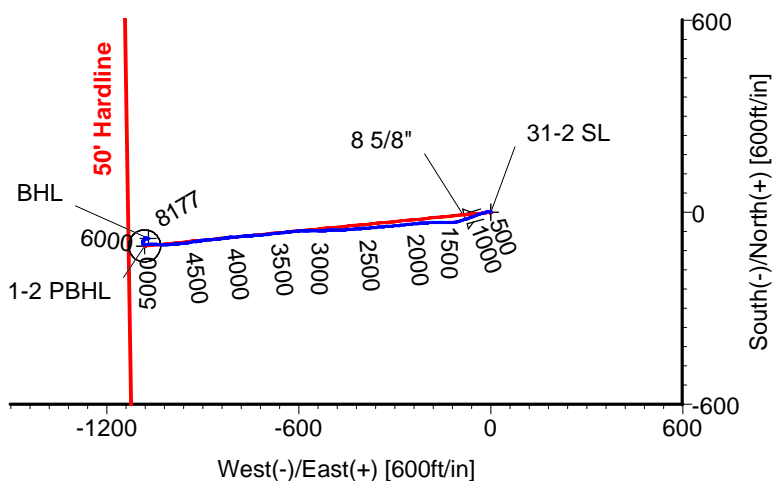
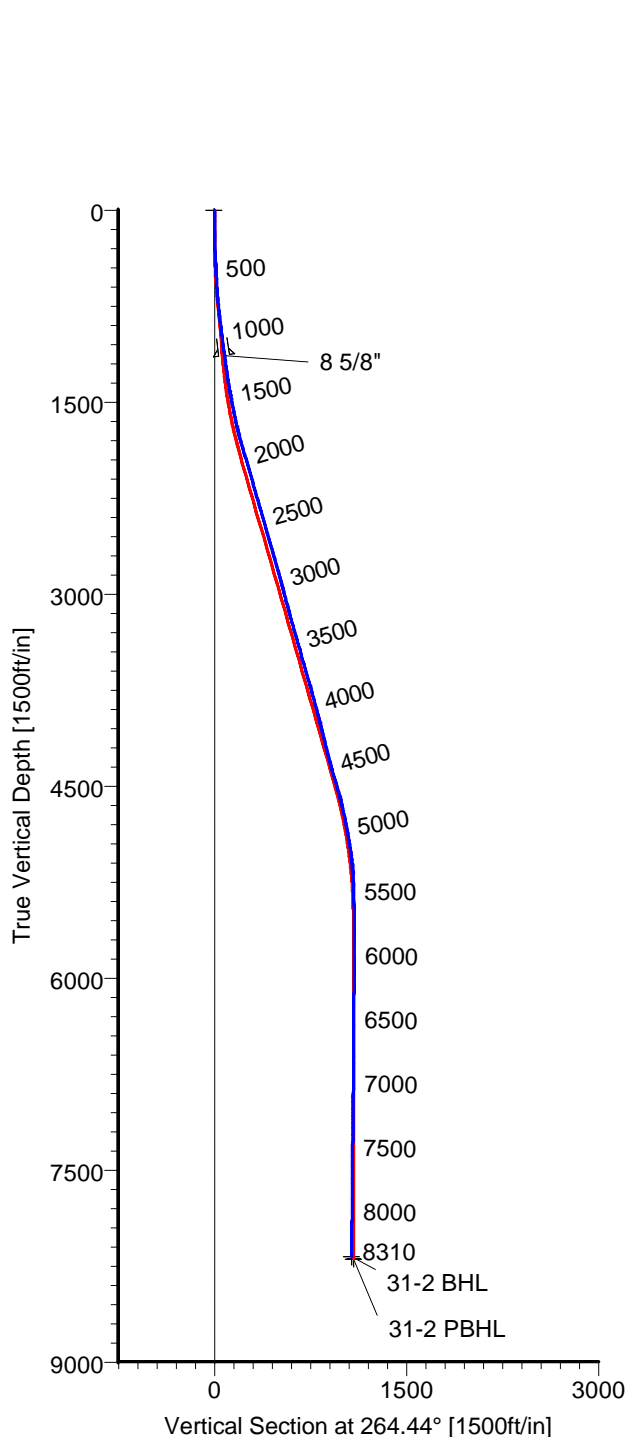


# ANADARKO PETROLEUM

Field: Weld County, CO  
Site: Jesser 18-2 Pad  
Well: 31-2  
Wellpath: Original Hole



Azimuths to Grid North  
True North: -0.49°  
Magnetic North: 8.41°

Magnetic Field  
Strength: 53059nT  
Dip Angle: 66.81°  
Date: 12/14/2010  
Model: IGRF2010

## CASING DETAILS

No.	TVD	MD	Name	Size
1	1135.87	1140.00	8 5/8"	8.625

## LEGEND

— 31-2, Original Hole, Plan #1  
— Original Hole

## TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
31-2 SL	0.00	0.00	0.00	40°05'02.656N	104°44'58.739W	Point
31-2 BHL	8177.14	-82.45	-1068.98	40°05'01.930N	104°45'12.501W	Point
31-2 PBHL	8195.00	-105.20	-1080.70	40°05'01.706N	104°45'12.654W	Circle (Radius: 50)

Wellpath: (31-2/Original Hole)

Created By: Ivonne Gonzalez

Date: 01/10/2011

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

<b>Company:</b> ANADARKO PETROLEUM <b>Field:</b> Weld County, CO <b>Site:</b> Jesser 18-2 Pad <b>Well:</b> 31-2 <b>Wellpath:</b> Original Hole	<b>Date:</b> 01/10/2011 <b>Co-ordinate(NE) Reference:</b> <b>Vertical (TVD) Reference:</b> <b>Section (VS) Reference:</b> <b>Survey Calculation Method:</b>	<b>Time:</b> 07:52:48 Well: 31-2, Grid North 5144'GL+13'KB 5157.0 Well (0.00N,0.00E,264.44Azi) Minimum Curvature	<b>Page:</b> 1 <b>Db:</b> Sybase
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<b>Field:</b> Weld County, CO	
<b>Map System:</b> US State Plane Coordinate System 1983 <b>Geo Datum:</b> GRS 1980 <b>Sys Datum:</b> Mean Sea Level	<b>Map Zone:</b> Colorado, Northern Zone <b>Coordinate System:</b> Well Centre <b>Geomagnetic Model:</b> IGRF2010

<b>Site:</b> Jesser 18-2 Pad  Centered on Jesser 21-2 <b>Site Position:</b> <b>From:</b> Geographic <b>Position Uncertainty:</b> 0.00 ft <b>Ground Level:</b> 5144.00 ft	<b>Northing:</b> 1274364.19 ft <b>Easting:</b> 3210048.09 ft  <b>Latitude:</b> 40 5 2.663 N <b>Longitude:</b> 104 44 57.581 W <b>North Reference:</b> Grid <b>Grid Convergence:</b> 0.49 deg
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<b>Well:</b> 31-2  <b>Well Position:</b> +N/-S -1.49 ft +E/-W -89.98 ft <b>Position Uncertainty:</b> 0.00 ft	<b>Slot Name:</b> 31-2  <b>Well Position:</b> +N/-S -1.49 ft +E/-W -89.98 ft <b>Position Uncertainty:</b> 0.00 ft  <b>Latitude:</b> 40 5 2.656 N <b>Longitude:</b> 104 44 58.739 W
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<b>Wellpath:</b> Original Hole  <b>Current Datum:</b> 5144'GL+13'KB <b>Magnetic Data:</b> 12/14/2010 <b>Field Strength:</b> 53059 nT <b>Vertical Section:</b> Depth From (TVD) ft	<b>Drilled From:</b> Surface <b>Tie-on Depth:</b> 0.00 ft <b>Above System Datum:</b> Mean Sea Level <b>Declination:</b> 8.90 deg <b>Mag Dip Angle:</b> 66.81 deg <b>Direction:</b> deg  Height 5157.00 ft +N/-S ft +E/-W ft 0.00 0.00 0.00 264.44
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<b>Survey Program for Definitive Wellpath</b>					
Date:	01/10/2011	Validated:	No	Version:	0
Actual From	To	Survey	Toolcode	Tool Name	
50.00	8265.00	Survey #1 (50.00-8265.00)	MWD	Std MWD	
8310.00	8310.00	Survey #2 (8310.00-8310.00)	Project	Projection	

Survey										
MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
50.00	0.70	326.70	50.00	0.26	-0.17	0.14	1.40	1.40	0.00	MWD
110.00	0.90	323.90	109.99	0.94	-0.65	0.55	0.34	0.33	-4.67	MWD
170.00	0.90	340.80	169.99	1.77	-1.08	0.90	0.44	0.00	28.17	MWD
230.00	1.40	286.30	229.97	2.42	-1.94	1.69	1.91	0.83	-90.83	MWD
291.00	2.30	276.40	290.94	2.76	-3.87	3.58	1.56	1.48	-16.23	MWD
350.00	3.00	258.90	349.88	2.60	-6.56	6.28	1.80	1.19	-29.66	MWD
425.00	2.80	261.00	424.78	1.93	-10.30	10.06	0.30	-0.27	2.80	MWD
517.00	2.80	246.90	516.68	0.70	-14.58	14.45	0.75	0.00	-15.33	MWD
608.00	4.00	251.10	607.51	-1.20	-19.63	19.65	1.35	1.32	4.62	MWD
699.00	5.30	250.80	698.21	-3.61	-26.60	26.83	1.43	1.43	-0.33	MWD
790.00	6.20	250.40	788.75	-6.64	-35.20	35.68	0.99	0.99	-0.44	MWD
880.00	7.20	248.70	878.14	-10.32	-45.03	45.82	1.13	1.11	-1.89	MWD
971.00	7.60	249.70	968.38	-14.48	-55.99	57.13	0.46	0.44	1.10	MWD
1062.00	7.70	250.80	1058.57	-18.57	-67.39	68.87	0.19	0.11	1.21	MWD
1095.00	7.70	253.60	1091.27	-19.92	-71.60	73.19	1.14	0.00	8.48	MWD
1140.00	7.70	253.60	1135.87	-21.62	-77.38	79.12	0.00	0.00	0.00	8 5/8"
1151.00	7.70	253.60	1146.77	-22.04	-78.80	80.56	0.00	0.00	0.00	MWD
1241.00	8.30	250.80	1235.89	-25.88	-90.72	92.80	0.79	0.67	-3.11	MWD
1332.00	8.60	258.90	1325.91	-29.35	-103.60	105.95	1.35	0.33	8.90	MWD
1423.00	9.90	262.00	1415.72	-31.75	-118.02	120.54	1.53	1.43	3.41	MWD
1514.00	11.10	271.50	1505.20	-32.61	-134.53	137.05	2.31	1.32	10.44	MWD

# Allis-Chalmers Energy, Inc.

## Survey Report

<b>Company:</b> ANADARKO PETROLEUM <b>Field:</b> Weld County, CO <b>Site:</b> Jesser 18-2 Pad <b>Well:</b> 31-2 <b>Wellpath:</b> Original Hole	<b>Date:</b> 01/10/2011 <b>Co-ordinate(NE) Reference:</b> Well: 31-2, Grid North <b>Vertical (TVD) Reference:</b> 5144'GL+13'KB 5157.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,264.44Azi) <b>Survey Calculation Method:</b> Minimum Curvature	<b>Time:</b> 07:52:48 <b>Page:</b> 2 <b>Db:</b> Sybase
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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
1604.00	11.80	272.20	1593.41	-32.03	-152.38	154.77	0.79	0.78	0.78	MWD
1695.00	12.70	267.70	1682.34	-32.07	-171.68	173.98	1.44	0.99	-4.95	MWD
1786.00	15.00	267.70	1770.69	-32.95	-193.44	195.72	2.53	2.53	0.00	MWD
1877.00	16.00	265.90	1858.38	-34.32	-217.72	220.02	1.22	1.10	-1.98	MWD
1967.00	16.50	264.10	1944.78	-36.52	-242.80	245.20	0.79	0.56	-2.00	MWD
2058.00	16.20	262.70	2032.10	-39.46	-268.25	270.81	0.54	-0.33	-1.54	MWD
2149.00	16.20	264.80	2119.49	-42.22	-293.48	296.19	0.64	0.00	2.31	MWD
2240.00	15.80	266.30	2206.97	-44.17	-318.49	321.27	0.63	-0.44	1.65	MWD
2330.00	16.50	264.80	2293.41	-46.12	-343.44	346.30	0.91	0.78	-1.67	MWD
2421.00	15.80	265.20	2380.82	-48.33	-368.66	371.61	0.78	-0.77	0.44	MWD
2512.00	15.80	265.60	2468.38	-50.31	-393.36	396.38	0.12	0.00	0.44	MWD
2603.00	16.70	265.20	2555.75	-52.36	-418.74	421.84	1.00	0.99	-0.44	MWD
2693.00	15.70	265.20	2642.17	-54.46	-443.76	446.95	1.11	-1.11	0.00	MWD
2784.00	16.40	269.40	2729.63	-55.63	-468.87	472.06	1.49	0.77	4.62	MWD
2875.00	15.50	268.70	2817.12	-56.04	-493.88	496.98	1.01	-0.99	-0.77	MWD
2965.00	15.10	263.80	2903.94	-57.57	-517.55	520.70	1.50	-0.44	-5.44	MWD
3056.00	15.00	270.80	2991.82	-58.69	-541.12	544.26	2.00	-0.11	7.69	MWD
3147.00	15.10	272.90	3079.70	-57.93	-564.73	567.68	0.61	0.11	2.31	MWD
3238.00	15.00	265.60	3167.59	-58.23	-588.31	591.18	2.08	-0.11	-8.02	MWD
3328.00	15.70	265.60	3254.38	-60.06	-612.06	615.00	0.78	0.78	0.00	MWD
3419.00	16.50	263.10	3341.81	-62.55	-637.17	640.23	1.16	0.88	-2.75	MWD
3510.00	15.80	263.40	3429.22	-65.53	-662.31	665.54	0.77	-0.77	0.33	MWD
3600.00	15.70	263.10	3515.84	-68.40	-686.57	689.96	0.14	-0.11	-0.33	MWD
3691.00	15.80	265.60	3603.42	-70.83	-711.14	714.66	0.75	0.11	2.75	MWD
3782.00	16.70	266.60	3690.79	-72.56	-736.55	740.11	1.04	0.99	1.10	MWD
3873.00	15.00	264.80	3778.33	-74.40	-761.33	764.96	1.94	-1.87	-1.98	MWD
3964.00	14.80	264.80	3866.27	-76.52	-784.63	788.35	0.22	-0.22	0.00	MWD
4055.00	15.00	266.60	3954.21	-78.27	-807.96	811.74	0.55	0.22	1.98	MWD
4146.00	14.30	260.00	4042.25	-80.92	-830.79	834.72	1.99	-0.77	-7.25	MWD
4236.00	13.40	264.50	4129.64	-83.85	-852.11	856.23	1.56	-1.00	5.00	MWD
4327.00	14.30	266.60	4217.99	-85.53	-873.83	878.01	1.13	0.99	2.31	MWD
4418.00	14.60	261.30	4306.12	-87.93	-896.39	900.69	1.49	0.33	-5.82	MWD
4508.00	16.40	261.70	4392.84	-91.48	-920.17	924.71	2.00	2.00	0.44	MWD
4599.00	16.50	262.40	4480.12	-95.05	-945.69	950.45	0.24	0.11	0.77	MWD
4690.00	15.10	262.40	4567.68	-98.32	-970.25	975.22	1.54	-1.54	0.00	MWD
4781.00	13.00	266.30	4655.95	-100.55	-992.22	997.29	2.53	-2.31	4.29	MWD
4871.00	12.30	269.80	4743.77	-101.24	-1011.91	1016.96	1.15	-0.78	3.89	MWD
4961.00	10.70	271.50	4831.96	-101.05	-1029.85	1034.79	1.82	-1.78	1.89	MWD
5052.00	9.30	270.80	4921.57	-100.73	-1045.65	1050.49	1.54	-1.54	-0.77	MWD
5142.00	7.90	270.80	5010.56	-100.54	-1059.10	1063.86	1.56	-1.56	0.00	MWD
5233.00	5.80	270.50	5100.90	-100.41	-1069.95	1074.65	2.31	-2.31	-0.33	MWD
5324.00	3.50	252.50	5191.60	-101.21	-1077.20	1081.94	2.96	-2.53	-19.78	MWD
5414.00	2.30	274.30	5281.49	-101.90	-1081.62	1086.41	1.79	-1.33	24.22	MWD
5505.00	1.10	296.80	5372.45	-101.37	-1084.22	1088.95	1.48	-1.32	24.73	MWD
5596.00	1.10	329.90	5463.43	-100.22	-1085.44	1090.05	0.69	0.00	36.37	MWD
5686.00	0.50	318.30	5553.42	-99.18	-1086.14	1090.64	0.69	-0.67	-12.89	MWD
5777.00	0.90	325.30	5644.42	-98.29	-1086.81	1091.22	0.45	0.44	7.69	MWD
5868.00	1.10	340.10	5735.40	-96.89	-1087.51	1091.78	0.36	0.22	16.26	MWD
5959.00	0.90	26.50	5826.39	-95.42	-1087.49	1091.62	0.89	-0.22	50.99	MWD
6049.00	1.10	12.10	5916.38	-93.95	-1086.99	1090.98	0.36	0.22	-16.00	MWD
6140.00	1.10	6.10	6007.36	-92.22	-1086.72	1090.54	0.13	0.00	-6.59	MWD
6322.00	0.50	34.20	6189.34	-89.83	-1086.09	1089.68	0.38	-0.33	15.44	MWD
6503.00	0.50	121.80	6370.34	-89.59	-1084.97	1088.55	0.38	0.00	48.40	MWD

# Allis-Chalmers Energy, Inc.

## Survey Report

<b>Company:</b> ANADARKO PETROLEUM <b>Field:</b> Weld County, CO <b>Site:</b> Jesser 18-2 Pad <b>Well:</b> 31-2 <b>Wellpath:</b> Original Hole	<b>Date:</b> 01/10/2011 <b>Co-ordinate(NE) Reference:</b> Well: 31-2, Grid North <b>Vertical (TVD) Reference:</b> 5144'GL+13'KB 5157.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,264.44Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Sybase
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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
6685.00	0.50	54.30	6552.33	-89.55	-1083.65	1087.23	0.31	0.00	-37.09	MWD
6866.00	1.10	13.10	6733.31	-87.40	-1082.62	1085.99	0.44	0.33	-22.76	MWD
7048.00	1.40	7.90	6915.27	-83.49	-1081.91	1084.91	0.18	0.16	-2.86	MWD
7230.00	0.90	50.70	7097.24	-80.38	-1080.50	1083.21	0.53	-0.27	23.52	MWD
7411.00	1.20	99.60	7278.21	-79.80	-1077.53	1080.20	0.50	0.17	27.02	MWD
7593.00	0.50	82.70	7460.19	-80.02	-1074.87	1077.56	0.40	-0.38	-9.29	MWD
7774.00	0.90	160.80	7641.18	-81.26	-1073.62	1076.44	0.52	0.22	43.15	MWD
7956.00	0.50	128.40	7823.16	-83.10	-1072.52	1075.53	0.30	-0.22	-17.80	MWD
8137.00	0.70	79.20	8004.16	-83.39	-1070.82	1073.86	0.29	0.11	-27.18	MWD
8265.00	0.70	53.60	8132.15	-82.78	-1069.42	1072.41	0.24	0.00	-20.00	MWD
8310.00	0.70	53.60	8177.14	-82.45	-1068.98	1071.94	0.00	0.00	0.00	31-2 BHL

### Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude ---> Deg Min Sec			<--- Longitude ---> Deg Min Sec		
31-2 SL			0.00	0.00	0.00	1274362.70	3209958.11	40	5	2.656 N	104	44	58.739 W
31-2 BHL			8177.14	-82.45	-1068.98	1274280.25	3208889.13	40	5	1.930 N	104	45	12.501 W
31-2 PBHL			8195.00	-105.20	-1080.70	1274257.49	3208877.41	40	5	1.706 N	104	45	12.654 W
-Circle (Radius: 50)													

### Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
1140.00	1135.87	8.625	12.250	8 5/8"