

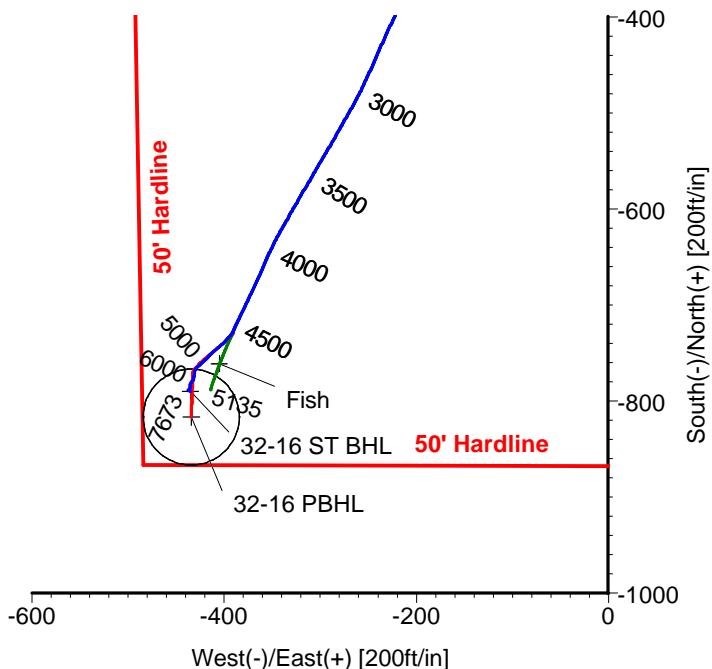
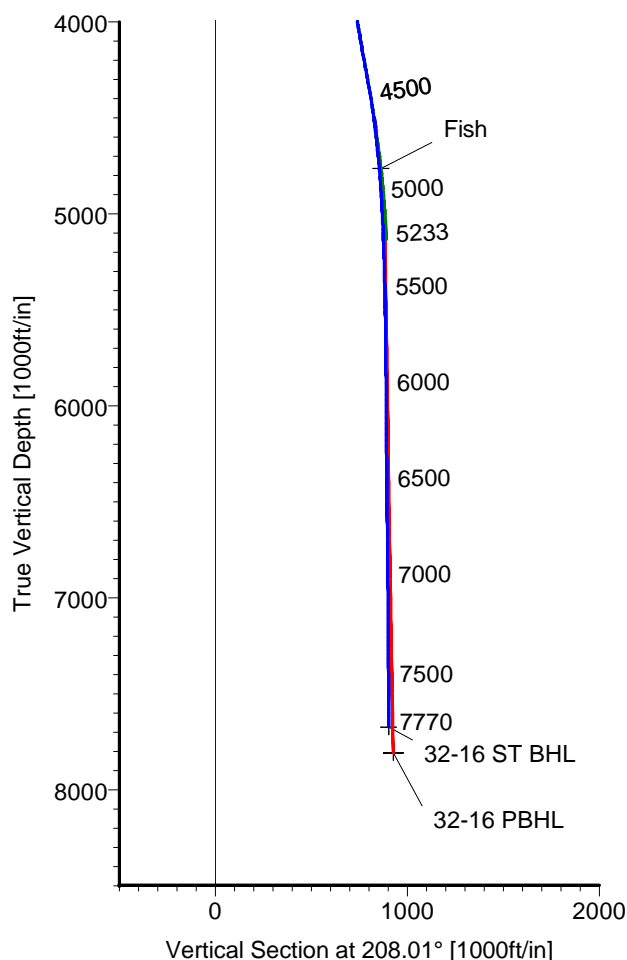
ANADARKO PETROLEUM

Field: Weld County, CO
Site: Houston State 5-16 Pad
Well: 32-16X
Wellpath: Sidetrack



Azimuths to Grid North
True North: -0.39°
Magnetic North: 8.65°

Magnetic Field
Strength: 53153nT
Dip Angle: 66.92°
Date: 08/15/2010
Model: IGRF2010



LEGEND

- 32-16X, Sidetrack, Plan #1
- 32-16X (Original Hole)
- Sidetrack

CASING DETAILS

No.	TVD	MD	Name	Size
1	694.89	695.00	8 5/8"	8.625

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
32-16 SL	0.00	0.00	0.00	40°13'41.505N	104°54'10.366W	Point
Fish	4762.85	-761.64	-404.92	40°13'34.006N	104°54'15.653W	Point
32-16 ST BHL	7672.89	-790.00	-435.29	40°13'33.727N	104°54'16.047W	Point
32-16 PBHL	7806.00	-816.80	-434.48	40°13'33.462N	104°54'16.039W	Circle (Radius: 50)

Wellpath: (32-16X/Sidetrack)

Created By: Ivonne Gonzalez

Date: 08/18/2010

ALLIS-CHALMERS DIRECTIONAL DRILLING SERVICES
911 Regional Park Drive Houston, Texas 77060
Phone: 713-934-9600 Fax: 713-934-9067



**DIRECTIONAL
DRILLING SERVICES**

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM	Date: 08/18/2010	Time: 11:38:52	Page: 1
Field: Weld County, CO	Co-ordinate(NE) Reference: Well: 32-16X, Grid North		
Site: Houston State 5-16 Pad	Vertical (TVD) Reference: 4773'GL+13'KB 4786.0		
Well: 32-16X	Section (VS) Reference: Well (0.00N,0.00E,208.01Azi)		
Wellpath: Sidetrack	Survey Calculation Method: Minimum Curvature		Db: Adapti

Field: Weld County, CO

Map SystemUS State Plane Coordinate System 1983
Geo DatumGRS 1980
Sys Datum:Mean Sea Level

Map Zone: Colorado, Northern Zone
Coordinate System: Well Centre
Geomagnetic Model: IGRF2010

Site: Houston State 5-16 Pad

Centered on 31-16

Site Position:	Northing:	1326553.84 ft	Latitude:	40 13	41.664 N
From: Geographic	Easting:	3166730.52 ft	Longitude:	104 54	10.368 W
Position Uncertainty:	0.00 ft		North Reference:		Grid
Ground Level:	4773.00 ft		Grid Convergence:		0.39 deg

Well: 32-16X

Slot Name:	32-16
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Well Position:	+N-S	-16.05 ft	Northing:	1326537.79 ft	Latitude:	40 13 41.505 N
	+E-W	0.26 ft	Easting :	3166730.78 ft	Longitude:	104 54 10.366 W
Position Uncertainty:		0.00 ft				

Wellpath: Sidetrack

Drilled From:	Original Hole
Tie-on Depth:	4507.00 ft
Above System Datum:	Mean Sea Level
D declination:	9.04 deg
Mag Dip Angle:	66.92 deg
+E/-W	Direction
ft	deg

Current Datum:	4773'GL+13'KB	Height	4786.00	ft
Magnetic Data:	08/15/2010			
Field Strength:	53153	nT		
Vertical Section: Depth From (TVD)			+N/-S	
	ft		ft	

0.00	0.00	0.00	208.01
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Survey Program for Definitive Wellpath

Date: 08/18/2010		Validated: No	Version: 0	
Actual From	To	Survey	Toolcode	Tool Name
ft	ft			
46.00	4507.00	Survey #1 (46.00-5142.00) (0)	MWD	Std MWD
4599.00	7725.00	Survey #1 (4599.00-7725.00)	MWD	Std MWD
7770.00	7770.00	Survey #2 (7770.00-7770.00)	Project	Projection

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
46.00	0.20	215.10	46.00	-0.07	-0.05	0.08	0.43	0.43	0.00	MWD
167.00	0.20	186.60	167.00	-0.45	-0.19	0.49	0.08	0.00	-23.55	MWD
288.00	0.40	241.10	288.00	-0.86	-0.59	1.04	0.27	0.17	45.04	MWD
413.00	1.20	213.00	412.98	-2.17	-1.68	2.71	0.69	0.64	-22.48	MWD
549.00	1.60	220.70	548.94	-4.80	-3.69	5.98	0.32	0.29	5.66	MWD
645.00	1.60	229.50	644.91	-6.69	-5.59	8.53	0.26	0.00	9.17	MWD
695.00	1.60	236.20	694.89	-7.53	-6.70	9.80	0.37	0.00	13.40	8 5/8"
786.00	3.20	236.50	785.80	-9.64	-9.87	13.15	1.76	1.76	0.33	MWD
877.00	4.60	220.00	876.59	-13.84	-14.34	18.95	1.96	1.54	-18.13	MWD
967.00	6.30	207.00	966.19	-21.00	-18.90	27.42	2.32	1.89	-14.44	MWD
1058.00	8.50	210.90	1056.42	-31.23	-24.62	39.13	2.48	2.42	4.29	MWD
1149.00	10.20	203.10	1146.22	-44.41	-31.24	53.88	2.33	1.87	-8.57	MWD
1240.00	10.90	206.30	1235.68	-59.53	-38.21	70.50	1.00	0.77	3.52	MWD
1331.00	12.30	208.00	1324.82	-75.81	-46.57	88.80	1.58	1.54	1.87	MWD
1421.00	14.10	207.30	1412.44	-94.01	-56.10	109.35	2.01	2.00	-0.78	MWD
1512.00	14.30	206.30	1500.66	-113.94	-66.16	131.66	0.35	0.22	-1.10	MWD
1603.00	15.50	207.00	1588.59	-134.85	-76.66	155.06	1.33	1.32	0.77	MWD
1694.00	15.80	207.30	1676.22	-156.69	-87.87	179.60	0.34	0.33	0.33	MWD
1784.00	16.50	210.50	1762.67	-178.59	-99.97	204.62	1.26	0.78	3.56	MWD
1875.00	17.10	211.60	1849.79	-201.12	-113.54	230.89	0.75	0.66	1.21	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM
Field: Weld County, CO
Site: Houston State 5-16 Pad
Well: 32-16X
Wellpath: Sidetrack

Date: 08/18/2010 **Time:** 11:38:52 **Page:** 2
Co-ordinate(NE) Reference: Well: 32-16X, Grid North
Vertical (TVD) Reference: 4773'GL+13'KB 4786.0
Section (VS) Reference: Well (0.00N,0.00E,208.01Azi)
Survey Calculation Method: Minimum Curvature **Db:** Adapti

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
1966.00	16.40	210.50	1936.92	-223.59	-127.07	257.07	0.84	-0.77	-1.21	MWD
2057.00	15.00	206.30	2024.53	-245.21	-138.81	281.68	1.98	-1.54	-4.62	MWD
2147.00	15.00	206.60	2111.46	-266.07	-149.19	304.97	0.09	0.00	0.33	MWD
2238.00	14.80	208.70	2199.40	-286.79	-160.04	328.36	0.63	-0.22	2.31	MWD
2329.00	15.30	210.50	2287.28	-307.33	-171.72	351.98	0.75	0.55	1.98	MWD
2420.00	16.50	211.60	2374.80	-328.69	-184.58	376.87	1.36	1.32	1.21	MWD
2511.00	17.60	207.70	2461.80	-351.88	-197.75	403.53	1.74	1.21	-4.29	MWD
2601.00	16.50	206.30	2547.85	-375.38	-209.74	429.91	1.30	-1.22	-1.56	MWD
2692.00	15.70	208.40	2635.28	-397.80	-221.32	455.14	1.09	-0.88	2.31	MWD
2783.00	16.40	203.80	2722.73	-420.38	-232.36	480.27	1.59	0.77	-5.05	MWD
2874.00	15.10	203.50	2810.31	-443.01	-242.27	504.89	1.43	-1.43	-0.33	MWD
2964.00	13.90	204.90	2897.45	-463.57	-251.50	527.38	1.39	-1.33	1.56	MWD
3055.00	13.00	206.60	2985.95	-482.63	-260.68	548.52	1.08	-0.99	1.87	MWD
3146.00	12.50	211.60	3074.71	-500.17	-270.43	568.58	1.33	-0.55	5.49	MWD
3236.00	12.00	208.40	3162.66	-516.70	-279.98	587.66	0.94	-0.56	-3.56	MWD
3330.00	11.30	210.10	3254.72	-533.26	-289.25	606.64	0.83	-0.74	1.81	MWD
3418.00	10.20	211.60	3341.18	-547.36	-297.65	623.03	1.29	-1.25	1.70	MWD
3509.00	10.00	209.10	3430.77	-561.12	-305.72	638.97	0.53	-0.22	-2.75	MWD
3599.00	10.60	211.20	3519.32	-575.03	-313.81	655.05	0.79	0.67	2.33	MWD
3690.00	10.40	209.40	3608.79	-589.35	-322.18	671.62	0.42	-0.22	-1.98	MWD
3781.00	11.30	210.10	3698.17	-604.22	-330.68	688.74	1.00	0.99	0.77	MWD
3872.00	10.20	209.80	3787.57	-618.92	-339.15	705.70	1.21	-1.21	-0.33	MWD
3962.00	9.00	207.70	3876.31	-632.07	-346.39	720.71	1.39	-1.33	-2.33	MWD
4053.00	8.60	205.20	3966.24	-644.53	-352.59	734.62	0.61	-0.44	-2.75	MWD
4144.00	9.90	202.20	4056.05	-657.93	-358.45	749.20	1.52	1.43	-3.30	MWD
4235.00	10.10	205.20	4145.67	-672.39	-364.80	764.95	0.61	0.22	3.30	MWD
4326.00	10.40	205.20	4235.22	-687.04	-371.69	781.12	0.33	0.33	0.00	MWD
4416.00	9.70	206.60	4323.83	-701.17	-378.55	796.82	0.82	-0.78	1.56	MWD
4507.00	9.70	204.20	4413.53	-715.02	-385.12	812.13	0.44	0.00	-2.64	MWD
4599.00	8.10	207.30	4504.42	-727.85	-391.27	826.35	1.81	-1.74	3.37	MWD
4644.00	6.30	216.80	4549.07	-732.65	-394.21	831.96	4.78	-4.00	21.11	MWD
4689.00	6.20	225.30	4593.80	-736.33	-397.41	836.72	2.07	-0.22	18.89	MWD
4734.00	6.50	228.10	4638.53	-739.74	-401.04	841.43	0.96	0.67	6.22	MWD
4826.00	5.60	227.70	4730.01	-746.24	-408.23	850.55	0.98	-0.98	-0.43	MWD
4858.98	5.16	227.61	4762.85	-748.32	-410.52	853.46	1.33	-1.33	-0.28	Fish
4916.00	4.40	227.40	4819.67	-751.53	-414.02	857.94	1.33	-1.33	-0.36	MWD
5007.00	3.50	225.30	4910.45	-755.85	-418.57	863.88	1.00	-0.99	-2.31	MWD
5098.00	3.20	228.40	5001.30	-759.49	-422.44	868.92	0.38	-0.33	3.41	MWD
5189.00	2.50	229.50	5092.18	-762.47	-425.85	873.14	0.77	-0.77	1.21	MWD
5325.00	1.90	215.10	5228.08	-766.24	-429.40	878.14	0.60	-0.44	-10.59	MWD
5462.00	1.20	183.80	5365.03	-769.53	-430.80	881.70	0.78	-0.51	-22.85	MWD
5598.00	1.20	195.70	5501.01	-772.32	-431.28	884.39	0.18	0.00	8.75	MWD
5734.00	0.90	171.10	5636.98	-774.74	-431.50	886.64	0.39	-0.22	-18.09	MWD
5870.00	0.30	222.40	5772.98	-776.06	-431.58	887.84	0.55	-0.44	37.72	MWD
6006.00	0.70	197.80	5908.97	-777.12	-432.07	889.00	0.33	0.29	-18.09	MWD
6188.00	0.20	232.60	6090.96	-778.37	-432.66	890.38	0.30	-0.27	19.12	MWD
6369.00	0.70	207.30	6271.96	-779.54	-433.42	891.78	0.29	0.28	-13.98	MWD
6551.00	0.50	234.40	6453.95	-780.99	-434.58	893.60	0.19	-0.11	14.89	MWD
6732.00	0.70	201.70	6634.94	-782.48	-435.63	895.41	0.21	0.11	-18.07	MWD
6914.00	0.70	160.40	6816.93	-784.56	-435.66	897.26	0.27	0.00	-22.69	MWD
7095.00	0.50	196.40	6997.92	-786.36	-435.52	898.78	0.23	-0.11	19.89	MWD
7277.00	0.70	236.20	7179.91	-787.74	-436.66	900.54	0.25	0.11	21.87	MWD
7458.00	0.20	141.90	7360.90	-788.60	-437.39	901.64	0.41	-0.28	-52.10	MWD
7640.00	0.50	126.80	7542.90	-789.33	-436.56	901.89	0.17	0.16	-8.30	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Houston State 5-16 Pad Well: 32-16X Wellpath: Sidetrack	Date: 08/18/2010 Time: 11:38:52 Page: 3 Co-ordinate(NE) Reference: Well: 32-16X, Grid North Vertical (TVD) Reference: 4773'GL+13'KB 4786.0 Section (VS) Reference: Well (0.00N,0.00E,208.01Azi) Survey Calculation Method: Minimum Curvature Db: Adapti
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Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
7725.00	0.70	114.90	7627.89	-789.77	-435.79	901.92	0.28	0.24	-14.00	MWD
7770.00	0.70	114.90	7672.89	-790.00	-435.29	901.89	0.00	0.00	0.00	32-16 ST BHL

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----><--- Longitude --->		
32-16 SL			0.00	0.00	0.00	1326537.793166730.78		40	13	41.505 N
Fish			4762.85	-761.64	-404.92	1325776.153166325.86		40	13	34.006 N
32-16 ST BHL			7672.89	-790.00	-435.29	1325747.793166295.49		40	13	33.727 N
32-16 PBHL			7806.00	-816.80	-434.48	1325720.993166296.29		40	13	33.462 N
-Circle (Radius: 50)										

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
695.00	694.89	8.625	9.875	8 5/8"