4.59	113.74	53.37	1,302.22	1,751.42	2,182.50	2,065.12	117.38	18.593	
2,200.00	2,200.00	2,206.91	2,206.55	4.81	120.79	53.32	1,303.56	1,750.10	2,182.24	2,057.63	124.60	17.513	
2,300.00	2,300.00	2,307.98	2,307.60	5.04	127.97	53.27	1,305.02	1,748.66	2,181.96	2,050.00	131.96	16.535	
2,400.00	2,400.00	2,409.04	2,408.63	5.26	135.15	53.20	1,306.75	1,746.96	2,181.63	2,042.32	139.31	15.660	
2,500.00	2,500.00	2,508.72	2,508.28	5.49	142.81	53.14	1,308.56	1,745.17	2,181.29	2,034.13	147.15	14.823	
2,600.00	2,600.00	2,608.25	2,607.78	5.71	150.53	53.07	1,310.27	1,743.49	2,180.96	2,025.91	155.05	14.068	
2,700.00	2,700.00	2,707.79	2,707.29	5.94	158.23	53.02	1,311.87	1,741.91	2,180.66	2,017.74	162.93	13.384	
2,800.00	2,800.00	2,807.36	2,806.84	6.16	164.70	52.96	1,313.36	1,740.44	2,180.39	2,010.79	169.59	12.857	
2,900.00	2,900.00	2,906.94	2,906.41	6.39	171.17	52.91	1,314.76	1,739.06	2,180.13	2,003.87	176.26	12.369	
3,000.00	3,000.00	3,006.53	3,005.98	6.61	177.65	52.86	1,316.06	1,737.78	2,179.89	1,996.96	182.93	11.917	
3,100.00	3,100.00	3,106.79	3,106.22	6.84	184.14	52.82	1,317.34	1,736.52	2,179.66	1,990.04	189.61	11.495	
3,200.00	3,200.00	3,207.12	3,206.54	7.06	190.64	52.77	1,318.71	1,735.17	2,179.41	1,983.11	196.30	11.102	
3,300.00	3,300.00	3,307.45	3,306.84	7.28	197.13	52.71	1,320.17	1,733.72	2,179.15	1,976.15	203.00	10.735	
3,400.00	3,400.00	3,407.79	3,407.16	7.51	204.20	52.66	1,321.73	1,732.19	2,178.87	1,968.62	210.25	10.363	
3,500.00	3,500.00	3,508.15	3,507.49	7.73	212.02	52.59	1,323.38	1,730.56	2,178.58	1,960.32	218.27	9.981	
3,600.00	3,600.00	3,608.50	3,607.81	7.96	219.84	52.53	1,325.13	1,728.84	2,178.28	1,952.00	226.28	9.626	
3,700.00	3,700.00	3,708.48	3,707.76	8.18	227.41	52.46	1,326.96	1,727.03	2,177.96	1,943.90	234.06	9.305	
3,800.00	3,800.00	3,807.70	3,806.95	8.41	234.48	52.40	1,328.65	1,725.37	2,177.67	1,936.34	241.33	9.024	
3,900.00	3,900.00	3,906.94	3,906.16	8.63	241.56	52.35	1,330.13	1,723.91	2,177.41	1,928.81	248.60	8.759	
4,000.00	4,000.00	4,006.73	4,005.94	8.86	249.11	52.30	1,331.45	1,722.61	2,177.19	1,920.84	256.36	8.493	
4,100.00	4,100.00	4,108.40	4,107.59	9.08	258.35	52.24	1,333.05	1,721.03	2,176.93	1,911.15	265.78	8.191	
4,200.00	4,200.00	4,210.04	4,209.18	9.31	267.58	52.18	1,335.13	1,718.98	2,176.59	1,901.38	275.21	7.909	
4,300.00	4,300.00	4,311.64	4,310.72	9.53	276.80	52.07	1,337.68	1,716.47	2,176.18	1,891.53	284.64	7.645	
4,400.00	4,400.00	4,407.95	4,406.99	9.76	285.79	52.00	1,339.71	1,714.46	2,175.83	1,881.99	293.84	7.405	
4,500.00	4,500.00	4,508.54	4,508.54	9.98	294.75	51.92	1,341.76	1,712.45	2,175.51	1,872.50	303.01	7.180	
4,600.00	4,600.00	4,609.50	4,608.44	10.21	304.50	51.84	1,343.93	1,710.31	2,175.17	1,862.20	312.97	6.950	
4,700.00	4,700.00	4,708.28	4,707.18	10.43	312.76	51.77	1,345.96	1,708.31	2,174.85	1,853.41	321.44	6.766	
4,800.00	4,800.00	4,806.62	4,805.50	10.66	320.42	51.71	1,347.51	1,706.77	2,174.60	1,845.29	329.31	6.603	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design | Skelly Unit #422H - Skelly Unit #967 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 196-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	4,906.27	4,905.13	10.88	326.62	51.66	1,348.76	1,705.54	2,174.41	1,838.67	335.74	6.477	
5,000.00	5,000.00	5,006.25	5,005.10	11.11	332.45	51.62	1,350.01	1,704.32	2,174.22	1,832.44	341.78	6.361	
5,100.00	5,100.00	5,105.65	5,104.49	11.33	337.08	51.57	1,351.19	1,703.15	2,174.04	1,827.40	346.64	6.272	
5,200.00	5,200.00	5,204.67	5,203.50	11.56	340.91	51.54	1,352.09	1,702.26	2,173.90	1,823.21	350.70	6.199	
5,300.00	5,300.00	5,303.69	5,302.52	11.78	344.74	51.52	1,352.70	1,701.66	2,173.81	1,819.06	354.75	6.128	
5,329.21	5,329.21	5,332.62	5,331.45	11.85	345.86	51.51	1,352.83	1,701.53	2,173.79	1,817.86	355.93	6.107	
5,350.00	5,349.99	5,353.21	5,352.03	11.89	346.66	6.10	1,352.90	1,701.46	2,173.37	1,816.59	356.77	6.092	
5,400.00	5,399.78	5,403.48	5,402.30	12.00	348.61	6.16	1,353.09	1,701.27	2,168.97	1,810.16	358.82	6.045	
5,450.00	5,448.92	5,453.15	5,451.97	12.11	350.53	6.29	1,353.37	1,701.00	2,159.85	1,799.01	360.84	5.986	
5,500.00	5,496.96	5,501.70	5,500.52	12.23	352.42	6.49	1,353.71	1,700.66	2,146.07	1,783.26	362.81	5.915	
5,550.00	5,543.45	5,548.69	5,547.51	12.35	354.24	6.78	1,354.12	1,700.26	2,127.76	1,763.05	364.71	5.834	
5,600.00	5,587.97	5,593.68	5,592.50	12.48	355.98	7.18	1,354.58	1,699.80	2,105.11	1,738.59	366.52	5.743	
5,650.00	5,630.10	5,636.27	5,635.07	12.63	357.63	7.70	1,355.08	1,699.31	2,078.31	1,710.08	368.23	5.644	
5,700.00	5,669.47	5,675.88	5,674.68	12.81	360.44	8.40	1,355.59	1,698.81	2,047.62	1,676.55	371.07	5.518	
5,750.00	5,705.70	5,712.34	5,711.13	13.03	363.05	9.32	1,356.08	1,698.32	2,013.33	1,639.64	373.70	5.388	
5,800.00	5,738.47	5,745.31	5,744.09	13.30	365.40	10.56	1,356.55	1,697.86	1,975.76	1,599.71	376.06	5.254	
5,850.00	5,767.46	5,774.48	5,773.26	13.62	367.49	12.28	1,356.99	1,697.43	1,935.25	1,557.13	378.12	5.118	
5,900.00	5,792.43	5,799.60	5,798.37	14.02	369.28	14.72	1,357.38	1,697.05	1,892.19	1,512.31	379.88	4.981	
5,950.00	5,813.12	5,820.42	5,819.19	14.47	370.77	18.41	1,357.71	1,696.73	1,846.97	1,465.66	381.31	4.844	
6,000.00	5,829.37	5,836.76	5,835.52	15.00	371.94	24.38	1,357.97	1,696.46	1,800.01	1,417.62	382.39	4.707	
6,050.00	5,841.00	5,848.47	5,847.23	15.59	372.78	35.11	1,358.16	1,696.27	1,751.78	1,368.64	383.12	4.572	
6,100.00	5,847.93	5,855.43	5,854.19	16.23	373.27	56.45	1,358.28	1,696.16	1,702.66	1,319.16	383.49	4.440	
6,150.00	5,850.07	5,857.59	5,856.35	16.92	373.43	93.45	1,358.32	1,696.12	1,653.16	1,269.67	383.49	4.311	
6,156.48	5,850.00	5,857.52	5,856.28	17.01	373.42	98.60	1,358.32	1,696.12	1,646.74	1,263.27	383.47	4.294	
6,200.00	5,849.24	5,856.76	5,855.51	17.65	373.37	98.40	1,358.30	1,696.14	1,603.64	1,220.38	383.26	4.184	
6,300.00	5,847.50	5,855.00	5,853.76	19.22	373.24	97.98	1,358.27	1,696.17	1,504.70	1,121.96	382.74	3.931	
6,400.00	5,845.75	5,853.24	5,852.00	20.91	373.12	97.52	1,358.24	1,696.19	1,405.91	1,023.75	382.16	3.679	
6,500.00	5,844.01	5,851.49	5,850.25	22.70	372.99	97.07	1,358.22	1,696.22	1,307.30	925.82	381.48	3.427	
6,600.00	5,842.26	5,849.73	5,848.49	24.57	372.87	96.63	1,358.19	1,696.25	1,208.92	828.24	380.68	3.176	
6,700.00	5,840.52	5,847.98	5,846.74	26.49	372.74	96.18	1,358.16	1,696.28	1,110.82	731.11	379.71	2.925	
6,800.00	5,838.77	5,846.22	5,844.98	28.46	372.62	95.74	1,358.13	1,696.31	1,013.09	634.58	378.51	2.677	
6,900.00	5,837.03	5,844.46	5,843.23	30.47	372.49	95.29	1,358.10	1,696.34	915.84	538.86	376.98	2.429	
7,000.00	5,835.28	5,842.71	5,841.47	32.51	372.36	94.84	1,358.07	1,696.37	819.26	444.30	374.96	2.185	
7,100.00	5,833.53	5,840.95	5,839.72	34.57	372.24	94.40	1,358.04	1,696.40	723.60	351.45	372.15	1.944	
7,200.00	5,831.79	5,839.20	5,837.96	36.66	372.11	93.95	1,358.01	1,696.42	629.29	261.27	368.02	1.710	
7,300.00	5,830.04	5,837.44	5,836.21	38.76	371.99	93.50	1,357.98	1,696.45	537.04	175.48	361.55	1.485	Level 3
7,400.00	5,828.30	5,835.68	5,834.45	40.88	371.86	93.05	1,357.95	1,696.48	448.11	97.55	350.56	1.278	Level 3
7,500.00	5,826.55	5,833.93	5,832.69	43.01	371.74	92.60	1,357.93	1,696.51	364.95	34.66	330.29	1.105	Level 2
7,600.00	5,824.81	5,832.17	5,830.94	45.15	371.61	92.15	1,357.90	1,696.54	292.53	1.99	290.53	1.007	Level 2
7,700.00	5,823.06	5,830.42	5,829.18	47.30	371.49	91.70	1,357.87	1,696.57	240.72	22.77	217.95	1.104	Level 2
7,788.16	5,821.52	5,828.87	5,827.64	49.20	371.38	91.31	1,357.84	1,696.59	224.00	58.82	165.18	1.356	Level 3, CC
7,800.00	5,821.32	5,828.66	5,827.43	49.46	371.36	91.25	1,357.84	1,696.59	224.31	57.47	166.84	1.344	Level 3
7,900.00	5,819.57	5,826.91	5,825.67	51.62	371.24	90.81	1,357.81	1,696.62	250.36	8.21	242.15	1.034	Level 2
8,000.00	5,817.83	5,825.15	5,823.92	53.79	371.11	90.36	1,357.78	1,696.65	308.28	-0.42	308.71	0.999	Level 1, ES, SF
8,100.00	5,816.08	5,823.39	5,822.16	55.97	370.98	89.91	1,357.75	1,696.68	383.91	40.66	343.26	1.118	Level 2
8,200.00	5,814.34	5,821.64	5,820.41	58.15	370.86	89.46	1,357.73	1,696.71	468.76	108.07	360.69	1.300	Level 3
8,300.00	5,812.59	5,819.88	5,818.65	60.34	370.73	89.01	1,357.70	1,696.73	558.64	188.65	369.99	1.510	
8,400.00	5,810.85	5,818.13	5,816.89	62.53	370.61	88.56	1,357.67	1,696.76	651.46	276.19	375.27	1.736	
8,500.00	5,809.10	5,816.37	5,815.14	64.73	370.48	88.11	1,357.64	1,696.79	746.15	367.70	378.44	1.972	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #967 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 198-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.38	5,814.61	5,813.38	66.92	370.36	87.67	1,357.61	1,696.82	842.05	461.63	380.43	2.213	
8,700.00	5,805.61	5,812.86	5,811.63	69.12	370.23	87.22	1,357.58	1,696.84	938.81	557.11	381.71	2.460	
8,800.00	5,803.87	5,811.10	5,809.87	71.33	370.11	86.77	1,357.56	1,696.87	1,036.18	653.63	382.55	2.709	
8,900.00	5,802.12	5,809.35	5,808.12	73.53	369.98	86.33	1,357.53	1,696.90	1,134.01	750.90	383.11	2.960	
9,000.00	5,800.37	5,807.59	5,806.36	75.74	369.85	85.88	1,357.50	1,696.93	1,232.18	848.69	383.49	3.213	
9,100.00	5,798.63	5,805.83	5,804.61	77.95	369.73	85.44	1,357.47	1,696.95	1,330.63	946.89	383.74	3.468	
9,200.00	5,796.88	5,804.08	5,802.85	80.16	369.60	84.99	1,357.45	1,696.98	1,429.28	1,045.39	383.89	3.723	
9,300.00	5,795.14	5,802.32	5,801.10	82.38	369.48	84.55	1,357.42	1,697.01	1,528.11	1,144.13	383.98	3.980	
9,400.00	5,793.39	5,800.57	5,799.34	84.59	369.35	84.11	1,357.39	1,697.04	1,627.08	1,243.05	384.03	4.237	
9,500.00	5,791.65	5,798.81	5,797.58	86.81	369.23	83.67	1,357.36	1,697.06	1,726.17	1,342.13	384.04	4.495	
9,600.00	5,789.90	5,797.05	5,795.83	89.02	369.10	83.22	1,357.34	1,697.09	1,825.36	1,441.34	384.02	4.753	
9,700.00	5,788.16	5,795.30	5,794.07	91.24	368.98	82.78	1,357.31	1,697.12	1,924.62	1,540.64	383.98	5.012	
9,800.00	5,786.41	5,793.54	5,792.32	93.46	368.85	82.35	1,357.28	1,697.14	2,023.96	1,640.03	383.93	5.272	
9,900.00	5,784.67	5,791.79	5,790.56	95.68	368.73	81.91	1,357.25	1,697.17	2,123.36	1,739.49	383.87	5.532	
10,000.00	5,782.92	5,790.03	5,788.81	97.91	368.60	81.47	1,357.23	1,697.20	2,222.81	1,839.02	383.79	5.792	
10,100.00	5,781.18	5,788.27	5,787.05	100.13	368.47	81.04	1,357.20	1,697.22	2,322.31	1,938.60	383.71	6.052	
10,200.00	5,779.43	5,786.52	5,785.29	102.35	368.35	80.60	1,357.17	1,697.25	2,421.85	2,038.22	383.63	6.313	
10,300.00	5,777.69	5,784.76	5,783.54	104.58	368.22	80.17	1,357.15	1,697.28	2,521.42	2,137.88	383.54	6.574	
10,400.00	5,775.94	5,783.01	5,781.78	106.80	368.10	79.74	1,357.12	1,697.30	2,621.03	2,237.58	383.44	6.835	
10,500.00	5,774.20	5,781.25	5,780.03	109.03	367.97	79.31	1,357.09	1,697.33	2,720.66	2,337.31	383.35	7.097	
10,600.00	5,772.45	5,779.49	5,778.27	111.25	367.85	78.88	1,357.06	1,697.36	2,820.32	2,437.06	383.25	7.359	
10,700.00	5,770.71	5,777.74	5,776.52	113.48	367.72	78.45	1,357.04	1,697.38	2,920.00	2,536.84	383.15	7.621	
10,800.00	5,768.96	5,775.98	5,774.76	115.71	367.60	78.02	1,357.01	1,697.41	3,019.70	2,636.64	383.05	7.883	
10,900.00	5,767.21	5,774.23	5,773.01	117.94	367.47	77.60	1,356.98	1,697.44	3,119.41	2,736.46	382.95	8.146	
11,000.00	5,765.47	5,772.47	5,771.25	120.17	367.34	77.17	1,356.96	1,697.46	3,219.15	2,836.30	382.85	8.408	
11,100.00	5,763.72	5,770.71	5,769.49	122.40	367.22	76.75	1,356.93	1,697.49	3,318.90	2,936.15	382.75	8.671	
11,200.00	5,761.98	5,768.96	5,767.74	124.63	367.09	76.33	1,356.90	1,697.52	3,418.66	3,036.02	382.64	8.934	
11,300.00	5,760.23	5,767.20	5,765.98	126.86	366.97	75.91	1,356.88	1,697.54	3,518.44	3,135.89	382.54	9.198	
11,400.00	5,758.49	5,765.45	5,764.23	129.09	366.84	75.50	1,356.85	1,697.57	3,618.22	3,235.78	382.44	9.461	
11,500.00	5,756.74	5,763.69	5,762.47	131.32	366.72	75.08	1,356.83	1,697.59	3,718.02	3,335.68	382.34	9.724	
11,600.00	5,755.00	5,761.93	5,760.72	133.55	366.59	74.67	1,356.80	1,697.62	3,817.83	3,435.59	382.24	9.988	
11,700.00	5,753.25	5,760.18	5,758.96	135.78	366.47	74.26	1,356.77	1,697.64	3,917.65	3,535.51	382.13	10.252	
11,802.14	5,751.47	5,758.38	5,757.17	138.06	366.34	73.84	1,356.75	1,697.67	4,019.61	3,637.58	382.03	10.522	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #970 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 234-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	7.11	7.11	0.00	0.14	37.12	2,337.80	1,769.20	2,931.79				
100.00	100.00	108.71	108.71	0.09	2.08	37.12	2,337.64	1,769.35	2,931.76	2,929.60	2.16	1,358.211	
200.00	200.00	210.31	210.31	0.32	4.02	37.13	2,337.21	1,769.78	2,931.67	2,927.36	4.31	679.518	
300.00	300.00	311.69	311.69	0.54	7.56	37.15	2,336.52	1,770.46	2,931.53	2,923.48	8.06	363.811	
400.00	400.00	412.35	412.34	0.77	11.54	37.18	2,335.63	1,771.33	2,931.36	2,919.12	12.23	239.666	
500.00	500.00	511.93	511.91	0.99	15.42	37.20	2,334.77	1,772.19	2,931.18	2,914.88	16.30	179.792	
600.00	600.00	611.50	611.48	1.22	19.30	37.22	2,333.97	1,772.97	2,931.02	2,910.64	20.38	143.832	
700.00	700.00	711.08	711.05	1.44	23.18	37.24	2,333.25	1,773.69	2,930.88	2,906.42	24.45	119.850	
800.00	800.00	811.00	810.96	1.67	27.08	37.26	2,332.59	1,774.34	2,930.74	2,902.20	28.54	102.672	
900.00	900.00	911.11	911.07	1.89	31.04	37.28	2,331.93	1,774.99	2,930.61	2,897.91	32.70	89.621	
1,000.00	1,000.00	1,011.58	1,011.51	2.12	35.01	37.30	2,331.19	1,775.72	2,930.47	2,893.60	36.87	79.482	
1,100.00	1,100.00	1,112.00	1,111.95	2.34	38.98	37.32	2,330.37	1,776.52	2,930.31	2,889.27	41.04	71.403	
1,200.00	1,200.00	1,212.44	1,212.38	2.56	42.96	37.34	2,329.47	1,777.41	2,930.13	2,884.92	45.21	64.813	
1,300.00	1,300.00	1,312.87	1,312.80	2.79	48.22	37.37	2,328.50	1,778.37	2,929.94	2,879.28	50.66	57.835	
1,400.00	1,400.00	1,413.30	1,413.22	3.01	53.50	37.40	2,327.45	1,779.40	2,929.73	2,873.61	56.12	52.204	
1,500.00	1,500.00	1,513.72	1,513.63	3.24	58.77	37.43	2,326.32	1,780.52	2,929.51	2,867.93	61.58	47.571	
1,600.00	1,600.00	1,614.14	1,614.04	3.46	64.05	37.46	2,325.12	1,781.70	2,929.28	2,862.23	67.05	43.691	
1,700.00	1,700.00	1,714.16	1,714.04	3.69	69.86	37.50	2,323.87	1,782.93	2,929.04	2,856.01	73.03	40.106	
1,800.00	1,800.00	1,814.15	1,814.01	3.91	75.71	37.53	2,322.63	1,784.15	2,928.80	2,849.73	79.07	37.042	
1,900.00	1,900.00	1,914.13	1,913.98	4.14	81.57	37.56	2,321.39	1,785.38	2,928.56	2,843.46	85.10	34.412	
2,000.00	2,000.00	2,014.12	2,013.95	4.36	87.42	37.60	2,320.15	1,786.60	2,928.32	2,837.18	91.14	32.130	
2,100.00	2,100.00	2,114.10	2,113.92	4.59	93.28	37.63	2,318.90	1,787.83	2,928.09	2,830.91	97.18	30.131	
2,200.00	2,200.00	2,214.09	2,213.89	4.81	99.11	37.67	2,317.66	1,789.05	2,927.85	2,824.66	103.19	28.373	
2,300.00	2,300.00	2,314.07	2,313.86	5.04	104.93	37.70	2,316.42	1,790.28	2,927.62	2,818.42	109.20	26.811	
2,400.00	2,400.00	2,414.06	2,413.83	5.26	110.75	37.73	2,315.18	1,791.50	2,927.38	2,812.18	115.20	25.411	
2,500.00	2,500.00	2,514.04	2,513.80	5.49	116.58	37.77	2,313.93	1,792.73	2,927.15	2,805.93	121.22	24.147	
2,600.00	2,600.00	2,614.03	2,613.77	5.71	122.42	37.80	2,312.69	1,793.95	2,926.92	2,799.67	127.25	23.002	
2,700.00	2,700.00	2,714.01	2,713.73	5.94	128.26	37.83	2,311.45	1,795.18	2,926.69	2,793.41	133.27	21.960	
2,800.00	2,800.00	2,814.00	2,813.70	6.16	134.10	37.87	2,310.20	1,796.40	2,926.46	2,787.15	139.30	21.008	
2,900.00	2,900.00	2,913.98	2,913.67	6.39	139.94	37.90	2,308.96	1,797.63	2,926.23	2,780.90	145.33	20.135	
3,000.00	3,000.00	3,013.97	3,013.64	6.61	145.77	37.94	2,307.72	1,798.85	2,926.00	2,774.65	151.35	19.333	
3,100.00	3,100.00	3,113.95	3,113.61	6.84	151.60	37.97	2,306.48	1,800.08	2,925.78	2,768.40	157.37	18.591	
3,200.00	3,200.00	3,213.93	3,213.58	7.06	157.43	38.00	2,305.23	1,801.30	2,925.55	2,762.16	163.39	17.905	
3,300.00	3,300.00	3,314.78	3,314.41	7.28	164.77	38.04	2,303.92	1,802.60	2,925.31	2,754.40	170.91	17.116	
3,400.00	3,400.00	3,415.89	3,415.50	7.51	172.58	38.08	2,302.39	1,804.11	2,925.04	2,746.14	178.91	16.350	
3,500.00	3,500.00	3,516.98	3,516.56	7.73	180.40	38.13	2,300.64	1,805.83	2,924.73	2,737.83	186.90	15.648	
3,600.00	3,600.00	3,618.06	3,617.60	7.96	188.22	38.18	2,298.67	1,807.77	2,924.39	2,729.48	194.90	15.004	
3,700.00	3,700.00	3,718.40	3,717.89	8.18	196.25	38.24	2,296.54	1,809.87	2,924.01	2,720.90	203.12	14.396	
3,800.00	3,800.00	3,817.76	3,817.22	8.41	204.56	38.30	2,294.48	1,811.90	2,923.65	2,712.04	211.61	13.816	
3,900.00	3,900.00	3,917.14	3,916.55	8.63	212.87	38.35	2,292.55	1,813.81	2,923.31	2,703.20	220.11	13.281	
4,000.00	4,000.00	4,016.52	4,015.90	8.86	221.19	38.40	2,290.72	1,815.61	2,923.00	2,694.39	228.61	12.786	
4,100.00	4,100.00	4,115.91	4,115.26	9.08	229.50	38.45	2,289.02	1,817.29	2,922.71	2,685.60	237.11	12.326	
4,200.00	4,200.00	4,215.33	4,214.66	9.31	237.67	38.49	2,287.42	1,818.86	2,922.43	2,676.97	245.46	11.906	
4,300.00	4,300.00	4,315.04	4,314.34	9.53	244.14	38.53	2,285.91	1,820.36	2,922.18	2,670.04	252.14	11.589	
4,400.00	4,400.00	4,414.74	4,414.03	9.76	250.62	38.57	2,284.44	1,821.80	2,921.93	2,663.11	258.82	11.289	
4,500.00	4,500.00	4,514.46	4,513.72	9.98	257.10	38.61	2,283.04	1,823.19	2,921.70	2,656.19	265.50	11.004	
4,600.00	4,600.00	4,614.17	4,613.42	10.21	263.58	38.65	2,281.68	1,824.52	2,921.47	2,649.29	272.18	10.734	
4,700.00	4,700.00	4,713.89	4,713.12	10.43	270.06	38.68	2,280.39	1,825.80	2,921.26	2,642.39	278.86	10.476	
4,800.00	4,800.00	4,813.33	4,812.55	10.66	275.38	38.72	2,279.16	1,827.01	2,921.05	2,636.66	284.40	10.271	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #970 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 234-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	4,912.44	4,911.64	10.88	279.28	38.75	2,278.10	1,828.05	2,920.88	2,632.37	288.51	10.124	
5,000.00	5,000.00	5,011.55	5,010.75	11.11	283.17	38.77	2,277.23	1,828.91	2,920.74	2,628.12	292.62	9.981	
5,100.00	5,100.00	5,110.67	5,109.87	11.33	287.07	38.79	2,276.54	1,829.59	2,920.62	2,623.90	296.73	9.843	
5,200.00	5,200.00	5,209.80	5,208.99	11.56	290.96	38.80	2,276.03	1,830.10	2,920.54	2,619.71	300.83	9.708	
5,300.00	5,300.00	5,309.40	5,308.59	11.78	294.35	38.81	2,275.68	1,830.44	2,920.48	2,616.04	304.44	9.593	
5,329.21	5,329.21	5,338.70	5,337.89	11.85	295.12	38.81	2,275.58	1,830.54	2,920.47	2,615.19	305.28	9.567	
5,350.00	5,349.99	5,359.55	5,358.74	11.89	295.67	-6.60	2,275.50	1,830.61	2,920.04	2,614.17	305.87	9.547	
5,400.00	5,399.78	5,409.50	5,408.68	12.00	296.99	-6.66	2,275.31	1,830.80	2,915.65	2,608.36	307.29	9.488	
5,450.00	5,448.92	5,458.79	5,457.97	12.11	298.29	-6.80	2,275.10	1,831.01	2,906.54	2,597.85	308.69	9.416	
5,500.00	5,496.96	5,506.97	5,506.16	12.23	299.56	-7.02	2,274.88	1,831.22	2,892.79	2,582.73	310.06	9.330	
5,550.00	5,543.45	5,553.61	5,552.79	12.35	300.79	-7.32	2,274.66	1,831.45	2,874.53	2,563.16	311.37	9.232	
5,600.00	5,587.97	5,598.26	5,597.45	12.48	301.97	-7.74	2,274.43	1,831.67	2,851.93	2,539.30	312.63	9.122	
5,650.00	5,630.10	5,640.53	5,639.71	12.63	303.09	-8.30	2,274.20	1,831.90	2,825.19	2,511.38	313.82	9.003	
5,700.00	5,669.47	5,680.02	5,679.20	12.81	304.13	-9.02	2,273.97	1,832.12	2,794.58	2,479.66	314.92	8.874	
5,750.00	5,705.70	5,716.36	5,715.54	13.03	305.09	-9.99	2,273.76	1,832.33	2,760.36	2,444.44	315.92	8.737	
5,800.00	5,738.47	5,749.27	5,748.44	13.30	306.17	-11.27	2,273.55	1,832.53	2,722.86	2,405.82	317.04	8.588	
5,850.00	5,767.46	5,778.46	5,777.63	13.62	307.51	-13.04	2,273.36	1,832.72	2,682.43	2,364.04	318.39	8.425	
5,900.00	*5,792.43*	*5,803.58*	*5,802.76*	*14.02*	*308.66*	*-15.55*	*2,273.19*	*1,832.90*	*2,639.44*	*2,319.90*	*319.54*	*8.260*	
5,950.00	5,813.12	5,824.42	5,823.59	14.47	309.61	-19.29	2,273.03	1,833.05	2,594.29	2,273.81	320.48	8.095	
6,000.00	5,829.37	5,840.77	5,839.94	15.00	310.36	-25.31	2,272.91	1,833.17	2,547.39	2,226.20	321.20	7.931	
6,050.00	5,841.00	5,852.48	5,851.65	15.59	310.90	-35.98	2,272.82	1,833.26	2,499.19	2,177.50	321.69	7.769	
6,100.00	5,847.93	5,859.45	5,858.62	16.23	311.21	-56.82	2,272.76	1,833.31	2,450.13	2,128.18	321.94	7.610	
6,150.00	5,850.07	5,861.61	5,860.79	16.92	311.31	-92.70	2,272.75	1,833.33	2,400.66	2,078.69	321.97	7.456	
6,156.48	5,850.00	5,861.54	5,860.71	17.01	311.31	-97.74	2,272.75	1,833.33	2,394.24	2,072.28	321.96	7.437	
6,200.00	5,849.24	5,860.78	5,859.95	17.65	311.27	-97.61	2,272.75	1,833.32	2,351.16	2,029.31	321.85	7.305	
6,300.00	5,847.50	5,859.02	5,858.19	19.22	311.19	-97.31	2,272.77	1,833.31	2,252.22	1,930.63	321.59	7.003	
6,400.00	5,845.75	5,857.26	5,856.43	20.91	311.11	-97.02	2,272.78	1,833.29	2,153.38	1,832.06	321.32	6.702	
6,500.00	5,844.01	5,855.51	5,854.68	22.70	311.03	-96.72	2,272.80	1,833.28	2,054.65	1,733.61	321.04	6.400	
6,600.00	5,842.26	5,853.75	5,852.92	24.57	310.95	-96.42	2,272.81	1,833.27	1,956.05	1,635.31	320.73	6.099	
6,700.00	5,840.52	5,851.99	5,851.17	26.49	310.87	-96.12	2,272.82	1,833.25	1,857.59	1,537.19	320.40	5.798	
6,800.00	5,838.77	5,850.24	5,849.41	28.46	310.79	-95.82	2,272.84	1,833.24	1,759.31	1,439.26	320.05	5.497	
6,900.00	5,837.03	5,848.48	5,847.65	30.47	310.71	-95.51	2,272.85	1,833.23	1,661.23	1,341.57	319.66	5.197	
7,000.00	5,835.28	5,846.72	5,845.90	32.51	310.63	-95.21	2,272.86	1,833.21	1,563.39	1,244.16	319.23	4.897	
7,100.00	5,833.53	5,844.97	5,844.14	34.57	310.55	-94.91	2,272.88	1,833.20	1,465.84	1,147.09	318.75	4.599	
7,200.00	5,831.79	5,843.21	5,842.38	36.66	310.47	-94.61	2,272.89	1,833.19	1,368.64	1,050.45	318.20	4.301	
7,300.00	5,830.04	5,841.45	5,840.63	38.76	310.39	-94.31	2,272.90	1,833.17	1,271.88	954.34	317.54	4.005	
7,400.00	5,828.30	5,839.70	5,838.87	40.88	310.31	-94.01	2,272.92	1,833.16	1,175.65	858.90	316.75	3.712	
7,500.00	5,826.55	5,837.94	5,837.11	43.01	310.23	-93.71	2,272.93	1,833.15	1,080.11	764.36	315.75	3.421	
7,600.00	5,824.81	5,836.18	5,835.36	45.15	310.15	-93.40	2,272.94	1,833.13	985.45	671.01	314.44	3.134	
7,700.00	5,823.06	5,834.42	5,833.60	47.30	310.07	-93.10	2,272.96	1,833.12	891.95	579.29	312.66	2.853	
7,800.00	5,821.32	5,832.67	5,831.84	49.46	309.99	-92.80	2,272.97	1,833.11	800.02	489.90	310.12	2.580	
7,900.00	5,819.57	5,830.91	5,830.09	51.62	309.91	-92.50	2,272.98	1,833.09	710.28	403.94	306.34	2.319	
8,000.00	5,817.83	5,829.15	5,828.33	53.79	309.83	-92.19	2,273.00	1,833.08	623.65	323.18	300.47	2.076	
8,100.00	5,816.08	5,827.40	5,826.57	55.97	309.75	-91.89	2,273.01	1,833.07	541.65	250.62	291.03	1.861	
8,200.00	5,814.34	5,825.64	5,824.82	58.15	309.67	-91.59	2,273.02	1,833.06	466.71	191.19	275.51	1.694	
8,300.00	5,812.59	5,823.88	5,823.06	60.34	309.59	-91.28	2,273.04	1,833.04	402.80	152.39	250.41	1.609	
8,400.00	5,810.85	5,822.13	5,821.30	62.53	309.51	-90.98	2,273.05	1,833.03	355.90	141.44	214.47	1.659	
8,500.00	5,809.10	5,820.37	5,819.55	64.73	309.43	-90.68	2,273.06	1,833.02	333.29	149.43	183.86	1.813	
8,527.94	5,808.61	5,819.88	5,819.05	65.34	309.40	-90.59	2,273.07	1,833.01	332.12	149.90	182.22	1.823 CC	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #970 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 234-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	5,818.61	5,817.79	66.92	309.35	-90.38	2,273.08	1,833.00	339.85	142.76	197.09	1.724	
8,700.00	5,805.61	5,816.86	5,816.03	69.12	309.27	-90.07	2,273.09	1,832.99	374.03	136.42	237.62	1.574	ES, SF
8,800.00	5,803.87	5,815.10	5,814.28	71.33	309.19	-89.77	2,273.10	1,832.98	429.30	157.88	271.42	1.582	
8,900.00	5,802.12	5,813.34	5,812.52	73.53	309.11	-89.47	2,273.11	1,832.97	498.69	205.52	293.16	1.701	
9,000.00	5,800.37	5,811.59	5,810.76	75.74	309.02	-89.16	2,273.13	1,832.95	577.13	270.84	306.29	1.884	
9,100.00	5,798.63	5,809.83	5,809.01	77.95	308.94	-88.86	2,273.14	1,832.94	661.41	347.22	314.19	2.105	
9,200.00	5,796.88	5,808.07	5,807.25	80.16	308.86	-88.56	2,273.15	1,832.93	749.55	430.53	319.03	2.350	
9,300.00	5,795.14	5,806.32	5,805.49	82.38	308.78	-88.26	2,273.17	1,832.92	840.36	518.32	322.04	2.609	
9,400.00	5,793.39	5,804.56	5,803.74	84.59	308.70	-87.95	2,273.18	1,832.90	933.04	609.09	323.95	2.880	
9,500.00	5,791.65	5,802.80	5,801.98	86.81	308.62	-87.65	2,273.19	1,832.89	1,027.09	701.93	325.16	3.159	
9,600.00	5,789.90	5,801.05	5,800.22	89.02	308.54	-87.35	2,273.20	1,832.88	1,122.17	796.24	325.93	3.443	
9,700.00	5,788.16	5,799.29	5,798.47	91.24	308.46	-87.05	2,273.22	1,832.87	1,218.04	891.82	326.42	3.732	
9,800.00	5,786.41	5,797.53	5,796.71	93.46	308.38	-86.74	2,273.23	1,832.85	1,314.51	987.81	326.71	4.024	
9,900.00	5,784.67	5,795.78	5,794.95	95.68	308.30	-86.44	2,273.24	1,832.84	1,411.48	1,084.61	326.87	4.318	
10,000.00	5,782.92	5,794.02	5,793.20	97.91	308.22	-86.14	2,273.25	1,832.83	1,508.84	1,181.90	326.94	4.615	
10,100.00	5,781.18	5,792.26	5,791.44	100.13	308.14	-85.84	2,273.27	1,832.82	1,606.52	1,279.58	326.95	4.914	
10,200.00	5,779.43	5,790.51	5,789.68	102.35	308.06	-85.54	2,273.28	1,832.81	1,704.47	1,377.56	326.91	5.214	
10,300.00	5,777.69	5,788.75	5,787.93	104.58	307.98	-85.24	2,273.29	1,832.79	1,802.65	1,475.80	326.85	5.515	
10,400.00	5,775.94	5,786.99	5,786.17	106.80	307.90	-84.94	2,273.30	1,832.78	1,901.01	1,574.25	326.76	5.818	
10,500.00	5,774.20	5,785.24	5,784.41	109.03	307.82	-84.64	2,273.31	1,832.77	1,999.53	1,672.87	326.66	6.121	
10,600.00	5,772.45	5,783.48	5,782.66	111.25	307.74	-84.34	2,273.33	1,832.76	2,098.20	1,771.64	326.56	6.425	
10,700.00	5,770.71	5,781.72	5,780.90	113.48	307.66	-84.04	2,273.34	1,832.75	2,196.98	1,870.54	326.44	6.730	
10,800.00	5,768.96	5,779.97	5,779.14	115.71	307.58	-83.74	2,273.35	1,832.73	2,295.86	1,969.54	326.32	7.036	
10,900.00	5,767.21	5,778.21	5,777.38	117.94	307.50	-83.44	2,273.36	1,832.72	2,394.84	2,068.64	326.20	7.342	
11,000.00	5,765.47	5,776.45	5,775.63	120.17	307.42	-83.14	2,273.37	1,832.71	2,493.90	2,167.82	326.08	7.648	
11,100.00	5,763.72	5,774.69	5,773.87	122.40	307.34	-82.85	2,273.39	1,832.70	2,593.02	2,267.07	325.96	7.955	
11,200.00	5,761.98	5,772.94	5,772.11	124.63	307.26	-82.55	2,273.40	1,832.69	2,692.22	2,366.38	325.84	8.262	
11,300.00	5,760.23	5,771.18	5,770.36	126.86	307.18	-82.25	2,273.41	1,832.68	2,791.46	2,465.75	325.72	8.570	
11,400.00	5,758.49	5,769.42	5,768.60	129.09	307.10	-81.96	2,273.42	1,832.68	2,890.76	2,565.16	325.60	8.878	
11,500.00	5,756.74	5,767.67	5,766.84	131.32	307.02	-81.66	2,273.43	1,832.65	2,990.11	2,664.62	325.48	9.187	
11,600.00	5,755.00	5,765.91	5,765.09	133.55	306.94	-81.36	2,273.44	1,832.64	3,089.49	2,764.12	325.37	9.495	
11,700.00	5,753.25	5,764.15	5,763.33	135.78	306.86	-81.07	2,273.46	1,832.63	3,188.92	2,863.66	325.26	9.804	
11,802.14	5,751.47	5,762.36	5,761.54	138.06	306.77	-80.77	2,273.47	1,832.62	3,290.50	2,965.35	325.15	10.120	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #978 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 10-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	123.49	-307.30	464.50	557.27				
100.00	100.00	10.00	10.00	0.09	0.01	123.49	-307.30	464.50	561.46	560.70	0.75	744.910	
200.00	200.00	10.00	10.00	0.32	0.01	123.49	-307.30	464.50	582.61	580.84	1.77	329.663	
300.00	300.00	10.00	10.00	0.54	0.01	123.49	-307.30	464.50	619.38	616.75	2.64	235.000	
400.00	400.00	10.00	10.00	0.77	0.01	123.49	-307.30	464.50	669.20	665.87	3.33	200.735	
500.00	500.00	10.00	10.00	0.99	0.01	123.49	-307.30	464.50	729.41	725.53	3.87	188.315	
600.00	600.00	10.00	10.00	1.22	0.01	123.49	-307.30	464.50	797.64	793.36	4.28	186.281 SF	
700.00	700.00	10.00	10.00	1.44	0.01	123.49	-307.30	464.50	872.03	867.44	4.59	190.022	
800.00	800.00	10.00	10.00	1.67	0.01	123.49	-307.30	464.50	951.12	946.30	4.82	197.323	
900.00	900.00	10.00	10.00	1.89	0.01	123.49	-307.30	464.50	1,033.84	1,028.85	4.99	206.989	
1,000.00	1,000.00	10.00	10.00	2.12	0.01	123.49	-307.30	464.50	1,119.39	1,114.26	5.13	218.317	
1,100.00	1,100.00	10.00	10.00	2.34	0.01	123.49	-307.30	464.50	1,207.16	1,201.93	5.23	230.866	
1,200.00	1,200.00	10.00	10.00	2.56	0.01	123.49	-307.30	464.50	1,296.70	1,291.39	5.31	244.346	
1,300.00	1,300.00	10.00	10.00	2.79	0.01	123.49	-307.30	464.50	1,387.67	1,382.31	5.37	258.558	
1,400.00	1,400.00	10.00	10.00	3.01	0.01	123.49	-307.30	464.50	1,479.81	1,474.40	5.41	273.362	
1,500.00	1,500.00	10.00	10.00	3.24	0.01	123.49	-307.30	464.50	1,572.91	1,567.46	5.45	288.654	
1,600.00	1,600.00	10.00	10.00	3.46	0.01	123.49	-307.30	464.50	1,666.80	1,661.33	5.48	304.358	
1,700.00	1,700.00	10.00	10.00	3.69	0.01	123.49	-307.30	464.50	1,761.37	1,755.88	5.50	320.415	
1,800.00	1,800.00	10.00	10.00	3.91	0.01	123.49	-307.30	464.50	1,856.51	1,851.00	5.51	336.780	
1,900.00	1,900.00	10.00	10.00	4.14	0.01	123.49	-307.30	464.50	1,952.14	1,946.61	5.52	353.417	
2,000.00	2,000.00	10.00	10.00	4.36	0.01	123.49	-307.30	464.50	2,048.18	2,042.65	5.53	370.295	
2,100.00	2,100.00	10.00	10.00	4.59	0.01	123.49	-307.30	464.50	2,144.58	2,139.05	5.54	387.390	
2,200.00	2,200.00	10.00	10.00	4.81	0.01	123.49	-307.30	464.50	2,241.30	2,235.76	5.54	404.681	
2,300.00	2,300.00	10.00	10.00	5.04	0.01	123.49	-307.30	464.50	2,338.30	2,332.76	5.54	422.149	
2,400.00	2,400.00	10.00	10.00	5.26	0.01	123.49	-307.30	464.50	2,435.54	2,430.00	5.54	439.778	
2,500.00	2,500.00	10.00	10.00	5.49	0.01	123.49	-307.30	464.50	2,532.99	2,527.45	5.54	457.550	
2,600.00	2,600.00	10.00	10.00	5.71	0.01	123.49	-307.30	464.50	2,630.63	2,625.10	5.53	475.451	
2,700.00	2,700.00	10.00	10.00	5.94	0.01	123.49	-307.30	464.50	2,728.45	2,722.92	5.53	493.465	
2,800.00	2,800.00	10.00	10.00	6.16	0.01	123.49	-307.30	464.50	2,826.42	2,820.89	5.52	511.574	
2,900.00	2,900.00	10.00	10.00	6.39	0.01	123.49	-307.30	464.50	2,924.52	2,919.00	5.52	529.762	
3,000.00	3,000.00	10.00	10.00	6.61	0.01	123.49	-307.30	464.50	3,022.75	3,017.24	5.52	548.011	
3,100.00	3,100.00	10.00	10.00	6.84	0.01	123.49	-307.30	464.50	3,121.10	3,115.58	5.51	566.299	
3,200.00	3,200.00	10.00	10.00	7.06	0.01	123.49	-307.30	464.50	3,219.54	3,214.03	5.51	584.607	
3,300.00	3,300.00	10.00	10.00	7.28	0.01	123.49	-307.30	464.50	3,318.08	3,312.57	5.50	602.909	
3,400.00	3,400.00	10.00	10.00	7.51	0.01	123.49	-307.30	464.50	3,416.70	3,411.20	5.50	621.181	
3,500.00	3,500.00	10.00	10.00	7.73	0.01	123.49	-307.30	464.50	3,515.40	3,509.90	5.50	639.394	
3,600.00	3,600.00	10.00	10.00	7.96	0.01	123.49	-307.30	464.50	3,614.17	3,608.67	5.50	657.518	
3,700.00	3,700.00	10.00	10.00	8.18	0.01	123.49	-307.30	464.50	3,713.01	3,707.51	5.50	675.520	
3,800.00	3,800.00	10.00	10.00	8.41	0.01	123.49	-307.30	464.50	3,811.91	3,806.41	5.50	693.365	
3,900.00	3,900.00	10.00	10.00	8.63	0.01	123.49	-307.30	464.50	3,910.86	3,905.36	5.50	711.016	
4,000.00	4,000.00	10.00	10.00	8.86	0.01	123.49	-307.30	464.50	4,009.87	4,004.36	5.50	728.433	
4,100.00	4,100.00	10.00	10.00	9.08	0.01	123.49	-307.30	464.50	4,108.92	4,103.41	5.51	745.576	
4,200.00	4,200.00	10.00	10.00	9.31	0.01	123.49	-307.30	464.50	4,208.02	4,202.50	5.52	762.401	
4,300.00	4,300.00	10.00	10.00	9.53	0.01	123.49	-307.30	464.50	4,307.16	4,301.63	5.53	778.865	
4,400.00	4,400.00	10.00	10.00	9.76	0.01	123.49	-307.30	464.50	4,406.34	4,400.80	5.54	794.923	
4,500.00	4,500.00	10.00	10.00	9.98	0.01	123.49	-307.30	464.50	4,505.56	4,500.00	5.56	810.531	
4,600.00	4,600.00	10.00	10.00	10.21	0.01	123.49	-307.30	464.50	4,604.81	4,599.23	5.58	825.644	
4,700.00	4,700.00	10.00	10.00	10.43	0.01	123.49	-307.30	464.50	4,704.09	4,698.49	5.60	840.220	
4,800.00	4,800.00	10.00	10.00	10.66	0.01	123.49	-307.30	464.50	4,803.40	4,797.78	5.62	854.218	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #978 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 10-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	10.00	10.00	10.88	0.01	123.49	-307.30	464.50	4,902.74	4,897.09	5.65	867.599	
5,000.00	5,000.00	10.00	10.00	11.11	0.01	123.49	-307.30	464.50	5,002.10	4,996.42	5.68	880.326	
5,100.00	5,100.00	10.00	10.00	11.33	0.01	123.49	-307.30	464.50	5,101.49	5,095.78	5.72	892.369	
5,200.00	5,200.00	10.00	10.00	11.56	0.01	123.49	-307.30	464.50	5,200.91	5,195.15	5.76	903.699	
5,300.00	5,300.00	10.00	10.00	11.78	0.01	123.49	-307.30	464.50	5,300.34	5,294.55	5.80	914.292	
5,329.21	5,329.21	10.00	10.00	11.85	0.01	123.49	-307.30	464.50	5,329.39	5,323.58	5.81	917.244	
5,350.00	5,349.99	10.00	10.00	11.89	0.01	59.04	-307.30	464.50	5,350.05	5,344.24	5.82	919.552	
5,400.00	5,399.78	10.00	10.00	12.00	0.01	33.07	-307.30	464.50	5,399.48	5,393.65	5.83	926.124	
5,450.00	5,448.92	10.00	10.00	12.11	0.01	22.07	-307.30	464.50	5,448.18	5,442.36	5.83	934.869	
5,500.00	5,496.96	10.00	10.00	12.23	0.01	16.47	-307.30	464.50	5,495.74	5,489.92	5.81	945.592	
5,550.00	5,543.45	10.00	10.00	12.35	0.01	13.16	-307.30	464.50	5,541.74	5,535.95	5.79	957.948	
5,600.00	5,587.97	10.00	10.00	12.48	0.01	11.01	-307.30	464.50	5,585.80	5,580.05	5.75	971.418	
5,650.00	5,630.10	10.00	10.00	12.63	0.01	9.51	-307.30	464.50	5,627.58	5,621.87	5.71	985.219	
5,700.00	5,669.47	10.00	10.00	12.81	0.01	8.43	-307.30	464.50	5,666.74	5,661.06	5.68	998.227	
5,750.00	5,705.70	10.00	10.00	13.03	0.01	7.62	-307.30	464.50	5,702.98	5,697.33	5.65	1,008.937	
5,800.00	5,738.47	10.00	10.00	13.30	0.01	7.01	-307.30	464.50	5,736.02	5,730.37	5.65	1,015.540	
5,850.00	5,767.46	10.00	10.00	13.62	0.01	6.53	-307.30	464.50	5,765.62	5,759.95	5.67	1,016.168	
5,900.00	5,792.43	10.00	10.00	14.02	0.01	6.16	-307.30	464.50	5,791.56	5,785.82	5.74	1,009.308	
5,950.00	5,813.12	10.00	10.00	14.47	0.01	5.88	-307.30	464.50	5,813.64	5,807.80	5.85	994.251	
6,000.00	5,829.37	10.00	10.00	15.00	0.01	5.66	-307.30	464.50	5,831.72	5,825.72	6.00	971.352	
6,050.00	5,841.00	10.00	10.00	15.59	0.01	5.51	-307.30	464.50	5,845.66	5,839.46	6.21	941.943	
6,100.00	5,847.93	10.00	10.00	16.23	0.01	5.40	-307.30	464.50	5,855.37	5,848.92	6.45	907.945	
6,150.00	5,850.07	10.00	10.00	16.92	0.01	5.35	-307.30	464.50	5,860.77	5,854.05	6.73	871.410	
6,156.48	5,850.00	10.00	10.00	17.01	0.01	5.34	-307.30	464.50	5,861.15	5,854.39	6.76	867.014	
6,200.00	5,849.24	10.00	10.00	17.65	0.01	5.34	-307.30	464.50	5,863.64	5,856.61	7.03	834.558	
6,300.00	5,847.50	10.00	10.00	19.22	0.01	5.34	-307.30	464.50	5,870.57	5,862.91	7.67	765.657	
6,400.00	5,845.75	10.00	10.00	20.91	0.01	5.34	-307.30	464.50	5,879.20	5,870.87	8.33	705.780	
6,500.00	5,844.01	10.00	10.00	22.70	0.01	5.34	-307.30	464.50	5,889.51	5,880.50	9.01	653.679	
6,600.00	5,842.26	10.00	10.00	24.57	0.01	5.34	-307.30	464.50	5,901.50	5,891.80	9.70	608.530	
6,700.00	5,840.52	10.00	10.00	26.49	0.01	5.34	-307.30	464.50	5,915.15	5,904.76	10.39	569.304	
6,800.00	5,838.77	10.00	10.00	28.46	0.01	5.34	-307.30	464.50	5,930.46	5,919.38	11.08	535.082	
6,900.00	5,837.03	10.00	10.00	30.47	0.01	5.34	-307.30	464.50	5,947.41	5,935.64	11.78	505.086	
7,000.00	5,835.28	10.00	10.00	32.51	0.01	5.34	-307.30	464.50	5,965.99	5,953.53	12.46	478.667	
7,100.00	5,833.53	10.00	10.00	34.57	0.01	5.34	-307.30	464.50	5,986.18	5,973.04	13.15	455.291	
7,200.00	5,831.79	10.00	10.00	36.66	0.01	5.34	-307.30	464.50	6,007.97	5,994.15	13.83	434.517	
7,300.00	5,830.04	10.00	10.00	38.76	0.01	5.34	-307.30	464.50	6,031.34	6,016.84	14.50	415.981	
7,400.00	5,828.30	10.00	10.00	40.88	0.01	5.34	-307.30	464.50	6,056.27	6,041.11	15.16	399.381	
7,500.00	5,826.55	10.00	10.00	43.01	0.01	5.34	-307.30	464.50	6,082.74	6,066.92	15.82	384.464	
7,600.00	5,824.81	10.00	10.00	45.15	0.01	5.34	-307.30	464.50	6,110.74	6,094.27	16.47	371.019	
7,700.00	5,823.06	10.00	10.00	47.30	0.01	5.34	-307.30	464.50	6,140.23	6,123.12	17.11	358.868	
7,800.00	5,821.32	10.00	10.00	49.46	0.01	5.34	-307.30	464.50	6,171.21	6,153.47	17.74	347.859	
7,900.00	5,819.57	10.00	10.00	51.62	0.01	5.34	-307.30	464.50	6,203.64	6,185.28	18.36	337.863	
8,000.00	5,817.83	10.00	10.00	53.79	0.01	5.34	-307.30	464.50	6,237.51	6,218.54	18.97	328.770	
8,100.00	5,816.08	10.00	10.00	55.97	0.01	5.34	-307.30	464.50	6,272.79	6,253.21	19.57	320.483	
8,200.00	5,814.34	10.00	10.00	58.15	0.01	5.34	-307.30	464.50	6,309.45	6,289.29	20.16	312.921	
8,300.00	5,812.59	10.00	10.00	60.34	0.01	5.34	-307.30	464.50	6,347.48	6,326.74	20.74	306.011	
8,400.00	5,810.85	10.00	10.00	62.53	0.01	5.34	-307.30	464.50	6,386.85	6,365.54	21.31	299.692	
8,500.00	5,809.10	10.00	10.00	64.73	0.01	5.34	-307.30	464.50	6,427.54	6,405.67	21.87	293.907	
8,600.00	5,807.36	10.00	10.00	66.92	0.01	5.34	-307.30	464.50	6,469.51	6,447.10	22.42	288.608	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #978 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 10-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,700.00	5,805.61	10.00	10.00	69.12	0.01	5.34	-307.30	464.50	6,512.75	6,489.80	22.95	283.753	
8,800.00	5,803.87	10.00	10.00	71.33	0.01	5.34	-307.30	464.50	6,557.23	6,533.75	23.48	279.303	
8,900.00	5,802.12	10.00	10.00	73.53	0.01	5.34	-307.30	464.50	6,602.93	6,578.93	23.99	275.225	
9,000.00	5,800.37	10.00	10.00	75.74	0.01	5.34	-307.30	464.50	6,649.81	6,625.32	24.49	271.488	
9,100.00	5,798.63	10.00	10.00	77.95	0.01	5.34	-307.30	464.50	6,697.86	6,672.87	24.99	268.066	
9,200.00	5,796.88	10.00	10.00	80.16	0.01	5.34	-307.30	464.50	6,747.05	6,721.58	25.47	264.933	
9,300.00	5,795.14	10.00	10.00	82.38	0.01	5.34	-307.30	464.50	6,797.35	6,771.42	25.94	262.069	
9,400.00	5,793.39	10.00	10.00	84.59	0.01	5.34	-307.30	464.50	6,848.75	6,822.35	26.40	259.453	
9,500.00	5,791.65	10.00	10.00	86.81	0.01	5.34	-307.30	464.50	6,901.21	6,874.36	26.85	257.068	
9,600.00	5,789.90	10.00	10.00	89.02	0.01	5.34	-307.30	464.50	6,954.71	6,927.43	27.28	254.897	
9,700.00	5,788.16	10.00	10.00	91.24	0.01	5.34	-307.30	464.50	7,009.24	6,981.52	27.71	252.926	
9,800.00	5,786.41	10.00	10.00	93.46	0.01	5.34	-307.30	464.50	7,064.75	7,036.62	28.13	251.141	
9,900.00	5,784.67	10.00	10.00	95.68	0.01	5.34	-307.30	464.50	7,121.24	7,092.70	28.54	249.529	
10,000.00	5,782.92	10.00	10.00	97.91	0.01	5.34	-307.30	464.50	7,178.68	7,149.74	28.94	248.081	
10,100.00	5,781.18	10.00	10.00	100.13	0.01	5.34	-307.30	464.50	7,237.04	7,207.72	29.33	246.785	
10,200.00	5,779.43	10.00	10.00	102.35	0.01	5.34	-307.30	464.50	7,296.31	7,266.61	29.70	245.631	
10,300.00	5,777.69	10.00	10.00	104.58	0.01	5.34	-307.30	464.50	7,356.46	7,326.38	30.07	244.612	
10,400.00	5,775.94	10.00	10.00	106.80	0.01	5.34	-307.30	464.50	7,417.47	7,387.03	30.43	243.719	
10,500.00	5,774.20	10.00	10.00	109.03	0.01	5.34	-307.30	464.50	7,479.32	7,448.53	30.79	242.945	
10,600.00	5,772.45	10.00	10.00	111.25	0.01	5.34	-307.30	464.50	7,541.98	7,510.85	31.13	242.282	
10,700.00	5,770.71	10.00	10.00	113.48	0.01	5.34	-307.30	464.50	7,605.45	7,573.99	31.46	241.726	
10,800.00	5,768.96	10.00	10.00	115.71	0.01	5.34	-307.30	464.50	7,669.69	7,637.91	31.79	241.269	
10,900.00	5,767.21	10.00	10.00	117.94	0.01	5.34	-307.30	464.50	7,734.70	7,702.59	32.11	240.906	
11,000.00	5,765.47	10.00	10.00	120.17	0.01	5.34	-307.30	464.50	7,800.44	7,768.03	32.42	240.632	
11,100.00	5,763.72	10.00	10.00	122.40	0.01	5.34	-307.30	464.50	7,866.91	7,834.19	32.72	240.443	
11,200.00	5,761.98	10.00	10.00	124.63	0.01	5.34	-307.30	464.50	7,934.08	7,901.07	33.01	240.334	
11,300.00	5,760.23	10.00	10.00	126.86	0.01	5.34	-307.30	464.50	8,001.93	7,968.63	33.30	240.301	
11,400.00	5,758.49	10.00	10.00	129.09	0.01	5.34	-307.30	464.50	8,070.46	8,036.88	33.58	240.339	
11,500.00	5,756.74	10.00	10.00	131.32	0.01	5.34	-307.30	464.50	8,139.63	8,105.78	33.85	240.447	
11,600.00	5,755.00	10.00	10.00	133.55	0.01	5.34	-307.30	464.50	8,209.44	8,175.33	34.12	240.619	
11,700.00	5,753.25	10.00	10.00	135.78	0.01	5.34	-307.30	464.50	8,279.88	8,245.50	34.38	240.854	
11,802.14	5,751.47	10.00	10.00	138.06	0.01	5.34	-307.30	464.50	8,352.44	8,317.80	34.64	241.154	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #992 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1873-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	28.09	28.09	0.00	0.03	37.79	3,562.69	2,762.09	4,507.98				
100.00	100.00	135.10	135.10	0.09	0.13	37.78	3,562.51	2,761.85	4,507.70	4,507.48	0.22	N/A	
200.00	200.00	225.52	225.52	0.32	0.23	37.78	3,562.42	2,761.78	4,507.58	4,507.03	0.55	8,259.764	
300.00	300.00	327.09	327.09	0.54	0.35	37.79	3,562.29	2,761.82	4,507.50	4,506.63	0.87	5,182.640	
400.00	400.00	425.87	425.87	0.77	0.47	37.79	3,562.15	2,761.89	4,507.43	4,506.25	1.18	3,824.880	
500.00	500.00	525.37	525.37	0.99	0.58	37.79	3,561.88	2,762.18	4,507.39	4,505.92	1.47	3,057.581	
600.00	600.00	631.40	631.39	1.22	0.70	37.80	3,561.34	2,762.65	4,507.27	4,505.50	1.77	2,551.049	
700.00	700.00	735.36	735.35	1.44	0.83	37.81	3,560.55	2,763.30	4,507.05	4,504.98	2.07	2,180.818	
800.00	800.00	837.69	837.67	1.67	0.96	37.83	3,559.76	2,763.80	4,506.74	4,504.36	2.37	1,900.363	
900.00	900.00	931.60	931.59	1.89	1.08	37.83	3,559.14	2,764.15	4,506.45	4,503.78	2.67	1,688.469	
959.67	959.67	982.89	982.87	2.02	1.14	37.84	3,558.91	2,764.37	4,506.39	4,503.56	2.84	1,588.027	
1,000.00	1,000.00	1,021.16	1,021.14	2.12	1.19	37.84	3,558.80	2,764.55	4,506.41	4,503.46	2.95	1,526.023	
1,100.00	1,100.00	1,122.95	1,122.93	2.34	1.32	37.84	3,558.65	2,764.74	4,506.42	4,503.18	3.24	1,390.913	
1,200.00	1,200.00	1,214.75	1,214.74	2.56	1.42	37.85	3,558.58	2,764.93	4,506.48	4,502.97	3.51	1,282.234	
1,300.00	1,300.00	1,300.00	1,299.98	2.79	1.48	37.85	3,558.81	2,765.33	4,506.96	4,503.20	3.77	1,195.988	
1,400.00	1,400.00	1,385.46	1,385.44	3.01	1.51	37.85	3,559.27	2,765.90	4,507.77	4,503.75	4.02	1,121.211	
1,500.00	1,500.00	1,457.80	1,457.78	3.24	1.55	37.85	3,559.77	2,766.52	4,508.87	4,504.59	4.28	1,054.240	
1,600.00	1,600.00	1,537.51	1,537.47	3.46	1.59	37.86	3,560.76	2,767.57	4,510.63	4,506.09	4.54	992.667	
1,700.00	1,700.00	1,630.56	1,630.50	3.69	1.63	37.86	3,562.05	2,768.83	4,512.56	4,507.73	4.83	934.684	
1,800.00	1,800.00	1,722.36	1,722.28	3.91	1.68	37.86	3,563.69	2,770.08	4,514.80	4,509.68	5.12	881.827	
1,900.00	1,900.00	1,848.60	1,848.49	4.14	1.73	37.86	3,565.46	2,771.65	4,516.65	4,511.24	5.41	835.451	
2,000.00	2,000.00	1,927.03	1,926.91	4.36	1.75	37.87	3,566.25	2,772.92	4,518.46	4,512.81	5.65	799.534	
2,100.00	2,100.00	1,967.00	1,966.88	4.59	1.76	37.88	3,566.52	2,774.08	4,521.07	4,515.18	5.89	767.824	
2,200.00	2,200.00	2,034.06	2,033.85	4.81	1.79	37.90	3,567.16	2,776.92	4,524.58	4,518.42	6.16	734.973	
2,300.00	2,300.00	2,100.83	2,100.51	5.04	1.84	37.93	3,568.21	2,780.72	4,529.26	4,522.82	6.44	703.247	
2,400.00	2,400.00	2,196.47	2,195.95	5.26	1.92	37.98	3,569.58	2,786.68	4,534.22	4,527.45	6.77	669.792	
2,500.00	2,500.00	2,270.53	2,269.85	5.49	2.00	38.02	3,570.68	2,791.55	4,539.46	4,532.37	7.09	640.271	
2,600.00	2,600.00	2,337.53	2,336.69	5.71	2.08	38.05	3,572.30	2,795.93	4,545.40	4,537.99	7.41	613.699	
2,700.00	2,700.00	2,378.00	2,377.05	5.94	2.13	38.07	3,573.59	2,798.56	4,552.18	4,544.50	7.68	592.518	
2,800.00	2,800.00	2,448.19	2,446.99	6.16	2.23	38.10	3,576.00	2,804.01	4,559.80	4,551.78	8.02	568.513	
2,900.00	2,900.00	2,497.88	2,496.40	6.39	2.32	38.14	3,577.68	2,808.93	4,568.60	4,560.27	8.33	548.484	
3,000.00	3,000.00	2,567.00	2,564.99	6.61	2.45	38.20	3,580.13	2,817.11	4,578.58	4,569.89	8.69	527.119	
3,100.00	3,100.00	2,628.44	2,625.88	6.84	2.57	38.26	3,582.37	2,825.02	4,589.27	4,580.24	9.03	508.426	
3,200.00	3,200.00	2,719.87	2,716.50	7.06	2.76	38.35	3,585.75	2,836.67	4,600.11	4,590.68	9.43	487.640	
3,300.00	3,300.00	2,790.97	2,786.94	7.28	2.92	38.41	3,588.74	2,845.82	4,611.44	4,601.64	9.80	470.592	
3,400.00	3,400.00	2,984.00	2,978.44	7.51	3.39	38.57	3,596.99	2,868.61	4,622.24	4,611.79	10.45	442.289	
3,500.00	3,500.00	3,052.10	3,046.07	7.73	3.56	38.63	3,599.47	2,876.13	4,632.06	4,621.24	10.82	428.122	
3,600.00	3,600.00	3,113.53	3,106.98	7.96	3.73	38.68	3,601.70	2,883.88	4,642.79	4,631.61	11.18	415.193	
3,700.00	3,700.00	3,178.57	3,171.37	8.18	3.92	38.75	3,604.22	2,892.64	4,654.28	4,642.72	11.56	402.609	
3,800.00	3,800.00	3,259.80	3,251.80	8.41	4.16	38.84	3,607.59	2,904.29	4,666.48	4,654.50	11.98	389.502	
3,900.00	3,900.00	3,395.00	3,385.54	8.63	4.55	38.97	3,612.63	2,922.68	4,677.85	4,665.31	12.54	372.993	
4,000.00	4,000.00	3,475.44	3,465.19	8.86	4.80	39.05	3,615.55	2,933.50	4,689.24	4,676.28	12.96	361.793	
4,100.00	4,100.00	3,534.71	3,523.79	9.08	4.98	39.12	3,617.96	2,942.07	4,701.57	4,688.25	13.32	352.927	
4,200.00	4,200.00	3,599.78	3,588.02	9.31	5.18	39.19	3,620.87	2,952.04	4,714.73	4,701.03	13.70	344.162	
4,300.00	4,300.00	3,694.67	3,681.66	9.53	5.50	39.30	3,625.33	2,966.78	4,728.25	4,714.08	14.17	333.672	
4,400.00	4,400.00	3,798.88	3,784.50	9.76	5.84	39.41	3,630.40	2,982.80	4,741.82	4,727.16	14.66	323.391	
4,500.00	4,500.00	3,912.11	3,896.33	9.98	6.20	39.52	3,636.01	2,999.65	4,755.14	4,739.97	15.18	313.332	
4,600.00	4,600.00	4,027.26	4,010.15	10.21	6.56	39.63	3,641.77	3,016.14	4,768.17	4,752.48	15.69	303.903	
4,700.00	4,700.00	4,134.69	4,116.42	10.43	6.90	39.73	3,647.16	3,030.97	4,780.88	4,764.70	16.18	295.442	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #992 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1873-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,800.00	4,214.99	4,195.83	10.66	7.16	39.80	3,651.34	3,042.09	4,793.77	4,777.16	16.60	288.741	
4,900.00	4,900.00	4,295.20	4,275.11	10.88	7.42	39.87	3,655.73	3,053.42	4,807.05	4,790.03	17.02	282.409	
5,000.00	5,000.00	4,583.81	4,561.21	11.11	8.29	40.10	3,668.41	3,089.08	4,817.99	4,799.99	18.00	267.645	
5,100.00	5,100.00	4,713.15	4,689.77	11.33	8.64	40.19	3,672.76	3,102.47	4,827.25	4,808.72	18.53	260.484	
5,200.00	5,200.00	5,035.29	5,010.93	11.56	9.40	40.36	3,678.20	3,126.09	4,831.84	4,812.35	19.49	247.966	
5,300.00	5,300.00	5,300.00	5,242.32	11.78	9.91	40.43	3,679.52	3,134.86	4,834.53	4,814.29	20.24	238.890	
5,329.21	5,329.21	5,329.21	5,271.51	11.85	9.96	40.44	3,679.55	3,135.57	4,835.02	4,814.66	20.36	237.481	
5,350.00	5,349.99	5,350.00	5,292.29	11.89	10.00	-4.97	3,679.57	3,136.09	4,834.96	4,814.51	20.45	236.478	
5,400.00	5,399.78	5,341.00	5,316.37	12.00	9.98	-5.00	3,679.59	3,136.68	4,831.49	4,810.95	20.54	235.236	
5,450.00	5,448.92	5,341.00	5,316.37	12.11	9.98	-5.08	3,679.59	3,136.68	4,823.72	4,803.07	20.65	233.572	
5,500.00	5,496.96	5,341.00	5,316.37	12.23	9.98	-5.20	3,679.59	3,136.68	4,811.77	4,791.00	20.76	231.744	
5,550.00	5,543.45	5,341.00	5,316.37	12.35	9.98	-5.37	3,679.59	3,136.68	4,795.71	4,774.83	20.87	229.769	
5,600.00	5,587.97	5,341.00	5,316.37	12.48	9.98	-5.60	3,679.59	3,136.68	4,775.65	4,754.67	20.98	227.660	
5,650.00	5,630.10	5,341.00	5,316.37	12.63	9.98	-5.90	3,679.59	3,136.68	4,751.72	4,730.64	21.08	225.432	
5,700.00	5,669.47	5,341.00	5,316.37	12.81	9.98	-6.29	3,679.59	3,136.68	4,724.10	4,702.92	21.18	223.098	
5,750.00	5,705.70	5,341.00	5,316.37	13.03	9.98	-6.79	3,679.59	3,136.68	4,692.96	4,671.70	21.27	220.672	
5,800.00	5,738.47	5,341.00	5,316.37	13.30	9.98	-7.44	3,679.59	3,136.68	4,658.54	4,637.18	21.35	218.170	
5,850.00	5,767.46	5,341.00	5,316.37	13.62	9.98	-8.29	3,679.59	3,136.68	4,621.07	4,599.64	21.43	215.609	
5,900.00	5,792.43	5,341.00	5,316.37	14.02	9.98	-9.44	3,679.59	3,136.68	4,580.83	4,559.33	21.51	213.008	
5,950.00	5,813.12	5,341.00	5,316.37	14.47	9.98	-11.05	3,679.59	3,136.68	4,538.13	4,516.56	21.57	210.384	
6,000.00	5,829.37	5,341.00	5,316.37	15.00	9.98	-13.42	3,679.59	3,136.68	4,493.29	4,471.66	21.63	207.757	
6,050.00	5,841.00	5,341.00	5,316.37	15.59	9.98	-17.17	3,679.59	3,136.68	4,446.67	4,424.99	21.68	205.143	
6,100.00	5,847.93	5,341.00	5,316.37	16.23	9.98	-23.85	3,679.59	3,136.68	4,398.64	4,376.93	21.72	202.558	
6,150.00	5,850.07	5,341.00	5,316.37	16.92	9.98	-38.02	3,679.59	3,136.68	4,349.62	4,327.87	21.75	200.015	
6,156.48	5,850.00	5,341.00	5,316.37	17.01	9.98	-40.98	3,679.59	3,136.68	4,343.21	4,321.46	21.75	199.664	
6,200.00	5,849.24	5,341.00	5,316.37	17.65	9.98	-40.98	3,679.59	3,136.68	4,300.17	4,278.40	21.77	197.518	
6,300.00	5,847.50	5,341.00	5,316.37	19.22	9.98	-40.98	3,679.59	3,136.68	4,201.31	4,179.49	21.82	192.581	
6,400.00	5,845.75	5,341.00	5,316.37	20.91	9.98	-40.98	3,679.59	3,136.68	4,102.49	4,080.62	21.87	187.558	
6,500.00	5,844.01	5,341.00	5,316.37	22.70	9.98	-40.98	3,679.59	3,136.68	4,003.74	3,981.81	21.94	182.507	
6,600.00	5,842.26	5,341.00	5,316.37	24.57	9.98	-40.98	3,679.59	3,136.68	3,905.05	3,883.04	22.01	177.409	
6,700.00	5,840.52	5,341.00	5,316.37	26.49	9.98	-40.98	3,679.59	3,136.68	3,806.44	3,784.34	22.10	172.260	
6,800.00	5,838.77	5,341.00	5,316.37	28.46	9.98	-40.98	3,679.59	3,136.68	3,707.89	3,685.69	22.19	167.062	
6,900.00	5,837.03	5,341.00	5,316.37	30.47	9.98	-40.98	3,679.59	3,136.68	3,609.42	3,587.12	22.31	161.812	
7,000.00	5,835.28	5,341.00	5,316.37	32.51	9.98	-40.98	3,679.59	3,136.68	3,511.04	3,488.61	22.43	156.512	
7,100.00	5,833.53	5,341.00	5,316.37	34.57	9.98	-40.98	3,679.59	3,136.68	3,412.76	3,390.18	22.58	151.160	
7,200.00	5,831.79	5,341.00	5,316.37	36.66	9.98	-40.98	3,679.59	3,136.68	3,314.58	3,291.84	22.74	145.758	
7,300.00	5,830.04	5,341.00	5,316.37	38.76	9.98	-40.98	3,679.59	3,136.68	3,216.51	3,193.58	22.92	140.306	
7,400.00	5,828.30	5,341.00	5,316.37	40.88	9.98	-40.98	3,679.59	3,136.68	3,118.56	3,095.43	23.13	134.807	
7,500.00	5,826.55	5,341.00	5,316.37	43.01	9.98	-40.98	3,679.59	3,136.68	3,020.75	2,997.38	23.37	129.263	
7,600.00	5,824.81	5,341.00	5,316.37	45.15	9.98	-40.98	3,679.59	3,136.68	2,923.08	2,899.45	23.63	123.678	
7,700.00	5,823.06	5,341.00	5,316.37	47.30	9.98	-40.98	3,679.59	3,136.68	2,825.58	2,801.65	23.93	118.058	
7,800.00	5,821.32	5,341.00	5,316.37	49.46	9.98	-40.98	3,679.59	3,136.68	2,728.26	2,703.99	24.27	112.407	
7,900.00	5,819.57	5,341.00	5,316.37	51.62	9.98	-40.98	3,679.59	3,136.68	2,631.14	2,606.49	24.65	106.735	
8,000.00	5,817.83	5,341.00	5,316.37	53.79	9.98	-40.98	3,679.59	3,136.68	2,534.24	2,509.16	25.08	101.050	
8,100.00	5,816.08	5,341.00	5,316.37	55.97	9.98	-40.98	3,679.59	3,136.68	2,437.60	2,412.04	25.56	95.363	
8,200.00	5,814.34	5,341.00	5,316.37	58.15	9.98	-40.98	3,679.59	3,136.68	2,341.24	2,315.13	26.10	89.686	
8,300.00	5,812.59	5,341.00	5,316.37	60.34	9.98	-40.98	3,679.59	3,136.68	2,245.19	2,218.47	26.72	84.035	
8,400.00	5,810.85	5,341.00	5,316.37	62.53	9.98	-40.98	3,679.59	3,136.68	2,149.51	2,122.10	27.41	78.426	
8,500.00	5,809.10	5,341.00	5,316.37	64.73	9.98	-40.98	3,679.59	3,136.68	2,054.23	2,026.04	28.19	72.876	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design — Skelly Unit #422H - Skelly Unit #992 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1873-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	5,341.00	5,316.37	66.92	9.98	-40.98	3,679.59	3,136.68	1,959.43	1,930.36	29.07	67.406	
8,700.00	5,805.81	5,341.00	5,316.37	69.12	9.98	-40.98	3,679.59	3,136.68	1,865.17	1,835.11	30.07	62.037	
8,800.00	5,803.87	5,341.00	5,316.37	71.33	9.98	-40.98	3,679.59	3,136.68	1,771.54	1,740.35	31.19	56.792	
8,900.00	5,802.12	5,341.00	5,316.37	73.53	9.98	-40.98	3,679.59	3,136.68	1,678.65	1,646.17	32.47	51.694	
9,000.00	5,800.37	5,341.00	5,316.37	75.74	9.98	-40.98	3,679.59	3,136.68	1,586.62	1,552.69	33.92	46.769	
9,100.00	5,798.63	5,341.00	5,316.37	77.95	9.98	-40.98	3,679.59	3,136.68	1,495.61	1,460.03	35.58	42.040	
9,200.00	5,796.88	5,341.00	5,316.37	80.16	9.98	-40.98	3,679.59	3,136.68	1,405.82	1,368.37	37.46	37.533	
9,300.00	5,795.14	5,341.00	5,316.37	82.38	9.98	-40.98	3,679.59	3,136.68	1,317.51	1,277.91	39.60	33.271	
9,400.00	5,793.39	5,341.00	5,316.37	84.59	9.98	-40.98	3,679.59	3,136.68	1,230.99	1,188.94	42.04	29.279	
9,500.00	5,791.65	5,341.00	5,316.37	86.81	9.98	-40.98	3,679.59	3,136.68	1,146.66	1,101.83	44.83	25.577	
9,600.00	5,789.90	5,341.00	5,316.37	89.02	9.98	-40.98	3,679.59	3,136.68	1,065.05	1,017.04	48.00	22.186	
9,700.00	5,788.16	5,341.00	5,316.37	91.24	9.98	-40.98	3,679.59	3,136.68	986.82	935.22	51.60	19.125	
9,800.00	5,786.41	5,341.00	5,316.37	93.46	9.98	-40.98	3,679.59	3,136.68	912.86	857.23	55.63	16.410	
9,900.00	5,784.67	5,341.00	5,316.37	95.68	9.98	-40.98	3,679.59	3,136.68	844.28	784.20	60.08	14.053	
10,000.00	5,782.92	5,341.00	5,316.37	97.91	9.98	-40.98	3,679.59	3,136.68	782.50	717.64	64.85	12.066	
10,100.00	5,781.18	5,341.00	5,316.37	100.13	9.98	-40.98	3,679.59	3,136.68	729.25	659.49	69.76	10.454	
10,200.00	5,779.43	5,341.00	5,316.37	102.35	9.98	-40.98	3,679.59	3,136.68	686.51	612.08	74.43	9.223	
10,300.00	5,777.69	5,341.00	5,316.37	104.58	9.98	-40.98	3,679.59	3,136.68	656.35	577.94	78.41	8.371	
10,400.00	5,775.94	5,341.00	5,316.37	106.80	9.98	-40.98	3,679.59	3,136.68	640.54	559.38	81.15	7.893	
10,452.52	5,775.02	5,341.00	5,316.37	107.97	9.98	-40.98	3,679.59	3,136.68	638.38	556.41	81.97	7.788	CC, ES
10,500.00	5,774.20	5,341.00	5,316.37	109.03	9.98	-40.98	3,679.59	3,136.68	640.14	557.83	82.31	7.777	SF
10,600.00	5,772.45	5,341.00	5,316.37	111.25	9.98	-40.98	3,679.59	3,136.68	655.19	573.37	81.82	8.008	
10,700.00	5,770.71	5,341.00	5,316.37	113.48	9.98	-40.98	3,679.59	3,136.68	684.67	604.72	79.95	8.564	
10,800.00	5,768.96	5,341.00	5,316.37	115.71	9.98	-40.98	3,679.59	3,136.68	726.82	649.69	77.13	9.423	
10,900.00	5,767.21	5,341.00	5,316.37	117.94	9.98	-40.98	3,679.59	3,136.68	779.59	705.78	73.82	10.561	
11,000.00	5,765.47	5,341.00	5,316.37	120.17	9.98	-40.98	3,679.59	3,136.68	840.99	770.64	70.35	11.954	
11,100.00	5,763.72	5,341.00	5,316.37	122.40	9.98	-40.98	3,679.59	3,136.68	909.26	842.30	66.96	13.579	
11,200.00	5,761.98	5,341.00	5,316.37	124.63	9.98	-40.98	3,679.59	3,136.68	982.98	919.21	63.77	15.414	
11,300.00	5,760.23	5,341.00	5,316.37	126.86	9.98	-40.98	3,679.59	3,136.68	1,061.01	1,000.17	60.85	17.437	
11,400.00	5,758.49	5,341.00	5,316.37	129.09	9.98	-40.98	3,679.59	3,136.68	1,142.47	1,084.28	58.19	19.632	
11,500.00	5,756.74	5,341.00	5,316.37	131.32	9.98	-40.98	3,679.59	3,136.68	1,226.68	1,170.87	55.81	21.980	
11,600.00	5,755.00	5,341.00	5,316.37	133.55	9.98	-40.98	3,679.59	3,136.68	1,313.10	1,259.43	53.67	24.465	
11,700.00	5,753.25	5,341.00	5,316.37	135.78	9.98	-40.98	3,679.59	3,136.68	1,401.33	1,349.57	51.76	27.074	
11,802.14	5,751.47	5,341.00	5,316.37	138.06	9.98	-40.98	3,679.59	3,136.68	1,492.98	1,442.97	50.01	29.854	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	*0.00 usft*	***Output errors are at***	*2.00 sigma*
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #993 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1849-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	35.51	35.51	0.00	0.03	51.61	3,677.10	4,641.52	5,921.55				
100.00	100.00	126.90	126.90	0.09	0.12	51.61	3,677.09	4,641.70	5,921.70	5,921.49	0.20	N/A	
200.00	200.00	223.80	223.80	0.32	0.22	51.61	3,677.26	4,641.87	5,921.95	5,921.41	0.53	N/A	
300.00	300.00	325.34	325.34	0.54	0.32	51.61	3,677.66	4,641.86	5,922.18	5,921.31	0.86	6,850.305	
400.00	400.00	428.07	428.07	0.77	0.43	51.61	3,677.96	4,641.98	5,922.46	5,921.27	1.19	4,981.189	
499.19	499.19	538.60	538.59	0.99	0.52	51.61	3,678.21	4,641.75	5,922.42	5,920.94	1.49	3,987.454	
500.00	500.00	539.24	539.24	0.99	0.52	51.61	3,678.22	4,641.75	5,922.42	5,920.94	1.49	3,981.669	
600.00	600.00	623.50	623.50	1.22	0.60	51.60	3,678.63	4,641.60	5,922.59	5,920.82	1.77	3,345.440	
700.00	700.00	724.05	724.05	1.44	0.71	51.60	3,678.89	4,641.75	5,922.87	5,920.78	2.10	2,816.699	
800.00	800.00	827.62	827.61	1.67	0.81	51.60	3,678.94	4,641.98	5,923.07	5,920.62	2.45	2,420.536	
900.00	900.00	921.37	921.36	1.89	0.88	51.61	3,678.80	4,642.40	5,923.32	5,920.56	2.77	2,141.219	
1,000.00	1,000.00	1,015.57	1,015.56	2.12	0.97	51.61	3,678.66	4,642.92	5,923.67	5,920.59	3.08	1,922.632	
1,100.00	1,100.00	1,104.13	1,104.12	2.34	1.06	51.61	3,678.55	4,643.58	5,924.17	5,920.78	3.40	1,744.635	
1,200.00	1,200.00	1,208.18	1,208.17	2.56	1.17	51.62	3,678.45	4,644.40	5,924.73	5,921.00	3.73	1,588.647	
1,300.00	1,300.00	1,306.91	1,306.89	2.79	1.29	51.62	3,678.44	4,645.08	5,925.26	5,921.20	4.06	1,458.524	
1,400.00	1,400.00	1,400.00	1,399.98	3.01	1.40	51.63	3,678.54	4,645.76	5,925.90	5,921.51	4.40	1,348.001	
1,500.00	1,500.00	1,492.73	1,492.71	3.24	1.52	51.63	3,678.81	4,646.45	5,926.66	5,921.92	4.74	1,251.396	
1,600.00	1,600.00	1,583.45	1,583.43	3.46	1.64	51.63	3,679.22	4,647.12	5,927.52	5,922.44	5.08	1,167.606	
1,700.00	1,700.00	1,665.69	1,665.66	3.69	1.74	51.63	3,679.68	4,647.88	5,928.60	5,923.20	5.41	1,096.554	
1,800.00	1,800.00	1,748.63	1,748.59	3.91	1.85	51.63	3,680.20	4,648.95	5,930.00	5,924.26	5.74	1,033.704	
1,900.00	1,900.00	2,243.71	2,243.11	4.14	2.15	51.53	3,681.35	4,632.88	5,925.22	5,918.96	6.25	947.540	
2,000.00	2,000.00	2,353.54	2,352.67	4.36	2.26	51.48	3,682.18	4,625.34	5,920.33	5,913.74	6.59	897.926	
2,100.00	2,100.00	2,523.12	2,521.68	4.59	2.48	51.39	3,682.92	4,611.45	5,914.01	5,906.97	7.04	840.058	
2,200.00	2,200.00	2,593.00	2,591.35	4.81	2.57	51.36	3,682.59	4,606.09	5,907.74	5,900.37	7.36	802.154	
2,300.00	2,300.00	2,686.00	2,684.11	5.04	2.71	51.32	3,682.18	4,599.39	5,901.84	5,894.11	7.73	763.461	
2,400.00	2,400.00	2,826.01	2,823.68	5.26	2.94	51.26	3,681.67	4,588.31	5,895.34	5,887.15	8.19	719.972	
2,500.00	2,500.00	2,876.00	2,873.52	5.49	3.03	51.23	3,681.49	4,584.41	5,889.12	5,880.62	8.50	692.594	
2,600.00	2,600.00	2,971.00	2,968.28	5.71	3.20	51.19	3,681.32	4,577.69	5,883.50	5,874.60	8.90	661.359	
2,700.00	2,700.00	3,115.63	3,112.50	5.94	3.47	51.14	3,680.27	4,566.92	5,877.10	5,867.72	9.39	626.213	
2,800.00	2,800.00	3,291.23	3,287.52	6.16	3.83	51.06	3,678.98	4,552.75	5,870.54	5,860.60	9.94	590.317	
2,900.00	2,900.00	3,384.95	3,380.85	6.39	4.04	51.01	3,678.18	4,544.24	5,862.94	5,852.58	10.36	565.971	
3,000.00	3,000.00	3,474.19	3,469.74	6.61	4.25	50.97	3,677.26	4,536.47	5,855.51	5,844.74	10.77	543.884	
3,100.00	3,100.00	3,558.90	3,554.14	6.84	4.44	50.93	3,676.38	4,529.25	5,848.24	5,837.08	11.17	523.762	
3,200.00	3,200.00	3,634.00	3,629.00	7.06	4.62	50.90	3,675.71	4,523.24	5,841.44	5,829.89	11.55	505.828	
3,300.00	3,300.00	3,776.12	3,770.58	7.28	4.95	50.83	3,674.63	4,511.03	5,834.23	5,822.18	12.07	483.492	
3,400.00	3,400.00	3,865.00	3,859.14	7.51	5.17	50.79	3,673.73	4,503.45	5,826.97	5,814.49	12.48	466.878	
3,500.00	3,500.00	3,980.29	3,973.90	7.73	5.46	50.73	3,673.62	4,492.49	5,819.51	5,806.55	12.96	449.109	
3,600.00	3,600.00	4,075.79	4,068.91	7.96	5.71	50.68	3,674.25	4,482.83	5,812.09	5,798.69	13.40	433.700	
3,700.00	3,700.00	4,162.88	4,155.55	8.18	5.94	50.80	3,675.00	4,474.00	5,804.78	5,790.95	13.83	419.741	
3,800.00	3,800.00	4,251.49	4,243.71	8.41	6.17	50.54	3,675.94	4,465.18	5,797.74	5,783.48	14.26	406.522	
3,900.00	3,900.00	4,340.65	4,332.44	8.63	6.41	50.47	3,676.90	4,456.42	5,790.83	5,776.14	14.70	394.053	
4,000.00	4,000.00	4,424.70	4,416.10	8.86	6.63	50.42	3,677.89	4,448.38	5,784.19	5,769.07	15.12	382.571	
4,100.00	4,100.00	4,548.21	4,539.06	9.08	6.95	50.33	3,679.20	4,436.85	5,777.71	5,762.08	15.63	369.675	
4,200.00	4,200.00	4,672.96	4,663.29	9.31	7.26	50.26	3,678.78	4,425.48	5,770.44	5,754.31	16.13	357.716	
4,300.00	4,300.00	4,735.96	4,726.04	9.53	7.42	50.23	3,678.55	4,419.89	5,763.39	5,746.89	16.50	349.252	
4,400.00	4,400.00	4,819.41	4,809.22	9.76	7.63	50.19	3,678.19	4,413.23	5,756.95	5,740.03	16.91	340.353	
4,500.00	4,500.00	4,894.32	4,883.88	9.98	7.81	50.15	3,677.90	4,407.22	5,750.58	5,733.28	17.31	332.273	
4,600.00	4,600.00	4,962.00	4,951.42	10.21	7.97	50.13	3,677.64	4,402.81	5,745.18	5,727.50	17.68	324.926	
4,700.00	4,700.00	4,962.00	4,951.42	10.43	7.97	50.13	3,677.64	4,402.81	5,740.62	5,722.70	17.91	320.464	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #993 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1849-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,800.00	5,011.26	5,000.63	10.66	8.07	50.11	3,677.52	4,400.55	5,737.16	5,718.92	18.24	314.517	
4,900.00	4,900.00	5,056.00	5,045.35	10.88	8.17	50.11	3,677.54	4,399.35	5,734.97	5,716.41	18.56	309.026	
5,000.00	5,000.00	5,093.57	5,082.92	11.11	8.24	50.10	3,677.55	4,398.85	5,733.77	5,714.92	18.85	304.110	
5,100.00	5,100.00	5,154.00	5,143.35	11.33	8.34	50.10	3,677.41	4,398.50	5,733.25	5,714.06	19.19	298.756	
5,103.95	5,103.95	5,154.00	5,143.35	11.34	8.34	50.10	3,677.41	4,398.50	5,733.25	5,714.05	19.20	298.621	
5,200.00	5,200.00	5,154.00	5,143.35	11.56	8.34	50.10	3,677.41	4,398.50	5,734.06	5,714.65	19.41	295.474	
5,300.00	5,300.00	5,154.00	5,143.35	11.78	8.34	50.10	3,677.41	4,398.50	5,736.60	5,716.99	19.62	292.436	
5,329.21	5,329.21	5,154.00	5,143.35	11.85	8.34	50.10	3,677.41	4,398.50	5,737.67	5,718.00	19.68	291.594	
5,350.00	5,349.99	5,154.00	5,143.35	11.89	8.34	4.68	3,677.41	4,398.50	5,738.12	5,718.40	19.72	291.002	
5,400.00	5,399.78	5,154.00	5,143.35	12.00	8.34	4.70	3,677.41	4,398.50	5,736.10	5,716.28	19.82	289.470	
5,450.00	5,448.92	5,154.00	5,143.35	12.11	8.34	4.76	3,677.41	4,398.50	5,729.75	5,709.84	19.91	287.729	
5,500.00	5,496.96	5,154.00	5,143.35	12.23	8.34	4.86	3,677.41	4,398.50	5,719.11	5,699.10	20.01	285.807	
5,550.00	5,543.45	5,154.00	5,143.35	12.35	8.34	5.01	3,677.41	4,398.50	5,704.26	5,684.16	20.10	283.724	
5,600.00	5,587.97	5,154.00	5,143.35	12.48	8.34	5.21	3,677.41	4,398.50	5,685.31	5,665.11	20.20	281.496	
5,650.00	5,630.10	5,154.00	5,143.35	12.63	8.34	5.47	3,677.41	4,398.50	5,662.38	5,642.09	20.29	279.138	
5,700.00	5,669.47	5,154.00	5,143.35	12.81	8.34	5.82	3,677.41	4,398.50	5,635.63	5,615.26	20.37	276.666	
5,750.00	5,705.70	5,154.00	5,143.35	13.03	8.34	6.26	3,677.41	4,398.50	5,605.28	5,584.83	20.45	274.096	
5,800.00	5,738.47	5,154.00	5,143.35	13.30	8.34	6.83	3,677.41	4,398.50	5,571.52	5,551.00	20.53	271.447	
5,850.00	5,767.46	5,154.00	5,143.35	13.62	8.34	7.59	3,677.41	4,398.50	5,534.63	5,514.03	20.59	268.739	
5,900.00	5,792.43	5,154.00	5,143.35	14.02	8.34	8.61	3,677.41	4,398.50	5,494.87	5,474.21	20.66	265.993	
5,950.00	5,813.12	5,154.00	5,143.35	14.47	8.34	10.02	3,677.41	4,398.50	5,452.56	5,431.85	20.71	263.230	
6,000.00	5,829.37	5,154.00	5,143.35	15.00	8.34	12.09	3,677.41	4,398.50	5,408.03	5,387.27	20.76	260.473	
6,050.00	5,841.00	5,154.00	5,143.35	15.59	8.34	15.35	3,677.41	4,398.50	5,361.64	5,340.84	20.80	257.741	
6,100.00	5,847.93	5,154.00	5,143.35	16.23	8.34	21.06	3,677.41	4,398.50	5,313.77	5,292.94	20.83	255.052	
6,150.00	5,850.07	5,154.00	5,143.35	16.92	8.34	33.08	3,677.41	4,398.50	5,264.84	5,243.98	20.86	252.417	
6,156.48	5,850.00	5,154.00	5,143.35	17.01	8.34	35.57	3,677.41	4,398.50	5,258.44	5,237.57	20.86	252.045	
6,200.00	5,849.24	5,154.00	5,143.35	17.65	8.34	35.57	3,677.41	4,398.50	5,215.44	5,194.56	20.87	249.844	
6,300.00	5,847.50	5,154.00	5,143.35	19.22	8.34	35.57	3,677.41	4,398.50	5,116.66	5,095.76	20.91	244.757	
6,400.00	5,845.75	5,154.00	5,143.35	20.91	8.34	35.57	3,677.41	4,398.50	5,017.93	4,996.99	20.94	239.616	
6,500.00	5,844.01	5,154.00	5,143.35	22.70	8.34	35.57	3,677.41	4,398.50	4,919.26	4,898.27	20.99	234.417	
6,600.00	5,842.26	5,154.00	5,143.35	24.57	8.34	35.57	3,677.41	4,398.50	4,820.64	4,799.60	21.04	229.161	
6,700.00	5,840.52	5,154.00	5,143.35	26.49	8.34	35.57	3,677.41	4,398.50	4,722.07	4,700.98	21.10	223.846	
6,800.00	5,838.77	5,154.00	5,143.35	28.46	8.34	35.57	3,677.41	4,398.50	4,623.57	4,602.41	21.16	218.472	
6,900.00	5,837.03	5,154.00	5,143.35	30.47	8.34	35.57	3,677.41	4,398.50	4,525.14	4,503.89	21.24	213.036	
7,000.00	5,835.28	5,154.00	5,143.35	32.51	8.34	35.57	3,677.41	4,398.50	4,426.77	4,405.44	21.33	207.540	
7,100.00	5,833.53	5,154.00	5,143.35	34.57	8.34	35.57	3,677.41	4,398.50	4,328.48	4,307.05	21.43	201.982	
7,200.00	5,831.79	5,154.00	5,143.35	36.66	8.34	35.57	3,677.41	4,398.50	4,230.27	4,208.72	21.54	196.363	
7,300.00	5,830.04	5,154.00	5,143.35	38.76	8.34	35.57	3,677.41	4,398.50	4,132.14	4,110.47	21.67	190.684	
7,400.00	5,828.30	5,154.00	5,143.35	40.88	8.34	35.57	3,677.41	4,398.50	4,034.11	4,012.30	21.81	184.945	
7,500.00	5,826.55	5,154.00	5,143.35	43.01	8.34	35.57	3,677.41	4,398.50	3,936.17	3,914.20	21.97	179.149	
7,600.00	5,824.81	5,154.00	5,143.35	45.15	8.34	35.57	3,677.41	4,398.50	3,838.35	3,816.20	22.15	173.297	
7,700.00	5,823.06	5,154.00	5,143.35	47.30	8.34	35.57	3,677.41	4,398.50	3,740.63	3,718.29	22.35	167.393	
7,800.00	5,821.32	5,154.00	5,143.35	49.46	8.34	35.57	3,677.41	4,398.50	3,643.05	3,620.48	22.57	161.440	
7,900.00	5,819.57	5,154.00	5,143.35	51.62	8.34	35.57	3,677.41	4,398.50	3,545.59	3,522.78	22.81	155.443	
8,000.00	5,817.83	5,154.00	5,143.35	53.79	8.34	35.57	3,677.41	4,398.50	3,448.28	3,425.20	23.08	149.408	
8,100.00	5,816.08	5,154.00	5,143.35	55.97	8.34	35.57	3,677.41	4,398.50	3,351.13	3,327.75	23.38	143.341	
8,200.00	5,814.34	5,154.00	5,143.35	58.15	8.34	35.57	3,677.41	4,398.50	3,254.16	3,230.45	23.71	137.250	
8,300.00	5,812.59	5,154.00	5,143.35	60.34	8.34	35.57	3,677.41	4,398.50	3,157.37	3,133.29	24.08	131.145	
8,400.00	5,810.85	5,154.00	5,143.35	62.53	8.34	35.57	3,677.41	4,398.50	3,060.78	3,036.31	24.48	125.034	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design — Skelly Unit #422H - Skelly Unit #993 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 100-Scientific Gyro, 1849-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,500.00	5,809.10	5,154.00	5,143.35	64.73	8.34	35.57	3,677.41	4,398.50	2,964.43	2,939.50	24.93	118.929	
8,600.00	5,807.36	5,154.00	5,143.35	66.92	8.34	35.57	3,677.41	4,398.50	2,868.32	2,842.90	25.42	112.842	
8,700.00	5,805.61	5,154.00	5,143.35	69.12	8.34	35.57	3,677.41	4,398.50	2,772.49	2,746.53	25.96	106.786	
8,800.00	5,803.87	5,154.00	5,143.35	71.33	8.34	35.57	3,677.41	4,398.50	2,676.97	2,650.40	26.56	100.776	
8,900.00	5,802.12	5,154.00	5,143.35	73.53	8.34	35.57	3,677.41	4,398.50	2,581.78	2,554.55	27.23	94.827	
9,000.00	5,800.37	5,154.00	5,143.35	75.74	8.34	35.57	3,677.41	4,398.50	2,486.97	2,459.01	27.96	88.954	
9,100.00	5,798.63	5,154.00	5,143.35	77.95	8.34	35.57	3,677.41	4,398.50	2,392.58	2,363.82	28.77	83.174	
9,200.00	5,796.88	5,154.00	5,143.35	80.16	8.34	35.57	3,677.41	4,398.50	2,298.67	2,269.01	29.66	77.504	
9,300.00	5,795.14	5,154.00	5,143.35	82.38	8.34	35.57	3,677.41	4,398.50	2,205.30	2,174.65	30.65	71.962	
9,400.00	5,793.39	5,154.00	5,143.35	84.59	8.34	35.57	3,677.41	4,398.50	2,112.53	2,080.79	31.74	66.565	
9,500.00	5,791.65	5,154.00	5,143.35	86.81	8.34	35.57	3,677.41	4,398.50	2,020.45	1,987.50	32.94	61.329	
9,600.00	5,789.90	5,154.00	5,143.35	89.02	8.34	35.57	3,677.41	4,398.50	1,929.16	1,894.88	34.28	56.273	
9,700.00	5,788.16	5,154.00	5,143.35	91.24	8.34	35.57	3,677.41	4,398.50	1,838.77	1,803.01	35.77	51.412	
9,800.00	5,786.41	5,154.00	5,143.35	93.46	8.34	35.57	3,677.41	4,398.50	1,749.43	1,712.02	37.41	46.763	
9,900.00	5,784.67	5,154.00	5,143.35	95.68	8.34	35.57	3,677.41	4,398.50	1,661.31	1,622.07	39.24	42.340	
10,000.00	5,782.92	5,154.00	5,143.35	97.91	8.34	35.57	3,677.41	4,398.50	1,574.61	1,533.34	41.27	38.157	
10,100.00	5,781.18	5,154.00	5,143.35	100.13	8.34	35.57	3,677.41	4,398.50	1,489.57	1,446.05	43.52	34.227	
10,200.00	5,779.43	5,154.00	5,143.35	102.35	8.34	35.57	3,677.41	4,398.50	1,406.51	1,360.49	46.02	30.562	
10,300.00	5,777.69	5,154.00	5,143.35	104.58	8.34	35.57	3,677.41	4,398.50	1,325.78	1,276.99	48.79	27.171	
10,400.00	5,775.94	5,154.00	5,143.35	106.80	8.34	35.57	3,677.41	4,398.50	1,247.85	1,196.00	51.86	24.064	
10,500.00	5,774.20	5,154.00	5,143.35	109.03	8.34	35.57	3,677.41	4,398.50	1,173.28	1,118.06	55.22	21.247	
10,600.00	5,772.45	5,154.00	5,143.35	111.25	8.34	35.57	3,677.41	4,398.50	1,102.73	1,043.85	58.89	18.727	
10,700.00	5,770.71	5,154.00	5,143.35	113.48	8.34	35.57	3,677.41	4,398.50	1,037.04	974.21	62.83	16.506	
10,800.00	5,768.96	5,154.00	5,143.35	115.71	8.34	35.57	3,677.41	4,398.50	977.18	910.20	66.99	14.588	
10,900.00	5,767.21	5,154.00	5,143.35	117.94	8.34	35.57	3,677.41	4,398.50	924.30	853.04	71.26	12.971	
11,000.00	5,765.47	5,154.00	5,143.35	120.17	8.34	35.57	3,677.41	4,398.50	879.64	804.17	75.47	11.655	
11,100.00	5,763.72	5,154.00	5,143.35	122.40	8.34	35.57	3,677.41	4,398.50	844.51	765.11	79.40	10.636	
11,200.00	5,761.98	5,154.00	5,143.35	124.63	8.34	35.57	3,677.41	4,398.50	820.14	737.35	82.79	9.906	
11,300.00	5,760.23	5,154.00	5,143.35	126.88	8.34	35.57	3,677.41	4,398.50	807.51	722.14	85.37	9.459	
11,352.82	5,759.31	5,154.00	5,143.35	128.03	8.34	35.57	3,677.41	4,398.50	805.78	719.45	86.33	9.334	CC, ES
11,400.00	5,758.49	5,154.00	5,143.35	129.09	8.34	35.57	3,677.41	4,398.50	807.16	720.23	86.93	9.285	SF
11,500.00	5,756.74	5,154.00	5,143.35	131.32	8.34	35.57	3,677.41	4,398.50	819.11	731.74	87.38	9.375	
11,600.00	5,755.00	5,154.00	5,143.35	133.55	8.34	35.57	3,677.41	4,398.50	842.84	756.09	86.76	9.715	
11,700.00	5,753.25	5,154.00	5,143.35	135.78	8.34	35.57	3,677.41	4,398.50	877.39	792.15	85.24	10.293	
11,802.14	5,751.47	5,154.00	5,143.35	138.06	8.34	35.57	3,677.41	4,398.50	922.59	839.57	83.02	11.113	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #998 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 235-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	21.52	1,156.00	455.80	1,242.77				
100.00	100.00	82.82	82.82	0.09	2.03	21.53	1,155.86	455.93	1,242.54	1,240.54	2.00	621.141	
200.00	200.00	185.70	185.70	0.32	4.55	21.56	1,155.32	456.47	1,242.24	1,237.64	4.60	270.292	
300.00	300.00	286.53	286.52	0.54	7.75	21.61	1,154.44	457.33	1,241.75	1,233.93	7.82	158.890	
400.00	400.00	385.48	385.47	0.77	11.57	21.68	1,153.67	458.10	1,241.30	1,229.69	11.61	106.915	
500.00	500.00	485.21	485.19	0.99	15.45	21.70	1,153.02	458.74	1,240.93	1,225.46	15.47	80.197	
600.00	600.00	585.99	585.97	1.22	19.43	21.74	1,152.29	459.46	1,240.52	1,221.09	19.43	63.842	
700.00	700.00	686.78	686.74	1.44	23.41	21.79	1,151.44	460.29	1,240.05	1,216.66	23.39	53.014	
800.00	800.00	787.03	786.99	1.67	27.86	21.84	1,150.51	461.21	1,239.53	1,211.74	27.79	44.602	
900.00	900.00	887.02	886.97	1.89	32.54	21.90	1,149.58	462.13	1,239.01	1,206.60	32.41	38.232	
1,000.00	1,000.00	987.01	986.95	2.12	37.22	21.96	1,148.65	463.05	1,238.49	1,201.46	37.03	33.447	
1,100.00	1,100.00	1,087.44	1,087.37	2.34	42.27	22.01	1,147.69	463.99	1,237.95	1,195.98	41.98	29.491	
1,200.00	1,200.00	1,188.13	1,188.05	2.56	47.54	22.08	1,146.64	465.03	1,237.37	1,190.25	47.12	26.258	
1,300.00	1,300.00	1,288.81	1,288.72	2.79	52.81	22.14	1,145.48	466.17	1,236.73	1,184.46	52.28	23.658	
1,400.00	1,400.00	1,391.04	1,390.93	3.01	59.90	22.22	1,144.14	467.49	1,236.01	1,176.92	59.09	20.918	
1,500.00	1,500.00	1,494.52	1,494.38	3.24	68.49	22.34	1,142.30	469.31	1,235.02	1,167.76	67.27	18.360	
1,600.00	1,600.00	1,597.31	1,597.11	3.46	77.12	22.48	1,139.94	471.63	1,233.77	1,158.26	75.51	16.339	
1,700.00	1,700.00	1,695.97	1,695.72	3.69	85.99	22.62	1,137.61	473.93	1,232.48	1,148.48	83.99	14.674	
1,800.00	1,800.00	1,794.64	1,794.34	3.91	94.87	22.75	1,135.47	476.04	1,231.30	1,138.81	92.49	13.313	
1,900.00	1,900.00	1,893.33	1,893.00	4.14	103.76	22.86	1,133.51	477.97	1,230.23	1,129.23	101.00	12.180	
2,000.00	2,000.00	1,992.04	1,991.67	4.36	112.64	22.97	1,131.74	479.71	1,229.26	1,119.74	109.52	11.224	
2,100.00	2,100.00	2,090.87	2,090.48	4.59	120.89	23.07	1,130.16	481.27	1,228.41	1,110.94	117.46	10.458	
2,200.00	2,200.00	2,190.03	2,189.62	4.81	127.34	23.15	1,128.71	482.70	1,227.63	1,103.87	123.76	9.919	
2,300.00	2,300.00	2,289.21	2,288.78	5.04	133.78	23.23	1,127.39	484.00	1,226.92	1,096.86	130.07	9.433	
2,400.00	2,400.00	2,390.88	2,390.43	5.26	141.37	23.32	1,126.01	485.36	1,226.20	1,088.77	137.43	8.922	
2,500.00	2,500.00	2,493.32	2,492.84	5.49	149.33	23.43	1,124.24	487.11	1,225.29	1,080.14	145.15	8.442	
2,600.00	2,600.00	2,594.20	2,593.68	5.71	157.16	23.55	1,122.16	489.16	1,224.21	1,071.42	152.79	8.012	
2,700.00	2,700.00	2,691.83	2,691.27	5.94	164.75	23.66	1,120.33	490.97	1,223.23	1,063.03	160.20	7.636	
2,800.00	2,800.00	2,789.48	2,788.91	6.16	172.35	23.75	1,118.85	492.42	1,222.45	1,054.84	167.60	7.294	
2,900.00	2,900.00	2,888.93	2,888.34	6.39	178.58	23.83	1,117.61	493.65	1,221.80	1,048.05	173.75	7.032	
3,000.00	3,000.00	2,988.92	2,988.31	6.61	184.41	23.91	1,116.36	494.87	1,221.16	1,041.64	179.52	6.802	
3,100.00	3,100.00	3,088.90	3,088.28	6.84	190.23	23.98	1,115.12	496.10	1,220.52	1,035.22	185.30	6.587	
3,200.00	3,200.00	3,188.89	3,188.25	7.06	196.08	24.06	1,113.88	497.32	1,219.88	1,028.79	191.10	6.384	
3,300.00	3,300.00	3,288.87	3,288.22	7.28	201.94	24.14	1,112.64	498.55	1,219.25	1,022.34	196.91	6.192	
3,400.00	3,400.00	3,388.86	3,388.19	7.51	207.79	24.21	1,111.39	499.77	1,218.62	1,015.88	202.73	6.011	
3,500.00	3,500.00	3,488.82	3,488.14	7.73	213.63	24.29	1,110.15	501.00	1,217.99	1,009.45	208.54	5.840	
3,600.00	3,600.00	3,587.99	3,587.29	7.96	218.76	24.36	1,108.99	502.14	1,217.39	1,003.70	213.70	5.697	
3,700.00	3,700.00	3,687.16	3,686.46	8.18	223.90	24.42	1,107.96	503.16	1,216.87	998.02	218.85	5.560	
3,800.00	3,800.00	3,786.90	3,786.19	8.41	228.63	24.48	1,107.02	504.08	1,216.40	992.79	223.61	5.440	
3,900.00	3,900.00	3,886.89	3,886.17	8.63	233.18	24.54	1,106.09	505.00	1,215.93	987.73	228.20	5.328	
4,000.00	4,000.00	3,986.89	3,986.15	8.86	237.70	24.60	1,105.16	505.92	1,215.47	982.66	232.80	5.221	
4,100.00	4,100.00	4,086.88	4,086.14	9.08	242.27	24.66	1,104.22	506.84	1,215.00	977.57	237.43	5.117	
4,200.00	4,200.00	4,186.87	4,186.12	9.31	246.84	24.71	1,103.29	507.76	1,214.54	972.47	242.07	5.017	
4,300.00	4,300.00	4,286.86	4,286.10	9.53	251.41	24.77	1,102.36	508.68	1,214.08	967.37	246.71	4.921	
4,400.00	4,400.00	4,386.85	4,386.08	9.76	255.99	24.83	1,101.43	509.60	1,213.62	962.27	251.35	4.828	
4,500.00	4,500.00	4,486.96	4,486.19	9.98	260.68	24.89	1,100.49	510.52	1,213.16	957.06	256.10	4.737	
4,600.00	4,600.00	4,587.62	4,586.83	10.21	265.91	24.95	1,099.48	511.52	1,212.66	951.29	261.37	4.640	
4,700.00	4,700.00	4,688.26	4,687.47	10.43	271.15	25.02	1,098.35	512.63	1,212.11	945.46	266.65	4.546	
4,800.00	4,800.00	4,788.51	4,787.70	10.66	276.36	25.10	1,097.13	513.83	1,211.52	939.60	271.92	4.455	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #998 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 235-INC — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,900.00	4,888.13	4,887.31	10.88	281.53	25.17	1,095.95	515.00	1,210.94	933.79	277.15	4.369	
5,000.00	5,000.00	4,987.76	4,986.92	11.11	288.70	25.24	1,094.83	516.10	1,210.39	928.01	282.38	4.286	
5,100.00	5,100.00	5,087.38	5,086.53	11.33	291.87	25.31	1,093.77	517.15	1,209.88	922.27	287.60	4.207	
5,200.00	5,200.00	5,187.01	5,186.15	11.56	297.04	25.37	1,092.77	518.13	1,209.40	916.57	292.83	4.130	
5,300.00	5,300.00	5,286.91	5,286.04	11.78	302.22	25.43	1,091.82	519.07	1,208.94	910.88	298.06	4.056	
5,329.21	5,329.21	5,316.22	5,315.35	11.85	303.74	25.44	1,091.54	519.35	1,208.80	909.20	299.60	4.035	
5,350.00	5,349.99	5,337.08	5,336.21	11.89	304.82	-19.98	1,091.33	519.55	1,208.32	907.63	300.68	4.019	
5,400.00	5,399.78	5,387.04	5,386.17	12.00	307.42	-20.19	1,090.83	520.04	1,203.95	900.76	303.19	3.971	
5,450.00	5,448.92	5,436.35	5,435.47	12.11	309.98	-20.65	1,090.32	520.54	1,195.12	889.58	305.54	3.911	
5,500.00	5,496.96	5,484.56	5,483.67	12.23	312.48	-21.40	1,089.81	521.05	1,181.92	874.22	307.70	3.841	
5,550.00	5,543.45	5,531.21	5,530.31	12.35	314.90	-22.46	1,089.30	521.55	1,164.48	854.84	309.64	3.761	
5,600.00	5,587.97	5,575.88	5,574.98	12.48	317.22	-23.90	1,088.80	522.04	1,142.99	831.67	311.32	3.671	
5,650.00	5,630.10	5,618.16	5,617.26	12.63	319.41	-25.78	1,088.32	522.52	1,117.68	804.98	312.70	3.574	
5,700.00	5,669.47	5,657.66	5,656.75	12.81	321.46	-28.21	1,087.85	522.98	1,088.83	775.10	313.73	3.471	
5,750.00	5,705.70	5,694.02	5,693.10	13.03	323.35	-31.32	1,087.42	523.41	1,056.75	742.38	314.37	3.361	
5,800.00	5,736.47	5,726.90	5,725.98	13.30	325.06	-35.28	1,087.02	523.80	1,021.80	707.23	314.57	3.248	
5,850.00	5,767.45	5,755.93	5,755.01	13.62	326.53	-40.30	1,086.66	524.16	984.38	670.14	314.24	3.133	
5,900.00	5,792.43	5,780.72	5,779.79	14.02	327.65	-46.55	1,086.36	524.45	944.92	631.69	313.22	3.017	
5,950.00	5,813.12	5,801.26	5,800.33	14.47	328.59	-54.16	1,086.11	524.70	903.88	592.28	311.60	2.901	
6,000.00	5,829.37	5,817.39	5,816.46	15.00	329.32	-63.03	1,085.92	524.88	861.77	552.47	309.30	2.786	
6,050.00	5,841.00	5,828.94	5,828.01	15.59	329.85	-72.71	1,085.79	525.01	819.09	512.87	306.22	2.675	
6,100.00	5,847.93	5,835.82	5,834.88	16.23	330.16	-82.43	1,085.71	525.09	776.38	474.11	302.27	2.568	
6,150.00	5,850.07	5,837.95	5,837.01	16.92	330.26	-91.35	1,085.69	525.11	734.21	436.86	297.35	2.469	
6,156.48	5,850.00	5,837.88	5,836.94	17.01	330.26	-92.41	1,085.69	525.11	728.81	432.17	296.64	2.457	
6,200.00	5,849.24	5,837.12	5,836.19	17.65	330.22	-92.30	1,085.70	525.11	693.05	401.64	291.41	2.378	
6,300.00	5,847.50	5,835.39	5,834.46	19.22	330.14	-92.06	1,085.72	525.09	614.67	338.57	276.11	2.226	
6,400.00	5,845.75	5,833.66	5,832.72	20.91	330.06	-91.81	1,085.74	525.07	543.44	288.87	254.56	2.135	
6,500.00	5,844.01	5,831.93	5,830.99	22.70	329.99	-91.57	1,085.75	525.05	482.52	257.80	224.71	2.147	
6,600.00	5,842.26	5,830.19	5,829.26	24.57	329.91	-91.32	1,085.77	525.03	436.25	249.45	186.80	2.335	
6,700.00	5,840.52	5,828.46	5,827.53	26.49	329.83	-91.08	1,085.79	525.01	409.63	258.19	151.43	2.705	
6,762.62	5,839.42	5,827.38	5,826.44	27.72	329.78	-90.92	1,085.81	525.00	404.81	261.24	143.57	2.820 CC	
6,800.00	5,838.77	5,826.73	5,825.79	28.46	329.75	-90.83	1,085.81	524.99	406.53	258.95	147.59	2.755	
6,900.00	5,837.03	5,825.00	5,824.06	30.47	329.67	-90.59	1,085.83	524.97	427.48	245.97	181.51	2.355 ES	
7,000.00	5,835.28	5,823.26	5,822.33	32.51	329.59	-90.34	1,085.85	524.95	469.26	246.27	223.00	2.104	
7,100.00	5,833.53	5,821.53	5,820.60	34.57	329.51	-90.10	1,085.87	524.93	526.94	270.33	256.61	2.053 SF	
7,200.00	5,831.79	5,819.80	5,818.86	36.66	329.43	-89.85	1,085.89	524.91	595.92	315.17	280.75	2.123	
7,300.00	5,830.04	5,818.06	5,817.13	38.76	329.35	-89.61	1,085.91	524.89	672.73	375.21	297.52	2.261	
7,400.00	5,828.30	5,816.33	5,815.40	40.88	329.28	-89.36	1,085.93	524.87	754.99	445.80	309.18	2.442	
7,500.00	5,826.55	5,814.60	5,813.67	43.01	329.20	-89.12	1,085.95	524.85	841.09	523.68	317.42	2.650	
7,600.00	5,824.81	5,812.87	5,811.93	45.15	329.12	-88.87	1,085.97	524.83	929.98	606.64	323.35	2.876	
7,700.00	5,823.06	5,811.13	5,810.20	47.30	329.04	-88.63	1,085.99	524.81	1,020.93	693.23	327.70	3.115	
7,800.00	5,821.32	5,809.40	5,808.47	49.46	328.96	-88.38	1,086.01	524.79	1,113.42	782.47	330.95	3.364	
7,900.00	5,819.57	5,807.67	5,806.74	51.62	328.88	-88.14	1,086.04	524.77	1,207.11	873.68	333.43	3.620	
8,000.00	5,817.83	5,805.94	5,805.00	53.79	328.80	-87.89	1,086.06	524.75	1,301.74	966.39	335.35	3.882	
8,100.00	5,816.08	5,804.20	5,803.27	55.97	328.72	-87.65	1,086.08	524.73	1,397.11	1,060.27	336.85	4.148	
8,200.00	5,814.34	5,802.47	5,801.54	58.15	328.64	-87.40	1,086.10	524.71	1,493.09	1,155.05	338.03	4.417	
8,300.00	5,812.59	5,800.74	5,799.81	60.34	328.57	-87.16	1,086.12	524.69	1,589.56	1,250.57	338.98	4.689	
8,400.00	5,810.85	5,799.01	5,798.07	62.53	328.49	-86.91	1,086.14	524.67	1,686.44	1,346.69	339.75	4.964	
8,500.00	5,809.10	5,797.27	5,796.34	64.73	328.41	-86.67	1,086.16	524.65	1,783.66	1,443.29	340.38	5.240	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design Skelly Unit #422H - Skelly Unit #998 - OH - OH — Offset Site Error: 0.00 usft

Survey Program: 235-INC — Offset Well Error: 0.00 usft

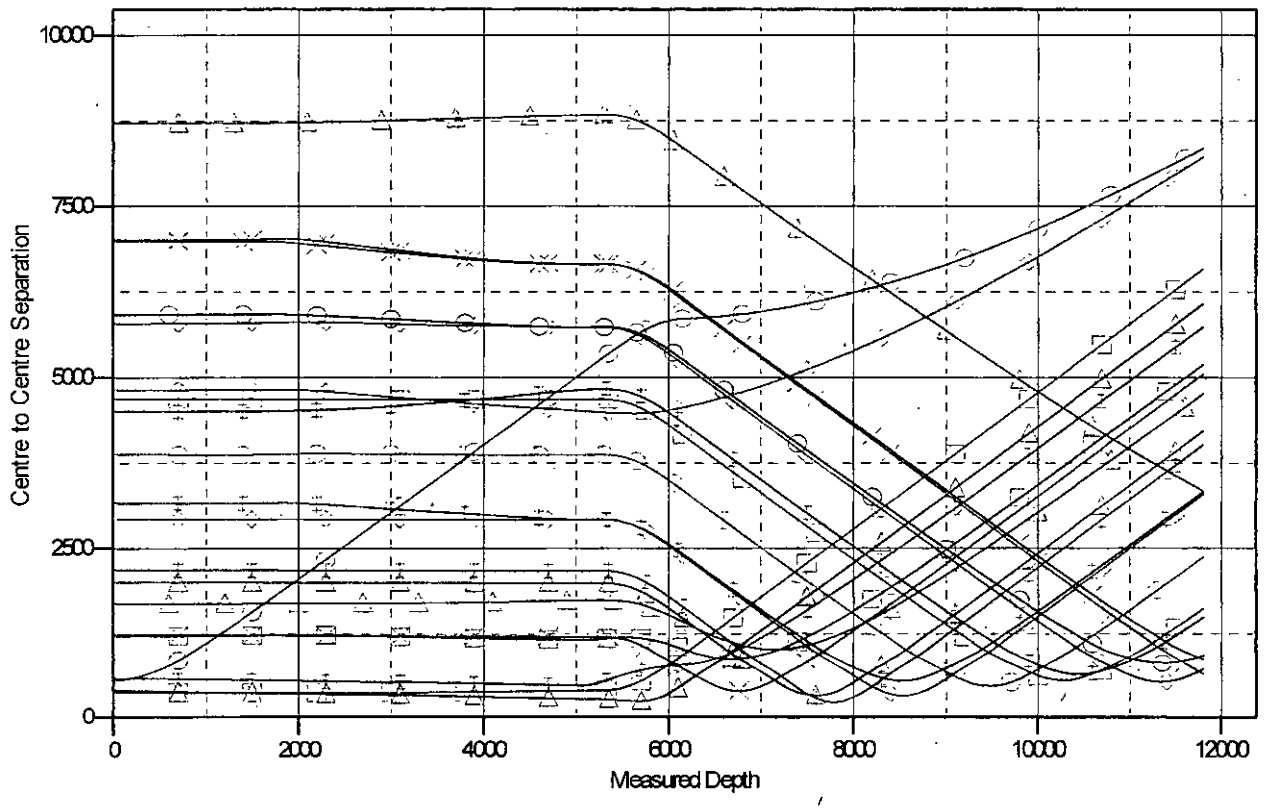
Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,600.00	5,807.36	5,795.54	5,794.61	66.92	328.33	-86.43	1,086.18	524.63	1,881.18	1,540.29	340.89	5.518	
8,700.00	5,805.61	5,793.81	5,792.88	69.12	328.25	-86.18	1,086.20	524.61	1,978.94	1,637.63	341.31	5.798	
8,800.00	5,803.87	5,792.07	5,791.14	71.33	328.17	-85.94	1,086.22	524.59	2,076.91	1,735.26	341.65	6.079	
8,900.00	5,802.12	5,790.34	5,789.41	73.53	328.09	-85.70	1,086.24	524.57	2,175.06	1,833.12	341.94	6.361	
9,000.00	5,800.37	5,788.61	5,787.68	75.74	328.01	-85.45	1,086.26	524.55	2,273.38	1,931.20	342.17	6.644	
9,100.00	5,798.63	5,786.88	5,785.95	77.95	327.93	-85.21	1,086.28	524.53	2,371.83	2,029.46	342.37	6.928	
9,200.00	5,796.88	5,785.14	5,784.22	80.16	327.86	-84.97	1,086.30	524.51	2,470.41	2,127.87	342.53	7.212	
9,300.00	5,795.14	5,783.41	5,782.48	82.38	327.78	-84.73	1,086.32	524.49	2,569.09	2,226.43	342.66	7.497	
9,400.00	5,793.39	5,781.68	5,780.75	84.59	327.70	-84.48	1,086.34	524.47	2,667.87	2,325.10	342.77	7.783	
9,500.00	5,791.65	5,779.95	5,779.02	86.81	327.62	-84.24	1,086.36	524.45	2,766.74	2,423.88	342.86	8.070	
9,600.00	5,789.90	5,778.21	5,777.29	89.02	327.54	-84.00	1,086.39	524.43	2,865.69	2,522.75	342.93	8.356	
9,700.00	5,788.16	5,776.48	5,775.55	91.24	327.46	-83.76	1,086.41	524.40	2,964.70	2,621.71	342.99	8.644	
9,800.00	5,786.41	5,774.75	5,773.82	93.46	327.38	-83.52	1,086.43	524.38	3,063.78	2,720.75	343.03	8.931	
9,900.00	5,784.67	5,773.02	5,772.09	95.68	327.30	-83.28	1,086.45	524.36	3,162.92	2,819.85	343.07	9.220	
10,000.00	5,782.92	5,771.28	5,770.36	97.91	327.23	-83.04	1,086.47	524.34	3,262.11	2,919.02	343.09	9.508	
10,100.00	5,781.18	5,769.55	5,768.62	100.13	327.15	-82.80	1,086.49	524.32	3,361.34	3,018.24	343.11	9.797	
10,200.00	5,779.43	5,767.82	5,766.89	102.35	327.07	-82.56	1,086.51	524.30	3,460.62	3,117.51	343.11	10.086	
10,300.00	5,777.69	5,766.09	5,765.16	104.58	326.99	-82.32	1,086.53	524.28	3,559.94	3,216.82	343.11	10.375	
10,400.00	5,775.94	5,764.35	5,763.43	106.80	326.91	-82.08	1,086.55	524.26	3,659.29	3,316.18	343.11	10.665	
10,500.00	5,774.20	5,762.62	5,761.69	109.03	326.83	-81.84	1,086.58	524.24	3,758.68	3,415.58	343.10	10.955	
10,600.00	5,772.45	5,760.89	5,759.96	111.25	326.75	-81.60	1,086.60	524.22	3,858.10	3,515.01	343.09	11.245	
10,700.00	5,770.71	5,759.15	5,758.23	113.48	326.67	-81.36	1,086.62	524.20	3,957.54	3,614.47	343.07	11.536	
10,800.00	5,768.96	5,757.42	5,756.50	115.71	326.59	-81.12	1,086.64	524.17	4,057.02	3,713.96	343.05	11.826	
10,900.00	5,767.21	5,755.69	5,754.76	117.94	326.52	-80.88	1,086.66	524.15	4,156.52	3,813.49	343.03	12.117	
11,000.00	5,765.47	5,753.96	5,753.03	120.17	326.44	-80.65	1,086.68	524.13	4,256.04	3,913.03	343.00	12.408	
11,100.00	5,763.72	5,752.22	5,751.30	122.40	326.36	-80.41	1,086.70	524.11	4,355.58	4,012.60	342.98	12.699	
11,200.00	5,761.98	5,750.00	5,749.08	124.63	326.28	-80.10	1,086.73	524.08	4,455.14	4,112.21	342.93	12.992	
11,300.00	5,760.23	5,748.75	5,747.82	126.86	326.19	-79.93	1,086.75	524.07	4,554.72	4,211.81	342.91	13.283	
11,400.00	5,758.49	5,746.99	5,746.07	129.09	326.10	-79.70	1,086.77	524.05	4,654.32	4,311.45	342.86	13.575	
11,500.00	5,756.74	5,745.24	5,744.32	131.32	326.01	-79.46	1,086.79	524.03	4,753.93	4,411.11	342.82	13.867	
11,600.00	5,755.00	5,743.49	5,742.57	133.55	325.92	-79.22	1,086.81	524.00	4,853.56	4,510.79	342.77	14.160	
11,700.00	5,753.25	5,741.74	5,740.82	135.78	325.83	-78.98	1,086.83	523.98	4,953.20	4,610.48	342.72	14.453	
11,802.14	5,751.47	5,739.95	5,739.03	138.06	325.73	-78.74	1,086.86	523.96	5,054.99	4,712.32	342.67	14.752	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3873.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.26°

Ladder Plot



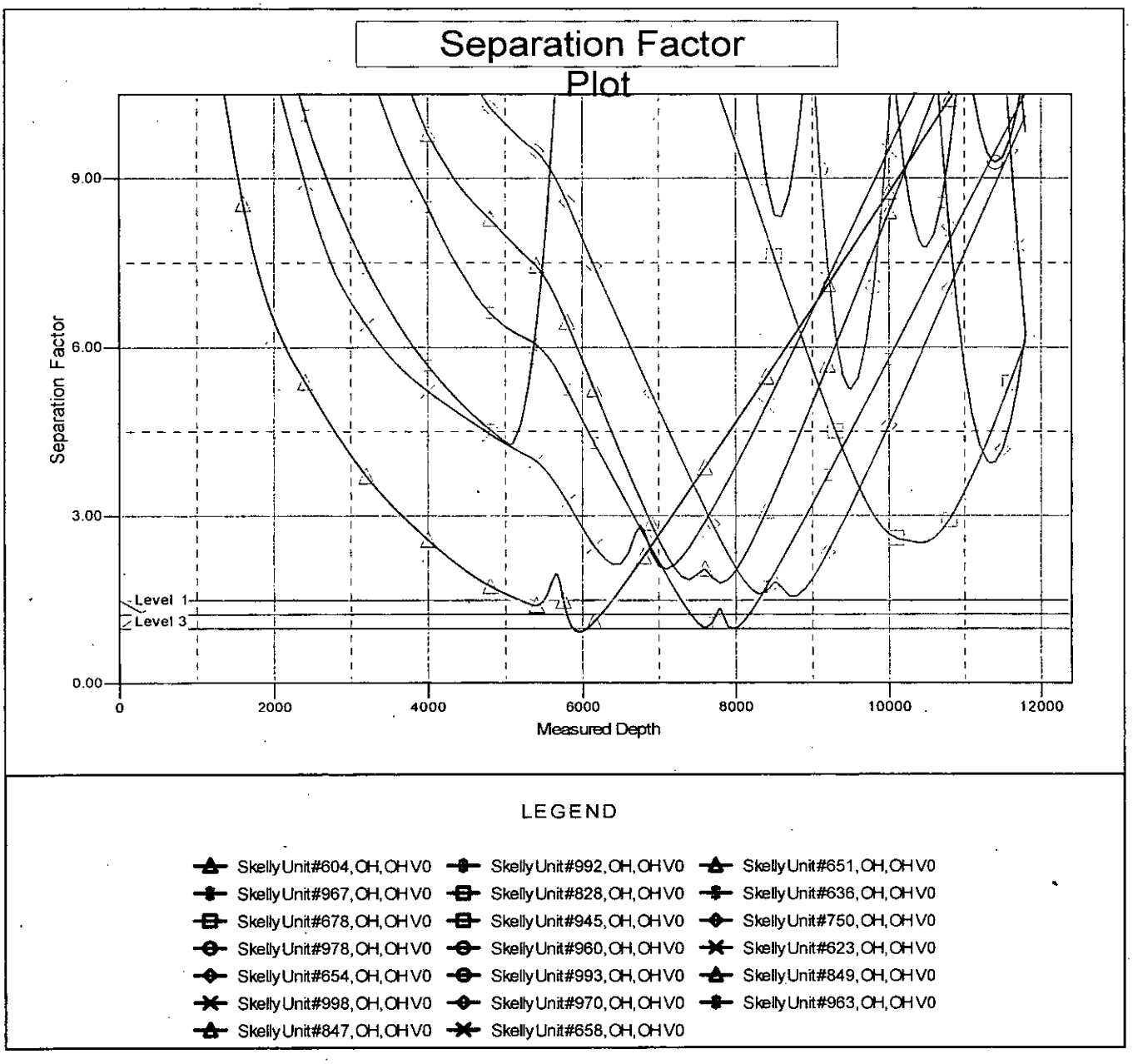
LEGEND

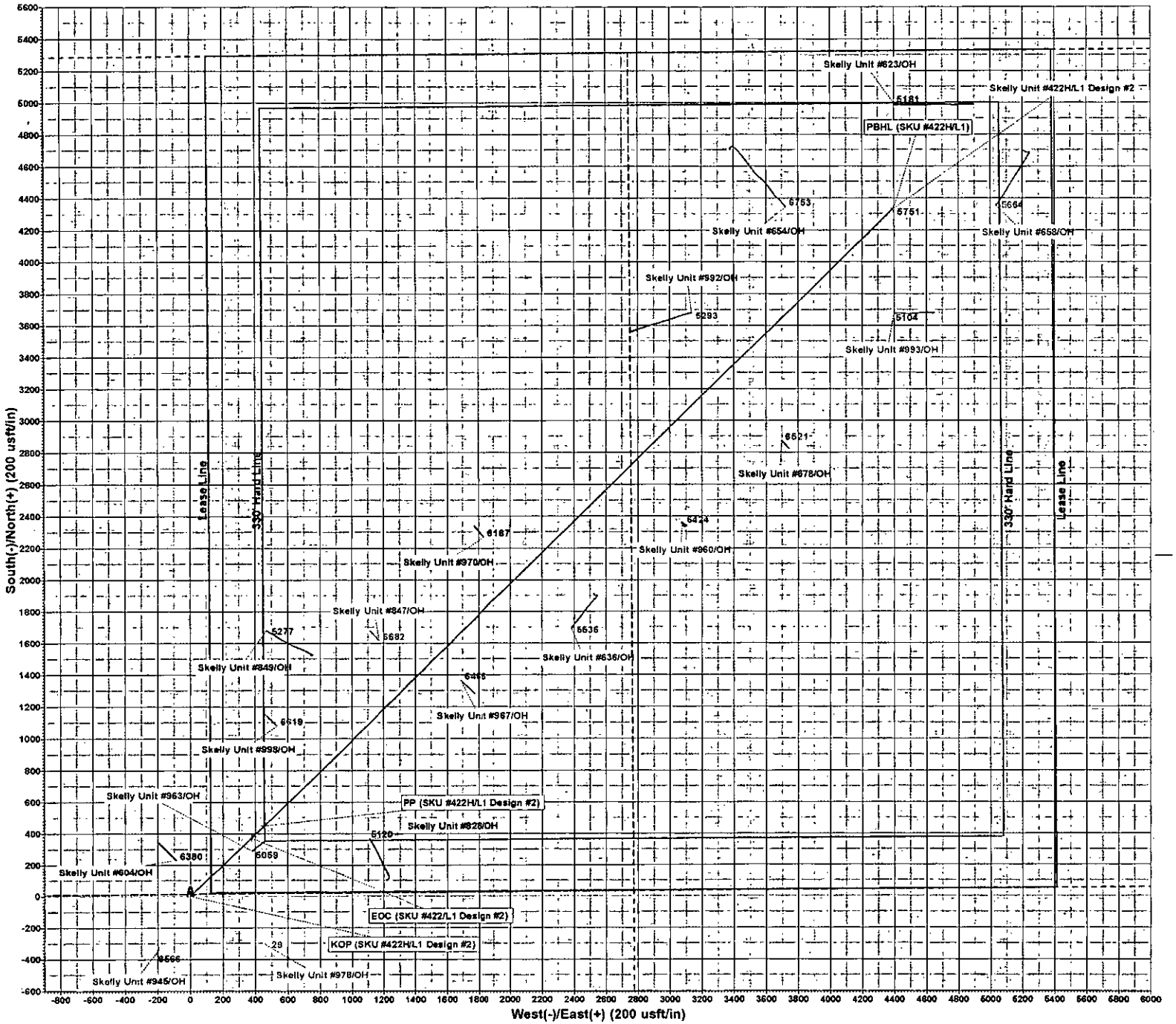
- Skelly Unit#604, OH, OH V0
- Skelly Unit#992, OH, OH V0
- Skelly Unit#651, OH, OH V0
- Skelly Unit#967, OH, OH V0
- Skelly Unit#828, OH, OH V0
- Skelly Unit#636, OH, OH V0
- Skelly Unit#678, OH, OH V0
- Skelly Unit#945, OH, OH V0
- Skelly Unit#750, OH, OH V0
- Skelly Unit#978, OH, OH V0
- Skelly Unit#960, OH, OH V0
- Skelly Unit#623, OH, OH V0
- Skelly Unit#654, OH, OH V0
- Skelly Unit#993, OH, OH V0
- Skelly Unit#849, OH, OH V0
- Skelly Unit#998, OH, OH V0
- Skelly Unit#970, OH, OH V0
- Skelly Unit#963, OH, OH V0
- Skelly Unit#847, OH, OH V0
- Skelly Unit#658, OH, OH V0

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C
Project:	Eddy County, NM (NAD-27 2015)	**TVD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Reference Site:	Skelly Unit #422H	**MD Reference:**	KB @ 3873.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit C	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	BHL: 990' FNL, 1650' FWL, Sec 14, T17S, R31E, Unit C	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3873.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SHL: 20' FNL, 2510' FWL, Sec 22, T17S, R31E, Unit
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.26°





CONCHO

G
T
M
Azimuths to Grid North
True North: -0.26°
Magnetic North: 7.01°

Magnetic Field
Strength: 48394.9snT
Dip Angle: 60.69°
Date: 3/6/2016
Model: IGRF2016

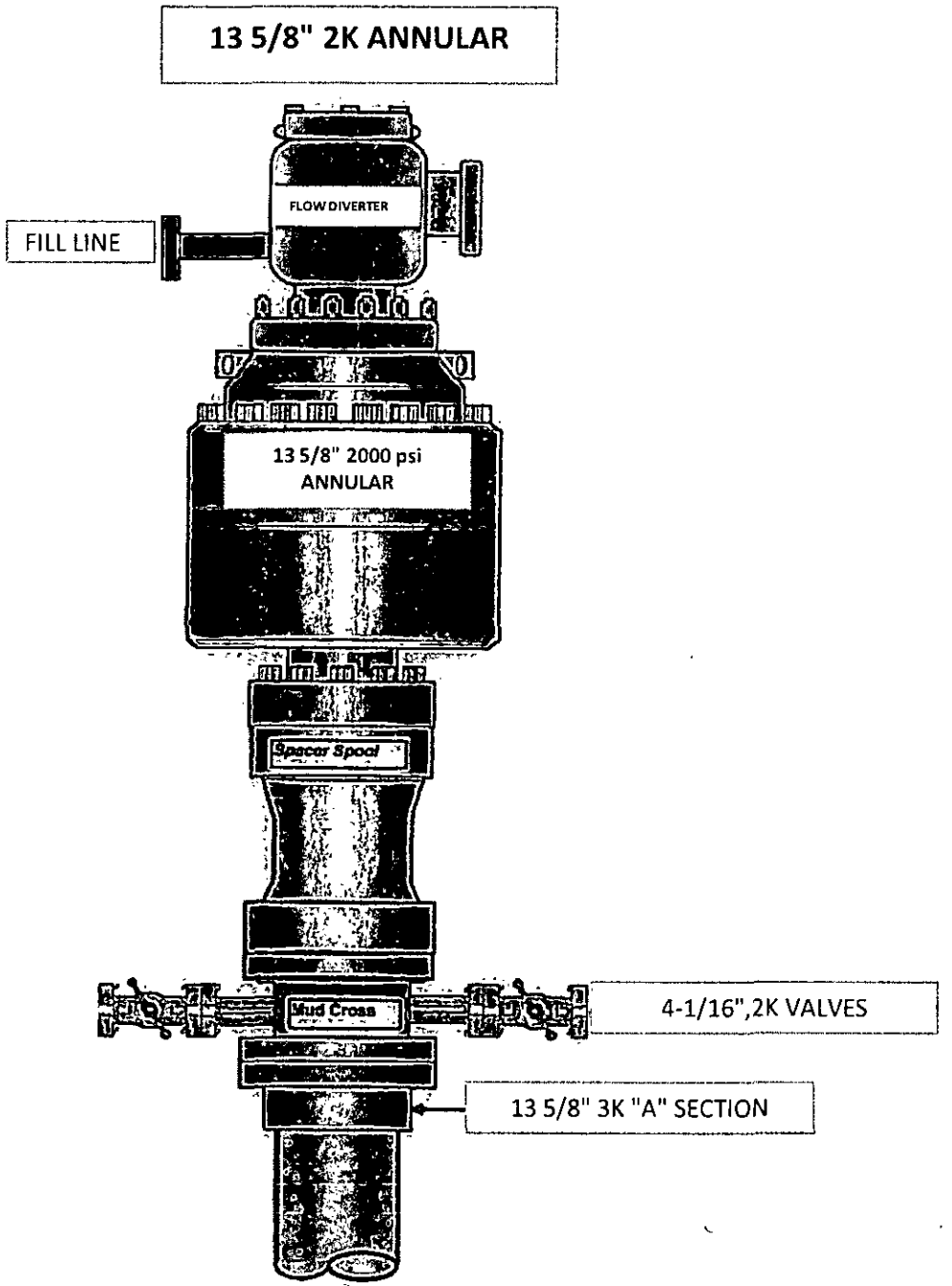
Terra Directional Services LLC
3705 South County Road 1210, Midland, TX 79706
Phone: 432-618-1210

Ground Elevation:: 3856.00
RKB Elevation: KB @ 3873.00usft (Silver Oak 3)

Northing	Easting	Latitude	Longitude
664973.50	646200.00	32° 49' 37.899 N	103° 51' 26.613 W

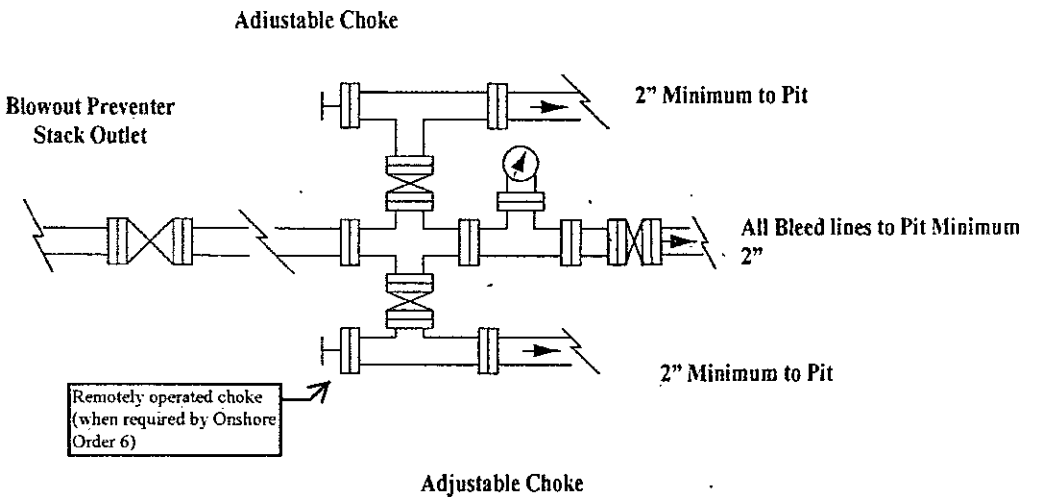
PROJECT DETAILS: Eddy County, NM (NAD-27 2016)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

Exhibit #10


13 5/8" 2K ANNULAR
FLOW DIVERTER
FILL LINE
13 5/8" 2000 psi
ANNULAR
Spacer Spool
Mud Cross
4-1/16",2K VALVES
13 5/8" 3K "A" SECTION

COG Operating LLC
Exhibit #9
Choke Schematic

Choke Manifold Requirement (2000 psi WP)



NOTES REGARDING THE BLOWOUT PREVENTERS

Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.

2. Wear ring to be properly installed in head.

3. Blow out preventer and all fittings must be in good condition. 2000 psi WP minimum.

4. All fittings to be flanged.

5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.

6. All choke and fill lines to be securely anchored especially ends of choke lines.

7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.

8. Kelly cock on Kelly.

9. Extension wrenches and hands wheels to be properly installed.

10. Blow out preventer control to be located as close to driller's position as feasible.

11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

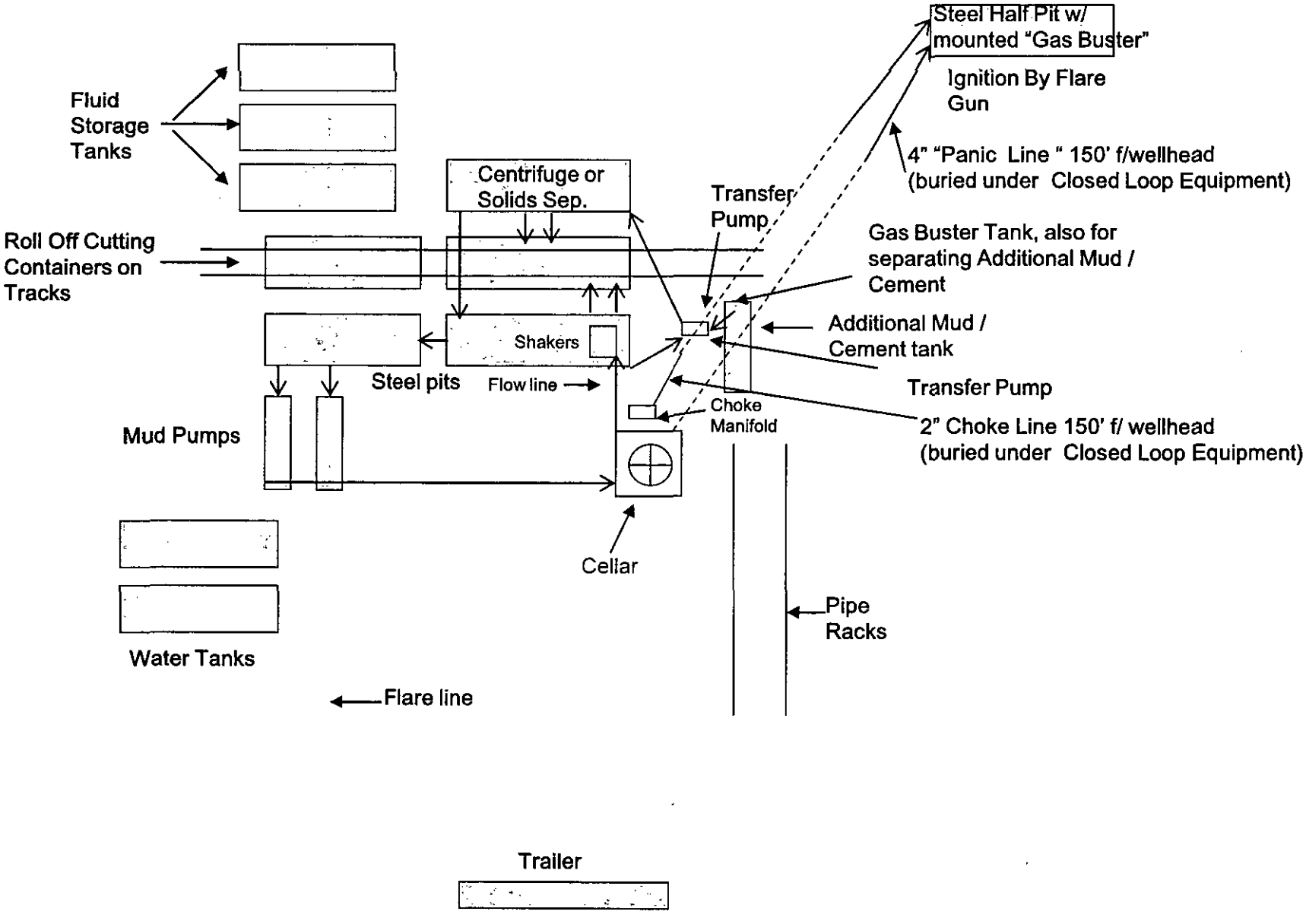
Cuttings will be hauled to either:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC

Closed Loop Equipment Diagram



COG Operating LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards an characteristics of hydrogen sulfide (H2S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H2S detectors alarms warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H2S on metal components. If high tensile tubular are to be used, personnel well be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

1. **Well Control Equipment:**

   A. Flare line.

   B. Choke manifold with minimum of one remotely operated choke.

   C. Closed Loop Blow Down Tank

   D. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

   E. Auxiliary equipment may include if applicable: mud-gas separator, annular preventer & rotating head.

2. **Protective equipment for essential personnel:**

   A. SCBA (Self contained breathing apparatus) 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

3. **H2S detection and monitoring equipment:**

   A. Portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

4. **Visual warning systems:**

   A. Wind direction indicators as shown on well site diagram.

   B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

5. **Mud program:**

   A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

6. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

   B. All elastomers used for packing and seals shall be H2S trim.

7. **Communication:**

   A. Radio communications in company vehicles including cellular telephone and 2-way radio.

   B. Land line (telephone) communication at Office.

8. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.

   B. There will be no drill stem testing.

EXHIBIT #7

WARNING

YOU ARE ENTERING AN H2S

AUTHORIZED PERSONNEL ONLY

1. BEARDS OR CONTACT LENSES NOT ALLOWED
2. HARD HATS REQUIRED
3. SMOKING IN DESIGNATED AREAS ONLY
4. BE WIND CONSCIOUS AT ALL TIMES
5. CHECK WITH COG OPERATING FOREMAN AT

COG OPERATING LLC
1-432-683-7443
1-575-746-2010

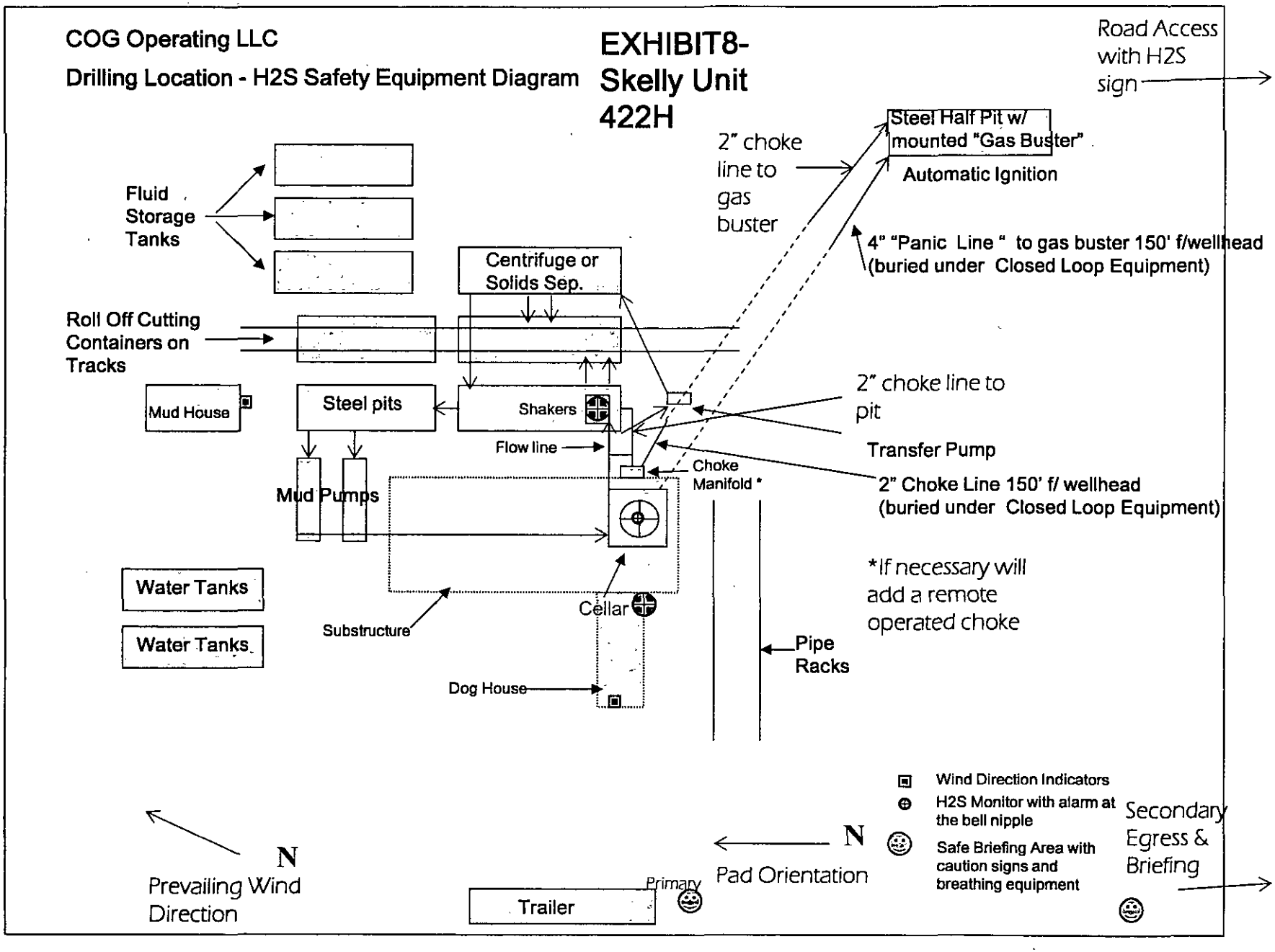
EDDY COUNTY EMERGENCY NUMBERS
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

LEA COUNTY EMERGENCY NUMBERS
HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

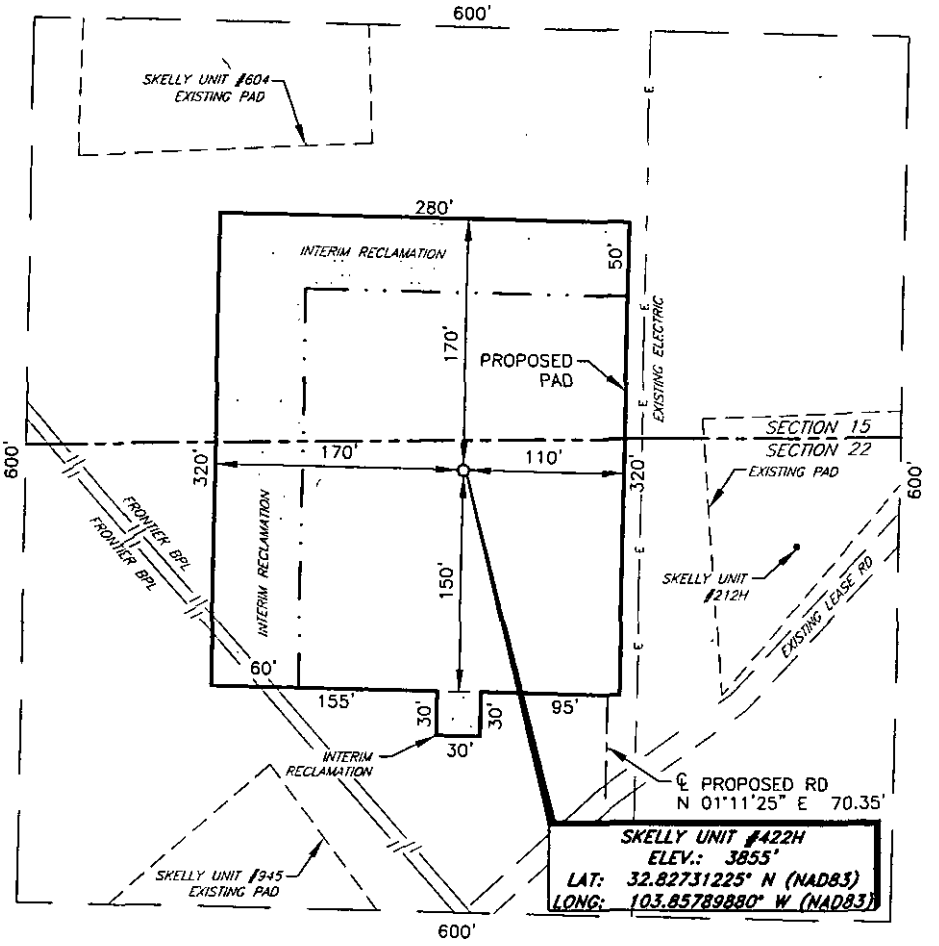
COG Operating LLC

Drilling Location - H2S Safety Equipment Diagram

EXHIBIT8- Skelly Unit 422H



COG OPERATING, LLC
INTERIM RECLAMATION
SKELLY UNIT #422H
(20' FNL & 2510' FWL)
SECTION 22, T17S, R31E
N. M. P. M., EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of US Hwy. 82 and NM HWY-529 (Bermuda Road)

Go East on US Hwy. 82 approx. 1.3 miles to a lease road on the left;

Turn left and go Northwest approx. 0.2 miles to a lease road on the left;

Turn left and go West approx. 0.2 miles to a lease road on the right;

Turn right and go North approx. 0.4 miles to a curve to the right;

Continue right and go Northeast approx. 0.2 miles to location on the left.

SCALE: 1" = 100'
0 50 100

BEARINGS ARE
NAD 83 GRID - NM EAST
DISTANCES ARE GROUND

Firm No.: TX 10193838 NM 4655451

NO.	REVISION	DATE

JOB NO.: LS1601041
DWG. NO.: 1601041REC

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 2-04-2016
SURVEYED BY: ML/CE
DRAWN BY: LPS
APPROVED BY: RMH
SHEET : 1 OF 1

Surface Use & Operating Plan

Skelly Unit 422H

- Surface Tenant: Olane Caswell, 1702 Gillham, Brownfield, TX 79316
- New Road: approx. 70.35'
- Flow Line: approx. 2082'
- Facilities: Skelly Unit 942 Battery

Well Site Information

V Door: South

Topsoil: North

Interim Reclamation: West/North

Notes

-N/A

Onsite: 2/2/2016

Richard Young(BLM), Caden Jameson (COG), Gary Box (RRC)

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Renewable Resource Consultants, LLC, Midland, TX.

B. All roads to the location are shown in the Vicinity Map. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted (red) in Vicinity Map. The road highlighted in the Vicinity Map will be used to access the well.

C. Directions to location: See Vicinity Map.

D. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease. Roads will be maintained according to specifications in section 2A of this Surface Use and Operating Plan. For all caliche roads indicated in RED on the Vicinity Map roads will be maintained a minimum of 2 times per year in dry conditions and 3 times per year in wet conditions.

2. Proposed Access Road:

The Elevation Plat shows that 70.35' of new access road will be required for this location. If any road is required it will be constructed as follows:

A. The maximum width of the running surface will be 20'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

B. The average grade will be less than 1%.

C. No turnouts are planned.

D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.

Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. Secondary candidate source will be Caswell Ranch owned Caliche Pit located in NESE of Section 9 Township 17 South Range 32 East.

3. Location of Existing Well:

The 1-mile Map shows all existing wells within a one-mile radius of this well.

As shown on this plat there are numerous wells producing from the San Andres and Yeso formations.

4. Location of Existing and/or Proposed Facilities:

A. COG Operating LLC does operate a production facility on this lease indicated below in B. (1). With the exception of a wellhead and pumping unit there are no current plans for facilities, flares, tanks, vessels, and/or associated production equipment to be left on the well site after drilling and completions have finished.

B. If the well is productive, contemplated facilities will be as follows:

1) Production will be sent Skelly Unit 942 Tank Battery located in Section 14 in T17S R31E. The facility location is shown in Flowline Map.

2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site the caliche will be hauled from secondary private source owned by Caswell Ranch owned Caliche Pit located in NESE of Section 9 Township 17 South Range 32 East.

4) Proposed flow lines (2), will follow an archaeologically approved route to the Skelly Unit 942 Tank Battery located in Section 14 in T17S R31E. The flowlines will be SDR 7 3" poly line laid on the surface and will be approximately 2082 feet in length. Normal working pressure of each flowline will be below 70 psi and carry a mixture of produced oil, water, and gas. See Flowline Map.

5) It will be necessary to run electric power if this well is productive. Power will be provided by Central Valley Electric (CVE). There will be necessary electric line construction for this well. CVE operates an existing primary line nearby and plats have been submitted with this APD showing proposed construction routes along existing disturbance.

6) If the well is productive, rehabilitation plans will include the following:

- The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. Water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Vicinity Map. A fresh water source is nearby and fast line may be laid along existing road ROW's and fresh water pumped to the well. Water will originate from private wells location described on the attached "Water Well Description" attached to this APD (Loco Hills Water Disposal Co). James R. Maloney, 575-677-2118. No water well will be drilled on the location.

6. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: The primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

B. An approximate 120' X 120' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and piled alongside the 120' by 120' area within the pad site.

D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in attached plat.

- In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit or other established mineral pit. Candidate source will be caliche pit from Caswell Ranch owned Caliche Pit located in NESE of Section 9 Township 17 South Range 32 East.

7. Methods of Handling W1-7ater Disposal:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud box commerciales and taken to R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

B. Drilling fluids will be contained in steel mud pits and taken to R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility. R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill-Lea Landfill LLC. Located at Mile Marker 64, Highway 62-180 East, P O Box 3247, Carlsbad, NM 88221. No toxic waste or hazardous chemicals will be produced by this operation.

E. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

F. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

G. Produced water from the well will be disposed of into COG Operating LLC's salt water disposal well system. Wells and respective locations are identified on the "SWD Well EXBT".

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

9. Well Site Layout:

A. The drill pad layout, with elevations staked by Renewable Resource Consultants, LLC, is shown in the Well Pad Layout plat. Dimensions of the pad and pits are also shown in Well Pad Layout plat. V door direction is South. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

A. Interim Reclamation will take place after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete. This area will be repaired or reclaimed within six (6) months after completion operations.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders. When required by BLM, the well pad site will be restored to match pre-construction grades. Final Reclamation will be completed within six (6) months of abandonment.

11. (Sedimentation and Erosion Control)

- No Sedimentation or Erosion Control will be necessary on this location as it is generally flat without little to no slope or cut and fill.

12.Surface Ownership:

A. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.

B. The surface tenant is Olane Caswell, 1702 Gillham, Brownfield, TX 79316.

C. The proposed road routes and surface location will be restored as directed by the BLM

13.Other Information:

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of New Mexico, LLC. Carlsbad, NM, 88220. 506 E Chapman Rd. , phone # 575.887.7667 and the results will be forwarded to your office in the near future. Otherwise, **COG will be participating in the Permian Basin MOA Program.**

14. Bond Coverage:

Bond Coverage is Nationwide Bond # 000215

15. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Brad English
Drilling Superintendent
COG Operating LLC
One Concho Center
600 W. Illinois
Midland, TX 79701
Phone (432) 818-2320 (office)
(432) 260-7995 (business)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W. Illinois
Midland, TX 79701
Phone (432) 685-4304 (office)
(432) 818-2254 (business)

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating, LLC
LEASE NO.:	NMLC029419A
WELL NAME & NO.:	422H-Skelly Unit
SURFACE HOLE FOOTAGE:	20'/N & 2510'/W
BOTTOM HOLE FOOTAGE	990'/N & 1650'/W
LOCATION:	Section 22, T.17 S., R.31 E., NMPM
COUNTY:	Eddy County, New Mexico

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Commercial Well Determination

A commercial well determination shall be submitted after production has been established for at least six months.

Unit Wells

The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

Avian Protection

Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006. The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all power line structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. The holder without liability or expense shall make such modifications and/or additions to the United States.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

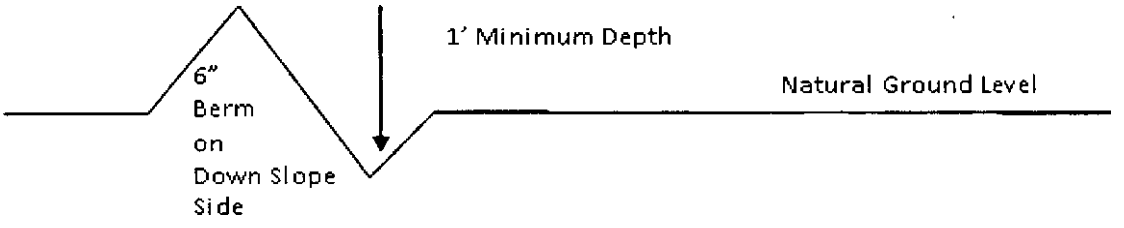
Turnouts

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattleguards
An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

Fence Requirement
Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

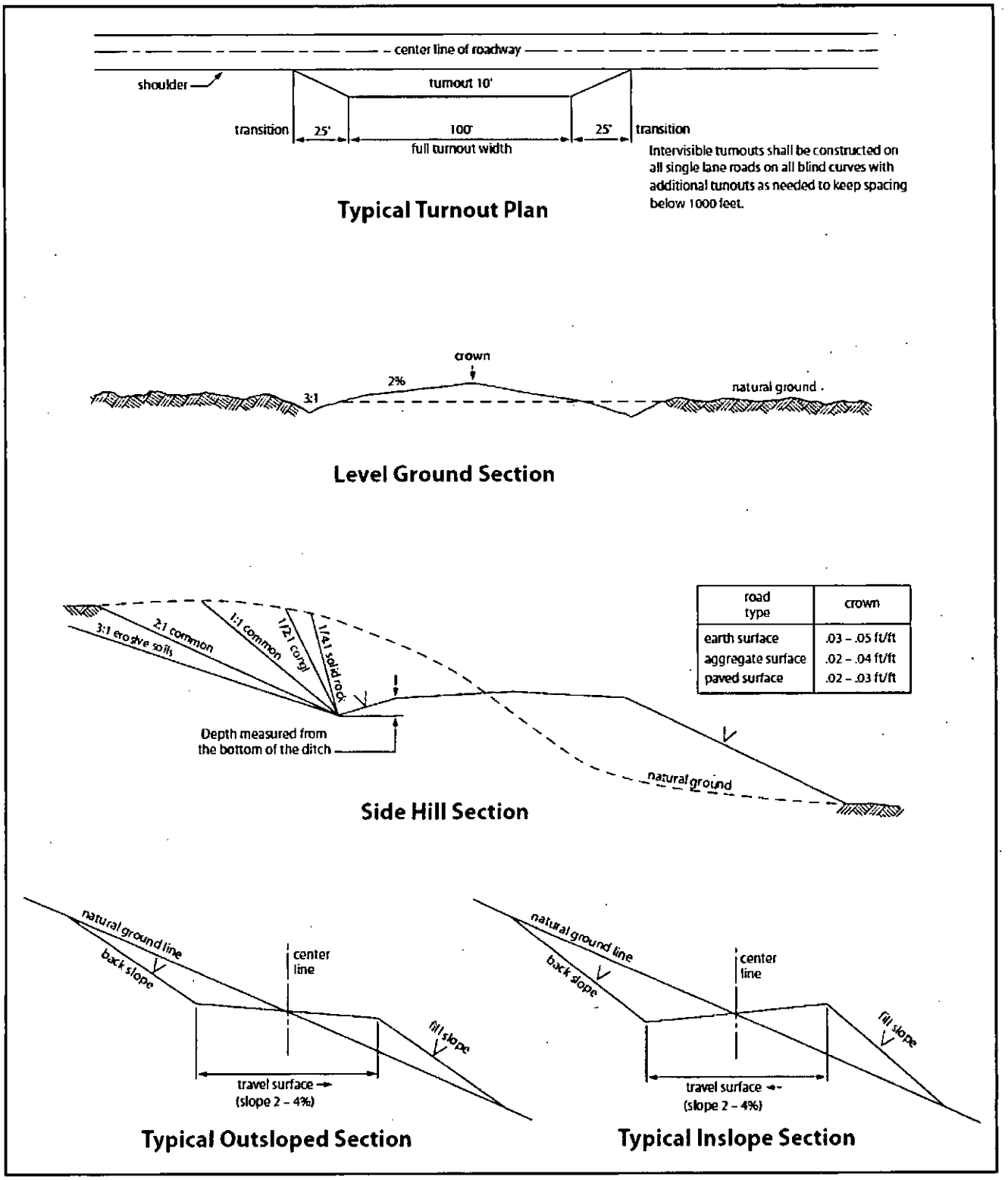


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. 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 Queen, Salado, and Artesia Groups. Possibility of lost circulation in the Rustler, Artesia Group, Grayburg and San Andres formations.

1. The **13-3/8** inch surface casing shall be set at approximately **510** feet (**in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet 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 **1740** feet (**base of Tansill Formation**), 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 1055', 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, contact the appropriate BLM office.

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 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 DV tool at depth of 4000', 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 circulation on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. 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 53.

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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. 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. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two 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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VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the Grant and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 *et seq.* (1982) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant (*see* 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way Holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way Holder on the Right-of-Way. This provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third parties.

4. Holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. Holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of Holder including, but not limited to: construction, operation, maintenance, and termination of the facility;
b. Activities of other parties including, but not limited to:
    (1) Land clearing
    (2) Earth-disturbing and earth-moving work
    (3) Blasting
    (4) Vandalism and sabotage;
c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Holder, regardless of fault. Upon failure of Holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he/she deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

8. Holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of

duney areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. *Excluding the pipe, all above-ground structures not subject to safety requirement* shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

18. Special Stipulations:

a. **Lesser Prairie-Chicken:** Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted.

b. This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on

facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent,

conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:
- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials

Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:
Pounds of seed x percent purity x percent germination = pounds pure live seed

NMOCD CONDITION OF APPROVAL

The *New!* Gas Capture Plan (GCP) notice is posted on the NMOCD website under Announcements. The Plan became effective May 1, 2016. A copy of the GCP form is included with the NOTICE and is also in our FORMS section under Unnumbered Forms. Please review filing dates for all applicable activities currently approved or pending and submit accordingly. Failure to file a GCP may jeopardize the operator's ability to obtain C-129 approval to flare gas after the initial 60-day completion period.