

CONCHO

COG Operating LLC

Lea County, NM (NAD-27 2015)

Branex-COG Federal Com #25H

SHL: 2075' FSL, 115' FWL, Sec 9, T17S, R32E, Unit L

PP: 2085' FSL, 330' FWL, Sec 9, T17S, R32E, Unit L

BHL: 2310' FSL, 220' FEL, Sec 9, T17S, R32E, Unit I

Design #1

Anticollision Report

20 February, 2017

HOBBS OCD
SEP 11 2017
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Anticollision Report



Company: COG Operating LLC

Project: Lea County, NM (NAD-27 2015)

Reference Site: Branex-COG Federal Com #25H

Site Error: 0.00 usft

Reference Well: SHL: 2075' FSL, 115' FWL, Sec 9, T17S, R32E, Unit L

Well Error: 0.00 usft

Reference Wellbore: BHL: 2310' FSL, 220' FEL, Sec 9, T17S, R32E, Unit I

Reference Design: Design #1

Local Co-ordinate Reference: Well SHL: 2075' FSL, 115' FWL, Sec 9, T17S, R32E, Unit L

TVD Reference: KB @ 4086.00usft (Silver Oak 3)

MD Reference: KB @ 4086.00usft (Silver Oak 3)

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at: 2.00 sigma

Database: EDM 5000.1 Single User Db

Offset TVD Reference: Offset Datum

Reference	Design #1
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum separation factor of 5.00
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic
Casing Method:	Not applied

Survey Tool Program Date 2/20/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	11,078.72	Design #1 (BHL: 2310' FSL, 220' FEL, Sec	MWD	MWD - Standard

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Branex-COG Federal Com #15H						
SHL: 2310' FSL, 150' FWL, Sec 9, T17S, R32E, Unit L -						Out of range
Lea County Offset Wells						
Maljamar-Grayburg Unit #44 - OH - OH	4,140.56	4,120.00	552.91	367.97	2.990	CC, ES, SF

Offset Design Lea County Offset Wells - Maljamar-Grayburg Unit #44 - OH - OH												Offset Site Error: 0.00 usft
Survey Program: 298-INC												Offset Well Error: 0.00 usft
Reference	Vertical	Offset	Semi Major Axis	Reference	Offset	Highside	Offset Wellbore Centre	Distance	Minimum	Separation	Warning	
Measured Depth (usft)	Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Factor	
2,700.00	2,700.00	2,679.89	2,679.59	5.94	106.93	96.40	-61.87	551.23	554.69	442.34	112.35	4.937
2,800.00	2,800.00	2,779.58	2,779.27	6.16	113.13	96.33	-61.19	551.23	554.62	435.86	118.76	4.670
2,900.00	2,900.00	2,879.77	2,879.47	6.39	116.49	96.27	-60.58	551.23	554.55	432.21	122.34	4.533
3,000.00	3,000.00	2,979.97	2,979.65	6.61	119.84	96.18	-59.64	551.23	554.45	428.52	125.92	4.403
3,100.00	3,100.00	3,080.13	3,079.81	6.84	124.06	96.05	-58.39	551.23	554.31	423.94	130.37	4.252
3,200.00	3,200.00	3,180.25	3,179.92	7.06	129.88	95.89	-56.88	551.23	554.16	417.75	136.41	4.062
3,300.00	3,300.00	3,280.36	3,280.02	7.28	135.69	95.71	-55.15	551.23	553.98	411.53	142.45	3.889
3,400.00	3,400.00	3,380.47	3,380.10	7.51	141.50	95.51	-53.19	551.23	553.79	405.29	148.50	3.729
3,500.00	3,500.00	3,480.42	3,480.03	7.73	147.29	95.29	-51.08	551.23	553.59	399.06	154.53	3.582
3,600.00	3,600.00	3,580.25	3,579.84	7.96	153.06	95.10	-49.21	551.23	553.42	392.88	160.54	3.447
3,700.00	3,700.00	3,680.09	3,679.67	8.18	158.83	94.94	-47.66	551.23	553.29	386.74	166.54	3.322
3,800.00	3,800.00	3,779.99	3,779.56	8.41	163.36	94.81	-46.37	551.23	553.18	381.86	171.31	3.229
3,900.00	3,900.00	3,879.91	3,879.48	8.63	167.34	94.69	-45.23	551.23	553.08	377.56	175.53	3.151
4,000.00	4,000.00	3,979.84	3,979.41	8.86	171.31	94.59	-44.25	551.23	553.00	373.27	179.74	3.077
4,100.00	4,100.00	4,079.82	4,079.38	9.08	174.84	94.50	-43.37	551.23	552.93	369.43	183.50	3.013
4,140.56	4,140.56	4,120.00	4,119.56	9.17	176.19	94.46	-43.02	551.23	552.91	367.97	184.94	2.990 CC, ES, SF
4,200.00	4,200.00	4,120.00	4,119.56	9.31	176.19	94.46	-43.02	551.23	556.09	372.08	184.02	3.022
4,300.00	4,300.00	4,120.00	4,119.56	9.53	176.19	94.46	-43.02	551.23	575.44	397.37	178.07	3.232
4,400.00	4,400.00	4,120.00	4,119.56	9.76	176.19	94.46	-43.02	551.23	610.75	442.74	168.01	3.635
4,500.00	4,500.00	4,120.00	4,119.56	9.98	176.19	94.46	-43.02	551.23	659.47	503.64	155.83	4.232

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

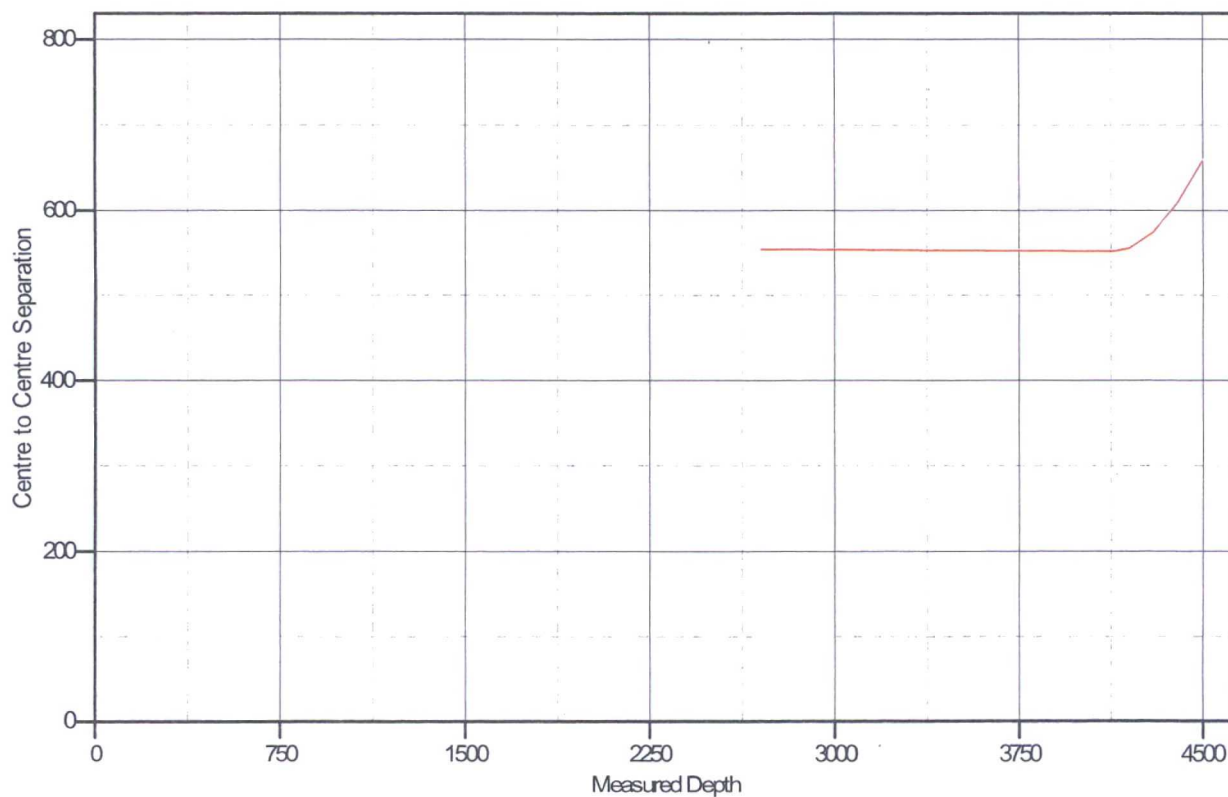
Company: COG Operating LLC
Project: Lea County, NM (NAD-27 2015)
Reference Site: Branex-COG Federal Com #25H
Site Error: 0.00 usft
Reference Well: SHL: 2075' FSL, 115' FWL, Sec 9, T17S, R32E, Unit L
Well Error: 0.00 usft
Reference Wellbore: BHL: 2310' FSL, 220' FEL, Sec 9, T17S, R32E, Unit I
Reference Design: Design #1

Local Co-ordinate Reference: Well SHL: 2075' FSL, 115' FWL, Sec 9, T17S, R32E, Unit L
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MD Reference: KB @ 4086.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 4086.00usft (Silver Oak 3)
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SHL: 2075' FSL, 115' FWL, Sec 9, T17S, R32E, Unit
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.30°

Ladder Plot



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 Maljamar-Grayburg Unit#44, OH, OHV0



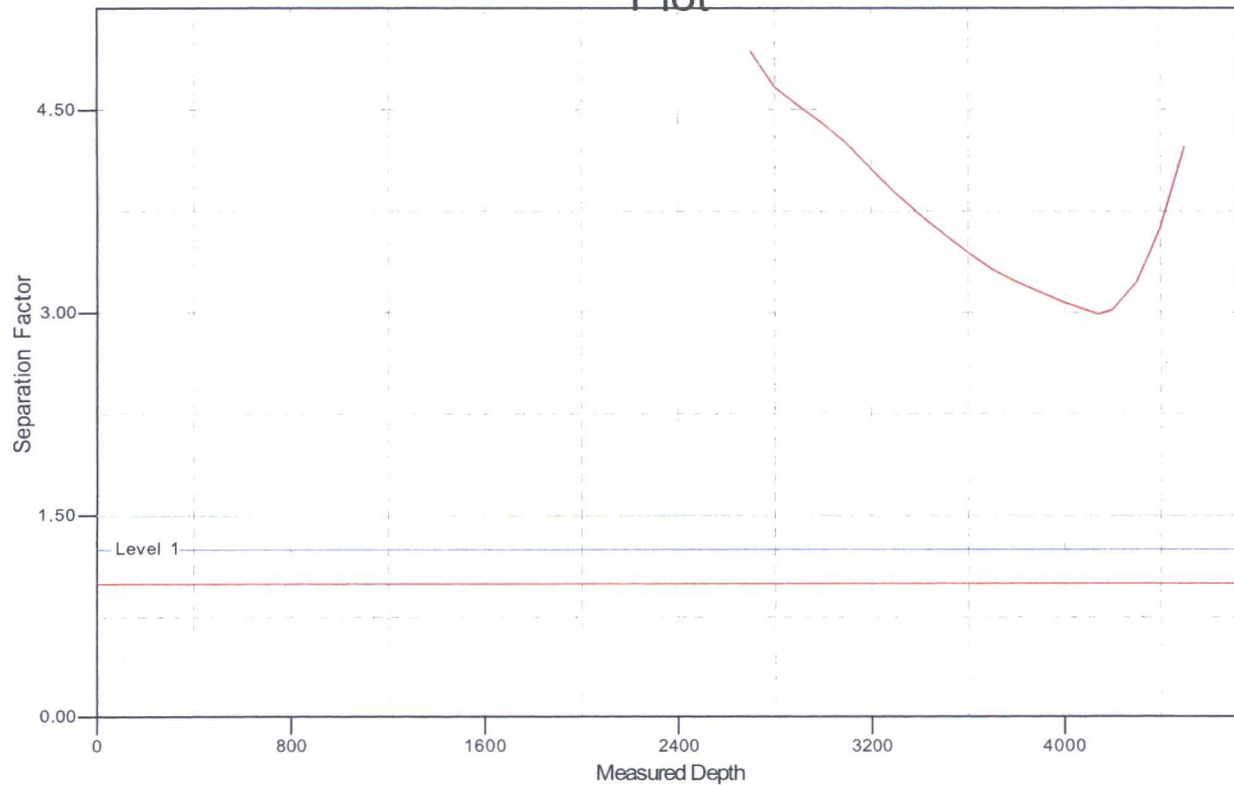
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Separation Factor Plot



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—▲— Maljamar-Grayburg Unit#44, OH, OHV0