

30-015-35887

COG OPERATING

Shugant
Eddy County, NM
Airbus Federal #1
VH - Job #32K10111017

Survey: Gyro

SDI Standard Survey Report

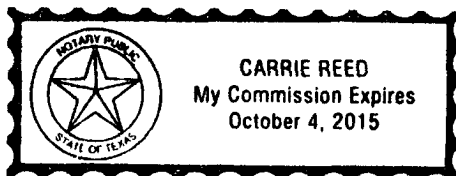
This survey is correct to the best of my knowledge and is supported by actual field data.

K. Wharton

Notarized this date 31st of December, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Airbus Federal #1
Project:	Shugant	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Airbus Federal #1	North Reference:	Grid
Wellbore:	VH - Job #32K10111017	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K10111017	Database:	EDM-Regulatory

Project	Shugant		
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	Eddy County, NM				
Site Position:		Northing:	608,945 90 usft	Latitude:	32° 40' 23 081 N
From:	Lat/Long	Easting:	655,249 61 usft	Longitude:	103° 49' 43 687 W
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0 27 °

Well	Airbus Federal #1, Vertical					
Well Position	+N/-S	0 0 usft	Northing:	608,945 90 usft	Latitude:	32° 40' 23 081 N
	+E/-W	0 0 usft	Easting:	655,249 61 usft	Longitude:	103° 49' 43 687 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	0 0 usft

Wellbore	VH - Job #32K10111017				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/21/2011	7 70	60 55	48,850

Design	VH - Job #32K10111017				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0 0	0 0	0 0	27 72	

Survey Program		Date 1/22/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100 0	11,670 0	Gyro (VH - Job #32K10111017)	Keeper	Keeper Gyro

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0 0	0 00	0 00	0.0	0 0	0 0	0 00	0 0	
100 0	0 21	12 30	100 0	0 2	0 0	12 30	0.2	
200 0	0 08	273 50	200 0	0 4	0 0	1 33	0.4	
300 0	0 27	295 10	300 0	0 5	-0 3	329 52	0.5	
400 0	0 24	304 82	400 0	0 7	-0 7	316 11	1 0	
500 0	0 30	281 08	500 0	0 9	-1 1	308 17	1 4	
600 0	0 31	289 07	600 0	1 0	-1 6	301 85	1 9	
700 0	0 29	281.26	700 0	1 1	-2 1	298 28	2 4	
800 0	0 14	262 19	800 0	1 2	-2 5	295 22	2 7	
900 0	0 12	188 05	900 0	1 0	-2 6	291 82	2 8	
1,000 0	0 06	133 67	1,000 0	0 9	-2 6	289 28	2 7	
1,100.0	0 11	95 24	1,100 0	0 9	-2 5	289 32	2 6	

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Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Airbus Federal #1	North Reference:	Grid
Wellbore:	VH - Job #32K10111017	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K10111017	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	0 23	114 82	1,200 0	0 8	-2 2	289 42	2 3
1,300 0	0 18	73 60	1,300 0	0 7	-1 8	291 54	2 0
1,400 0	0 42	74 93	1,400 0	0 9	-1 3	302 94	1 6
1,500 0	0 36	78 80	1,500 0	1 0	-0 7	326 54	1 2
1,600 0	0 84	49 77	1,600 0	1 6	0 2	7 01	1 6
1,700 0	1 56	44 88	1,700 0	3 0	1 7	29 74	3 5
1,800 0	1 82	52 31	1,799 9	4 9	3 9	38 55	6 3
1,900 0	2 01	54 27	1,899 9	6 9	6 6	43 66	9 6
2,000 0	1 95	51 80	1,999 8	9 0	9 4	46 15	13 0
2,100 0	1 71	50 88	2,099 7	11 0	11 9	47 18	16 2
2,200 0	1 79	53 84	2,199 7	12 9	14 3	48 00	19 2
2,300 0	1 53	51 95	2,299 7	14 6	16 6	48 65	22 1
2,400 0	1 00	42 27	2,399 6	16 1	18 2	48 61	24 3
2,500 0	0 61	18 30	2,499 6	17 2	19 0	47 79	25 6
2,600 0	0 54	359 04	2,599 6	18 2	19 1	46 45	26 4
2,700 0	0 45	355 55	2,699 6	19 1	19 1	45 07	27 0
2,800 0	0 45	20 69	2,799 6	19 8	19 2	44 11	27 6
2,900 0	0 46	32 44	2,899 6	20 5	19 6	43 63	28 4
3,000 0	0 51	13 82	2,999 6	21 3	19 9	43 05	29 1
3,100 0	0 36	16 86	3,099 6	22 0	20 1	42 36	29 8
3,200 0	0 36	340 87	3,199 6	22 6	20 1	41 58	30 3
3,300 0	0 33	350 36	3,299 6	23 2	19 9	40 65	30 6
3,400 0	0 42	342 35	3,399 6	23 8	19 8	39 66	31 0
3,500 0	0 43	334 48	3,499 6	24 5	19 5	38 47	31 3
3,600 0	0 38	326 27	3,599 6	25 1	19 1	37 29	31 6
3,700 0	0 48	337 51	3,699 6	25 8	18 8	36 08	31 9
3,800 0	0 48	347 39	3,799 6	26 6	18 6	34 89	32 4
3,900 0	0 44	346 96	3,899 6	27 4	18 4	33 86	33 0
4,000 0	0 39	333 40	3,999 6	28 1	18 1	32 87	33 4
4,100 0	0 50	353 50	4,099 6	28 8	17 9	31 91	33 9
4,200 0	0 78	14 41	4,199 6	29 9	18 1	31 13	34 9
4,300 0	0 63	6 52	4,299 6	31 1	18 3	30 45	36 1
4,400 0	0 70	8 08	4,399 6	32 3	18 4	29 75	37 1
4,500 0	0 62	2 81	4,499 6	33 4	18 5	29 04	38 2
4,600 0	0 70	8 91	4,599 5	34 5	18 7	28 39	39 3
4,700 0	0 78	9 52	4,699 5	35 8	18 9	27 79	40 5
4,800 0	0 80	4 62	4,799 5	37 2	19 0	27 12	41 8
4,900 0	0 99	11 98	4,899 5	38 7	19 3	26 47	43 3
5,000 0	0 90	1 25	4,999 5	40 4	19 5	25 76	44 8
5,100 0	1 01	10 81	5,099 5	42 0	19 7	25 08	46 4
5,200 0	1 02	10 02	5,199 5	43 7	20 0	24 54	48 1
5,300 0	1 11	6 85	5,299 5	45 6	20 2	23 95	49 9
5,400 0	1 16	4 80	5,399 4	47 6	20 4	23 27	51 8
5,500 0	1 10	14 65	5,499 4	49 5	20 8	22 77	53 7

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Well:	Airbus Federal #1	North Reference:	Grid
Wellbore:	VH - Job #32K10111017	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K10111017	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,600 0	1 07	11 06	5,599 4	51 3	21 2	22 44	55 5
5,700 0	1 00	18 62	5,699 4	53 1	21 7	22 19	57 3
5,800 0	1 01	18 71	5,799 4	54 7	22 2	22 09	59 1
5,900 0	1 06	22 62	5,899 4	56 4	22 9	22 05	60 9
6,000 0	0 95	23 88	5,999 3	58 0	23 5	22 08	62 6
6,100 0	1 00	23 99	6,099 3	59 6	24 2	22 13	64 3
6,200 0	0 96	18 12	6,199 3	61 2	24 9	22 10	66 0
6,300 0	0 99	16 49	6,299 3	62 8	25 4	21 98	67 7
6,400 0	0 90	17 59	6,399 3	64 4	25 8	21 87	69 4
6,500 0	0 94	16 98	6,499 3	65 9	26 3	21 76	71 0
6,600 0	0 83	21 53	6,599 3	67 4	26 8	21 71	72 5
6,700 0	0 77	8 16	6,699 2	68 7	27 2	21 58	73 9
6,800 0	0 81	6 36	6,799 2	70 1	27 4	21 32	75 2
6,900 0	0 85	9 49	6,899 2	71 5	27 6	21 07	76 7
7,000 0	0 90	8 90	6,999 2	73 0	27 8	20 84	78 1
7,100 0	0 87	16 83	7,099 2	74 5	28 1	20 69	79 7
7,200 0	1 12	9 60	7,199 2	76 2	28 5	20 52	81 4
7,300 0	1 27	358 68	7,299 2	78 3	28 7	20 11	83 4
7,400 0	1 40	1 23	7,399 1	80 6	28 7	19 57	85 6
7,500 0	1 38	5 80	7,499 1	83 0	28 8	19 13	87 9
7,600 0	1 42	5 70	7,599 1	85 5	29 1	18 78	90 3
7,700 0	1 30	12 12	7,699 0	87 8	29 4	18 52	92 6
7,800 0	1 09	19 22	7,799 0	89 8	30 0	18 45	94 7
7,900 0	1 38	14 75	7,899 0	91 9	30 6	18 41	96 8
8,000 0	1 37	27 38	7,999 0	94 1	31 4	18 48	99 2
8,100 0	1 36	29 57	8,098 9	96 2	32 6	18 71	101 6
8,200 0	1 29	25 38	8,198 9	98 3	33 6	18 90	103 9
8,300 0	1 39	18 31	8,298 9	100 4	34 5	18 97	106 2
8,400 0	1 45	19 99	8,398 9	102 8	35 3	18 97	108 7
8,500 0	1 73	13 78	8,498 8	105 4	36 1	18 91	111 4
8,600 0	2 43	21 88	8,598 8	108 9	37 3	18 90	115 1
8,700 0	2 46	24 76	8,698 7	112 8	39 0	19 06	119 3
8,800 0	2 57	22 32	8,798 6	116 8	40 7	19 22	123 7
8,900 0	2 41	22 75	8,898 5	120 8	42 4	19 33	128 0
9,000 0	2 43	25 32	8,998 4	124 7	44 1	19 48	132 2
9,100 0	2 31	26 61	9,098 3	128 4	45 9	19 67	136 3
9,200 0	2 05	28 23	9,198 2	131 8	47 6	19 88	140 1
9,300 0	1 78	28 58	9,298 2	134 7	49 2	20 08	143 4
9,400 0	1 61	33 78	9,398 1	137 2	50 8	20 30	146 3
9,500 0	1 53	37 85	9,498 1	139 5	52 4	20 58	149 0
9,600 0	1 50	38 11	9,598 1	141 5	54 0	20 88	151 5
9,700 0	1 42	43 58	9,698 0	143 5	55 7	21 20	153 9
9,800 0	1 34	44 81	9,798 0	145 2	57 3	21 55	156 1
9,900 0	1 25	48 48	9,898 0	146 7	59 0	21 89	158 1

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Well:	Airbus Federal #1	North Reference:	Grid
Wellbore:	VH - Job #32K10111017	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K10111017	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
10,000 0	1 29	47 50	9,997 9	148 2	60 6	22 24	160 1
10,100 0	1 36	48 70	10,097 9	149 8	62 3	22 60	162 2
10,200 0	1 43	52 62	10,197 9	151 3	64 2	23 00	164 4
10,300 0	1 54	51 32	10,297 9	152 9	66 3	23 43	166 6
10,400 0	1 49	48 68	10,397 8	154 6	68 3	23 83	169 0
10,500 0	1 56	48 16	10,497 8	156 4	70 3	24 20	171 4
10,600 0	1 53	45 54	10,597 7	158 2	72 2	24 54	173 9
10,700 0	1 50	43 84	10,697 7	160 1	74 1	24 84	176 4
10,800 0	1 29	42 84	10,797 7	161 9	75 8	25 09	178 7
10,900 0	1 41	44 24	10,897 7	163 6	77 4	25 32	181 0
11,000 0	1 38	42 65	10,997 6	165 3	79 1	25 56	183 3
11,100 0	1 16	59 72	11,097 6	166 7	80 8	25 85	185 3
11,200 0	1 15	59 51	11,197 6	167 8	82 5	26 19	186 9
11,300 0	0 95	70 58	11,297 6	168 5	84 1	26 53	188 4
11,400 0	0 88	74 09	11,397 6	169 0	85 7	26 88	189 5
11,500 0	0 88	73 93	11,497 5	169 4	87 1	27 22	190 5
11,600 0	0 92	60 82	11,597 5	170 1	88 6	27 52	191 7
11,670 0	0 77	79 97	11,667 5	170 4	89 5	27 72	192 5



Project: Shugant
 Eddy County, NM
 Well: Airbus Federal #1
 Wellbore: VH - Job #32K10111017
 Design: VH - Job #32K10111017

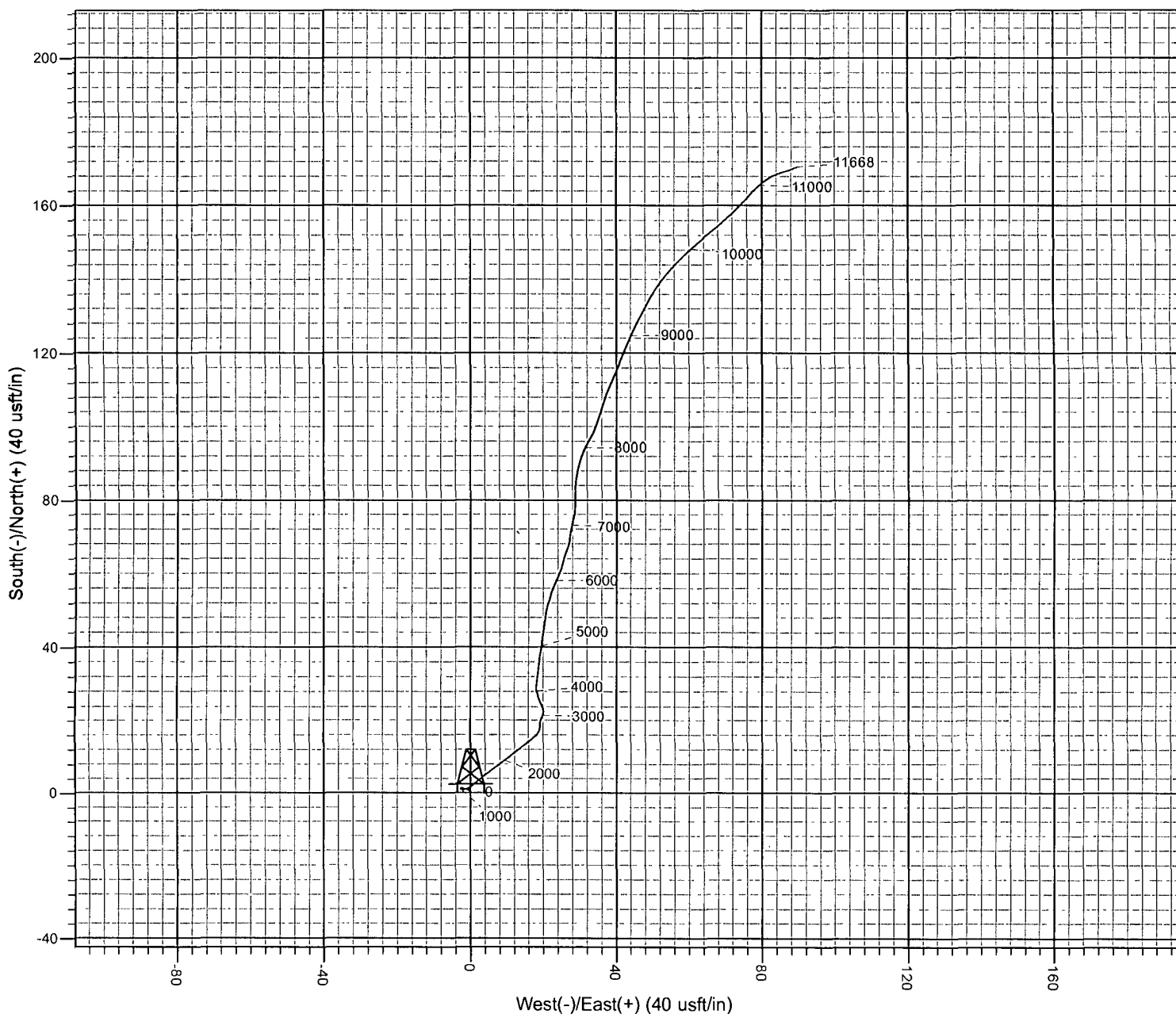


Azimuths to Grid North
 True North -0 27°
 Magnetic North 7 43°

Magnetic Field
 Strength 48849 5snT
 Dip Angle 60 55°
 Date 10/21/2011
 Model IGRF2010

WELL DETAILS: Airbus Federal #1
 WELL @ 0.0usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	608945.90	655249.61	32° 40' 23.081 N	103° 49' 43.687 W	



PROJECT DETAILS: Shugant
 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

SITE DETAILS: Eddy County, NM
 Site Centre Latitude: 32° 40' 23.081 N
 Longitude: 103° 49' 43.687 W
 Positional Uncertainty: 0.0
 Convergence: 0.27
 Local North: Grid