



ConocoPhillips

SJB (NM West)
SEC 23-T30N-R11W
Ross Federal #1N
API # 30-045-34909
Original Hole

Survey: Actual

Standard Survey Report

09 February, 2011

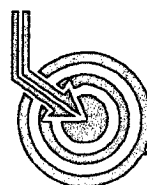
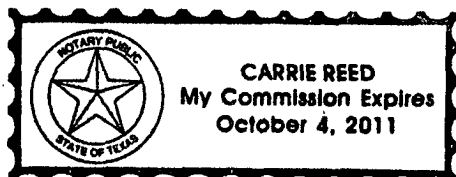
This survey is correct to the best of my knowledge and is supported by actual field data.



Notarized this date 9th of February, 2011.



Notary Signature
County of Midland
State of Texas



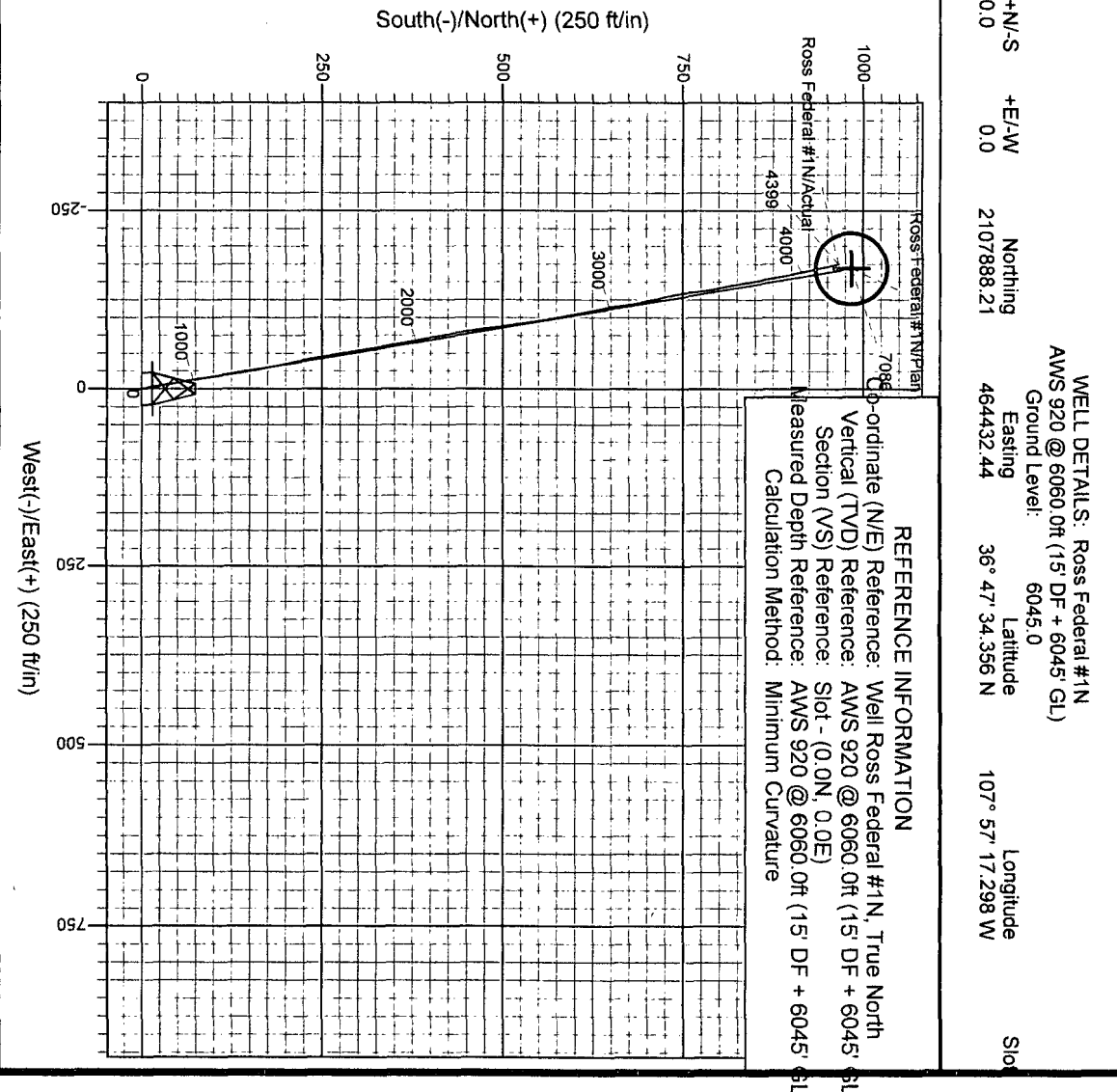
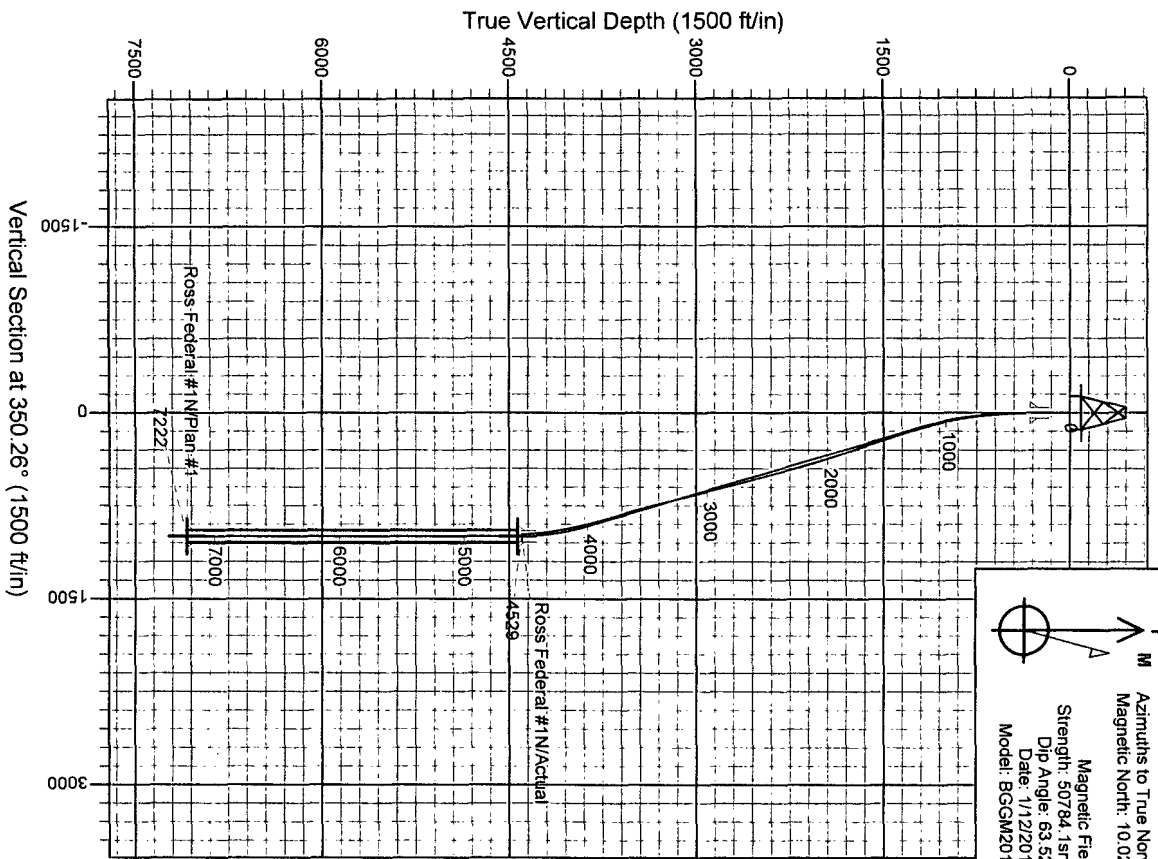
Scientific Drilling
Directional Drilling Operations

Project: SUB (NM West)
Site: SEC 23-T30N-R11W
Well: Ross Federal #1N
Wellbore: Original Hole
Design: Plan #1

Azimuths to True North
Magnetic North: 10.02°
Magnetic Field Strength: 50784.1 nT
Dip Angle: 63.52° +N/-S
Date: 1/12/2011 0.0
Model: BGGM2010

Well Details: Ross Federal #1N
AWS 920 @ 6060.0ft (15' DF + 6045' GI)
Ground Level: 6045.0
Easting: 46432.44
Latitude: 36° 47' 34.356 N
Longitude: 107° 57' 17.298 W
Slot

REFERENCE INFORMATION
D-coordinate (N/E) Reference: Well Ross Federal #1N, True North
Vertical (TVD) Reference: AWS 920 @ 6060.0ft (15' DF + 6045' GI)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: AWS 920 @ 6060.0ft (15' DF + 6045' GI)
Calculation Method: Minimum Curvature



COMPANY DETAILS: ConocoPhillips
Calculation Method: Minimum Curvature
Error System: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Combined Covariances
Warning Method: Risk Ratio

PROJECT DETAILS: SUB (NM West)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico West 3003
System Datum: Mean Sea Level

SITE DETAILS: SEC 23-T30N-R11W
San Juan County NM
Site Centre Latitude: 36° 47' 34.356 N
Longitude: 107° 57' 17.298 W
Positional Uncertainty: 7.5
Convergence: -0.07
Local North: True

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Ross Federal #1N
Project:	SJB (NM West)	TVD Reference:	AWS 920 @ 6060.0ft (15' DF + 6045' GL)
Site:	SEC 23-T30N-R11W	MD Reference:	AWS 920 @ 6060.0ft (15' DF + 6045' GL)
Well:	Ross Federal #1N	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	edmCOP

Project	SJB (NM West), New Mexico, S-Type MV/DK Wells		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		Using Well Reference Point
Map Zone:	New Mexico West 3003		Using geodetic scale factor

Site	SEC 23-T30N-R11W		
Site Position:		Northing:	2,107,888.21 ft
From:	Lat/Long	Easting:	464,432.44 ft
Position Uncertainty:	15.0 ft	Slot Radius:	6-1/8"
		Latitude:	36° 47' 34.356 N
		Longitude:	107° 57' 17.298 W
		Grid Convergence:	-0.07 °

Well	Ross Federal #1N, S-Type MV/DK Well		
Well Position	+N/-S	0.0 ft	Northing: 2,107,888.21 ft
	+E/-W	0.0 ft	Easting: 464,432.44 ft
Position Uncertainty	3.5 ft	Wellhead Elevation:	ft
		Latitude:	36° 47' 34.356 N
		Longitude:	107° 57' 17.298 W
		Ground Level:	6,045.0 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	1/12/2011	10.02	63.52	50,784

Design	Original Hole			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	349.72

Survey Program	Date 2/9/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
267.0	4,529.0	Actual (Original Hole)	MWD SDI	MWD - Standard ver 1.0.1

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
267.0	0.21	22.02	267.0	0.5	0.2	0.4	0.08	0.08	0.00	
329.0	0.05	67.97	329.0	0.6	0.3	0.5	0.29	-0.26	74.11	
360.0	0.08	3.35	360.0	0.6	0.3	0.5	0.24	0.10	-208.45	
390.0	0.64	335.50	390.0	0.8	0.2	0.7	1.90	1.87	-92.83	
421.0	1.38	346.92	421.0	1.3	0.0	1.3	2.46	2.39	36.84	
452.0	2.03	349.09	452.0	2.2	-0.1	2.2	2.11	2.10	7.00	
483.0	2.63	346.84	483.0	3.4	-0.4	3.4	1.96	1.94	-7.26	
514.0	2.97	351.49	513.9	4.9	-0.7	5.0	1.32	1.10	15.00	
544.0	3.84	352.87	543.9	6.7	-0.9	6.7	2.91	2.90	4.60	
575.0	4.65	352.62	574.8	9.0	-1.2	9.0	2.61	2.61	-0.81	
606.0	5.19	350.78	605.7	11.6	-1.6	11.7	1.81	1.74	-5.94	
637.0	5.70	351.50	636.5	14.5	-2.1	14.6	1.66	1.65	2.32	

Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Ross Federal #1N
Project:	SJB (NM West)	TVD Reference:	AWS 920 @ 6060.0ft (15' DF + 6045' GL)
Site:	SEC 23-T30N-R11W	MD Reference:	AWS 920 @ 6060.0ft (15' DF + 6045' GL)
Well:	Ross Federal #1N	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	edmCOP

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
667.0	6.46	352.62	666.4	17.6	-2.5	17.8	2.56	2.53	3.73
697.0	6.75	350.94	696.2	21.1	-3.0	21.2	1.16	0.97	-5.60
728.0	7.34	351.18	726.9	24.8	-3.6	25.0	1.91	1.90	0.77
758.0	7.95	349.97	756.7	28.7	-4.2	29.0	2.10	2.03	-4.03
788.0	8.62	349.45	786.3	33.0	-5.0	33.4	2.25	2.23	-1.73
817.0	9.02	347.82	815.0	37.4	-5.9	37.8	1.63	1.38	-5.62
848.0	9.62	348.26	845.6	42.3	-6.9	42.8	1.95	1.94	1.42
878.0	10.33	348.60	875.1	47.4	-8.0	48.0	2.37	2.37	1.13
908.0	10.96	347.09	904.6	52.8	-9.1	53.6	2.30	2.10	-5.03
939.0	11.40	347.06	935.0	58.6	-10.5	59.6	1.42	1.42	-0.10
973.0	11.86	348.58	968.3	65.3	-11.9	66.4	1.63	1.35	4.47
1,005.0	12.48	350.93	999.6	72.0	-13.1	73.2	2.48	1.94	7.34
1,037.0	12.52	352.71	1,030.9	78.8	-14.1	80.1	1.21	0.13	5.56
1,070.0	13.13	353.35	1,063.0	86.1	-15.0	87.4	1.90	1.85	1.94
1,102.0	13.86	352.33	1,094.1	93.5	-15.9	94.8	2.40	2.28	-3.19
1,134.0	14.24	352.55	1,125.2	101.2	-17.0	102.6	1.20	1.19	0.69
1,166.0	14.96	352.03	1,156.2	109.2	-18.0	110.7	2.29	2.25	-1.63
1,198.0	15.86	351.14	1,187.0	117.6	-19.3	119.2	2.91	2.81	-2.78
1,231.0	16.77	350.62	1,218.7	126.8	-20.8	128.4	2.79	2.76	-1.58
1,263.0	17.22	350.10	1,249.3	136.0	-22.3	137.8	1.48	1.41	-1.63
1,295.0	17.34	349.81	1,279.8	145.3	-24.0	147.3	0.46	0.38	-0.91
1,328.0	18.08	349.10	1,311.3	155.2	-25.8	157.3	2.34	2.24	-2.15
1,360.0	18.47	348.93	1,341.7	165.1	-27.7	167.4	1.23	1.22	-0.53
1,392.0	18.27	348.23	1,372.0	174.9	-29.7	177.4	0.93	-0.63	-2.19
1,425.0	17.92	348.43	1,403.4	185.0	-31.8	187.7	1.08	-1.06	0.61
1,457.0	18.14	348.17	1,433.8	194.7	-33.8	197.6	0.73	0.69	-0.81
1,521.0	17.97	347.06	1,494.7	214.1	-38.1	217.4	0.60	-0.27	-1.73
1,586.0	17.94	347.79	1,556.5	233.6	-42.4	237.4	0.35	-0.05	1.12
1,650.0	18.31	350.61	1,617.3	253.2	-46.1	257.3	1.49	0.58	4.41
1,715.0	18.70	350.93	1,679.0	273.5	-49.5	278.0	0.62	0.60	0.49
1,778.0	18.70	350.75	1,738.6	293.5	-52.7	298.2	0.09	0.00	-0.29
1,842.0	18.71	350.20	1,799.3	313.7	-56.1	318.7	0.28	0.02	-0.86
1,907.0	18.52	349.80	1,860.9	334.1	-59.7	339.4	0.35	-0.29	-0.62
1,971.0	18.23	349.69	1,921.6	354.0	-63.3	359.6	0.46	-0.45	-0.17
2,036.0	17.69	349.92	1,983.4	373.7	-66.8	379.6	0.84	-0.83	0.35
2,100.0	17.14	349.49	2,044.5	392.6	-70.2	398.8	0.88	-0.86	-0.67
2,165.0	16.61	348.99	2,106.7	411.1	-73.8	417.7	0.85	-0.82	-0.77
2,229.0	15.86	349.90	2,168.1	428.7	-77.0	435.6	1.24	-1.17	1.42
2,294.0	15.21	349.92	2,230.8	445.8	-80.1	453.0	1.00	-1.00	0.03
2,358.0	14.67	351.93	2,292.6	462.1	-82.7	469.5	1.17	-0.84	3.14
2,423.0	14.98	351.85	2,355.4	478.6	-85.0	486.1	0.48	0.48	-0.12
2,487.0	16.17	352.00	2,417.1	495.6	-87.5	503.3	1.86	1.86	0.23
2,552.0	15.72	352.49	2,479.6	513.3	-89.9	521.1	0.72	-0.69	0.75
2,616.0	16.43	351.11	2,541.1	530.8	-92.4	538.8	1.26	1.11	-2.16
2,681.0	16.62	350.95	2,603.4	549.1	-95.3	557.3	0.30	0.29	-0.25
2,745.0	15.80	350.27	2,664.9	566.7	-98.2	575.1	1.32	-1.28	-1.06
2,809.0	14.08	348.92	2,726.7	583.0	-101.2	591.6	2.74	-2.69	-2.11
2,874.0	13.61	348.57	2,789.8	598.2	-104.2	607.2	0.73	-0.72	-0.54
2,938.0	13.24	348.84	2,852.1	612.8	-107.1	622.1	0.59	-0.58	0.42
3,003.0	13.66	348.75	2,915.3	627.6	-110.0	637.2	0.65	0.65	-0.14
3,067.0	14.16	348.95	2,977.4	642.7	-113.0	652.6	0.78	0.78	0.31
3,132.0	14.78	352.62	3,040.3	658.7	-115.6	668.8	1.70	0.95	5.65
3,196.0	14.46	352.45	3,102.3	674.7	-117.7	684.9	0.50	-0.50	-0.27
3,261.0	15.29	346.51	3,165.1	691.1	-120.8	701.6	2.67	1.28	-9.14

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Site:	SEC 23-T30N-R11W	MD Reference:	AWS 920 @ 6060.0ft (15' DF + 6045' GL)
Well:	Ross Federal #1N	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	edmCOP

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,325.0	15.95	347.56	3,226.7	707.9	-124.6	718.8	1.12	1.03	1.64
3,390.0	14.48	345.96	3,289.4	724.5	-128.5	735.8	2.35	-2.26	-2.46
3,454.0	13.82	348.83	3,351.5	739.8	-131.9	751.5	1.50	-1.03	4.48
3,519.0	14.06	353.91	3,414.6	755.3	-134.3	767.1	1.92	0.37	7.82
3,583.0	16.00	353.50	3,476.4	771.8	-136.1	783.7	3.04	3.03	-0.64
3,647.0	16.65	349.41	3,537.8	789.5	-138.8	801.6	2.06	1.02	-6.39
3,712.0	15.62	347.30	3,600.3	807.2	-142.4	819.7	1.82	-1.58	-3.25
3,776.0	16.91	349.10	3,661.7	824.8	-146.1	837.6	2.16	2.02	2.81
3,841.0	16.84	349.95	3,723.9	843.3	-149.5	856.5	0.39	-0.11	1.31
3,905.0	16.55	350.03	3,785.2	861.4	-152.7	874.8	0.45	-0.45	0.13
3,970.0	14.85	350.12	3,847.8	878.7	-155.7	892.4	2.62	-2.62	0.14
4,034.0	13.55	347.35	3,909.8	894.1	-158.8	908.1	2.29	-2.03	-4.33
4,099.0	12.66	346.68	3,973.1	908.5	-162.1	922.9	1.39	-1.37	-1.03
4,164.0	11.23	347.75	4,036.7	921.6	-165.1	936.3	2.23	-2.20	1.65
4,228.0	10.10	347.72	4,099.6	933.2	-167.6	948.1	1.77	-1.77	-0.05
4,293.0	8.91	346.16	4,163.7	943.7	-170.0	958.8	1.87	-1.83	-2.40
4,357.0	6.65	347.51	4,227.1	952.1	-172.0	967.5	3.54	-3.53	2.11
4,422.0	5.06	347.97	4,291.8	958.6	-173.4	974.1	2.45	-2.45	0.71
4,486.0	3.89	345.11	4,355.6	963.4	-174.6	979.1	1.86	-1.83	-4.47
4,518.0	3.34	343.88	4,387.5	965.4	-175.1	981.1	1.74	-1.72	-3.84
4,529.0	3.19	342.67	4,398.5	966.0	-175.3	981.7	1.50	-1.36	-11.00