

17

OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Teena M. Whiting 10-22-10
Signature Date

Teena M. Whiting
Printed Name

18

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plot was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge & belief.

SEPTEMBER 30, 2010
Date of Survey

NEIL A. RUSSELL
Signature and Seal of Registered Surveyor

REGISTERED
30-10
18894
NEBRASKA LAND SURVEYORS

Certificate Number



Five of Diamonds #90H
San Juan Co., New Mexico

FIELD DETAILS

San Juan, NM (NAD 83)
Geodetic System: US State Plane Coordinate System 1983
Ellipsoid: GRS 1980
Zone: New Mexico, Western Zone
Magnetic Model: IGRF2010
System Datum: Mean Sea Level
Local North: True North

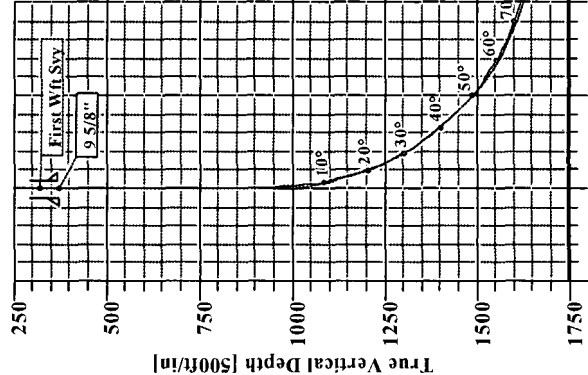
SITE DETAILS

Five of Diamonds #90H
Site Centre Latitude: 36°49'59.736N
Longitude: 108°11'51.720W
Ground Level: 5657.00
Positional Uncertainty: 0.00
Convergence: -0.22

FORMATION TOP DETAILS

No.	TVDPath	MDPath	Formation
1	197.00	197.00	Kirland Shale
2	1027.00	1027.17	Fruitland Formation
3	1419.00	1462.62	Upper Fruitland Coal
4	1658.00	1992.41	Lower Fruitland Coal

KD ELEV: 5669
GL ELEV: 5657



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	182.29	0.00	0.00	0.00	0.00	0.00	0.00	
2	946.12	0.00	182.29	946.12	0.00	0.00	0.00	0.00	0.00	
3	2074.87	90.30	182.29	1662.31	-719.37	-28.79	8.00	182.29	539.06	PBHL
4	5381.09	90.30	182.29	1645.00	-4022.90	-161.00	0.00	0.00	3014.54	PBHL

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shot
Five of Diamonds #90H	0.00	0.00	2122836.40	2616466.79	36°49'59.736N	108°11'51.720W	N/A

TARGET DETAILS

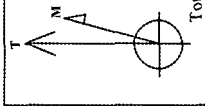
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL	1645.00	-4022.90	-161.00	36°49'19.956N	108°11'53.700W	Point

CASING DETAILS

No.	TVD	MD	Name	Size
1	372.00	372.00	9.5/8"	9.625
2	1662.32	2074.00	7"	7.000
3	1645.00	5381.09	4 1/2"	4.500

LEGEND

Five of Diamonds #90H, Horizontal, Plan #1
Wt Svy



Azinuths to True North
Magnetic North: 10.18°
Strength: 50852nT
Dip Angle: 63.47°
Date: 9/13/2010
Model: IGRF2010

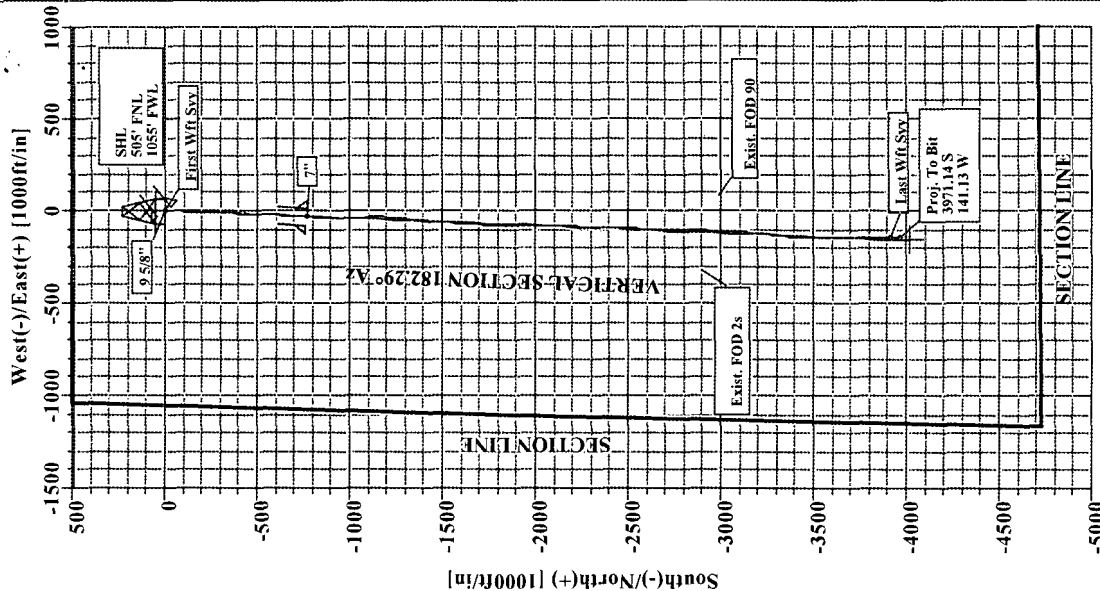
Total Correction to True North 10.18°



Weatherford®

Survey: Wt Svy (Five of Diamonds #90H/Horizontal)

No	MD	Inc	Az	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
152	5328.00	91.75	179.56	1652.06	-3971.14	-141.13	0.00	0.00	3973.65



Vertical Section at 182.04° [500ft/in]

Survey: Wt Svy (Five of Diamonds #90H/Horizontal)

Created By: Russell W. Joyner

Date: 9/22/2010



Weatherford International Ltd.

WFT Survey Report Lat, Long



Weatherford

Company: XTO	Date: 9/22/2010	Time: 07:30:25	Page: 1
Field: San Juan, NM (NAD 83)	Co-ordinate(NE) Reference: Well: Five of Diamonds #90H, True North		
Site: Five of Diamonds #90H	Vertical (TVD) Reference: SITE 5669.0		
Well: Five of Diamonds #90H	Section (VS) Reference: Well (0.00N,0.00E,182.04Azi)		
Wellpath: Horizontal	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey: Wft Svy	Start Date: 9/16/2010
Company: Weatherford International Ltd.	Engineer: Russell W. Joyner
Tool: MWD;MWD - Standard	Tied-to: From Surface

Field: San Juan, NM (NAD 83)	
Map System: US State Plane Coordinate System 1983	Map Zone: New Mexico, Western Zone
Geo Datum: GRS 1980	Coordinate System: Well Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site: Five of Diamonds #90H
Site Position: Northing: 2122836.40 ft Latitude: 36 49 59.736 N
From: Geographic Easting: 2616466.79 ft Longitude: 108 11 51.720 W
Position Uncertainty: 0.00 ft North Reference: True
Ground Level: 5657.00 ft Grid Convergence: -0.22 deg

Well: Five of Diamonds #90H	Slot Name:
Well Position: +N/-S 0.00 ft Northing: 2122836.40 ft Latitude: 36 49 59.736 N	
+E/-W 0.00 ft Easting: 2616466.79 ft Longitude: 108 11 51.720 W	
Position Uncertainty: 0.00 ft	

Wellpath: Horizontal	Drilled From: Surface
Current Datum: SITE	Tie-on Depth: 0.00 ft
Magnetic Data: 9/13/2010	Above System Datum: Mean Sea Level
Field Strength: 50852 nT	Declination: 10.18 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 63.47 deg
ft	+E/-W
	ft
	Direction
	deg
0.00	0.00
0.00	182.04

Survey															
MD	Incl	Azim	TVD	N/S	E/W	VS	DLS	Lat	Min	Sec	Long	Min	Sec	Comment	
ft	deg	deg	ft	ft	ft	ft	deg/100ft								
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36	49	59.736	108	11	51.720	First Wft Sv 9 5/8"	
320.00	0.19	223.81	320.00	-0.38	-0.37	0.40	0.06	36	49	59.732	108	11	51.725		
372.00	0.19	231.07	372.00	-0.50	-0.49	0.52	0.05	36	49	59.731	108	11	51.726		
414.00	0.19	236.93	414.00	-0.58	-0.61	0.60	0.05	36	49	59.730	108	11	51.727		
507.00	0.25	244.18	507.00	-0.75	-0.92	0.79	0.07	36	49	59.729	108	11	51.731		
602.00	0.38	245.93	602.00	-0.97	-1.39	1.02	0.14	36	49	59.726	108	11	51.737		
695.00	0.31	252.56	695.00	-1.17	-1.91	1.24	0.09	36	49	59.724	108	11	51.744		
788.00	0.38	247.81	787.99	-1.36	-2.44	1.45	0.08	36	49	59.723	108	11	51.750		
882.00	0.38	263.68	881.99	-1.52	-3.04	1.62	0.11	36	49	59.721	108	11	51.757		
913.00	0.31	219.56	912.99	-1.59	-3.19	1.71	0.86	36	49	59.720	108	11	51.759		
944.00	1.50	173.06	943.99	-2.06	-3.20	2.17	4.21	36	49	59.716	108	11	51.759		
975.00	3.25	182.03	974.96	-3.34	-3.18	3.45	5.75	36	49	59.703	108	11	51.759		
1006.00	4.81	175.18	1005.88	-5.51	-3.10	5.62	5.26	36	49	59.681	108	11	51.758		
1037.00	6.63	187.31	1036.73	-8.59	-3.22	8.69	7.02	36	49	59.651	108	11	51.760		
1069.00	8.75	186.43	1068.44	-12.84	-3.73	12.96	6.64	36	49	59.609	108	11	51.766		
1100.00	11.13	183.06	1098.97	-18.17	-4.15	18.30	7.90	36	49	59.556	108	11	51.771		
1131.00	13.44	179.31	1129.26	-24.76	-4.27	24.90	7.88	36	49	59.491	108	11	51.773		
1162.00	15.75	179.06	1159.26	-32.57	-4.16	32.70	7.45	36	49	59.414	108	11	51.771		
1192.00	18.31	179.56	1187.94	-41.35	-4.05	41.47	8.55	36	49	59.327	108	11	51.770		
1222.00	21.00	179.93	1216.19	-51.44	-4.01	51.55	8.98	36	49	59.227	108	11	51.769		
1253.00	23.88	180.81	1244.84	-63.28	-4.09	63.38	9.35	36	49	59.110	108	11	51.770		
1284.00	26.69	181.93	1272.87	-76.51	-4.41	76.62	9.19	36	49	58.979	108	11	51.774		
1315.00	29.50	181.93	1300.21	-91.10	-4.91	91.22	9.06	36	49	58.835	108	11	51.780		
1345.00	32.44	181.68	1325.93	-106.53	-5.39	106.65	9.81	36	49	58.683	108	11	51.786		



Weatherford International Ltd.

WFT Survey Report Lat, Long

**Weatherford**

Company: XTO
Field: San Juan, NM (NAD 83)
Site: Five of Diamonds #90H
Well: Five of Diamonds #90H
Wellpath: Horizontal

Date: 9/22/2010 Time: 07:30:25 Page: 2
Co-ordinate(NE) Reference: Well: Five of Diamonds #90H, True North
Vertical (TVD) Reference: SITE 5669.0
Section (VS) Reference: Well (0.00N,0.00E,182.04Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
1376.00	35.25	180.68	1351.67	-123.79	-5.74	123.91	9.24	36	49	58.512	108	11	51.791	
1406.00	37.81	180.31	1375.78	-141.64	-5.89	141.76	8.56	36	49	58.335	108	11	51.793	
1437.00	39.69	179.68	1399.95	-161.05	-5.89	161.15	6.20	36	49	58.144	108	11	51.792	
1468.00	42.06	180.31	1423.39	-181.33	-5.89	181.42	7.76	36	49	57.943	108	11	51.792	
1498.00	44.75	181.06	1445.19	-201.94	-6.14	202.03	9.13	36	49	57.739	108	11	51.796	
1529.00	47.31	181.68	1466.71	-224.24	-6.68	224.34	8.38	36	49	57.519	108	11	51.802	
1559.00	49.81	181.81	1486.56	-246.72	-7.36	246.83	8.34	36	49	57.296	108	11	51.811	
1590.00	51.94	182.43	1506.12	-270.75	-8.25	270.87	7.04	36	49	57.059	108	11	51.822	
1621.00	54.38	182.81	1524.71	-295.53	-9.39	295.68	7.93	36	49	56.814	108	11	51.835	
1651.00	57.06	182.18	1541.60	-320.30	-10.47	320.47	9.10	36	49	56.569	108	11	51.849	
1682.00	60.13	182.31	1557.75	-346.73	-11.50	346.92	9.91	36	49	56.307	108	11	51.861	
1713.00	63.31	182.68	1572.44	-374.00	-12.69	374.22	10.31	36	49	56.038	108	11	51.876	
1744.00	66.13	182.68	1585.68	-402.00	-14.00	402.24	9.10	36	49	55.761	108	11	51.892	
1774.00	68.56	182.56	1597.23	-429.65	-15.27	429.92	8.11	36	49	55.487	108	11	51.908	
1804.00	70.94	182.31	1607.61	-457.77	-16.46	458.07	7.97	36	49	55.209	108	11	51.923	
1836.00	73.19	182.18	1617.47	-488.19	-17.66	488.51	7.04	36	49	54.909	108	11	51.937	
1867.00	75.19	182.31	1625.91	-517.99	-18.82	518.34	6.46	36	49	54.614	108	11	51.952	
1898.00	77.00	183.43	1633.36	-548.05	-20.33	548.42	6.81	36	49	54.317	108	11	51.970	
1929.00	78.69	184.06	1639.89	-578.29	-22.31	578.71	5.80	36	49	54.018	108	11	51.994	
1958.00	80.69	183.93	1645.08	-606.75	-24.30	607.23	6.91	36	49	53.736	108	11	52.019	
1990.00	82.81	184.18	1649.67	-638.33	-26.54	638.87	6.67	36	49	53.424	108	11	52.046	
2021.00	85.13	183.93	1652.93	-669.08	-28.72	669.68	7.53	36	49	53.120	108	11	52.073	
2051.00	87.25	183.81	1654.92	-698.95	-30.74	699.60	7.08	36	49	52.825	108	11	52.098	
2068.00	88.38	183.31	1655.57	-715.90	-31.79	716.58	7.27	36	49	52.657	108	11	52.111	
2092.00	89.86	183.33	1655.94	-739.86	-33.18	740.57	6.17	36	49	52.420	108	11	52.128	
2121.00	89.80	182.95	1656.02	-768.81	-34.77	769.56	1.32	36	49	52.134	108	11	52.148	7"
2135.00	89.77	182.77	1656.08	-782.80	-35.47	783.56	1.32	36	49	51.995	108	11	52.156	
2165.00	90.38	182.18	1656.04	-812.77	-36.77	813.56	2.83	36	49	51.699	108	11	52.172	
2196.00	91.94	181.43	1655.41	-843.75	-37.74	844.55	5.58	36	49	51.393	108	11	52.184	
2226.00	92.38	180.81	1654.28	-873.72	-38.33	874.53	2.53	36	49	51.096	108	11	52.191	
2256.00	90.75	180.31	1653.46	-903.70	-38.62	904.51	5.68	36	49	50.800	108	11	52.195	
2287.00	89.56	179.43	1653.38	-934.70	-38.55	935.48	4.77	36	49	50.493	108	11	52.194	
2318.00	90.31	178.68	1653.41	-965.70	-38.04	966.44	3.42	36	49	50.187	108	11	52.188	
2348.00	89.56	178.56	1653.45	-995.69	-37.32	996.39	2.53	36	49	49.890	108	11	52.179	
2379.00	89.63	180.31	1653.66	-1026.69	-37.01	1027.35	5.65	36	49	49.584	108	11	52.175	
2410.00	90.00	179.58	1653.76	-1057.69	-36.98	1058.33	2.64	36	49	49.277	108	11	52.175	
2440.00	90.44	179.56	1653.65	-1087.68	-36.76	1088.30	1.47	36	49	48.981	108	11	52.172	
2470.00	91.19	178.93	1653.22	-1117.68	-36.36	1118.26	3.26	36	49	48.684	108	11	52.167	
2500.00	92.19	179.93	1652.34	-1147.66	-36.06	1148.22	4.71	36	49	48.387	108	11	52.164	
2530.00	91.13	181.56	1651.47	-1177.65	-36.45	1178.20	6.48	36	49	48.091	108	11	52.168	
2561.00	90.69	183.18	1650.98	-1208.62	-37.73	1209.19	5.41	36	49	47.785	108	11	52.184	
2591.00	90.75	183.56	1650.60	-1238.56	-39.50	1239.18	1.28	36	49	47.489	108	11	52.206	
2622.00	90.50	184.68	1650.26	-1269.48	-41.73	1270.16	3.70	36	49	47.183	108	11	52.233	
2653.00	89.38	185.68	1650.29	-1300.35	-44.52	1301.11	4.84	36	49	46.878	108	11	52.268	
2683.00	87.19	186.06	1651.19	-1330.18	-47.59	1331.03	7.41	36	49	46.583	108	11	52.305	
2714.00	87.19	185.68	1652.71	-1360.98	-50.76	1361.92	1.22	36	49	46.278	108	11	52.344	
2745.00	87.63	185.06	1654.11	-1391.81	-53.66	1392.84	2.45	36	49	45.973	108	11	52.380	
2775.00	88.75	184.69	1655.06	-1421.69	-56.20	1422.79	3.93	36	49	45.678	108	11	52.411	
2806.00	89.44	184.31	1655.55	-1452.59	-58.64	1453.75	2.54	36	49	45.372	108	11	52.441	
2836.00	89.81	184.31	1655.75	-1482.50	-60.89	1483.73	1.23	36	49	45.076	108	11	52.469	
2867.00	90.13	184.69	1655.76	-1513.41	-63.32	1514.70	1.60	36	49	44.771	108	11	52.499	
2897.00	90.31	184.56	1655.65	-1543.31	-65.74	1544.67	0.74	36	49	44.475	108	11	52.529	



Weatherford International Ltd.

WFT Survey Report Lat, Long



Weatherford

Company: XTO

Field: San Juan, NM (NAD 83)

Site: Five of Diamonds #90H

Well: Five of Diamonds #90H

Wellpath: Horizontal

Date: 9/22/2010

Time: 07:30:25

Page: 3

Co-ordinate(NE) Reference:

Well: Five of Diamonds #90H, True North

Vertical (TVD) Reference:

SITE 5669.0

Section (VS) Reference:

Well (0.00N,0.00E,182.04Azi)

Survey Calculation Method:

Minimum Curvature

Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
2928.00	90.50	184.68	1655.43	-1574.21	-68.24	1575.64	0.72	36	49	44.170	108	11	52.559	
2958.00	91.00	185.06	1655.03	-1604.10	-70.78	1605.60	2.09	36	49	43.874	108	11	52.591	
2988.00	91.44	184.31	1654.40	-1633.99	-73.23	1635.56	2.90	36	49	43.579	108	11	52.621	
3019.00	91.75	183.56	1653.53	-1664.90	-75.36	1666.53	2.62	36	49	43.273	108	11	52.647	
3050.00	92.00	183.43	1652.52	-1695.83	-77.25	1697.50	0.91	36	49	42.967	108	11	52.670	
3079.00	90.81	182.56	1651.81	-1724.78	-78.76	1726.49	5.08	36	49	42.681	108	11	52.689	
3110.00	88.88	182.43	1651.89	-1755.75	-80.11	1757.49	6.24	36	49	42.374	108	11	52.705	
3140.00	88.44	182.81	1652.59	-1785.71	-81.48	1787.48	1.94	36	49	42.078	108	11	52.722	
3171.00	88.31	180.93	1653.47	-1816.68	-82.50	1818.46	6.08	36	49	41.772	108	11	52.735	
3202.00	88.75	180.31	1654.27	-1847.67	-82.83	1849.44	2.45	36	49	41.466	108	11	52.739	
3232.00	89.31	180.93	1654.78	-1877.66	-83.16	1879.43	2.78	36	49	41.169	108	11	52.743	
3262.00	89.81	180.93	1655.01	-1907.66	-83.64	1909.42	1.67	36	49	40.872	108	11	52.749	
3293.00	90.13	181.43	1655.02	-1938.65	-84.28	1940.42	1.91	36	49	40.566	108	11	52.757	
3322.00	90.25	181.31	1654.93	-1967.64	-84.97	1969.42	0.59	36	49	40.279	108	11	52.765	
3354.00	90.31	181.31	1654.77	-1999.63	-85.71	2001.41	0.19	36	49	39.963	108	11	52.774	
3387.00	90.31	181.06	1654.59	-2032.62	-86.39	2034.41	0.76	36	49	39.637	108	11	52.783	
3418.00	91.00	180.56	1654.24	-2063.62	-86.83	2065.40	2.75	36	49	39.330	108	11	52.788	
3450.00	90.13	180.06	1653.92	-2095.62	-87.00	2097.38	3.14	36	49	39.014	108	11	52.790	
3481.00	88.06	180.18	1654.41	-2126.61	-87.06	2128.36	6.69	36	49	38.707	108	11	52.791	
3513.00	86.38	180.43	1655.96	-2158.57	-87.23	2160.31	5.31	36	49	38.391	108	11	52.793	
3545.00	87.13	181.18	1657.77	-2190.52	-87.68	2192.25	3.31	36	49	38.075	108	11	52.799	
3576.00	89.00	181.56	1658.82	-2221.49	-88.42	2223.23	6.16	36	49	37.769	108	11	52.808	
3607.00	90.13	181.81	1659.06	-2252.47	-89.34	2254.22	3.73	36	49	37.463	108	11	52.819	
3639.00	90.81	181.93	1658.79	-2284.45	-90.38	2286.22	2.16	36	49	37.146	108	11	52.832	
3671.00	91.06	181.93	1658.27	-2316.43	-91.46	2318.22	0.78	36	49	36.830	108	11	52.845	
3703.00	91.00	181.68	1657.70	-2348.41	-92.47	2350.21	0.80	36	49	36.514	108	11	52.857	
3735.00	91.00	181.56	1657.14	-2380.39	-93.37	2382.21	0.37	36	49	36.198	108	11	52.869	
3766.00	89.31	182.31	1657.05	-2411.37	-94.42	2413.21	5.96	36	49	35.891	108	11	52.881	
3798.00	87.63	181.81	1657.91	-2443.34	-95.57	2445.19	5.48	36	49	35.575	108	11	52.896	
3830.00	87.50	181.93	1659.27	-2475.30	-96.61	2477.16	0.55	36	49	35.259	108	11	52.908	
3862.00	87.75	181.56	1660.59	-2507.25	-97.58	2509.14	1.39	36	49	34.943	108	11	52.920	
3894.00	87.75	181.81	1661.85	-2539.21	-98.52	2541.11	0.78	36	49	34.627	108	11	52.932	
3929.00	87.81	181.68	1663.21	-2574.17	-99.59	2576.08	0.41	36	49	34.282	108	11	52.945	
3970.00	87.94	182.18	1664.73	-2615.12	-100.97	2617.06	1.26	36	49	33.877	108	11	52.962	
4001.00	88.75	182.18	1665.62	-2646.08	-102.15	2648.04	2.61	36	49	33.571	108	11	52.976	
4031.00	89.69	181.81	1666.03	-2676.06	-103.19	2678.04	3.37	36	49	33.274	108	11	52.989	
4061.00	89.75	181.31	1666.18	-2706.05	-104.01	2708.04	1.68	36	49	32.978	108	11	52.999	
4092.00	90.25	182.18	1666.18	-2737.04	-104.95	2739.04	3.24	36	49	32.671	108	11	53.011	
4121.00	90.44	181.68	1666.00	-2766.02	-105.93	2768.04	1.84	36	49	32.385	108	11	53.023	
4152.00	90.63	180.81	1665.71	-2797.01	-106.60	2799.03	2.87	36	49	32.078	108	11	53.031	
4183.00	90.88	180.56	1665.30	-2828.01	-106.97	2830.02	1.14	36	49	31.772	108	11	53.036	
4213.00	91.13	181.43	1664.78	-2858.00	-107.49	2860.01	3.02	36	49	31.475	108	11	53.042	
4244.00	91.50	181.31	1664.07	-2888.98	-108.23	2891.00	1.25	36	49	31.169	108	11	53.051	
4275.00	90.06	181.56	1663.64	-2919.97	-109.01	2922.00	4.71	36	49	30.862	108	11	53.061	
4305.00	89.88	181.18	1663.66	-2949.96	-109.73	2951.99	1.40	36	49	30.566	108	11	53.070	
4336.00	89.00	182.06	1663.96	-2980.94	-110.60	2982.99	4.01	36	49	30.259	108	11	53.080	
4366.00	88.00	182.56	1664.75	-3010.91	-111.81	3012.98	3.73	36	49	29.963	108	11	53.095	
4397.00	87.38	182.81	1666.00	-3041.85	-113.26	3043.95	2.16	36	49	29.657	108	11	53.113	
4427.00	87.88	183.06	1667.24	-3071.78	-114.80	3073.92	1.86	36	49	29.361	108	11	53.132	
4458.00	89.19	183.56	1668.03	-3102.72	-116.59	3104.90	4.52	36	49	29.055	108	11	53.154	
4488.00	90.94	184.43	1668.00	-3132.65	-118.68	3134.88	6.51	36	49	28.759	108	11	53.180	
4519.00	90.81	184.68	1667.52	-3163.54	-121.14	3165.85	0.91	36	49	28.454	108	11	53.210	
4550.00	90.94	184.68	1667.05	-3194.44	-123.67	3196.81	0.42	36	49	28.148	108	11	53.241	



Weatherford International Ltd.

WFT Survey Report Lat, Long



Weatherford

Company: XTO
Field: San Juan, NM (NAD 83)
Site: Five of Diamonds #90H
Well: Five of Diamonds #90H
Wellpath: Horizontal

Date: 9/22/2010 Time: 07:30:25 Page: 4
Co-ordinate(NE) Reference: Well: Five of Diamonds #90H, True North
Vertical (TVD) Reference: SITE 5669.0
Section (VS) Reference: Well (0.00N,0.00E,182.04Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
4579.00	91.38	185.56	1666.46	-3223.32	-126.26	3225.77	3.39	36	49	27.863	108	11	53.273	
4610.00	90.63	185.93	1665.92	-3254.16	-129.36	3256.70	2.70	36	49	27.558	108	11	53.311	
4641.00	91.63	187.18	1665.31	-3284.95	-132.90	3287.59	5.16	36	49	27.253	108	11	53.355	
4670.00	92.44	187.02	1664.28	-3313.70	-136.48	3316.46	2.85	36	49	26.969	108	11	53.399	
4701.00	91.75	185.18	1663.14	-3344.51	-139.77	3347.36	6.34	36	49	26.664	108	11	53.439	
4732.00	91.56	183.68	1662.25	-3375.40	-142.16	3378.32	4.88	36	49	26.359	108	11	53.469	
4762.00	91.88	182.18	1661.35	-3405.35	-143.70	3408.30	5.11	36	49	26.063	108	11	53.487	
4793.00	91.25	182.06	1660.50	-3436.31	-144.84	3439.29	2.07	36	49	25.756	108	11	53.502	
4824.00	90.88	181.31	1659.93	-3467.29	-145.75	3470.28	2.70	36	49	25.450	108	11	53.513	
4853.00	90.13	180.93	1659.67	-3496.29	-146.32	3499.28	2.90	36	49	25.163	108	11	53.520	
4884.00	89.38	180.43	1659.80	-3527.29	-146.69	3530.27	2.91	36	49	24.857	108	11	53.524	
4914.00	90.50	180.18	1659.83	-3557.28	-146.85	3560.26	3.83	36	49	24.560	108	11	53.526	
4945.00	90.75	180.18	1659.50	-3588.28	-146.95	3591.24	0.81	36	49	24.254	108	11	53.527	
4974.00	90.94	179.43	1659.07	-3617.28	-146.85	3620.21	2.67	36	49	23.967	108	11	53.526	
5006.00	90.69	179.31	1658.61	-3649.27	-146.50	3652.17	0.87	36	49	23.651	108	11	53.522	
5037.00	90.13	178.81	1658.39	-3680.27	-145.99	3683.13	2.42	36	49	23.344	108	11	53.516	
5068.00	90.31	179.18	1658.27	-3711.26	-145.44	3714.09	1.33	36	49	23.038	108	11	53.509	
5099.00	91.25	178.93	1657.85	-3742.26	-144.93	3745.04	3.14	36	49	22.731	108	11	53.503	
5130.00	91.00	178.81	1657.24	-3773.24	-144.32	3775.99	0.89	36	49	22.425	108	11	53.495	
5161.00	91.19	178.56	1656.65	-3804.23	-143.61	3806.93	1.01	36	49	22.118	108	11	53.486	
5192.00	91.25	179.06	1655.99	-3835.22	-142.97	3837.87	1.62	36	49	21.812	108	11	53.478	
5223.00	91.38	178.68	1655.28	-3866.20	-142.36	3868.82	1.30	36	49	21.506	108	11	53.471	
5255.00	92.00	179.18	1654.33	-3898.18	-141.76	3900.76	2.49	36	49	21.189	108	11	53.464	
5276.00	91.75	179.56	1653.65	-3919.17	-141.53	3921.72	2.17	36	49	20.982	108	11	53.461	Last Wft Sys
5328.00	91.75	179.56	1652.06	-3971.14	-141.13	3973.65	0.00	36	49	20.468	108	11	53.456	Proj. To Bit

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
372.00	372.00	9.625	12.250	9 5/8"
2121.00	1656.02	7.000	8.750	7"
5381.09	0.00	4.500	4.500	4 1/2"

Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
197.00	197.00	Kirtland Shale		0.00	0.00
1027.21	1027.00	Fruitland Formation		0.00	0.00
1462.10	1419.00	Upper Fruitland Coal		0.00	0.00
3549.75	1658.00	Lower Fruitland Coal		0.00	0.00
4455.93	1668.00	Base of Lower Coal		0.00	0.00
	0.00	Pictured Cliffs SS		0.00	0.00