

EOG

**Sand Tank
Eddy County, NM
Duggan 12 Federal Com #3H
VH - Job #32K0910674**

30-015-37666

Survey: Actual

SDI Standard Survey Report

14 September, 2010

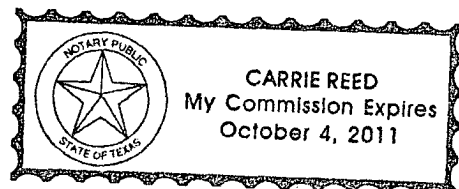
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notorized this date 5th of October, 2010.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report

Company:	EOG	Local Co-ordinate Reference:	Well Duggan 12 Federal Com #3H
Project:	Sand Tank	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Duggan 12 Federal Com #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0910674	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0910674	Database:	EDM-Regulatory

Project	Sand Tank		
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		

Well	Duggan 12 Federal Com #3H, Directional (Pathfinder)				
Well Position	+N/-S	0.0 usft	Northing:	642,684.38 usft	Latitude: 32° 45' 59.184 N
	+E/-W	0.0 usft	Easting:	596,337.13 usft	Longitude: 104° 1' 11.744 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level: 0.0 usft

Wellbore	VH - Job #32K0910674				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	9/14/2010	7.99	60.64	49,031

Design	VH - Job #32K0910674				
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	353.01	

Survey Program	Date 9/14/2010				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	7,900.1	Actual (VH - Job #32K0910674)	Keeper	Keeper Surface Readout 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	0.23	318.45	100.0	0.2	-0.1	318.45	0.2	
200.0	0.54	334.91	200.0	0.7	-0.5	327.34	0.9	
300.0	0.68	344.28	300.0	1.7	-0.8	334.40	1.9	
400.0	0.99	4.86	400.0	3.2	-0.9	343.85	3.3	
500.0	0.98	3.96	500.0	4.9	-0.8	350.88	4.9	
600.0	1.07	16.58	600.0	6.6	-0.5	356.05	6.6	
700.0	1.13	25.03	699.9	8.4	0.2	1.55	8.4	
800.0	1.15	35.10	799.9	10.1	1.2	6.88	10.2	
900.0	1.17	40.13	899.9	11.7	2.5	11.83	12.0	
1,000.0	1.49	51.09	999.9	13.3	4.1	17.21	13.9	
1,100.0	1.48	49.95	1,099.8	15.0	6.1	22.26	16.2	
1,200.0	1.18	43.81	1,199.8	16.5	7.8	25.32	18.3	
1,300.0	0.95	38.88	1,299.8	17.9	9.1	26.81	20.1	
1,400.0	0.86	36.10	1,399.8	19.2	10.0	27.59	21.6	
1,500.0	0.78	32.62	1,499.8	20.4	10.8	28.01	23.1	
1,600.0	0.69	28.13	1,599.8	21.5	11.5	28.14	24.3	

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Well:	Duggan 12 Federal Com #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0910674	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0910674	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,700.0	0.55	15.53	1,699.8	22.5	11.9	27.91	25.4	
1,800.0	0.43	6.69	1,799.7	23.3	12.1	27.39	26.2	
1,900.0	0.47	10.15	1,899.7	24.1	12.2	26.85	27.0	
2,000.0	0.42	355.57	1,999.7	24.8	12.2	26.21	27.7	
2,100.0	0.52	13.83	2,099.7	25.6	12.3	25.64	28.4	
2,200.0	0.76	42.26	2,199.7	26.6	12.9	25.82	29.5	
2,300.0	0.61	25.72	2,299.7	27.5	13.5	26.17	30.7	
2,400.0	0.60	21.09	2,399.7	28.5	14.0	26.08	31.7	
2,500.0	0.66	247.22	2,499.7	28.8	13.6	25.32	31.8	
2,600.0	0.53	154.71	2,599.7	28.1	13.3	25.27	31.1	
2,700.0	0.37	2.47	2,699.7	28.0	13.5	25.70	31.1	
2,800.0	0.34	290.40	2,799.7	28.5	13.2	24.92	31.4	
2,900.0	0.30	265.72	2,899.7	28.6	12.7	23.96	31.2	
3,000.0	0.30	241.01	2,999.7	28.4	12.2	23.24	30.9	
3,100.0	0.22	271.79	3,099.7	28.3	11.8	22.61	30.6	
3,200.0	0.48	349.04	3,199.7	28.7	11.5	21.85	30.9	
3,300.0	0.59	356.50	3,299.7	29.6	11.4	21.04	31.7	
3,400.0	0.78	351.77	3,399.7	30.8	11.3	20.08	32.8	
3,500.0	0.65	333.88	3,499.7	32.0	10.9	18.84	33.8	
3,600.0	0.68	318.93	3,599.7	33.0	10.3	17.33	34.5	
3,700.0	0.75	320.69	3,699.7	33.9	9.5	15.61	35.2	
3,800.0	0.75	321.44	3,799.7	34.9	8.7	13.92	36.0	
3,900.0	0.79	312.16	3,899.7	35.9	7.7	12.16	36.7	
4,000.0	0.75	322.25	3,999.6	36.9	6.8	10.48	37.5	
4,100.0	0.82	322.49	4,099.6	38.0	6.0	8.96	38.4	
4,200.0	0.81	321.99	4,199.6	39.1	5.1	7.46	39.4	
4,300.0	0.87	335.90	4,299.6	40.3	4.4	6.18	40.6	
4,400.0	1.04	345.07	4,399.6	41.9	3.8	5.22	42.1	
4,500.0	0.95	351.57	4,499.6	43.6	3.5	4.55	43.7	
4,600.0	1.06	358.53	4,599.6	45.4	3.3	4.20	45.5	
4,700.0	0.96	359.69	4,699.6	47.1	3.3	4.00	47.2	
4,800.0	1.11	356.96	4,799.5	48.9	3.2	3.79	49.0	
4,900.0	1.10	357.28	4,899.5	50.8	3.1	3.54	50.9	
5,000.0	1.23	353.78	4,999.5	52.9	3.0	3.23	53.0	
5,100.0	1.37	1.85	5,099.5	55.1	2.9	3.02	55.2	
5,200.0	1.53	350.99	5,199.4	57.6	2.7	2.72	57.7	
5,300.0	1.84	1.04	5,299.4	60.6	2.6	2.42	60.6	
5,400.0	2.30	9.36	5,399.3	64.2	2.9	2.60	64.2	
5,500.0	1.49	25.14	5,499.3	67.3	3.8	3.22	67.4	
5,600.0	1.52	29.86	5,599.2	69.6	5.0	4.11	69.8	
5,700.0	1.07	10.09	5,699.2	71.7	5.8	4.65	71.9	
5,800.0	0.83	5.00	5,799.2	73.4	6.1	4.72	73.6	
5,900.0	0.33	143.71	5,899.2	73.8	6.3	4.87	74.1	
6,000.0	0.46	87.01	5,999.2	73.6	6.9	5.32	73.9	

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Wellbore:	VH - Job #32K0910674	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0910674	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
6,100.0	1.35	36.53	6,099.2	74.6	8.0	6.09	75.0	
6,200.0	2.00	15.90	6,199.1	77.2	9.1	6.75	77.8	
6,300.0	1.99	0.74	6,299.1	80.6	9.6	6.82	81.2	
6,400.0	0.91	304.08	6,399.1	82.8	9.0	6.21	83.3	
6,500.0	0.90	288.16	6,499.0	83.5	7.6	5.20	83.9	
6,600.0	0.56	329.71	6,599.0	84.2	6.6	4.49	84.4	
6,700.0	1.00	341.69	6,699.0	85.4	6.1	4.08	85.6	
6,800.0	1.46	337.00	6,799.0	87.4	5.3	3.48	87.6	
6,900.0	1.90	328.27	6,899.0	90.0	3.9	2.51	90.1	
7,000.0	1.82	336.12	6,998.9	92.9	2.4	1.50	92.9	
7,100.0	0.84	311.77	7,098.9	94.8	1.2	0.75	94.8	
7,200.0	0.82	314.70	7,198.9	95.8	0.2	0.11	95.8	
7,300.0	1.02	321.78	7,298.9	97.0	-0.9	359.48	97.0	
7,400.0	1.28	321.29	7,398.8	98.6	-2.1	358.77	98.6	
7,500.0	1.49	318.13	7,498.8	100.4	-3.7	357.90	100.5	
7,600.0	1.44	311.28	7,598.8	102.2	-5.5	356.92	102.4	
7,700.0	1.85	311.40	7,698.7	104.1	-7.7	355.79	104.4	
7,800.0	2.19	305.75	7,798.7	106.3	-10.4	354.40	106.8	
7,900.0	1.89	306.48	7,898.6	108.4	-13.3	353.01	109.2	
7,900.1	1.90	306.40	7,898.7	108.4	-13.3	353.01	109.2	



Scientific Drilling
Directional Drilling Operations

Project: Sand Tank
Eddy County, NM
Well: Duggan 12 Federal Com #3H
Wellbore: VH - Job #32K0910674
Design: VH - Job #32K0910674

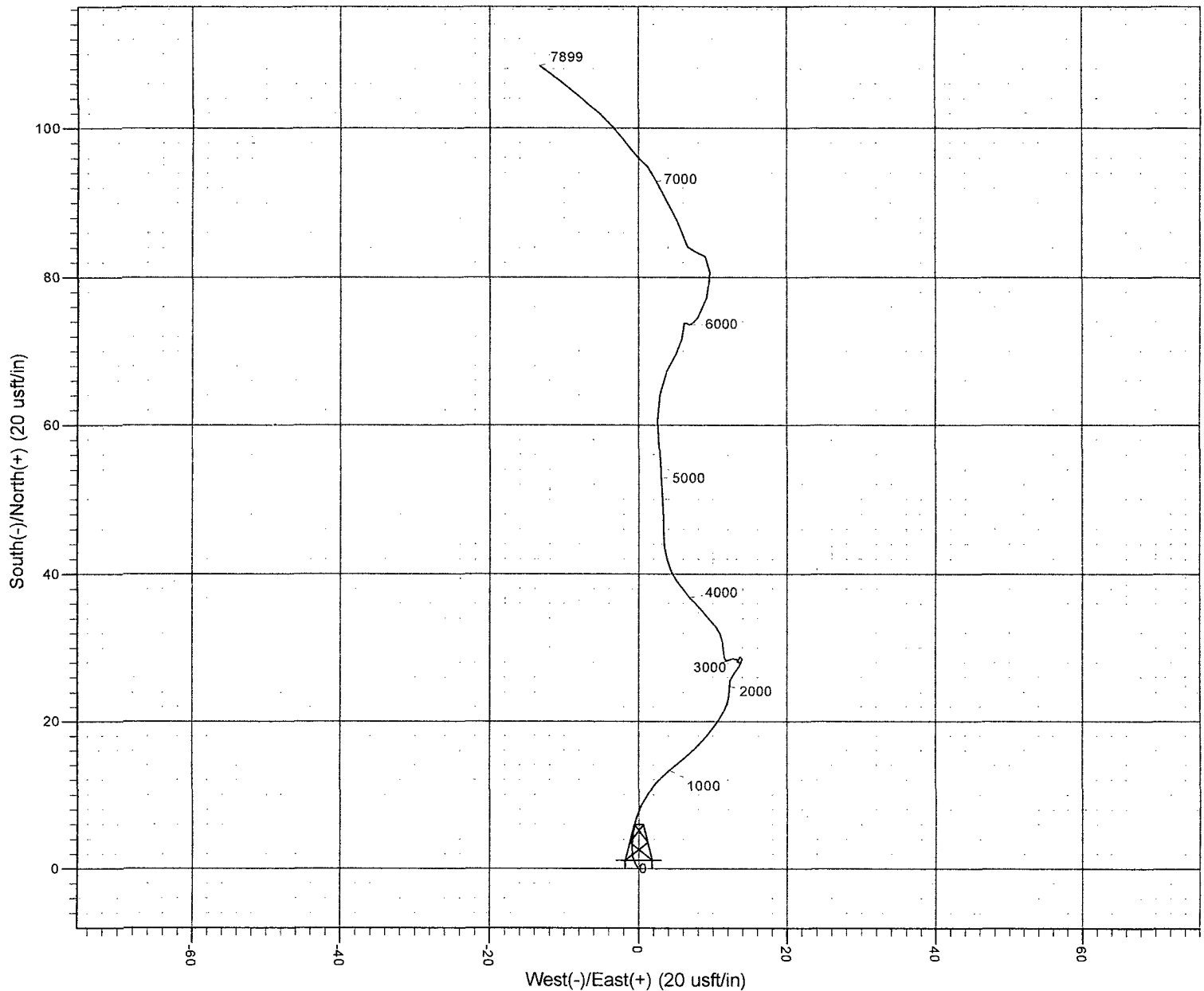


Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.82°

Magnetic Field
Strength: 49030.9snT
Dip Angle: 60.64°
Date: 9/14/2010
Model: BGGM2010

WELL DETAILS: Duggan 12 Federal Com #3H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	642684.38	596337.13	32° 45' 59.184 N	104° 1' 11.744 W	



PROJECT DETAILS: Sand Tank
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° 45' 59.184 N
Longitude: 104° 1' 11.744 W
Positional Uncertainty: 0.0
Convergence: 0.17
Local North: Grid