

NADEL & GUSSMAN LLC

Undesignated
Eddy County, NM
Rock Island 16 State #1H
VH - Job #32K0511495

30-015-38461



Survey: Actual

SDI Standard Survey Report

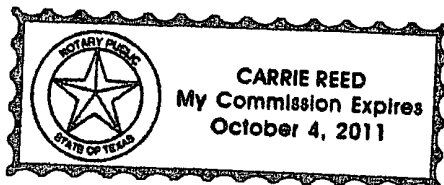
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notarized this date 30th of June, 2011.

[Signature: Carrie Reed]

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	NADEL & GUSSMAN LLC	Local Co-ordinate Reference:	Well Rock Island 16 State #1H
Project:	Undesignated	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Rock Island 16 State #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0511495	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0511495	Database:	EDM-Regulatory

Project:	Undesignated		
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:	636,173 10 usft	Latitude: 32° 44' 56 126 N
From: Lat/Long	Easting:	484,663 03 usft	Longitude: 104° 22' 59 585 W
Position Uncertainty: 0 0 usft	Slot Radius:	0"	Grid Convergence: -0 03 °

Well:	Rock Island 16 State #1H, Directional (DDC)		
Well Position	+N/-S	0 0 usft	Northing: 636,173 10 usft
	+E/-W	0 0 usft	Easting: 484,663.03 usft
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Ground Level:	0 0 usft

Wellbore: VH - Job #32K0511495

Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	5/26/2011	(°) 8.01	(°) 60 53	(nT) 48,872

Design: VH - Job #32K0511495

Audit Notes:

Version: 1 0 **Phase:** ACTUAL **Tie On Depth:**

Vertical Section	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0 0	0 0	0 0	113 08

Survey Program **Date:** 7/6/2011

From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100 0	2,770 0	Actual (VH - Job #32K0511495)	Keeper	Keeper Gyro

Survey

Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)
0.0	0 00	0 00	0 0	0 0	0 0	0 00	0 0
100.0	0 33	157 33	100.0	-0.3	0 1	157 33	0 3
200.0	0 03	165 88	200.0	-0.6	0 2	157 70	0 6
300.0	0 15	142.21	300.0	-0.7	0 3	155 33	0 8
400.0	0 23	122 99	400.0	-0.9	0 6	147 90	1 1
500.0	0 43	166 50	500.0	-1.4	0 8	149 16	1 6
600.0	0 68	163 30	600.0	-2.3	1 1	154 95	2 5
700.0	0 70	170 57	700.0	-3.5	1 3	158 81	3 7
800.0	0 58	192 87	800.0	-4.6	1 3	163 72	4 8
900.0	0 46	180 07	900.0	-5.5	1 2	167 40	5 6
1,000.0	0 15	188 25	1,000.0	-6.0	1 2	168 66	6 1
1,100.0	0 27	3 74	1,100.0	-5.9	1 2	168 49	6 0

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	NADEL & GUSSMAN LLC	Local Co-ordinate Reference:	Well Rock Island 16 State #1H
Project:	Undesignated	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Rock Island 16 State #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0511495	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0511495	Database:	EDM-Regulatory

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	0 77	353 15	1,200 0	-5.0	1 1	167 19	5 1
1,300 0	0 75	346 69	1,300 0	-3 7	0 9	166 22	3 8
1,400 0	0 58	347 80	1,400 0	-2 6	0 6	165 80	2 6
1,500 0	0 50	5 80	1,499 9	-1 6	0 6	160 26	1 7
1,600 0	0 44	346 72	1,599 9	-0 8	0 5	146 61	1 0
1,700 0	0 29	8 80	1,699 9	-0 2	0 5	111 68	0 5
1,800 0	0 19	305 67	1,799 9	0 2	0 4	68 90	0 4
1,900 0	0 08	316 58	1,899 9	0 3	0 2	35 21	0 4
2,000 0	0 04	62 63	1,999 9	0 4	0 2	27 95	0 4
2,100 0	0 09	146 11	2,099 9	0 3	0 3	40 33	0 4
2,200 0	0 12	127 75	2,199 9	0 2	0 4	64 62	0 4
2,300 0	0 37	128 01	2,299 9	-0 1	0 7	95 86	0 7
2,400 0	0 27	133 12	2,399 9	-0 4	1 2	110 57	1 2
2,500 0	0 15	111 25	2,499 9	-0 6	1 5	113 89	1 6
2,600 0	0 35	109 71	2,599 9	-0 8	1 9	113 09	2 0
2,700 0	0 42	110 98	2,699 9	-1 0	2 5	112 42	2 7
2,770 0	0 32	124 99	2,769 9	-1 2	2 9	113 08	3 1



SURVEY CALCULATION PROGRAM

TARGET DETAILS

OPERATOR:			NADEL & GUSSMAN HEYCO						Supervisors:				TARGET N-S		Directional		
WELL:			ROCK ISLAND 16 STATE # 1H						TONY BAUTISA MWD				TARGET E-W				
LOCATION:			EDDY CO. NM						TRAVIS BRUMLOW MWD				TARGET RADIUS				
JOB NUMBER:			WT-11260						ZANE BARBRE DD				TARGET DISPLACEMENT				
Curr<	Prev<	DIFF	S/Ahead			PROJ			DONALD DD		TARGET CLOSURE						
		0.0							KEITH CANNON Co. Rep		TARGET KBTVD		Horizontal		2528.00		
Slide/Seen		A/BR		BRN		JNT		D/S				DIP AZ				270.06	
0.00		#DIV/0!							PATRIOT #1		Rig		DIP DEG UP+/DN-		1.17		
													TARGET INCLINATION		91.17		
													Magnetic Declination		8.04		
Target #1		MD	TVD	Vertical Section		N-S		E-W		Sec/Plane	270.06	TARGET TRACKING					
		2389	2344.00	167.60		0.7		-167.6				TO CENTER					
SVY	MD	INC	TRUE	COURSE					DLS/	ABOVE(+)	RIGHT(+)	CLOSURE	CLOSURE	BUILD	WALK		
NUM			AZM	LENGTH	TVD	SECT	N-S	E-W	100	BELOW(-)	LEFT(-)	DIR	DISTANCE	RATE/	RATE/		
												(DEG AZ)	(FEET)	°/100'	°/100'		
25	2706	67.70	268.60	32.00	2523.77	453.42	16.37	-453.41	9.38	-5.03	15.89	272.07	453.70	9.38	-0.77		
26	2737	69.90	268.50	31.00	2534.98	482.31	15.63	-482.30	7.10	-16.83	15.13	271.86	482.55	7.10	-0.81		
27	2811	75.90	271.40	74.00	2556.74	553.00	15.60	-552.99	8.93	-40.03	15.02	271.62	553.21	8.11	10.12		
28	2843	79.50	271.30	32.00	2563.55	584.25	16.34	-584.24	11.25	-47.49	15.73	271.60	584.47	11.25	-0.82		
29	2875	82.60	270.40	32.00	2568.53	615.86	16.80	-615.84	10.08	-53.11	16.16	271.56	616.07	9.69	-7.50		
30	2907	84.70	269.50	32.00	2572.07	647.66	16.78	-647.64	7.13	-57.30	16.10	271.48	647.86	6.56	-7.55		
31	2938	86.70	268.80	31.00	2574.39	678.57	16.32	-678.55	6.83	-60.25	15.61	271.38	678.75	6.45	-6.08		
32	2970	88.70	268.90	32.00	2575.68	710.53	15.68	-710.52	6.26	-62.19	14.93	271.26	710.69	6.25	0.84		
33	3002	90.70	268.90	32.00	2575.85	742.52	15.06	-742.51	6.25	-63.01	14.28	271.16	742.66	6.25	0.00		
34	3034	90.40	269.00	32.00	2575.54	774.52	14.48	-774.50	0.99	-63.36	13.66	271.07	774.64	-0.94	0.84		
35	3066	90.20	268.70	32.00	2575.37	806.51	13.83	-806.49	1.13	-63.84	12.99	270.98	806.61	-0.62	-2.53		
36	3097	90.30	268.80	31.00	2575.24	837.50	13.16	-837.49	0.46	-64.34	12.28	270.90	837.59	0.32	0.87		
37	3129	90.30	268.50	32.00	2575.07	869.49	12.40	-869.48	0.94	-64.83	11.49	270.82	869.56	0.00	-2.53		
38	3161	90.40	268.20	32.00	2574.87	901.47	11.48	-901.46	0.99	-65.28	10.54	270.73	901.54	0.31	-2.53		
39	3193	90.50	268.10	32.00	2574.62	933.46	10.45	-933.44	0.44	-65.69	9.47	270.64	933.50	0.31	-0.84		
40	3225	89.30	268.80	32.00	2574.68	965.44	9.58	-965.43	4.34	-66.39	8.57	270.57	965.48	-3.75	5.91		
41	3256	88.90	268.50	31.00	2575.16	996.43	8.85	-996.42	1.61	-67.51	7.81	270.51	996.46	-1.29	-2.61		
42	3288	89.00	268.00	32.00	2575.75	1028.41	7.88	-1028.40	1.59	-68.75	6.80	270.44	1028.43	0.31	-4.22		
43	3320	89.40	267.70	32.00	2576.20	1060.38	6.68	-1060.37	1.56	-69.85	5.56	270.36	1060.39	1.25	-2.53		
44	3352	89.80	267.50	32.00	2576.42	1092.35	5.34	-1092.34	1.40	-70.73	4.19	270.28	1092.36	1.25	-1.69		
45	3383	90.30	267.50	31.00	2576.39	1123.32	3.98	-1123.32	1.61	-71.34	2.81	270.20	1123.32	1.61	0.00		
46	3415	89.50	268.70	32.00	2576.45	1155.30	2.92	-1155.30	4.51	-72.04	1.71	270.14	1155.30	-2.50	10.13		
47	3447	89.10	268.90	32.00	2576.84	1187.29	2.25	-1187.29	1.40	-73.09	1.01	270.11	1187.29	-1.25	1.69		
48	3478	89.10	268.60	31.00	2577.33	1218.28	1.58	-1218.28	0.97	-74.21	0.30	270.07	1218.28	0.00	-2.61		
49	3510	89.10	268.80	32.00	2577.83	1250.26	0.85	-1250.26	0.62	-75.36	-0.46	270.04	1250.26	0.00	1.69		



SURVEY CALCULATION PROGRAM

TARGET DETAILS

OPERATOR: NADEL & GUSSMAN HEYCO WELL: ROCK ISLAND 16 STATE # 1H LOCATION: EDDY CO. NM JOB NUMBER: WT-11260										Supervisors: TONY BAUTISA MWD TRAVIS BRUMLOW MWD ZANE BARBRE DD DONALD DD KEITH CANNON Co. Rep PATRIOT #1 Rig				TARGET N-S Directional TARGET E-W TARGET RADIUS TARGET DISPLACEMENT TARGET CLOSURE TARGET KBTVD Horizontal DIP AZ DIP DEG UP+/DN- TARGET INCLINATION Magnetic Declination				2528.00 270.06 1.17 91.17 8.04	
Curr<		Prev<		DIFF		S/Ahead		PROJ											
				0.0															
Slide/Seen		A/BR		BRN		JNT		D/S											
0.00				#DIV/0!															
Target #1		MD 2389		TVD 2344.00		Vertical Section 167.60		N-S 0.7		E-W -167.6		Sec/Plane 270.06		TARGET TRACKING TO CENTER ABOVE(+) RIGHT(+) BELOW(-) LEFT(-)					
SVY NUM	MD	INC	TRUE AZM	COURSE LENGTH	TVD	SECT	N-S	E-W	DLS/ 100	ABOVE(+) BELOW(-)	RIGHT(+) LEFT(-)	DIR (DEG AZ)	CLOSURE DISTANCE (FEET)	BUILD RATE/ °/100'	WALK RATE/ °/100'				
50	3542	89.30	268.40	32.00	2578.28	1282.25	0.07	-1282.25	1.40	-76.46	-1.27	270.00	1282.25	0.63	-3.38				
51	3574	89.80	267.80	32.00	2578.53	1314.23	-0.99	-1314.23	2.44	-77.37	-2.37	269.96	1314.23	1.56	-5.06				
52	3606	90.10	267.20	32.00	2578.56	1346.20	-2.39	-1346.20	2.10	-78.05	-3.80	269.90	1346.20	0.94	-5.06				
53	3638	90.20	266.20	32.00	2578.47	1378.14	-4.23	-1378.15	3.14	-78.62	-5.67	269.82	1378.15	0.31	-8.44				
54	3670	90.00	266.80	32.00	2578.42	1410.08	-6.18	-1410.09	1.98	-79.22	-7.66	269.75	1410.10	-0.62	5.06				
55	3701	89.50	267.30	31.00	2578.55	1441.04	-7.78	-1441.05	2.28	-79.98	-9.29	269.69	1441.07	-1.61	4.36				
56	3733	89.40	267.30	32.00	2578.86	1473.00	-9.29	-1473.01	0.31	-80.94	-10.83	269.64	1473.04	-0.31	0.00				
57	3765	89.30	268.70	32.00	2579.22	1504.98	-10.40	-1504.99	4.39	-81.96	-11.98	269.60	1505.02	-0.31	11.81				
58	3797	88.90	269.60	32.00	2579.72	1536.97	-10.88	-1536.98	3.08	-83.11	-12.49	269.59	1537.02	-1.25	7.59				
59	3829	89.00	269.70	32.00	2580.31	1568.96	-11.07	-1568.97	0.44	-84.35	-12.72	269.60	1569.01	0.31	0.84				
60	3860	89.00	269.80	31.00	2580.85	1599.96	-11.21	-1599.97	0.32	-85.53	-12.88	269.60	1600.01	0.00	0.87				
61	3890	89.60	270.40	30.00	2581.22	1629.95	-11.16	-1629.97	2.83	-86.51	-12.86	269.61	1630.00	2.00	5.40				
62	3921	89.80	270.60	31.00	2581.38	1660.95	-10.89	-1660.96	0.91	-87.30	-12.63	269.62	1661.00	0.65	1.74				
63	3951	90.00	270.70	30.00	2581.43	1690.95	-10.55	-1690.96	0.75	-87.97	-12.32	269.64	1690.99	0.67	0.90				
64	3982	90.30	271.30	31.00	2581.35	1721.95	-10.00	-1721.96	2.16	-88.52	-11.81	269.67	1721.99	0.97	5.23				
65	4012	90.60	271.40	30.00	2581.12	1751.94	-9.30	-1751.95	1.05	-88.90	-11.13	269.70	1751.97	1.00	0.90				
66	4041	90.80	270.40	29.00	2580.76	1780.93	-8.84	-1780.94	3.52	-89.13	-10.71	269.72	1780.96	0.69	-9.31				
67	4071	91.50	269.70	30.00	2580.16	1810.92	-8.82	-1810.94	3.30	-89.15	-10.71	269.72	1810.96	2.33	-6.30				
68	4102	91.20	269.80	31.00	2579.43	1841.92	-8.95	-1841.93	1.02	-89.05	-10.88	269.72	1841.95	-0.97	0.87				
69	4133	90.90	269.00	31.00	2578.86	1872.91	-9.28	-1872.92	2.76	-89.11	-11.24	269.72	1872.94	-0.97	-6.97				
70	4164	90.70	268.40	31.00	2578.43	1903.90	-9.98	-1903.91	2.04	-89.31	-11.97	269.70	1903.93	-0.65	-5.23				
71	4194	90.50	268.40	30.00	2578.11	1933.88	-10.82	-1933.89	0.67	-89.61	-12.84	269.68	1933.92	-0.67	0.00				
72	4225	90.70	268.60	31.00	2577.79	1964.87	-11.63	-1964.88	0.91	-89.92	-13.69	269.66	1964.92	0.65	1.74				
73	4256	90.50	269.70	31.00	2577.47	1995.86	-12.09	-1995.88	3.61	-90.23	-14.18	269.65	1995.91	-0.65	9.58				
74	4286	90.20	270.00	30.00	2577.28	2025.86	-12.17	-2025.88	1.41	-90.66	-14.29	269.66	2025.91	-1.00	2.70				

OPERATOR:			NADEL & GUSSMAN HEYCO						Supervisors:			TARGET N-S		Directional							
WELL:			ROCK ISLAND 16 STATE # 1H						TONY BAUTISA			MWD		TARGET E-W							
LOCATION:			EDDY CO. NM						TRAVIS BRUMLOW			MWD		TARGET RADIUS							
JOB NUMBER:			WT-11260						ZANE BARBRE			DD		TARGET DISPLACEMENT							
Curr<	Prev<	DIFF	S/Ahead						PROJ			DONALD			DD		TARGET CLOSURE				
		0.0							KEITH CANNON			Co. Rep			TARGET KBTVD		Horizontal		2528.00		
Slide/Seen			A/BR		BRN		JNT		D/S					DIP AZ				270.06			
0.00		#DIV/0!							PATRIOT #1			Rig			DIP DEG UP+/DN-		1.17				
															TARGET INCLINATION		91.17				
Target #1			MD	TVD	Vertical Section		N-S	E-W	Sec/Plane	270.06	TARGET TRACKING		Magnetic Declination		8.04						
			2389	2344.00	167.60		0.7	-167.6			TO CENTER		CLOSURE		CLOSURE		BUILD		WALK		
SVY			TRUE		COURSE				DLS/	ABOVE(+)		RIGHT(+)		DIR		DISTANCE		RATE/		RATE/	
NUM			MD	INC	AZM	LENGTH	TVD	SECT	N-S	E-W	100	BELOW(-)	LEFT(-)	(DEG AZ)		(FEET)		°/100'		°/100'	
75	4317	90.20	270.20	31.00	2577.17	2056.86	-12.11	-2056.88	0.65	-91.18	-14.27	269.66	2056.91	0.00	1.74						
76	4348	90.70	270.30	31.00	2576.93	2087.86	-11.98	-2087.87	1.64	-91.57	-14.16	269.67	2087.91	1.61	0.87						
77	4378	90.90	270.20	30.00	2576.51	2117.86	-11.85	-2117.87	0.75	-91.77	-14.06	269.68	2117.90	0.67	-0.90						
78	4407	91.00	269.90	29.00	2576.03	2146.85	-11.82	-2146.87	1.09	-91.88	-14.07	269.68	2146.90	0.34	-2.79						
79	4437	90.90	269.70	30.00	2575.53	2176.85	-11.93	-2176.86	0.75	-91.99	-14.21	269.69	2176.90	-0.33	-1.80						
80	4468	91.00	269.70	31.00	2575.02	2207.84	-12.09	-2207.86	0.32	-92.11	-14.40	269.69	2207.89	0.32	0.00						
81	4498	91.30	270.00	30.00	2574.42	2237.84	-12.17	-2237.85	1.41	-92.12	-14.51	269.69	2237.88	1.00	2.70						
82	4530	92.00	270.50	32.00	2573.50	2269.82	-12.03	-2269.84	2.69	-91.85	-14.40	269.70	2269.87	2.19	4.22						
83	4560	92.40	270.20	30.00	2572.34	2299.80	-11.84	-2299.82	1.67	-91.31	-14.25	269.70	2299.85	1.33	-2.70						
84	4593	92.90	270.30	33.00	2570.82	2332.77	-11.70	-2332.78	1.55	-90.46	-14.14	269.71	2332.81	1.52	0.82						
85	4625	93.00	270.00	32.00	2569.17	2364.72	-11.62	-2364.74	0.99	-89.47	-14.09	269.72	2364.77	0.31	-2.53						
86	4657	92.40	270.20	32.00	2567.66	2396.69	-11.56	-2396.70	1.98	-88.61	-14.07	269.72	2396.73	-1.87	1.69						
87	4689	91.80	270.10	32.00	2566.49	2428.67	-11.48	-2428.68	1.90	-88.09	-14.02	269.73	2428.71	-1.87	-0.84						
88	4720	91.60	269.80	31.00	2565.57	2459.65	-11.50	-2459.67	1.16	-87.81	-14.08	269.73	2459.69	-0.65	-2.61						
89	4752	91.70	269.30	32.00	2564.65	2491.64	-11.76	-2491.65	1.59	-87.54	-14.36	269.73	2491.68	0.31	-4.22						
90	4784	91.40	269.80	32.00	2563.79	2523.62	-12.01	-2523.64	1.82	-87.33	-14.65	269.73	2523.67	-0.94	4.22						
91	4816	91.00	269.60	32.00	2563.11	2555.62	-12.17	-2555.63	1.40	-87.31	-14.85	269.73	2555.66	-1.25	-1.69						
92	4848	91.00	269.30	32.00	2562.56	2587.61	-12.48	-2587.62	0.94	-87.40	-15.19	269.72	2587.65	0.00	-2.53						
93	4879	90.90	269.00	31.00	2562.04	2618.60	-12.94	-2618.62	1.02	-87.52	-15.68	269.72	2618.65	-0.32	-2.61						
94	4910	90.90	268.50	31.00	2561.56	2649.59	-13.62	-2649.61	1.61	-87.67	-16.39	269.71	2649.64	0.00	-4.36						
95	4942	90.90	269.20	32.00	2561.05	2681.58	-14.26	-2681.59	2.19	-87.82	-17.07	269.70	2681.63	0.00	5.91						
96	4974	90.90	269.30	32.00	2560.55	2713.57	-14.68	-2713.59	0.31	-87.97	-17.52	269.69	2713.63	0.00	0.84						
97	5006	90.90	269.50	32.00	2560.05	2745.57	-15.01	-2745.58	0.62	-88.12	-17.89	269.69	2745.62	0.00	1.69						
98	5038	90.70	269.80	32.00	2559.60	2777.56	-15.21	-2777.58	1.13	-88.33	-18.12	269.69	2777.62	-0.63	2.53						
99	5069	90.50	269.70	31.00	2559.28	2808.56	-15.34	-2808.58	0.72	-88.64	-18.28	269.69	2808.62	-0.65	-0.87						

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