

COP Deviation Report

JICARILLA 150 #8M

Operator BURLINGTON RESOURCES OIL & GAS COMPANY LP	Legal WellName JICARILLA 150 #8M	API / UWI 3003930998	County RIO ARRIBA	State/Province NEW MEXICO
Surface Legal Location 002-026N-005W-G	N/S Dist (ft) 1,625.00	N/S Ref FNL	E/W Dist (ft) 1,560.00	E/W Ref FEL

Survey Data				
Date	MD (ftKB)	Incl (°)	Method	Survey Company
4/29/2011	129.00	0.75	Inc-Drop	MO-TE DRILLING INC.
4/29/2011	229.00	0.75	Inc-Drop	MO-TE DRILLING INC
4/29/2011	329.00	0.75	Inc-Drop	MO-TE DRILLING INC
5/11/2011	338.00	0.47	IncAzi-MWD	Scientific Drilling
5/11/2011	388.00	0.77	IncAzi-MWD	Scientific Drilling
5/11/2011	450.00	1.96	IncAzi-MWD	Scientific Drilling
5/11/2011	512.00	3.22	IncAzi-MWD	Scientific Drilling
5/11/2011	573.00	4.39	IncAzi-MWD	Scientific Drilling
5/11/2011	634.00	4.27	IncAzi-MWD	Scientific Drilling
5/11/2011	696.00	4.99	IncAzi-MWD	Scientific Drilling
5/11/2011	758.00	6.59	IncAzi-MWD	Scientific Drilling
5/11/2011	819.00	9.79	IncAzi-MWD	Scientific Drilling
5/12/2011	881.00	10.72	IncAzi-MWD	Scientific Drilling
5/12/2011	946.00	12.50	IncAzi-MWD	Scientific Drilling
5/12/2011	1,009.00	13.63	IncAzi-MWD	Scientific Drilling
5/12/2011	1,041.00	14.41	IncAzi-MWD	Scientific Drilling
5/12/2011	1,105.00	15.89	IncAzi-MWD	Scientific Drilling
5/12/2011	1,168.00	17.12	IncAzi-MWD	Scientific Drilling
5/12/2011	1,232.00	18.55	IncAzi-MWD	Scientific Drilling
5/12/2011	1,296.00	19.78	IncAzi-MWD	Scientific Drilling
5/12/2011	1,359.00	21.20	IncAzi-MWD	Scientific Drilling
5/12/2011	1,423.00	22.13	IncAzi-MWD	Scientific Drilling
5/12/2011	1,486.00	22.76	IncAzi-MWD	Scientific Drilling
5/12/2011	1,550.00	23.24	IncAzi-MWD	Scientific Drilling
5/12/2011	1,613.00	23.83	IncAzi-MWD	Scientific Drilling
5/12/2011	1,677.00	25.18	IncAzi-MWD	Scientific Drilling
5/12/2011	1,740.00	26.22	IncAzi-MWD	Scientific Drilling
5/12/2011	1,804.00	26.69	IncAzi-MWD	Scientific Drilling
5/12/2011	1,868.00	26.57	IncAzi-MWD	Scientific Drilling
5/12/2011	1,931.00	26.22	IncAzi-MWD	Scientific Drilling
5/12/2011	1,995.00	26.42	IncAzi-MWD	Scientific Drilling
5/12/2011	2,058.00	26.60	IncAzi-MWD	Scientific Drilling
5/12/2011	2,122.00	26.94	IncAzi-MWD	Scientific Drilling
5/12/2011	2,185.00	27.55	IncAzi-MWD	Scientific Drilling
5/12/2011	2,249.00	27.70	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as _____ for ConocoPhillips Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

Subscribed and sworn to me this _____

Notary Public in and for San Juan County, New Mexico

My Commission expires _____

Survey Data					
Date	MD (ftKB)	Incl (°)	Method	Survey Company	
5/12/2011	2,313.00	27.83	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,376.00	27.12	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,440.00	26.29	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,503.00	26.27	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,567.00	25.70	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,630.00	25.47	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,694.00	24.67	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,757.00	25.10	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,821.00	25.66	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,884.00	25.80	IncAzi-MWD	Scientific Drilling	
5/12/2011	2,948.00	26.04	IncAzi-MWD	Scientific Drilling	
5/12/2011	3,012.00	23.16	IncAzi-MWD	Scientific Drilling	
5/12/2011	3,075.00	21.68	IncAzi-MWD	Scientific Drilling	
5/12/2011	3,139.00	21.20	IncAzi-MWD	Scientific Drilling	
5/12/2011	3,202.00	20.34	IncAzi-MWD	Scientific Drilling	
5/12/2011	3,266.00	18.02	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,329.00	16.06	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,393.00	15.47	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,457.00	13.73	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,520.00	10.41	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,584.00	7.83	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,647.00	7.07	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,711.00	6.01	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,761.00	4.38	IncAzi-MWD	Scientific Drilling	
5/13/2011	3,817.00	2.55	IncAzi-MWD	Scientific Drilling	
5/24/2011	7,966.00	1.50	Inc-WL	Phoenix Services LLC	

I, the undersigned, certify that I acting in my capacity as Drilling Engineer for ConocoPhillips Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

Ben Tolman

Subscribed and sworn to me this 6/22/11

Notary Public in and for San Juan County, New Mexico

My Commission expires 9/28/14



Scientific Drilling
Directional Drilling Operations

RECEIVED

JUL 26 2011

Farmington Field Office
Bureau of Land Management

ConocoPhillips

SJB (NM Central)
SEC 02-T26N-R5W
Jicarilla 150 #8M

Original Hole

Design: Original Hole

AA# 3003930998

Standard Survey Report

16 May, 2011

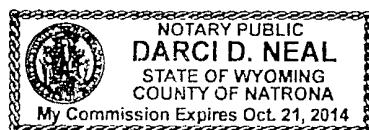


This survey is correct to the best of my knowledge and is supported by actual field data.

Notarized this date 17th of May, 2011.

Darci D. Neal

Notary Signature
County of Natrona
State of Wyoming

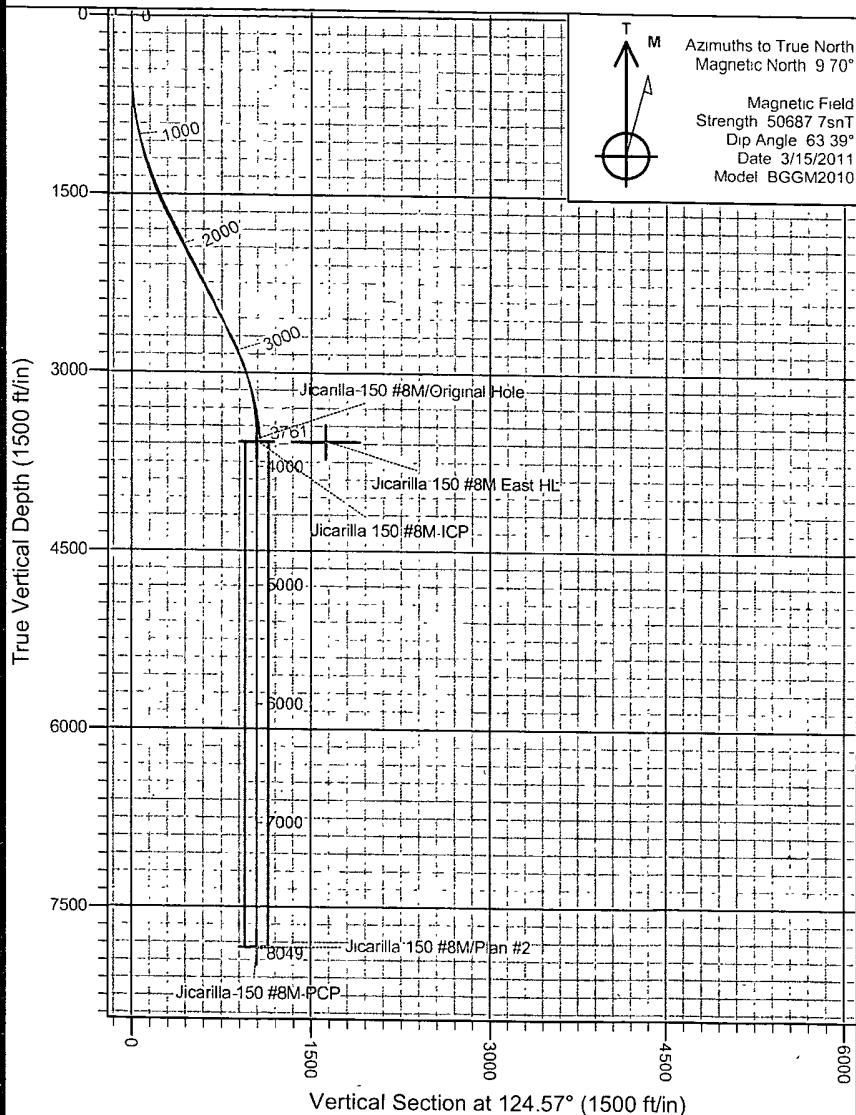


ConocoPhillips

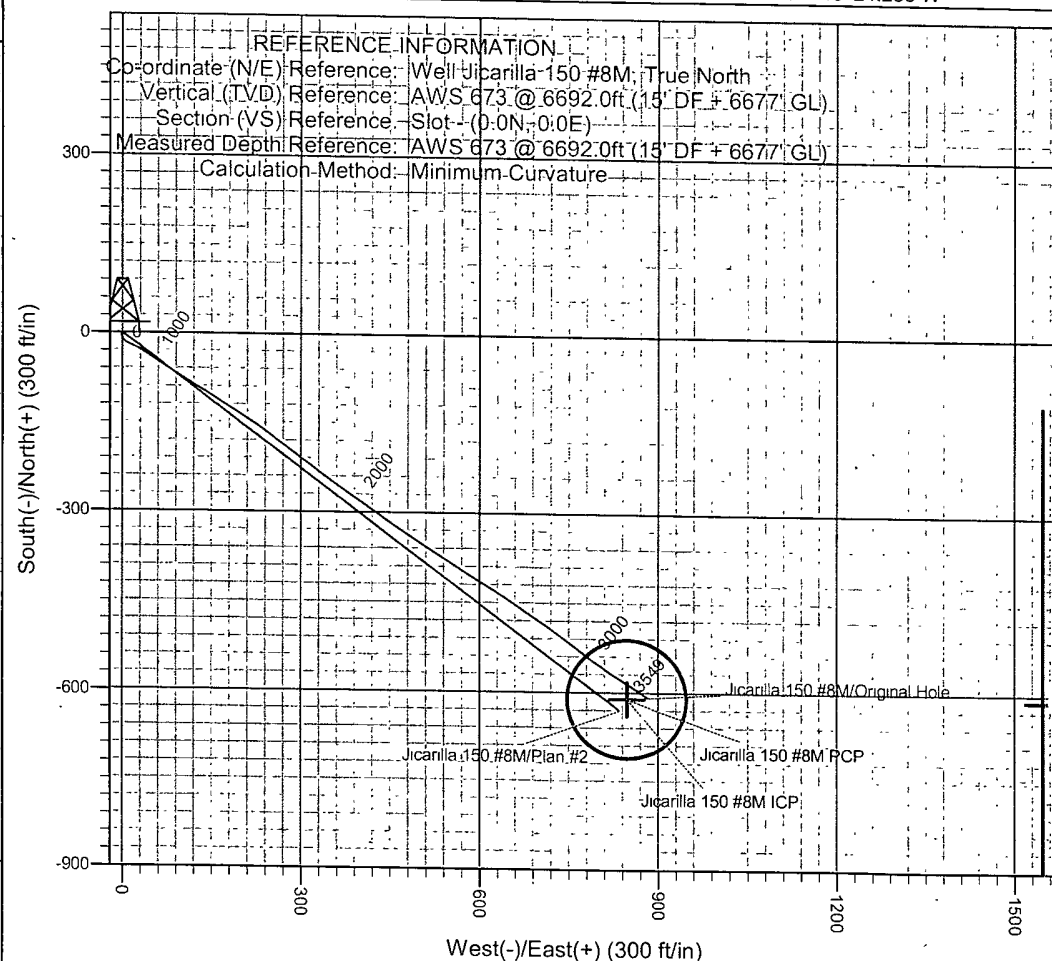


Project: SJB (NM Central)
Site: SEC 02-T26N-R5W
Well: Jicarilla 150 #8M
Wellbore: Original Hole
Design: Original Hole

ConocoPhillips



WELL DETAILS: Jicarilla 150 #8M					Slope	
AWS 673 @ 6692.0ft (15' DF + 6677' GL)						
Ground Level: 6677.0						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slope
0.0	0.0	2009752.24	184581.99	36° 31' 7.050 N	107° 19' 24.288 W	



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: SJB (NM Central)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico Central 3002
System Datum: Mean Sea Level

SITE DETAILS: SEC 02-T26N-R5W
Rio Arriba County NM
Site Centre Latitude: 36° 31' 6.885 N
Longitude: 107° 19' 24.288 W
Positional Uncertainty: 7.5
Convergence: -0.64
Local North: True



Scientific Drilling Survey Report



Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Jicarilla 150 #8M
Project:	SJB (NM Central)	TVD Reference:	AWS 673 @ 6692.0ft (15' DF + 6677' GL)
Site:	SEC 02-T26N-R5W	MD Reference:	AWS 673 @ 6692.0ft (15' DF + 6677' GL)
Well:	Jicarilla 150 #8M	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	EDMCOP

Project:	SJB (NM Central), 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 Central 3002		Using geodetic scale factor

Site:		SEC 02-T26N-R5W			
Site Position:		Northing:	2,009,735.56 ft	Latitude:	36° 31' 6.885 N
From:	Lat/Long	Easting:	184,581.81 ft	Longitude:	107° 19' 24.288 W
Position Uncertainty:	15.0 ft	Slot Radius:	6-1/8"	Grid Convergence:	-0.64 °

Well:	Jicarilla 150 #8M, S-Type MV/DK Well					
Well Position	+N/-S	0.0 ft	Northing:	2,009,752.24 ft	Latitude:	36° 31' 7.050 N
	+E/-W	0.0 ft	Easting:	184,581.99 ft	Longitude:	107° 19' 24.288 W
Position Uncertainty		3.5 ft	Wellhead Elevation:	ft	Ground Level:	6,677.0 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	3/15/2011	9.70	63.39	50,688

Design	Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	124.57	

Survey Program		Date: 5/16/2011		
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
338.0	3,761.0	Survey #1 (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
338.0	0.47	272.16	338.0	0.1	-1.4	-1.2	0.14	0.14	0.00
First SDI MWD Survey									
388.0	0.77	190.46	388.0	-0.3	-1.7	-1.2	1.68	0.60	-163.40
450.0	1.96	169.92	450.0	-1.7	-1.5	-0.3	2.05	1.92	-33.13
512.0	3.22	171.70	511.9	-4.5	-1.1	1.6	2.04	2.03	2.87
573.0	4.39	156.19	572.8	-8.3	0.1	4.8	2.54	1.92	-25.43
634.0	4.27	140.83	633.6	-12.2	2.5	9.0	1.91	-0.20	-25.18
696.0	4.99	127.60	695.4	-15.7	6.1	13.9	2.07	1.16	-21.34
758.0	6.59	114.17	757.1	-18.8	11.4	20.1	3.36	2.58	-21.66
819.0	9.79	113.75	817.5	-22.3	19.4	28.6	5.25	5.25	-0.69
881.0	10.72	120.59	878.5	-27.3	29.2	39.5	2.47	1.50	11.03
946.0	12.50	123.49	942.1	-34.3	40.2	52.6	2.88	2.74	4.46



Scientific Drilling
Survey Report



Company:	ConocoPhillips	Local Co-ordinate Reference:	Well Jicarilla 150 #8M
Project:	SJB (NM Central)	TVD Reference:	AWS 673 @ 6692.0ft (15' DF + 6677' GL)
Site:	SEC 02-T26N-R5W	MD Reference:	AWS 673 @ 6692.0ft (15' DF + 6677' GL)
Well:	Jicarilla 150 #8M	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)
1,009.0	13.63	123.59	1,003.5	-42.2	52.1	66.8	1.79	1.79	0.16
1,041.0	14.41	122.59	1,034.6	-46.4	58.6	74.6	2.55	2.44	-3.13
1,105.0	15.89	122.88	1,096.3	-55.4	72.7	91.3	2.32	2.31	0.45
1,168.0	17.12	122.80	1,156.7	-65.1	87.7	109.2	1.95	1.95	-0.13
1,232.0	18.55	121.81	1,217.7	-75.6	104.3	128.8	2.28	2.23	-1.55
1,296.0	19.78	120.82	1,278.1	-86.5	122.2	149.8	1.99	1.92	-1.55
1,359.0	21.20	122.64	1,337.1	-98.1	141.0	171.8	2.47	2.25	2.89
1,423.0	22.13	122.87	1,396.6	-110.9	160.9	195.4	1.46	1.45	0.36
1,486.0	22.76	122.04	1,454.8	-123.8	181.2	219.4	1.12	1.00	-1.32
1,550.0	23.24	122.28	1,513.7	-137.1	202.3	244.4	0.76	0.75	0.38
1,613.0	23.83	123.96	1,571.5	-150.9	223.4	269.6	1.42	0.94	2.67
1,677.0	25.18	127.70	1,629.7	-166.4	244.9	296.1	3.21	2.11	5.84
1,740.0	26.22	127.06	1,686.5	-183.0	266.6	323.4	1.71	1.65	-1.02
1,804.0	26.69	127.06	1,743.8	-200.2	289.3	351.9	0.73	0.73	0.00
1,868.0	26.57	127.51	1,801.0	-217.6	312.2	380.5	0.37	-0.19	0.70
1,931.0	26.22	126.56	1,857.4	-234.4	334.5	408.5	0.87	-0.56	-1.51
1,995.0	26.42	125.38	1,914.8	-251.1	357.5	436.9	0.88	0.31	-1.84
2,058.0	26.60	125.35	1,971.2	-267.4	380.4	465.0	0.29	0.29	-0.05
2,122.0	26.94	125.26	2,028.3	-284.0	403.9	493.8	0.54	0.53	-0.14
2,185.0	27.55	124.49	2,084.3	-300.5	427.6	522.6	1.12	0.97	-1.22
2,249.0	27.70	125.23	2,141.0	-317.5	452.0	552.3	0.59	0.23	1.16
2,313.0	27.83	123.97	2,197.7	-334.4	476.5	582.1	0.94	0.20	-1.97
2,376.0	27.12	123.11	2,253.6	-350.5	500.7	611.2	1.29	-1.13	-1.37
2,440.0	26.29	123.27	2,310.7	-366.2	524.8	639.9	1.30	-1.30	0.25
2,503.0	26.27	122.39	2,367.2	-381.4	548.2	667.8	0.62	-0.03	-1.40
2,567.0	25.70	123.15	2,424.8	-396.5	571.8	695.8	1.03	-0.89	1.19
2,630.0	25.47	121.20	2,481.6	-411.0	594.8	723.0	1.39	-0.37	-3.10
2,694.0	24.67	122.14	2,539.5	-425.3	617.9	750.1	1.40	-1.25	1.47
2,757.0	25.10	121.96	2,596.7	-439.3	640.4	776.6	0.69	0.68	-0.29
2,821.0	25.66	125.12	2,654.5	-454.5	663.2	804.0	2.29	0.88	4.94
2,884.0	25.80	123.80	2,711.3	-470.0	685.8	831.4	0.94	0.22	-2.10
2,948.0	26.04	125.00	2,768.8	-485.8	708.9	859.3	0.90	0.38	1.88
3,012.0	23.16	126.31	2,827.0	-501.3	730.5	886.0	4.58	-4.50	2.05
3,075.0	21.68	127.00	2,885.3	-515.6	749.8	910.0	2.39	-2.35	1.10
3,139.0	21.20	127.57	2,944.8	-529.8	768.4	933.3	0.82	-0.75	0.89
3,202.0	20.34	127.68	3,003.7	-543.4	786.1	955.7	1.37	-1.37	0.17
3,266.0	18.02	125.10	3,064.2	-555.9	803.0	976.7	3.86	-3.63	-4.03
3,329.0	16.06	122.41	3,124.4	-566.2	818.3	995.1	3.35	-3.11	-4.27
3,393.0	15.47	122.76	3,186.0	-575.6	833.0	1,012.5	0.93	-0.92	0.55
3,457.0	13.73	121.92	3,247.9	-584.2	846.6	1,028.6	2.74	-2.72	-1.31
3,520.0	10.41	122.34	3,309.5	-591.2	857.8	1,041.8	5.27	-5.27	0.67
3,584.0	7.83	123.83	3,372.7	-596.7	866.3	1,051.9	4.05	-4.03	2.33
3,647.0	7.07	125.98	3,435.2	-601.4	873.0	1,060.1	1.28	-1.21	3.41
3,711.0	6.01	123.52	3,498.8	-605.5	879.0	1,067.4	1.71	-1.66	-3.84
3,761.0	4.38	131.61	3,548.6	-608.3	882.6	1,071.9	3.57	-3.26	16.18

Last SDI MWD Survey

Checked By: _____ Approved By: _____ Date: _____

$Y: (1625 + 608.3) = 2233' \text{ FNL}$

$X: (1560 - 882.6) = 677.4' \text{ FEL}$