

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

FORM APPROVED
OMB NO. 1004-0137
Expires March 31, 2007

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other		5. Lease Serial No. SHL NM-99032 BHL NM-15007	
b. Type of Completion: ☐ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other <u>Horizontal Re-entry</u>		6. If Indian, Allottee or Tribe Name	
2. Name of Operator Cimarex Energy Co. of Colorado		7. Unit or CA Agreement Name and No Pending	
3. Address PO Box 140907; Irving, TX 75014		8. Lease Name and Well No. Glenwood 28 Federal Com No. 2	
3a. Phone No. (include area code) 972-443-6489		9. API Well No. 30-015-36140	
4. Location of Well (Report Location clearly and in accordance with Federal requirements)* At surface 660' FNL & 330' FWL At top prod interval reported below At total depth 660' FNL & 330' FEL		10. Field and Pool, or Exploratory Abo Wildcat <u>County Line Tank</u> 11. Sec., T., R., M., on Block and Survey or Area 28-16S-29E 12. County or Parish Eddy 13. State NM	
14. Date Spudded 03.23.08	15. Date T.D. Reached 04.13.08	16. Date Completed ☐ D & A ☒ Ready to Prod	17. Elevations (DF, RKB, RT, GL)* 3633' GR

AUG 27 2008

OCD-ARTESIA

18. Total Depth: MD 11,200' TVD 7,426'	19. Plug Back TD: MD 10,987' TVD 7,218'	20. Depth Bridge Plug Set: MD 6,728' TVD
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) Multiple Array Acoustilog		22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit report) Directional Survey ☐ No ☒ Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)									
Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17 1/2"	13 3/8" H40	48	0'	370'		420 sx Prem Plus		circ	
12 1/4"	9 5/8" J55	40	0'	2,536'		750 sx Interfill		did not Circulate	
						1" Top job 85 sx		Circ	
8 3/4"	7" P110	26	0'	7,427'		800 sx Super H		1900'	
6 1/8"	4 1/2" P110	11.6	6486'	10,897'		None			

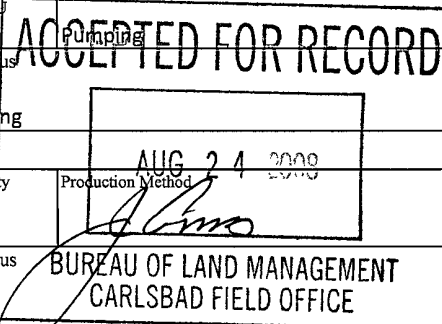
24. Tubing Record									
Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	
2 3/4"	6,408'								

25. Producing Intervals				26. Perforation Record			
Formation	Top	Bottom		Perforated Interval	Size	No. Holes	Perf. Status
A) Abo	7,050'	7,267'					
B)							
C)							
D)							

27. Acid, Fracture, Treatment, Cement Squeeze, etc.									
Depth Interval		Amount and Type of Material							
		Please see attachment...							

28. Production - Interval A									
Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity BTU	Production Method
06.11.08	07.10.08	24	→	67	33	251	47.4	1	Pumping
Choke Size	Tbg Press. Flwg.	Csg Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
open	SI 60	50	→				492	Producing	
28. Production - Interval B									
Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg Press. Flwg.	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
SI			→						

* (See instructions and spaces for additional data on page 2)



28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg Press. Flwg SI	Csg. Press	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg Press. Flwg SI	Csg. Press	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

Gas Vented for testing from 6-11-08 to 7-9-08, then sold

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top
					Meas. Depth
				San Andres	2545'
				Tubb	5153'
				Abo	5,855'
				Wolfcamp	7169'

32. Additional remarks (include plugging procedure):

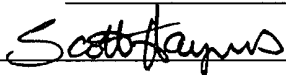
2 1/2"x2"x20' RHBC rod pump installed.

33. Indicate which items have been attached by placing a check in the appropriate boxes:

- ☒ Electrical/Mechanical Logs (1 full set req'd.)
 ☐ Geologic Report
 ☐ DST Report
 ☒ Directional Survey
 ☐ Sundry Notice for plugging and cement verification
 ☐ Core Analysis
 ☒ Other: PEAK Systems Drawing, Frac Job, Deviation/well path

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (please print) Scott Haynes Title Regulatory Analyst

Signature  Date August 20, 2008

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Acid, Fracture, Treatment, Cement Squeeze, etc. Attachment
Glenwood 28 Federal Com No. 2
 28-16S-29E
 Eddy County, NM

Depth Interval	Amount and Type of Material Used
10716'-10987'	Pump 119 bbl of 15% HCl NeFe acid, 332 bbl slickwater, SD, 24 bbls Slickwater, 119 bbl Deepspot 15% HCl acid, 357 bbl slickwater, 238 bbl Lightning 2000 x-linker pad, 0.5 to 1 ppg 30/50# white sand on lightning 2000 gel, 357 bbls slickwater & flush with 20# liner gel, Pump down 7" & 4 1/2" liner 40 BPM. Drop 2 1/4" ball. Pump 95 bbl of 15% HCl NeFe acid & NeFe acid & 183 bbl slickwater, seat ball, open port at 8399' at 4624#. 10000# 30/50 white sand pumped.
8190'-8617'	Cont pumping 95 bbl slickwater, SD, 71 bbl slickwater, 119 bbl Deepspot 15% HCl acid, 238 bbl slickwater, 119 bbl Lightning 2000 x-linker pad, 0.5 to 1 ppg 30/50# white sand in lightning 2000 gel, 238 bbl slick water & flush with 20# liner gel. Drop 2 3/4" ball. Pump 95 bbl 15% HCl NeFe acid, 176 bbl slickwater, seat ball, open port 7932' at 5202#. Avg rate 45 BPM. 7500# 30/50 white sand pumped.
7680'-8190'	Cont pumping 87 bbl slickwater, SD, 71 bbl slickwater, 119 bbls Deepspot 15% HCl acid, 357 bbl slickwater, 119 bbl Lightning 2000 x-linker pad, 0.5 to 1 ppg 30/50# white sand in lightning 2000 gel, 238 bbl slickwater & flush with 20# linear gel. Drop 3" ball. Pump 95 bbl 15% HCl NeFe acid, 168 bbl slickwater, seat ball, open port at 7422' at 3988#. Avg rate 44 BPM. 7500# 30/50# white sand pumped.
6714'-7680'	Cont pumping 94 bbl slickwater, SD, 95 bbls slick water, 119 bbl Deepspot 15% HCl acid, 357 bbl slickwater, 119 bbl Lightning 2000 x-linker pad, 0.5 to 1 ppg 30/50# white sand in lightning 2000 gel & flush with 265 bbls 20# liner gel. Avg rate 45 BPM. 7500# 30/50# white sand pumped.

DISTRICT I
625 N. French Dr., Hobbs, NM 88340

DISTRICT II
301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
4000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised October 12, 2005

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-36140	Pool Code	Pool Name Abo Wildcat
Property Code	Property Name GLENWOOD "28" FEDERAL COM	Well Number 2
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3633'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	28	16 S	29 E		660	NORTH	330	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	28	16 S	29 E		660	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160		P	

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SURFACE LOCATION Lat - N32°53'53.13" Long - W104°05'14.46" NMSPE- N 690547.4 E 616837.2 (NAD-83) BOTTOM HOLE LOCATION Lat - N32°53'53.2" Long - W104°04'20.3" NMSPE- N 690564.473 E 621451.642 (NAD-83)	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 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. <i>Scott Haynes</i> 8-20-08 Signature Date Scott Haynes Printed Name
Glenwood 28 Federal com2 SHL 660 FNL & 330 FWL	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat 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 belief. NOVEMBER 3, 2007 Date Surveyed <i>Gary L. Jones</i> Signature <i>Gary L. Jones</i> Professional Surveyor No. 48 Certificate No. Gary L. Jones 7977 BASIN SURVEYS

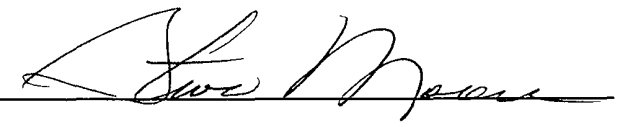
OPERATOR Cimarex Energy Co.
WELL/LEASE Glenwood 28 Fed Com
COUNTY Eddy RIG 623

STATE OF NEW MEXICO
DEVIATION REPORT

257	0.25
770	0.50
995	0.50
1,275	0.50
1,544	0.50
1,777	1.00
2,097	1.00
2,410	0.50
2,509	1.00
2,776	0.50
3,368	0.50
4,387	1.00
4,575	1.00
4,793	1.00
5,013	0.50
5,106	1.50
5,201	1.50
5,388	1.00
5,576	1.50
5,670	1.00
5,855	0.50
6,040	1.00
6,229	1.50
6,322	0.50
6,417	1.00
6,604	1.00
6,792	0.50
6,887	1.00
6,979	1.00
7,167	1.50
7,261	0.50
7,355	0.50

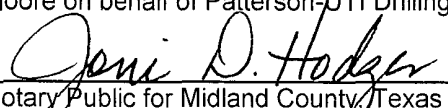
STATE OF TEXAS

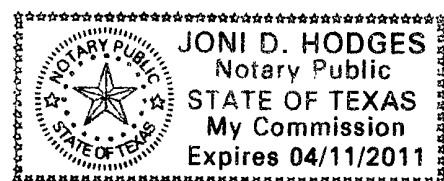
COUNTY OF MIDLAND

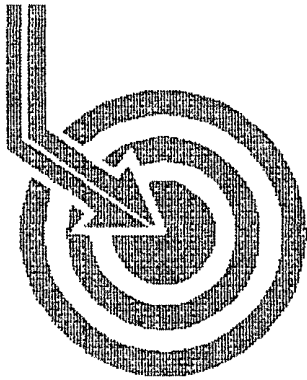
BY: 

The foregoing instrument was acknowledged before me on
Moore on behalf of Patterson-UTI Drilling Company LLC.

May 12th, 2008, by Steve


Notary Public for Midland County, Texas
My Commission Expires: 4/11/11





Scientific Drilling

CIMAREX ENERGY

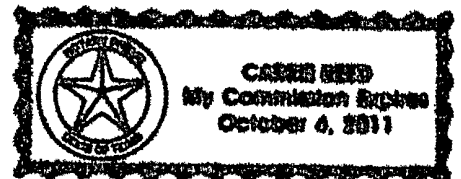
Field: Wildcat
Site: Eddy County, NM
Well: Glenwood 28 Federal Com #2H
Wellpath: VH - Job #32K0408256
Survey: 04/15/08

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

.....*L. L. Larkston*.....Company Representative

Notorized this date 6th of May, 2008.

Carrie Reed
Notary Signature
County of Midland
State of Texas





Scientific Drilling International

Survey Report

Company: CIMAREX ENERGY
 Field: Wildcat
 Site: Eddy County, NM
 Well: Glenwood 28 Federal Com #2H
 Wellpath: VH - Job #32K0408256

Date: 05/05/2008 Time: 08:48:00 Page: 1
 Co-ordinate(NE) Reference: Site: Eddy County, NM, Grid North
 Vertical (TVD) Reference: SITE 0.0
 Section (VS) Reference: Well (0.00N,0.00E,62.76Azi)
 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 04/15/08 Start Date: 04/15/2008
 KSRG 0'-7338'
 Company: Scientific Drilling Internatio Engineer: Madrid w/GeoGyro
 Tool: Keeper,Keeper Gyro Tied-to: From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.70	93.55	100.00	0.52	-0.04	0.61	0.70	0.61	93.55
200.00	0.45	161.04	199.99	0.99	-0.45	1.35	0.67	1.42	108.36
300.00	0.58	162.41	299.99	0.85	-1.30	1.63	0.13	2.08	128.64
400.00	0.60	152.31	399.98	0.77	-2.25	2.02	0.11	3.02	137.99
500.00	0.70	126.73	499.98	1.04	-3.08	2.76	0.30	4.13	138.13
600.00	0.97	107.60	599.97	1.91	-3.70	4.05	0.38	5.49	132.37
700.00	0.99	101.87	699.95	3.18	-4.13	5.71	0.10	7.04	125.91
800.00	0.87	100.34	799.94	4.45	-4.44	7.30	0.12	8.54	121.34
900.00	0.77	94.02	899.93	5.63	-4.63	8.71	0.13	9.87	117.97
1000.00	0.31	130.31	999.92	6.31	-4.85	9.59	0.55	10.75	116.83
1100.00	0.28	152.49	1099.92	6.41	-5.24	9.91	0.12	11.21	117.88
1200.00	0.26	165.31	1199.92	6.36	-5.68	10.08	0.06	11.57	119.39
1300.00	0.17	132.48	1299.92	6.37	-6.00	10.25	0.15	11.87	120.34
1400.00	0.01	291.69	1399.92	6.41	-6.09	10.35	0.18	12.01	120.49
1500.00	0.21	159.47	1499.92	6.39	-6.26	10.41	0.22	12.14	121.04
1600.00	0.27	161.79	1599.92	6.33	-6.66	10.54	0.06	12.47	122.27
1700.00	0.17	197.93	1699.92	6.18	-7.02	10.57	0.17	12.69	123.60
1800.00	0.16	249.28	1799.92	5.94	-7.21	10.39	0.14	12.65	124.76
1900.00	0.19	276.91	1899.92	5.66	-7.24	10.10	0.09	12.43	125.65
2000.00	0.31	342.01	1999.92	5.57	-6.97	9.85	0.29	12.07	125.27
2100.00	0.27	332.36	2099.92	5.61	-6.50	9.66	0.06	11.64	123.94
2200.00	0.39	288.88	2199.92	5.38	-6.18	9.23	0.27	11.11	123.82
2300.00	0.48	293.62	2299.91	4.87	-5.90	8.52	0.10	10.37	124.71
2400.00	0.42	310.19	2399.91	4.47	-5.50	7.86	0.14	9.59	124.99
2500.00	0.41	283.67	2499.91	4.06	-5.18	7.23	0.19	8.89	125.61
2600.00	0.59	307.34	2599.90	3.57	-4.78	6.47	0.27	8.05	126.45
2700.00	0.49	303.43	2699.90	3.14	-4.23	5.71	0.11	7.11	126.57
2800.00	0.46	304.33	2799.90	2.74	-3.77	5.02	0.03	6.28	126.92
2900.00	0.45	299.44	2899.89	2.33	-3.35	4.35	0.04	5.49	127.65
3000.00	0.40	282.05	2999.89	1.84	-3.09	3.66	0.14	4.79	130.12
3100.00	0.36	290.12	3099.89	1.36	-2.91	3.03	0.07	4.19	133.84
3200.00	0.13	308.14	3199.89	1.10	-2.73	2.64	0.24	3.80	135.92
3300.00	0.06	308.09	3299.89	1.03	-2.62	2.51	0.07	3.63	136.27
3400.00	0.44	197.10	3399.89	0.74	-2.96	2.36	0.46	3.78	141.47
3500.00	0.36	179.44	3499.88	0.33	-3.64	2.25	0.15	4.28	148.32
3600.00	0.29	182.35	3599.88	0.07	-4.21	2.24	0.07	4.77	151.98
3700.00	0.36	174.93	3699.88	-0.18	-4.77	2.26	0.08	5.28	154.70
3800.00	0.38	181.90	3799.88	-0.46	-5.42	2.27	0.05	5.88	157.23
3900.00	0.29	208.37	3899.88	-0.83	-5.97	2.14	0.18	6.34	160.26
4000.00	0.65	252.91	3999.87	-1.60	-6.36	1.48	0.49	6.53	166.90
4100.00	0.67	255.27	4099.87	-2.72	-6.68	0.37	0.03	6.69	176.81
4200.00	0.59	265.79	4199.86	-3.77	-6.86	-0.71	0.14	6.90	185.88
4300.00	0.51	255.56	4299.86	-4.68	-7.01	-1.65	0.13	7.20	193.25
4400.00	0.36	259.80	4399.85	-5.41	-7.18	-2.39	0.15	7.57	198.42
4500.00	0.35	276.39	4499.85	-5.97	-7.20	-3.00	0.10	7.80	202.65
4600.00	0.35	302.50	4599.85	-6.37	-7.00	-3.57	0.16	7.86	206.98
4700.00	0.43	302.09	4699.85	-6.72	-6.64	-4.14	0.08	7.82	211.95
4800.00	0.58	289.23	4799.84	-7.26	-6.27	-4.94	0.19	7.98	218.20



Scientific Drilling International

Survey Report

Company: CIMAREX ENERGY
Field: Wildcat
Site: Eddy County, NM
Well: Glenwood 28 Federal Com #2H
Wellpath: VH - Job #32K0408256

Date: 05/05/2008 Time: 08:48:00 Page: 2
Co-ordinate(NE) Reference: Site: Eddy County, NM, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,62.76Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

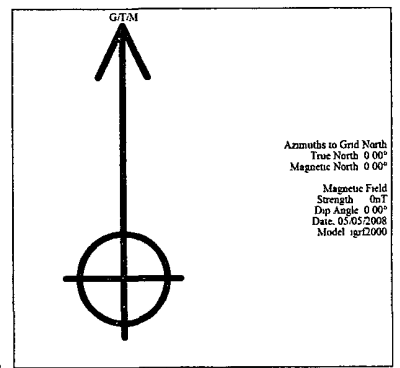
Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.00	0.52	289.94	4899.84	-7.92	-5.95	-5.84	0.06	8.34	224.47
5000.00	0.50	282.66	4999.83	-8.56	-5.70	-6.69	0.07	8.79	229.58
5100.00	0.32	283.24	5099.83	-9.11	-5.54	-7.39	0.18	9.24	233.14
5200.00	0.25	285.35	5199.83	-9.48	-5.42	-7.87	0.07	9.56	235.46
5300.00	0.25	259.02	5299.83	-9.85	-5.40	-8.30	0.11	9.90	236.93
5400.00	0.15	253.48	5399.83	-10.19	-5.48	-8.64	0.10	10.23	237.60
5500.00	0.16	244.55	5499.83	-10.46	-5.58	-8.89	0.03	10.49	237.89
5600.00	0.18	254.22	5599.83	-10.75	-5.68	-9.17	0.03	10.78	238.21
5700.00	0.20	294.52	5699.83	-11.01	-5.65	-9.48	0.13	11.03	239.19
5800.00	0.22	32.01	5799.83	-10.96	-5.42	-9.53	0.32	10.96	240.39
5900.00	0.23	72.40	5899.83	-10.59	-5.19	-9.24	0.16	10.60	240.66
6000.00	0.12	46.31	5999.83	-10.29	-5.06	-8.97	0.13	10.30	240.58
6100.00	0.16	347.88	6099.83	-10.16	-4.85	-8.93	0.14	10.16	241.48
6200.00	0.14	336.21	6199.83	-10.11	-4.60	-9.01	0.04	10.11	242.92
6300.00	0.52	19.93	6299.82	-9.77	-4.06	-8.90	0.43	9.78	245.45
6400.00	0.65	56.50	6399.82	-8.88	-3.33	-8.27	0.39	8.92	248.10
6500.00	1.23	67.07	6499.80	-7.24	-2.59	-6.81	0.60	7.29	249.15
6600.00	1.46	63.16	6599.78	-4.90	-1.60	-4.69	0.25	4.95	251.14
6700.00	1.32	73.44	6699.75	-2.49	-0.70	-2.44	0.29	2.54	254.08
6800.00	1.14	56.10	6799.72	-0.37	0.19	-0.51	0.41	0.55	289.87
6900.00	1.00	71.98	6899.71	1.48	1.01	1.14	0.33	1.52	48.45
7000.00	1.04	63.07	6999.69	3.25	1.69	2.78	0.16	3.25	58.67
7100.00	0.89	62.48	7099.68	4.93	2.46	4.28	0.15	4.94	60.08
7200.00	0.63	67.34	7199.67	6.25	3.03	5.47	0.27	6.26	61.01
7300.00	0.46	75.78	7299.66	7.19	3.34	6.37	0.19	7.19	62.31
7338.00	0.46	71.22	7337.66	7.49	3.43	6.66	0.10	7.49	62.76

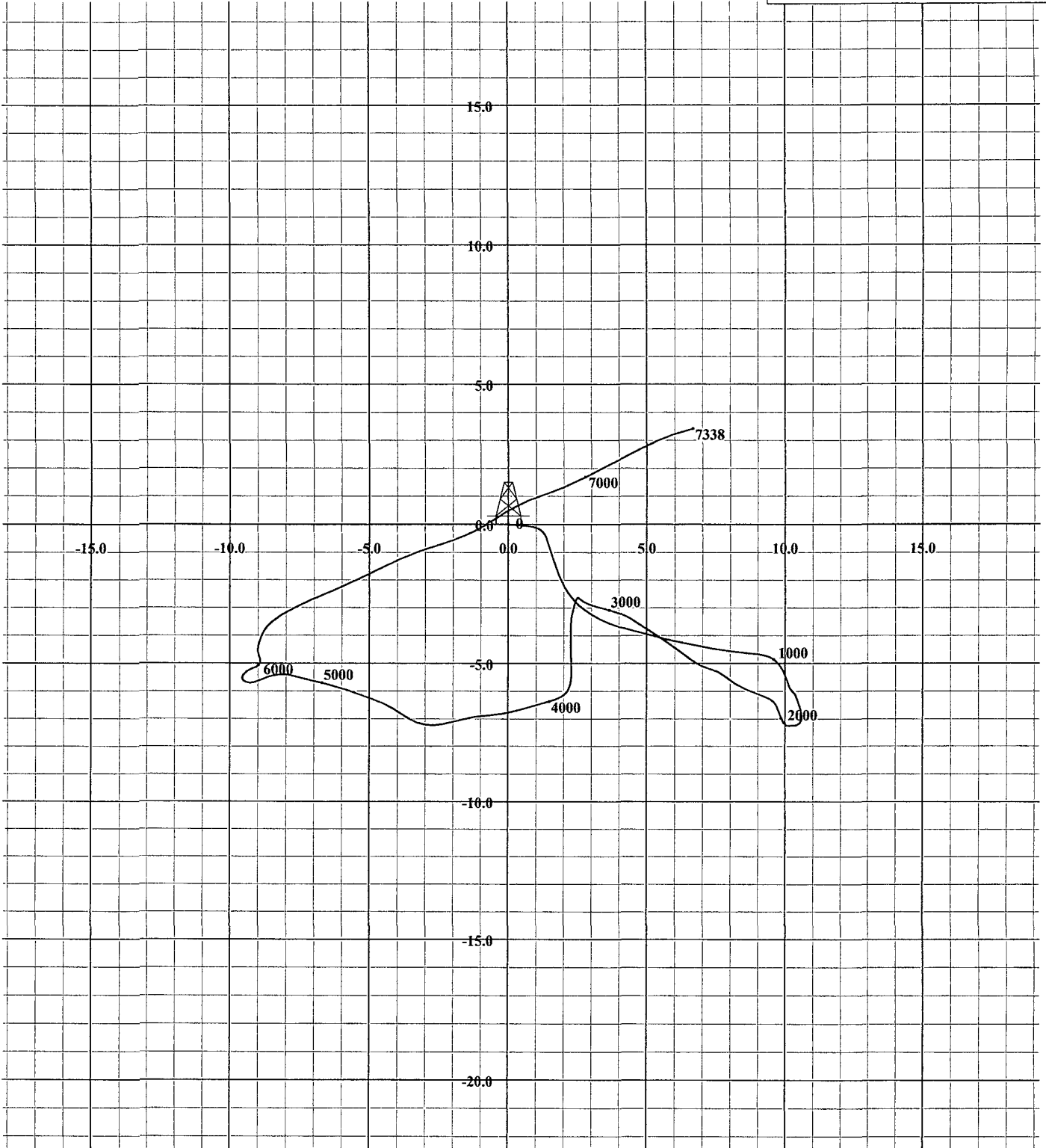


Scientific
Drilling

Field: Wildcat
Site: Eddy County, NM
Well: Glenwood 28 Federal Com #2H
Wellpath: VH - Job #32K0408256
Survey: 04/15/08



South(-)/North(+) [5ft/in]



West(-)/East(+) [5ft/in]



10000 West County Road 116
P.O. Box 61028
Midland, Texas 79711
Phone (432) 561-8892

May 4, 2008

Dan Spancers/ Jim Evans
1700 Lincoln St., Ste.1800
Denver, CO 80203

Reference Well Name : Glenwood 28 Federal Com #2
Location : Eddy County, NM
Wft Job # : 4014154
Rig : Patterson #623

Dear Mr. Spancers/ Mr. Evans:

Thank you for allowing us the opportunity to provide our services on your Glenwood 28 Federal Com #2 in Eddy County, NM.

Please find the final End Of Well (EOW) report enclosed behind this coverletter.

The EOW report contains the following information :

Section 1 - Weatherford (Wft) Final Definitive Survey & 8.5" x 11".

* Note: This survey contains the Directional Survey's obtained by Weatherford Drilling Services via Weatherford MWD Services, and any gyro survey needed for Tie On (if required).

Section 2 - Final customer approved Wellplan Survey & 8.5" x 11" Plot.

Section 3 - Wft Final BHA reports (BHA Graphic Reports, BHA Detail Reports, Motor Evaluation Reports, and BHA Slide Reports).

Section 4 - Wft Final Daily Drilling reports.

Section 5 - Wft Personnel list with contact numbers.

We at Weatherford Drilling Services' understand the importance of this project to you and hope that you were satisfied with our Directional Drilling and MWD services provided.

Please feel free to contact me if you have any questions.

Sincerely,

Luke Schnell
Area Manager
Weatherford Drilling Services



GLENWOOD 28 FEDERAL COM #2
EDDY COUNTY, NEW MEXICO



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	6708.00	1.30	72.24	6707.75	-0.64	-2.27	0.00	0.00	-2.27	
2	6724.00	3.20	90.11	6723.73	-0.59	-1.65	12.50	29.37	-1.65	
3	6729.00	3.20	90.11	6728.72	-0.59	-1.37	0.00	0.00	-1.37	
4	7244.47	89.20	90.11	7052.95	-1.24	336.72	16.68	0.00	336.71	
5	11048.15	89.20	90.11	7106.06	-8.52	4140.02	0.00	0.00	4140.00	VSEC TGT
6	11117.12	89.48	88.06	7106.85	-7.42	4208.97	3.00	-82.10	4208.96	
7	11522.87	89.48	88.06	7110.50	6.31	4614.47	0.00	0.00	4614.47	PBHL P4

SITE DETAILS

Glenwood 28 Federal #2H
660' FNL 330' FWL of SEC 28, T-16-S, R-29-E

Site Centre Northing: 690547.40
Easting: 616837.20

Ground Level: 3633.00
Positional Uncertainty: 0.00
Convergence: 0.13

FIELD DETAILS

Eddy Co., NM (NAD 83)

Geodetic System: US State Plane Coordinate System 1983
Ellipsoid: GRS 1980
Zone: New Mexico, Eastern Zone
Magnetic Model: bggm2007

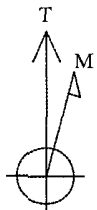
System Datum: Mean Sea Level
Local North: True North

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
#2	0.00	0.00	690547.40	616837.20	32°53'53.111N	104°05'14.471W	N/A

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
GLENWOOD #1	0.00	-142.36	4303.10	690415.08	621140.62	Circle (Radius: 100)
VSEC TGT	7106.50	5.06	4140.00	690562.11	620977.17	Point
PBHL P4	7110.50	6.31	4614.47	690564.47	621451.64	Point



Azimuths to True North
Magnetic North: 8.30°

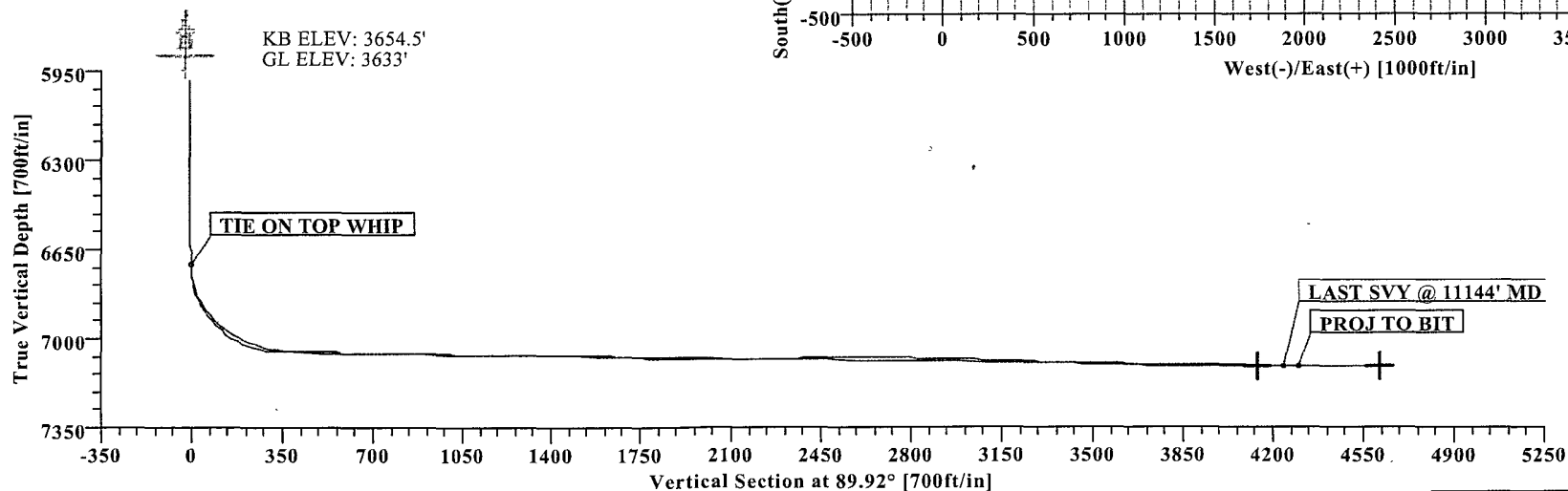
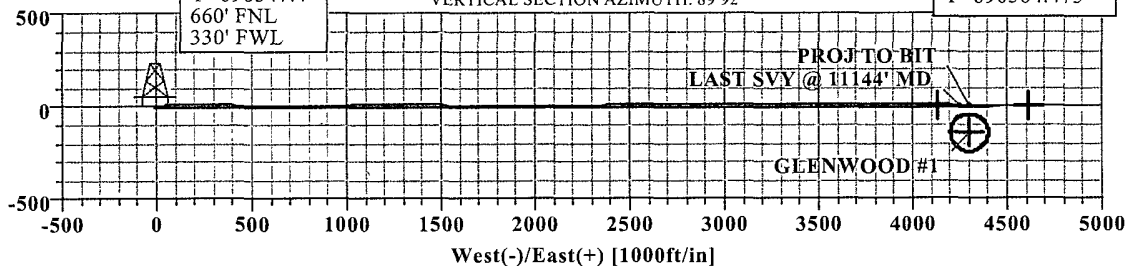
Magnetic Field
Strength: 49337nT
Dip Angle: 60.81°
Date: 4/1/2008
Model: bggm2007

TOTAL CORRECTION TO TRUE NORTH 8.30°

LEGEND

== #2, Plan#5
WFT SVY

South(-)/North(+) [1000ft/in]



Survey: WFT SVY (#2/1)

Created By: Lindsey Maddux

Date: 5/6/2008



Weatherford International, Inc.

Survey Report



Weatherford

Company: Cimarex Date: 5/6/2008 Time: 14:01:22 Page: 1
 Field: Eddy Co. NM (NAD 83) Co-ordinate(NE) Reference: Site: Glenwood 28 Federal #2H True North
 Site: Glenwood 28 Federal #2H Vertical (TVD) Reference: SITE 3654.5
 Well: #2 Section (VS) Reference: Well (0.00N,0.00E 89.92Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Field: Eddy Co., NM (NAD 83)

Map System: US State Plane Coordinate System 1983
 Geo Datum: GRS 1980
 Sys Datum: Mean Sea Level

Map Zone: New Mexico, Eastern Zone
 Coordinate System: Site Centre
 Geomagnetic Model: bggm2007

Site: Glenwood 28 Federal #2H

660' FNL 330' FWL of SEC 28, T-16-S, R-29-E

Site Position: Northing: 690547.40 ft Latitude: 32 53 53.111 N
 From: Map Easting: 616837.20 ft Longitude: 104 5 14.471 W
 Position Uncertainty: 0.00 ft North Reference: True
 Ground Level: 3633.00 ft Grid Convergence: 0.13 deg

Well: #2

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 690547.40 ft Latitude: 32 53 53.111 N
 +E/-W 0.00 ft Easting: 616837.20 ft Longitude: 104 5 14.471 W
 Position Uncertainty: 0.00 ft

Wellpath: 1

Drilled From: Surface
 Tie-on Depth: 0.00 ft
 Above System Datum: Mean Sea Level
 Declination: 8.30 deg
 Mag Dip Angle: 60.81 deg

Current Datum: SITE Height 3654.50 ft
 Magnetic Data: 4/1/2008
 Field Strength: 49337 nT
 Vertical Section: Depth From (TVD) +N/-S
 ft ft
 0.00 0.00

+E/-W ft
 Direction deg
 0.00 89.92

Survey: WFT SVY

Start Date: 4/21/2008

Company: Weatherford International, Inc
 Tool: MWD;MWD - Standard

Engineer: Lindsey Maddux
 Tied-to: From: KEEPER GYRO SVY

Survey: WFT SVY

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
6700.00	1.32	73.44	6699.75	-0.70	-2.44	-2.45	0.00	0.00	0.00	MWD
6708.00	1.30	72.24	6707.75	-0.64	-2.27	-2.27	0.42	-0.25	-15.00	TIE ON TOP WHIP
6758.00	10.24	75.32	6757.44	0.66	2.58	2.58	17.88	17.88	6.16	MWD
6804.00	18.62	71.35	6801.95	4.05	13.51	13.52	18.33	18.22	-8.63	MWD
6834.00	23.77	73.42	6829.91	7.31	23.85	23.86	17.34	17.17	6.90	MWD
6864.00	28.50	79.30	6856.84	10.36	36.69	36.70	17.96	15.77	19.60	MWD
6895.00	33.44	84.05	6883.42	12.63	52.46	52.48	17.77	15.94	15.32	MWD
6925.00	39.38	86.30	6907.55	14.10	70.20	70.22	20.29	19.80	7.50	MWD
6955.00	45.44	87.55	6929.69	15.17	90.39	90.41	20.39	20.20	4.17	MWD
6985.00	50.19	89.30	6949.83	15.77	112.61	112.63	16.41	15.83	5.83	MWD
7016.00	55.31	90.43	6968.59	15.82	137.27	137.30	16.77	16.52	3.65	MWD
7045.00	59.31	90.93	6984.25	15.53	161.67	161.70	13.87	13.79	1.72	MWD
7075.00	63.13	91.30	6998.69	15.01	187.96	187.98	12.78	12.73	1.23	MWD
7107.00	66.06	91.68	7012.42	14.26	216.85	216.87	9.22	9.16	1.19	MWD
7138.00	68.75	91.93	7024.33	13.36	245.45	245.47	8.71	8.68	0.81	MWD
7168.00	72.00	91.80	7034.40	12.44	273.69	273.71	10.84	10.83	-0.43	MWD
7194.00	77.22	90.19	7041.30	12.01	298.75	298.76	20.95	20.08	-6.19	MWD
7226.00	82.69	89.55	7046.88	12.08	330.24	330.26	17.21	17.09	-2.00	MWD
7258.00	87.75	90.55	7049.55	12.05	362.12	362.14	16.12	15.81	3.12	MWD
7290.00	89.50	93.05	7050.32	11.05	394.09	394.11	9.53	5.47	7.81	MWD
7322.00	90.38	93.43	7050.35	9.24	426.04	426.05	3.00	2.75	1.19	MWD
7353.00	91.06	93.43	7049.96	7.38	456.98	456.99	2.19	2.19	0.00	MWD
7384.00	88.13	92.18	7050.18	5.87	487.94	487.95	10.28	-9.45	-4.03	MWD
7416.00	87.19	91.55	7051.49	4.83	519.90	519.90	3.54	-2.94	-1.97	MWD



Weatherford International, Inc.

Survey Report

**Weatherford**

Company: Cimarex
Field: Eddy Co. NM (NAD 83)
Site: Glenwood 28 Federal #2H
Well: #2
Wellpath: 1

Date: 5/6/2008
Co-ordinate(NE) Reference:
Vertical (TVD) Reference:
Section (VS) Reference:
Survey Calculation Method:

Time: 14:01:22
Site: Glenwood 28 Federal #2H, True North
SITE 3654.5
Well (0.00N,0.00E,89.92Azi)
Minimum Curvature

Page: 2
Db: Sybase

Survey: WFT SVY

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
7449.00	86.88	91.55	7053.19	3.93	552.84	552.85	0.94	-0.94	0.00	MWD
7480.00	86.87	91.03	7054.88	3.24	583.79	583.79	1.68	-0.03	-1.68	MWD
7511.00	88.94	90.55	7056.02	2.81	614.76	614.77	6.85	6.68	-1.55	MWD
7542.00	90.00	90.18	7056.30	2.61	645.76	645.76	3.62	3.42	-1.19	MWD
7574.00	90.38	89.93	7056.20	2.58	677.76	677.76	1.42	1.19	-0.78	MWD
7605.00	89.50	89.18	7056.23	2.82	708.76	708.76	3.73	-2.84	-2.42	MWD
7637.00	89.69	89.18	7056.45	3.28	740.75	740.76	0.59	0.59	0.00	MWD
7670.00	89.88	89.18	7056.58	3.75	773.75	773.75	0.58	0.58	0.00	MWD
7701.00	90.16	89.33	7056.57	4.16	804.75	804.75	1.02	0.90	0.48	MWD
7733.00	90.00	88.68	7056.52	4.71	836.74	836.75	2.09	-0.50	-2.03	MWD
7765.00	88.38	88.68	7056.98	5.45	868.73	868.74	5.06	-5.06	0.00	MWD
7797.00	88.31	88.43	7057.90	6.26	900.71	900.71	0.81	-0.22	-0.78	MWD
7828.00	87.81	88.43	7058.95	7.11	931.68	931.69	1.61	-1.61	0.00	MWD
7860.00	87.69	87.93	7060.21	8.12	963.64	963.65	1.61	-0.37	-1.56	MWD
7892.00	87.81	87.55	7061.46	9.38	995.59	995.60	1.24	0.37	-1.19	MWD
7924.00	88.31	88.43	7062.55	10.50	1027.55	1027.56	3.16	1.56	2.75	MWD
7957.00	88.69	88.55	7063.41	11.37	1060.52	1060.54	1.21	1.15	0.36	MWD
7988.00	89.06	88.93	7064.02	12.05	1091.51	1091.53	1.71	1.19	1.23	MWD
8020.00	89.50	88.93	7064.42	12.65	1123.50	1123.52	1.37	1.37	0.00	MWD
8052.00	89.94	88.93	7064.58	13.25	1155.50	1155.51	1.37	1.37	0.00	MWD
8083.00	90.50	89.26	7064.46	13.74	1186.49	1186.51	2.10	1.81	1.06	MWD
8115.00	90.00	89.80	7064.32	14.00	1218.49	1218.51	2.30	-1.56	1.69	MWD
8147.00	90.13	89.68	7064.28	14.15	1250.49	1250.51	0.55	0.41	-0.37	MWD
8178.00	90.56	89.55	7064.09	14.35	1281.49	1281.51	1.45	1.39	-0.42	MWD
8210.00	89.81	90.30	7063.99	14.40	1313.49	1313.51	3.31	-2.34	2.34	MWD
8242.00	89.69	90.93	7064.13	14.05	1345.49	1345.50	2.00	-0.37	1.97	MWD
8274.00	89.19	90.93	7064.44	13.53	1377.48	1377.50	1.56	-1.56	0.00	MWD
8305.00	89.56	90.80	7064.78	13.07	1408.48	1408.49	1.27	1.19	-0.42	MWD
8337.00	90.25	90.80	7064.83	12.62	1440.47	1440.49	2.16	2.16	0.00	MWD
8368.00	88.81	91.43	7065.09	12.02	1471.46	1471.48	5.07	-4.65	2.03	MWD
8400.00	89.13	91.55	7065.66	11.18	1503.45	1503.46	1.07	1.00	0.37	MWD
8432.00	89.63	91.80	7066.01	10.25	1535.43	1535.45	1.75	1.56	0.78	MWD
8464.00	88.25	91.80	7066.60	9.24	1567.41	1567.42	4.31	-4.31	0.00	MWD
8495.00	88.38	91.80	7067.51	8.27	1598.38	1598.39	0.42	0.42	0.00	MWD
8527.00	86.69	91.30	7068.89	7.41	1630.34	1630.35	5.51	-5.28	-1.56	MWD
8559.00	86.81	91.30	7070.70	6.68	1662.28	1662.29	0.37	0.37	0.00	MWD
8591.00	87.06	91.30	7072.42	5.96	1694.23	1694.23	0.78	0.78	0.00	MWD
8622.00	87.29	91.32	7073.94	5.25	1725.18	1725.19	0.74	0.74	0.06	MWD
8654.00	87.63	91.18	7075.36	4.55	1757.14	1757.14	1.15	1.06	-0.44	MWD
8686.00	87.00	90.30	7076.86	4.14	1789.10	1789.11	3.38	-1.97	-2.75	MWD
8717.00	87.25	90.30	7078.42	3.98	1820.06	1820.07	0.81	0.81	0.00	MWD
8744.00	87.63	91.24	7079.62	3.61	1847.03	1847.04	3.75	1.41	3.48	MWD
8775.00	88.20	91.68	7080.75	2.82	1878.00	1878.00	2.32	1.84	1.42	MWD
8807.00	89.69	91.43	7081.34	1.96	1909.98	1909.98	4.72	4.66	-0.78	MWD
8839.00	90.26	92.26	7081.35	0.93	1941.97	1941.97	3.15	1.78	2.59	MWD
8870.00	89.86	91.87	7081.32	-0.19	1972.95	1972.94	1.80	-1.29	-1.26	MWD
8902.00	89.46	89.92	7081.51	-0.69	2004.94	2004.94	6.22	-1.25	-6.09	MWD
8934.00	90.54	88.78	7081.51	-0.33	2036.94	2036.94	4.91	3.37	-3.56	MWD
8965.00	90.77	87.83	7081.16	0.59	2067.92	2067.92	3.15	0.74	-3.06	MWD
8997.00	90.71	87.11	7080.74	2.00	2099.89	2099.89	2.26	-0.19	-2.25	MWD
9028.00	90.71	87.25	7080.36	3.53	2130.85	2130.85	0.45	0.00	0.45	MWD
9060.00	91.46	88.64	7079.75	4.67	2162.82	2162.82	4.94	2.34	4.34	MWD
9091.00	91.46	88.93	7078.96	5.33	2193.80	2193.81	0.94	0.00	0.94	MWD



Weatherford International, Inc.

Survey Report



Weatherford

Company: Cimarex Date: 5/6/2008 Time: 14:01:22 Page: 3
 Field: Eddy Co. NM (NAD 83) Co-ordinate(NE) Reference: Site: Glenwood 28 Federal #2H, True North
 Site: Glenwood 28 Federal #2H Vertical (TVD) Reference: SITE 3654.5
 Well: #2 Section (VS) Reference: Well (0.00N,0.00E,89.92Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: WFT SVY

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
9123.00	91.40	87.94	7078.16	6.20	2225.78	2225.79	3.10	-0.19	-3.09	MWD
9155.00	90.03	88.18	7077.76	7.29	2257.76	2257.77	4.35	-4.28	0.75	MWD
9186.00	90.26	87.88	7077.69	8.35	2288.74	2288.75	1.22	0.74	-0.97	MWD
9218.00	90.60	88.34	7077.45	9.41	2320.72	2320.73	1.79	1.06	1.44	MWD
9250.00	91.57	88.43	7076.84	10.31	2352.70	2352.72	3.04	3.03	0.28	MWD
9281.00	91.69	88.07	7075.96	11.26	2383.68	2383.69	1.22	0.39	-1.16	MWD
9313.00	91.80	88.69	7074.98	12.16	2415.65	2415.66	1.97	0.34	1.94	MWD
9344.00	90.43	89.18	7074.38	12.74	2446.64	2446.65	4.69	-4.42	1.58	MWD
9376.00	90.31	88.90	7074.17	13.27	2478.63	2478.65	0.95	-0.37	-0.87	MWD
9408.00	90.60	88.81	7073.92	13.91	2510.62	2510.64	0.95	0.91	-0.28	MWD
9440.00	90.31	89.20	7073.67	14.47	2542.62	2542.64	1.52	-0.91	1.22	MWD
9471.00	89.80	89.08	7073.64	14.93	2573.61	2573.63	1.69	-1.65	-0.39	MWD
9503.00	89.40	89.68	7073.86	15.28	2605.61	2605.63	2.25	-1.25	1.87	MWD
9535.00	89.17	89.76	7074.26	15.44	2637.61	2637.63	0.76	-0.72	0.25	MWD
9567.00	89.34	89.63	7074.67	15.61	2669.61	2669.62	0.67	0.53	-0.41	MWD
9598.00	88.83	89.54	7075.17	15.83	2700.60	2700.62	1.67	-1.65	-0.29	MWD
9630.00	88.88	89.92	7075.81	15.98	2732.59	2732.61	1.20	0.16	1.19	MWD
9662.00	89.57	89.36	7076.24	16.18	2764.59	2764.61	2.78	2.16	-1.75	MWD
9694.00	89.91	89.23	7076.39	16.58	2796.59	2796.61	1.14	1.06	-0.41	MWD
9725.00	88.43	89.35	7076.84	16.96	2827.58	2827.60	4.79	-4.77	0.39	MWD
9757.00	88.60	89.75	7077.67	17.21	2859.57	2859.59	1.36	0.53	1.25	MWD
9789.00	87.91	90.54	7078.64	17.13	2891.55	2891.57	3.28	-2.16	2.47	MWD
9820.00	87.57	90.53	7079.86	16.84	2922.53	2922.55	1.10	-1.10	-0.03	MWD
9852.00	88.49	90.32	7080.96	16.60	2954.51	2954.53	2.95	2.87	-0.66	MWD
9884.00	89.34	90.13	7081.57	16.48	2986.50	2986.52	2.72	2.66	-0.59	MWD
9916.00	88.60	90.97	7082.14	16.17	3018.49	3018.51	3.50	-2.31	2.62	MWD
9948.00	88.20	90.48	7083.04	15.77	3050.48	3050.50	1.98	-1.25	-1.53	MWD
9979.00	87.74	90.42	7084.13	15.52	3081.46	3081.48	1.50	-1.48	-0.19	MWD
10011.00	88.08	90.45	7085.30	15.28	3113.44	3113.45	1.07	1.06	0.09	MWD
10043.00	88.71	90.02	7086.20	15.15	3145.42	3145.44	2.38	1.97	-1.34	MWD
10074.00	88.43	89.85	7086.97	15.18	3176.41	3176.43	1.06	-0.90	-0.55	MWD
10106.00	87.57	90.71	7088.09	15.03	3208.39	3208.41	3.80	-2.69	2.69	MWD
10138.00	88.03	90.83	7089.32	14.60	3240.37	3240.38	1.49	1.44	0.37	MWD
10169.00	88.20	90.71	7090.34	14.18	3271.35	3271.36	0.67	0.55	-0.39	MWD
10201.00	88.89	90.28	7091.15	13.91	3303.34	3303.35	2.54	2.16	-1.34	MWD
10233.00	88.94	90.05	7091.76	13.81	3335.33	3335.35	0.74	0.16	-0.72	MWD
10264.00	87.74	90.68	7092.65	13.62	3366.31	3366.33	4.37	-3.87	2.03	MWD
10296.00	86.42	90.28	7094.28	13.35	3398.27	3398.29	4.31	-4.12	-1.25	MWD
10327.00	85.79	89.58	7096.39	13.39	3429.20	3429.21	3.03	-2.03	-2.26	MWD
10359.00	85.51	90.17	7098.82	13.46	3461.11	3461.12	2.04	-0.87	1.84	MWD
10391.00	86.26	89.76	7101.11	13.48	3493.02	3493.04	2.67	2.34	-1.28	MWD
10422.00	87.97	89.84	7102.67	13.58	3523.98	3524.00	5.52	5.52	0.26	MWD
10454.00	88.54	90.09	7103.65	13.60	3555.97	3555.98	1.94	1.78	0.78	MWD
10486.00	88.77	89.98	7104.40	13.58	3587.96	3587.98	0.80	0.72	-0.34	MWD
10518.00	89.10	89.71	7104.99	13.67	3619.95	3619.97	1.33	1.03	-0.84	MWD
10549.00	89.97	89.14	7105.24	13.98	3650.95	3650.97	3.36	2.81	-1.84	MWD
10581.00	89.40	89.14	7105.42	14.46	3682.95	3682.96	1.78	-1.78	0.00	MWD
10613.00	88.66	89.58	7105.96	14.82	3714.94	3714.96	2.69	-2.31	1.37	MWD
10645.00	89.06	89.30	7106.60	15.13	3746.93	3746.95	1.53	1.25	-0.87	MWD
10676.00	89.00	89.84	7107.12	15.36	3777.93	3777.94	1.75	-0.19	1.74	MWD
10708.00	89.06	89.86	7107.67	15.45	3809.92	3809.94	0.20	0.19	0.06	MWD
10740.00	88.26	90.50	7108.41	15.35	3841.91	3841.93	3.20	-2.50	2.00	MWD
10771.00	88.26	90.50	7109.36	15.08	3872.90	3872.91	0.00	0.00	0.00	MWD



Weatherford International, Inc.

Survey Report

**Weatherford**

Company: Cimarex Date: 5/6/2008 Time: 14:01:22 Page: 4
Field: Eddy Co. NM (NAD 83) Co-ordinate(NE) Reference: Site: Glenwood 28 Federal #2H; True Nort
Site: Glenwood 28 Federal #2H Vertical (TVD) Reference: SITE 3654.5
Well: #2 Section (VS) Reference: Well (0.00N,0.00E,89.92Azi)
Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: WFT SVY

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
10803.00	88.77	90.43	7110.18	14.82	3904.89	3904.90	1.61	1.59	-0.22	MWD
10835.00	88.94	90.76	7110.82	14.48	3936.88	3936.89	1.16	0.53	1.03	MWD
10867.00	89.11	90.49	7111.37	14.14	3968.87	3968.89	1.00	0.53	-0.84	MWD
10898.00	89.29	90.48	7111.80	13.87	3999.87	3999.88	0.58	0.58	-0.03	MWD
10930.00	89.51	91.18	7112.14	13.41	4031.86	4031.88	2.29	0.69	2.19	MWD
10962.00	89.69	91.05	7112.36	12.79	4063.85	4063.87	0.69	0.56	-0.41	MWD
10993.00	90.31	90.76	7112.36	12.30	4094.85	4094.86	2.21	2.00	-0.94	MWD
11025.00	90.09	90.40	7112.25	11.97	4126.85	4126.86	1.32	-0.69	-1.12	MWD
11056.00	90.94	91.32	7111.97	11.51	4157.84	4157.85	4.04	2.74	2.97	MWD
11088.00	91.57	91.23	7111.27	10.80	4189.83	4189.84	1.99	1.97	-0.28	MWD
11119.00	90.77	91.44	7110.64	10.07	4220.81	4220.82	2.67	-2.58	0.68	MWD
11144.00	90.54	90.60	7110.35	9.63	4245.81	4245.82	3.48	-0.92	-3.36	LAST SVY @ 11144' MD
11200.00	89.00	90.60	7110.57	9.04	4301.80	4301.81	2.75	-2.75	0.00	PROJ TO BIT

Annotation

MD ft	TVD ft	
6708.00	6707.75	TIE ON TOP WHIP
11144.00	7110.35	LAST SVY @ 11144' MD
11200.00	7110.57	PROJ TO BIT



GLENWOOD 28 FEDERAL COM #2 EDDY COUNTY, NEW MEXICO



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	6708.00	1.30	72.24	6707.75	-0.64	-2.27	0.00	0.00	-2.27	
2	6724.00	3.20	90.11	6723.73	-0.59	-1.65	12.50	29.37	-1.65	
3	6729.00	3.20	90.11	6728.72	-0.59	-1.37	0.00	0.00	-1.37	
4	7244.47	89.20	90.11	7052.95	-1.24	336.72	16.68	0.00	336.71	
5	11048.15	89.20	90.11	7106.06	-8.52	4140.02	0.00	0.00	4140.00	VSEC TGT
6	11117.12	89.48	88.06	7106.85	-7.42	4208.97	3.00	-82.10	4208.96	
7	11522.87	89.48	88.06	7110.50	6.31	4614.47	0.00	0.00	4614.47	PBHL P4

SITE DETAILS

Glenwood 28 Federal #2H
660' FNL 330' FWL of SEC 28, T-16-S, R-29-E

Site Centre Northing: 690547.40
Easting: 616837.20

Ground Level: 3633.00
Positional Uncertainty: 0.00
Convergence: 0.13

FIELD DETAILS

Eddy Co., NM (NAD 83)

Geodetic System: US State Plane Coordinate System 1983
Ellipsoid: GRS 1980
Zone: New Mexico, Eastern Zone
Magnetic Model: bggm2007

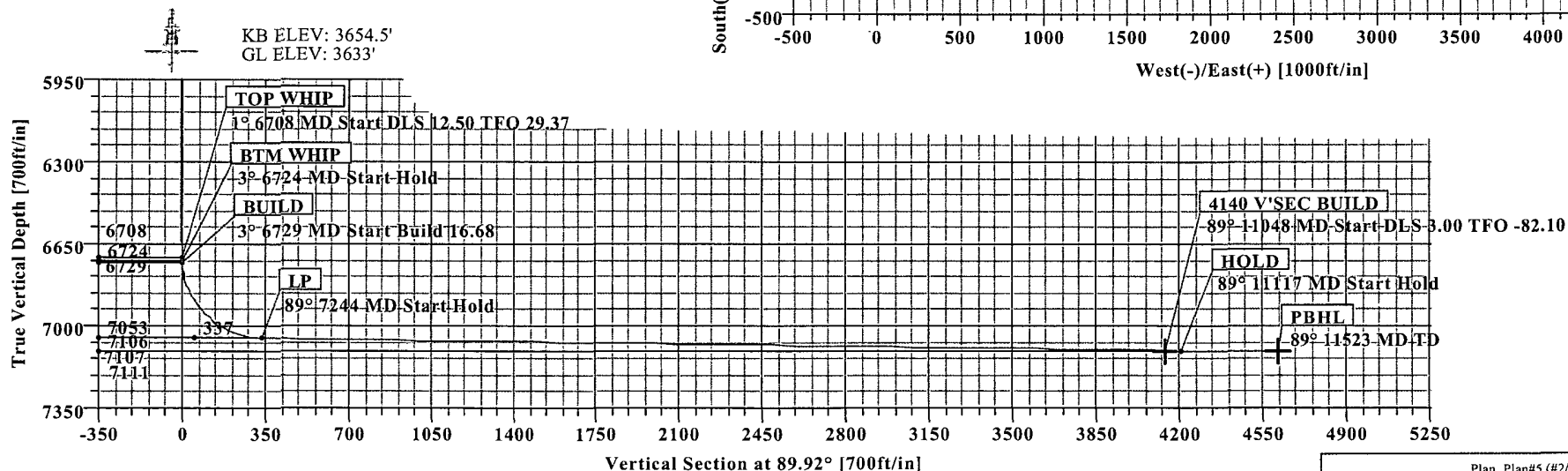
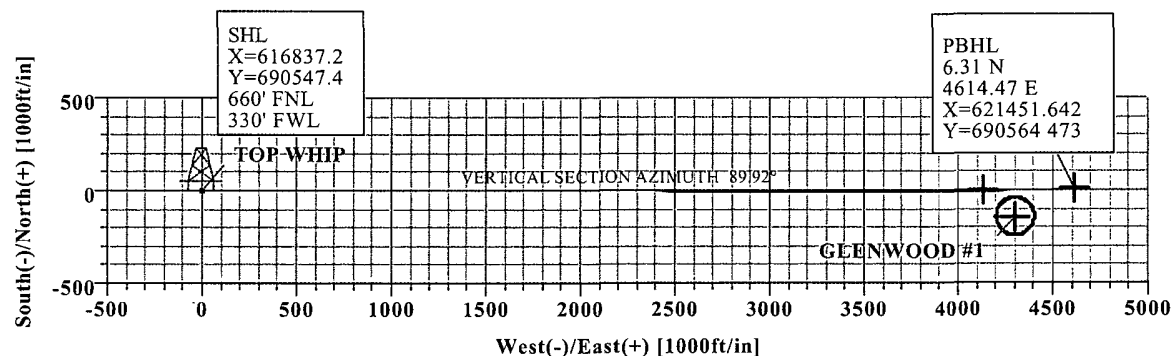
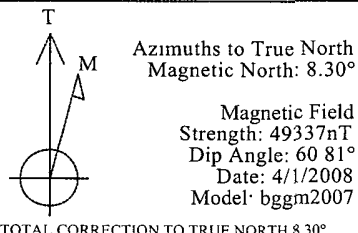
System Datum: Mean Sea Level
Local North: True North

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
#2	0.00	0.00	690547.40	616837.20	32°53'53.111N	104°05'14.471W	N/A

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
GLENWOOD #1	0.00	-142.36	4303.10	690415.08	621140.62	Circle (Radius: 100)
VSEC TGT	7106.50	5.06	4140.00	690562.11	620977.17	Point
PBHL P4	7110.50	6.31	4614.47	690564.47	621451.64	Point



Plan Plan#5 (#2/1)

Created By: Lindsey Maddux

Date: 4/17/2008



Weatherford International, Inc.

Proposal Plan Report



Weatherford

Company: Cimarex	Date: 4/17/2008	Time: 20:43:38	Page: 1
Field: Eddy Co., NM (NAD 83)	Co-ordinate(NE) Reference: Site: Glenwood 28 Federal #2H, True North		
Site: Glenwood 28 Federal #2H	Vertical (TVD) Reference: SITE 3654.5		
Well: #2	Section (VS) Reference: Well (0.00N, 0.00E, 89.92Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Plan: Plan#5	Date Composed: 4/17/2008
Principal: Yes	Version: 1
	Tied-to: From: KEEPER GYRO SVY

Field: Eddy Co., NM (NAD 83)

Map System: US State Plane Coordinate System 1983
Geo Datum: GRS 1980
Sys Datum: Mean Sea Level

Map Zone: New Mexico, Eastern Zone
Coordinate System: Site Centre
Geomagnetic Model: bggm2007

Site: Glenwood 28 Federal #2H

660' FNL 330' FWL of SEC 28, T-16-S, R-29-E

Site Position:	Northing: 690547.40 ft	Latitude: 32 53 53.111 N
From: Map	Easting: 616837.20 ft	Longitude: 104 5 14.471 W
Position Uncertainty: 0.00 ft		North Reference: True
Ground Level: 3633.00 ft		Grid Convergence: 0.13 deg

Well: #2

Slot Name:

Well Position: +N/-S 0.00 ft	Northing: 690547.40 ft	Latitude: 32 53 53.111 N
+E/-W 0.00 ft	Easting : 616837.20 ft	Longitude: 104 5 14.471 W
Position Uncertainty: 0.00 ft		

Wellpath: 1

Current Datum: SITE	Height 3654.50 ft	Drilled From: Surface
Magnetic Data: 4/1/2008		Tie-on Depth: 0.00 ft
Field Strength: 49337 nT		Above System Datum: Mean Sea Level
Vertical Section: Depth From (TVD)	+N/-S	Declination: 8.30 deg
ft	ft	Mag Dip Angle: 60.81 deg
		+E/-W ft
		Direction deg
0.00	0.00	0.00 89.92

Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
6708.00	1.30	72.24	6707.75	-0.64	-2.27	0.00	0.00	0.00	0.00	
6724.00	3.20	90.11	6723.73	-0.59	-1.65	12.50	11.86	111.66	29.37	
6729.00	3.20	90.11	6728.72	-0.59	-1.37	0.00	0.00	0.00	0.00	
7244.47	89.20	90.11	7052.95	-1.24	336.72	16.68	16.68	0.00	0.00	
11048.15	89.20	90.11	7106.06	-8.52	4140.02	0.00	0.00	0.00	0.00	V'SEC TGT
11117.12	89.48	88.06	7106.85	-7.42	4208.97	3.00	0.41	-2.97	-82.10	
11522.87	89.48	88.06	7110.50	6.31	4614.47	0.00	0.00	0.00	0.00	PBHL P4

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	Build deg/100ft	Turn deg/100ft	DLS deg/100ft	TFO deg	Comment
6708.00	1.30	72.24	6707.75	-0.64	-2.27	-2.27	0.00	0.00	0.00	0.00	TOP WHIP
6724.00	3.20	90.11	6723.73	-0.59	-1.65	-1.65	11.86	111.66	12.50	29.38	BTM WHIP
6729.00	3.20	90.11	6728.72	-0.59	-1.37	-1.37	0.00	0.00	0.00	0.00	BUILD
6750.00	6.70	90.11	6749.64	-0.59	0.44	0.44	16.68	0.00	16.68	0.00	
6775.00	10.87	90.11	6774.34	-0.60	4.26	4.26	16.68	0.00	16.68	0.00	
6800.00	15.04	90.11	6798.70	-0.61	9.86	9.86	16.68	0.00	16.68	0.00	
6825.00	19.22	90.11	6822.59	-0.62	17.23	17.23	16.68	0.00	16.68	0.00	
6850.00	23.39	90.11	6845.87	-0.64	26.31	26.30	16.68	0.00	16.68	0.00	
6875.00	27.56	90.11	6868.44	-0.66	37.06	37.05	16.68	0.00	16.68	0.00	
6900.00	31.73	90.11	6890.16	-0.69	49.42	49.42	16.68	0.00	16.68	0.00	
6925.00	35.90	90.11	6910.93	-0.71	63.33	63.33	16.68	0.00	16.68	0.00	
6950.00	40.07	90.11	6930.63	-0.74	78.71	78.71	16.68	0.00	16.68	0.00	
6975.00	44.24	90.11	6949.16	-0.77	95.48	95.48	16.68	0.00	16.68	0.00	
7000.00	48.41	90.11	6966.42	-0.81	113.56	113.56	16.68	0.00	16.68	0.00	
7025.00	52.58	90.11	6982.32	-0.85	132.85	132.85	16.68	0.00	16.68	0.00	



Weatherford International, Inc.

Proposal Plan Report



Weatherford

Company: Cimarex Date: 4/17/2008 Time: 20:43:38 Page: 2
 Field: Eddy Co. NM (NAD 83) Co-ordinate(NE) Reference: Site: Glenwood 28 Federal #2H True North
 Site: Glenwood 28 Federal #2H Vertical (TVD) Reference: SITE 3654.5
 Well: #2 Section (VS) Reference: Well (0.00N,0.00E,89.92Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	Build deg/100ft	Turn deg/100ft	DLS deg/100ft	TFO deg	Comment
7050.00	56.75	90.11	6996.77	-0.89	153.24	153.24	16.68	0.00	16.68	0.00	
7075.00	60.93	90.11	7009.71	-0.93	174.63	174.63	16.68	0.00	16.68	0.00	
7100.00	65.10	90.11	7021.05	-0.97	196.90	196.90	16.68	0.00	16.68	0.00	
7125.00	69.27	90.11	7030.74	-1.01	219.94	219.94	16.68	0.00	16.68	0.00	
7150.00	73.44	90.11	7038.73	-1.06	243.62	243.62	16.68	0.00	16.68	0.00	
7175.00	77.61	90.11	7044.98	-1.10	267.82	267.82	16.68	0.00	16.68	0.00	
7200.00	81.78	90.11	7049.45	-1.15	292.41	292.41	16.68	0.00	16.68	0.00	
7225.00	85.95	90.11	7052.12	-1.20	317.26	317.26	16.68	0.00	16.68	0.00	
7244.47	89.20	90.11	7052.95	-1.24	336.72	336.71	16.68	0.00	16.68	0.00	LP
7300.00	89.20	90.11	7053.72	-1.34	392.24	392.24	0.00	0.00	0.00	0.00	
7400.00	89.20	90.11	7055.12	-1.53	492.23	492.23	0.00	0.00	0.00	0.00	
7500.00	89.20	90.11	7056.51	-1.73	592.22	592.22	0.00	0.00	0.00	0.00	
7600.00	89.20	90.11	7057.91	-1.92	692.21	692.21	0.00	0.00	0.00	0.00	
7700.00	89.20	90.11	7059.31	-2.11	792.20	792.20	0.00	0.00	0.00	0.00	
7800.00	89.20	90.11	7060.70	-2.30	892.19	892.19	0.00	0.00	0.00	0.00	
7900.00	89.20	90.11	7062.10	-2.49	992.18	992.17	0.00	0.00	0.00	0.00	
8000.00	89.20	90.11	7063.50	-2.68	1092.17	1092.16	0.00	0.00	0.00	0.00	
8100.00	89.20	90.11	7064.89	-2.88	1192.16	1192.15	0.00	0.00	0.00	0.00	
8200.00	89.20	90.11	7066.29	-3.07	1292.15	1292.14	0.00	0.00	0.00	0.00	
8300.00	89.20	90.11	7067.69	-3.26	1392.14	1392.13	0.00	0.00	0.00	0.00	
8400.00	89.20	90.11	7069.08	-3.45	1492.13	1492.12	0.00	0.00	0.00	0.00	
8500.00	89.20	90.11	7070.48	-3.64	1592.12	1592.11	0.00	0.00	0.00	0.00	
8600.00	89.20	90.11	7071.87	-3.83	1692.11	1692.10	0.00	0.00	0.00	0.00	
8700.00	89.20	90.11	7073.27	-4.02	1792.10	1792.09	0.00	0.00	0.00	0.00	
8800.00	89.20	90.11	7074.67	-4.22	1892.09	1892.08	0.00	0.00	0.00	0.00	
8900.00	89.20	90.11	7076.06	-4.41	1992.08	1992.07	0.00	0.00	0.00	0.00	
9000.00	89.20	90.11	7077.46	-4.60	2092.07	2092.06	0.00	0.00	0.00	0.00	
9100.00	89.20	90.11	7078.86	-4.79	2192.06	2192.05	0.00	0.00	0.00	0.00	
9200.00	89.20	90.11	7080.25	-4.98	2292.05	2292.04	0.00	0.00	0.00	0.00	
9300.00	89.20	90.11	7081.65	-5.17	2392.04	2392.03	0.00	0.00	0.00	0.00	
9400.00	89.20	90.11	7083.05	-5.37	2492.03	2492.02	0.00	0.00	0.00	0.00	
9500.00	89.20	90.11	7084.44	-5.56	2592.02	2592.01	0.00	0.00	0.00	0.00	
9600.00	89.20	90.11	7085.84	-5.75	2692.01	2692.00	0.00	0.00	0.00	0.00	
9700.00	89.20	90.11	7087.24	-5.94	2792.00	2791.99	0.00	0.00	0.00	0.00	
9800.00	89.20	90.11	7088.63	-6.13	2891.99	2891.98	0.00	0.00	0.00	0.00	
9900.00	89.20	90.11	7090.03	-6.32	2991.98	2991.97	0.00	0.00	0.00	0.00	
10000.00	89.20	90.11	7091.42	-6.52	3091.97	3091.96	0.00	0.00	0.00	0.00	
10100.00	89.20	90.11	7092.82	-6.71	3191.96	3191.95	0.00	0.00	0.00	0.00	
10200.00	89.20	90.11	7094.22	-6.90	3291.95	3291.94	0.00	0.00	0.00	0.00	
10300.00	89.20	90.11	7095.61	-7.09	3391.94	3391.93	0.00	0.00	0.00	0.00	
10400.00	89.20	90.11	7097.01	-7.28	3491.93	3491.92	0.00	0.00	0.00	0.00	
10500.00	89.20	90.11	7098.41	-7.47	3591.92	3591.91	0.00	0.00	0.00	0.00	
10600.00	89.20	90.11	7099.80	-7.66	3691.91	3691.90	0.00	0.00	0.00	0.00	
10700.00	89.20	90.11	7101.20	-7.86	3791.90	3791.89	0.00	0.00	0.00	0.00	
10800.00	89.20	90.11	7102.60	-8.05	3891.89	3891.88	0.00	0.00	0.00	0.00	
10900.00	89.20	90.11	7103.99	-8.24	3991.88	3991.87	0.00	0.00	0.00	0.00	
11000.00	89.20	90.11	7105.39	-8.43	4091.87	4091.86	0.00	0.00	0.00	0.00	
11048.15	89.20	90.11	7106.06	-8.52	4140.02	4140.00	0.00	0.00	0.00	0.00	V'SEC TGT
11100.00	89.41	88.57	7106.69	-7.93	4191.86	4191.84	0.41	-2.97	3.00	277.90	
11117.12	89.48	88.06	7106.85	-7.42	4208.97	4208.96	0.41	-2.97	3.00	277.92	HOLD
11200.00	89.48	88.06	7107.60	-4.62	4291.80	4291.79	0.00	0.00	0.00	180.00	
11300.00	89.48	88.06	7108.50	-1.23	4391.74	4391.73	0.00	0.00	0.00	180.00	



Weatherford International, Inc.

Proposal Plan Report

**Weatherford**

Company: Cimarex	Date: 4/17/2008	Time: 20:43:38	Page: 3
Field: Eddy Co., NM (NAD 83)	Co-ordinate(NE) Reference:	Site: Glenwood 28 Federal #2H, True North	
Site: Glenwood 28 Federal #2H	Vertical (TVD) Reference:	SITE: 3654.5	
Well: #2	Section (VS) Reference:	Well: (0.00N,0.00E,89.92Azi)	
Wellpath: 1	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	Build deg/100ft	Turn deg/100ft	DLS deg/100ft	TFO deg	Comment
11400.00	89.48	88.06	7109.40	2.15	4491.68	4491.67	0.00	0.00	0.00	180.00	
11500.00	89.48	88.06	7110.29	5.54	4591.61	4591.62	0.00	0.00	0.00	180.00	
11522.76	89.48	88.06	7110.50	6.31	4614.36	4614.36	0.00	0.00	0.00	180.00	PBHL
11522.87	89.48	88.06	7110.50	6.31	4614.47	4614.47	0.00	0.00	0.00	180.00	PBHL P4

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
GLENWOOD #1 -Circle (Radius: 100)		0.00	-142.36	4303.10	690415.08	621140.62	32 53 51.700 N	104 4 24.000 W
V'SEC TGT		7106.50	5.06	4140.00	690562.11	620977.17	32 53 53.159 N	104 4 25.913 W
PBHL P4		7110.50	6.31	4614.47	690564.47	621451.64	32 53 53.171 N	104 4 20.348 W

Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction

Annotation

MD ft	TVD ft	
6708.00	6707.75	TOP WHIP
6724.00	6723.73	BTM WHIP
6729.00	6728.72	BUILD
7244.47	7052.95	LP
11048.15	7106.06	4140 V'SEC BUILD
11117.12	7106.85	HOLD
11522.76	7110.50	PBHL

Casing Points

MD	TVD	Diameter	Hole Size	Name



BHA Report

BHA 1 - Curve Section

Drilling & Evaluation Services
v4 2 2384

FILE #: 4014154
JOB TYPE: Horizontal
RIG & NO: Patterson 623

WELL NAME: Glenwood28Federal
COMPANY: Cimarex Energy Company
SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Mexico

DIR Supervisor: Lance Mosteller, Jay Vinson, Mike Vice
MWD Supervisor: Robin Feys

BHA SURVEY TYPE: Electromagnetic MWD

HOLE SIZE: 6.125 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Tri-Cone Bit	Security	10965692	EBX9425R	6.125	0	0		3 1/2" REG Pin	0.75 ft	0.75 ft
1	Drilling Motor	PES	401604585	LE7838	5.5	0	0.81	3 1/2" IF Box	3 1/2" IF Box	23.14 ft	23.89 ft
1	Float Sub	WFT	207075		4.71	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	25.47 ft
1	Muleshoe	PES	8946		4.75	2.5	0	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	28.78 ft
1	MWD Tool Carrier	PES	475401		4.75	2.75	3.07	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	59.93 ft
1	Fin Cutter Sub	PES	475031		4.75	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	61.90 ft
1	Flex NMDC	WFT	475-9970		4.77	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	92.93 ft
1	Flex NMDC	WFT	475-18828		4.8	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	124.09 ft

(O.D. units are in; I.D. units are in, FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2008/04/18 TO 2008/04/21
DEPTH IN: 6730.00 ft ANGLE IN: 0.00 °
DEPTH OUT: 7222.00 ft ANGLE OUT: 77.22 °
DRILL HRS: 39.00 BUILD: 77.22 °
ORIENTING HRS: 35.50 HOLE MADE: 492.00 ft
ROTATING HRS: 3.50 AVG R.O.P.: 12.62 ft/hr

MOTOR INFORMATION

MANFCT. PES SETTING: 1.83 °
SERIAL #: 401604585 KICK PAD: No
MODEL: LE7838 STABILIZER: No
LOBE CFG: 7/8 MOTOR HRS: 40.00
BIT TO BEND: 2.91

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	80	0	0
STROKE VOLUME:	2.9363 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	223.15599 gal/min		
PUMP PRESSURE:	OFF BTM: 0 psi	ON BTM: 1881 psi	

MUD INFORMATION

MUD TYPE: Brine or Salt LIQUID BASE: Water
DENSITY: 0 lb/gal TEMP: 0 °F
VISCOSITY: 0 sec/qt pH: 0
WTR LOSS: 0 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
PLAST VISC: 0 cP SOLIDS: 0 GAS TYPE:
YIELD PT: 0 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: EBX9425R IADC BIT GRADE: 1 / 1 / BF / N / E / I / BT / PR
NOZZLES: 20, 20, 20, n/a: 0.92 in² TFA

REASON FOR BHA CHANGE

ROP dropped to 5 to 8 ft per hr.

FORMATION CHARACTERISTICS

Target Formation is Wolfcamp.

MWD COMMENTS

Signal 0.336mD / Noise level .021 / 3 amp consumption/hrs.14.4

SIDETRACKING PROCEDURE COMMENTS



BHA Report

BHA 1 - Curve Section

Drilling & Evaluation Services
v4 2 2384

RUN SUMMARY

Avg Build Rate 16° to 20°. 8lbf to 10lbf over pull when tripping out of the curve.



BHA Report

Drilling & Evaluation Services
v4.2 2384

BHA 2 - Lateral 1 Section

FILE #: 4014154

JOB TYPE: Horizontal

RIG & NO: Patterson 623

WELL NAME: Glenwood28Federal

COMPANY: Cimarex Energy Company

SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E

SERVICE CO.: Weatherford Directional Services

SURVEY TYPE: Positive Pulse MWD

FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Me

DIR Supervisor: Jay Vinson, Lance Mosteller, Mike Vice

MWD Supervisor: Robin Feys

BHA SURVEY TYPE: Electromagnetic MWD

HOLE SIZE: 6.125 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Halliburton	10993351	fmh3543zz	6.125	0	0		3 1/2" REG Pin	0.75 ft	0.75 ft
1	Drilling Motor	WFT	475-1940	LE7838	5.51	0	0	3 1/2" REG Pin	3 1/2" IF Box	23.22 ft	23.97 ft
1	Float Sub	WFT	207075		4.71	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	25.55 ft
1	DBL PIN UBHO	WFT	AA428043-B3		4.75	2.5	0	3 1/2" IF Pin	3 1/2" IF Pin	3.57 ft	29.12 ft
1	MWD Tool Carrier	WFT	475-384		4.67	3.25	0	3 1/2" IF Box	3 1/2" IF Box	19.38 ft	48.50 ft
1	MWD Emitter Sub	WFT	475-068		4.65	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	9.52 ft	58.02 ft
1	Flex NMDC	WFT	475-9970		4.77	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	89.05 ft
1	Flex NMDC	WFT	475-18828		4.8	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	120.21 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

— GENERAL INFORMATION

DATES RUN: 2008/04/21 TO 2008/04/25
DEPTH IN: 7222.00 ft ANGLE IN: 0.00 °
DEPTH OUT: 8796.00 ft ANGLE OUT: 0.00 °
DRILL HRS: 56.25 BUILD: 0.00 °
ORIENTING HRS: 12.75 HOLE MADE: 1574.00 ft
ROTATING HRS: 43.50 AVG R.O.P.: 27.98 ft/hr

— MOTOR INFORMATION

MANFCT. WFT SETTING: 1.50 °
SERIAL #: 475-1940 KICK PAD: No
MODEL: LE7838 STABILIZER: No
LOBE CFG: 5.35 MOTOR HRS: 68.25
BIT TO BEND: 2.95

— PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	0	0	0
STROKE VOLUME:	0.0 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	0 gal/min		
PUMP PRESSURE:	OFF BTM: 0 psi	ON BTM: 0 psi	

— MUD INFORMATION

MUD TYPE: Brine or Salt LIQUID BASE: Water
DENSITY: 9.7 lb/gal TEMP: 135 °F
VISCOSITY: 35 sec/qt pH: 10.5
WTR LOSS: 0 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
PLAST VISC: 1 cP SOLIDS: 1.7 GAS TYPE:
YIELD PT: 1 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

— BIT INFORMATION

MANFCT: Halliburton TYPE: fmh3543zz IADC BIT GRADE: 1 / 3 / WT / S / X / 1 / BT / BHA
NOZZLES: 22.5, 22.5, 22.5, 22.5: 1.553 in² TFA

— REASON FOR BHA CHANGE

POOH for the MWD. Couldn't get a signal at 8796 MD.

— FORMATION CHARACTERISTICS

Lost signal in the dolomite.

— MWD COMMENTS

Lost the signal at 8796 md. pulled up one joint and the signal returned. POOH for MWD to switch it to the EMPP.

— SIDETRACKING PROCEDURE COMMENTS



BHA Report

BHA 2 - Lateral 1 Section

Drilling & Evaluation Services
v4 2.2384

RUN SUMMARY

Max dog legs were 5° in the lateral.



BHA Report

BHA 3 - Lateral 1 Section

Drilling & Evaluation Services
v4.2 2384

FILE #: 4014154 WELL NAME: Glenwood28Federal SERVICE CO.: Weatherford Directional Services
JOB TYPE: Horizontal COMPANY: Cimarex Energy Company SURVEY TYPE: Positive Pulse MWD
RIG & NO: Patterson 623 SURFACE LOCATION: 660' FWL of SEC28,T-16-S,R-29-E FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Me.

DIR Supervisor: Lance Mosteller, Shane Perry
MWD Supervisor: Robin Feys, Paul Pierron SR, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 6.125 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Security	10829368	FMH3543ZZ	6.13	0	0		3 1/2" REG Pin	0.75 ft	0.75 ft
1	Drilling Motor	PES	401604		4.75	0	2.8	3 1/2" IF Box	3 1/2" IF Box	23.22 ft	23.97 ft
1	Float Sub	WFT	207075		4.71	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	25.55 ft
1	Muleshoe	PES	8946		4.75	2.5	0	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	28.86 ft
1	MWD Tool Carrier	PES	475401		4.75	2.75	3.07	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	60.01 ft
1	Fin Cutter Sub	PES	475031		4.75	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	61.98 ft
1	Flex-NMDC	WFT	475-9970		4.77	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	93.01 ft
1	Flex NMDC	WFT	475-18828		4.8	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	124.17 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2008/04/25 TO 2008/04/28
DEPTH IN: 8796.00 ft ANGLE IN: 0.00 °
DEPTH OUT: 9568.00 ft ANGLE OUT: 89.40 °
DRILL HRS: 47.75 BUILD: 89.40 °
ORIENTING HRS: 12.25 HOLE MADE: 772.00 ft
ROTATING HRS: 35.50 AVG R.O.P.: 16.17 ft/hr

MOTOR INFORMATION

MANFCT. PES
SERIAL #: 401604
MODEL:
LOBE CFG: 7/8
BIT TO BEND: 2.97
SETTING: 1.50 °
KICK PAD: No
STABILIZER: No
MOTOR HRS: 51.50

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	78	0	0
STROKE VOLUME:	2.9363 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	268 gal/min		
PUMP PRESSURE:	OFF BTM: 1900 psi	ON BTM: 2050 psi	

MUD INFORMATION

MUD TYPE: Brine or Salt LIQUID BASE: Water
DENSITY: 9.8 lb/gal TEMP: 0 °F
VISCOSITY: 29 sec/qt pH: 0
WTR LOSS: 0 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
PLAST VISC: 0 cP SOLIDS: 0 GAS TYPE:
YIELD PT: 0 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: FMH3543ZZ ADC BIT GRADE: 8 / 3 / CR / M / X / I / BT / PR
NOZZLES: 22.5, 22.5, 22.5, 22.5: 1.553 in² TFA

REASON FOR BHA CHANGE

Bit wouldnt drill it appears to be wore out.
On surface bit showed extreme wear (cored out).

FORMATION CHARACTERISTICS

@ 9310 to 9350 hit a chert stringer. 9350-9569 100 % Dolomite.

MWD COMMENTS

Mwd was working great as expected.

SIDETRACKING PROCEDURE COMMENTS

BHA Report

BHA 3 - Lateral 1 Section

RUN SUMMARY

Motor gave build rates as expected.



BHA Report

BHA 4 - Lateral 1 Section

Drilling & Evaluation Services
v4 2 2384

FILE #: 4014154 WELL NAME: Glenwood28Federal SERVICE CO.: Weatherford Directional Services
JOB TYPE: Horizontal COMPANY: Cimarex Energy Company SURVEY TYPE: Positive Pulse MWD
RIG & NO: Patterson 623 SURFACE LOCATION: 660' FWL of SEC28,T-16-S,R-29-E FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Me.

DIR Supervisor: Shane Perry, Lance Mosteller
MWD Supervisor: Robin Feys, Paul Pierron SR, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 6.125 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Tri-Cone Bit	Security	10965692	EBX9425R	6.125	0	0		3 1/2" REG Pin	0.75 ft	0.75 ft
1	Drilling Motor	PES	401604585	LE7838	5.5	0	0.81	3 1/2" IF Box	3 1/2" IF Box	23.14 ft	23.89 ft
1	Float Sub	WFT	207075		4.71	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	1 58 ft	25.47 ft
1	Muleshoe	PES	8946		4.75	2.5	0	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	28.78 ft
1	MWD Tool Carrier	PES	475401		4.75	2.75	3.07	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	59.93 ft
1	Fin Cutter Sub	PES	475031		4.75	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	61.90 ft
1	Flex NMDC	WFT	475-9970		4.77	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	92.93 ft
1	Flex NMDC	WFT	475-18828		4.8	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	124.09 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2008/04/28 TO 2008/05/01
DEPTH IN: 9568.00 ft ANGLE IN: 89.17 °
DEPTH OUT: 9981.00 ft ANGLE OUT: 0.00 °
DRILL HRS: 29.75 BUILD: -89.17 °
ORIENTING HRS: 8.25 HOLE MADE: 413.00 ft
ROTATING HRS: 21.50 AVG R.O.P.: 13.88 ft/hr

MOTOR INFORMATION

MANFCT. PES SETTING: 1.50 °
SERIAL #: 401604585 KICK PAD: No
MODEL: LE7838 STABILIZER: No
LOBE CFG: 7/8 MOTOR HRS: 36.00
BIT TO BEND: 2.91

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	80	0	0
STROKE VOLUME:	3.1 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	235.6 gal/min		
PUMP PRESSURE:	OFF BTM: 1950 psi ON BTM: 2050 psi		

MUD INFORMATION

MUD TYPE: Brine or Salt LIQUID BASE: Water
DENSITY: 9.6 lb/gal TEMP: 90 °F
VISCOSITY: 31 sec/qt pH: 10
WTR LOSS: 100 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
PLAST VISC: 1 cP SOLIDS: 1.2 GAS TYPE:
YIELD PT: 1 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: EBX9425R IADC BIT GRADE: 1 / 2 / *BC / M / E / 1 / BT / TQ
NOZZLES: 23, 23, 23, n/a: 1.217 in² TFA

REASON FOR BHA CHANGE

Bit torquing up and motor stalling.

FORMATION CHARACTERISTICS

MWD COMMENTS

SIDETRACKING PROCEDURE COMMENTS

BHA Report

BHA 4 - Lateral 1 Section

RUN SUMMARY



BHA Report

BHA 5 - Lateral 1 Section

Drilling & Evaluation Services
v4 2 2384

FILE #: 4014154 WELL NAME: Glenwood28Federal SERVICE CO.: Weatherford Directional Services
JOB TYPE: Horizontal COMPANY: Cimarex Energy Company SURVEY TYPE: Positive Pulse MWD
RIG & NO: Patterson 623 SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Me

DIR Supervisor: Shane Perry, Richard Zamora
MWD Supervisor: Adam Langley, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 6.125 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Tri-Cone Bit	Security	c24082	HAT217G	6.13	0	0		Pin	0.75 ft	0.75 ft
1	Drilling Motor	PES	3720787	LE7838	5.25	0	0.81	3 1/2" IF Box	3 1/2" IF Box	25.50 ft	26.25 ft
1	Float Sub	WFT	207075		4.71	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	27.83 ft
1	Muleshoe	PES	8946		4.75	2.5	0	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	31.14 ft
1	MWD Tool Carrier	PES	475401		4.75	2.75	3.07	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	62.29 ft
1	Fin Cutter Sub	PES	475031		4.75	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	64.26 ft
1	Flex NMDC	WFT	475-9970		4.77	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	95.29 ft
1	Flex NMDC	WFT	475-18828		4.8	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	126.45 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2008/05/01 TO 2008/05/02
DEPTH IN: 9981.00 ft ANGLE IN: 88.20 °
DEPTH OUT: 10017.00 ft ANGLE OUT: 88.20 °
DRILL HRS: 6.00 BUILD: 0.00 °
ORIENTING HRS: 0.00 HOLE MADE: 36.00 ft
ROTATING HRS: 6.00 AVG R.O.P.: 6.00 ft/hr

MOTOR INFORMATION

MANFCT. PES SETTING: 1.83 °
SERIAL #: 3720787 KICK PAD: No
MODEL: LE7838 STABILIZER: No
LOBE CFG: 7/8 MOTOR HRS: 7.50
BIT TO BEND: 5.84

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	0	0	0
STROKE VOLUME:	0.0 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	235 gal/min		
PUMP PRESSURE:	OFF BTM: 1970 psi	ON BTM: 2076 psi	

MUD INFORMATION

MUD TYPE: Brine or Salt LIQUID BASE: Water
DENSITY: 9.6 lb/gal TEMP: 90 °F
VISCOSITY: 31 sec/qt pH: 10
WTR LOSS: 100 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
PLAST VISC: 1 cP SOLIDS: 1.2 GAS TYPE:
YIELD PT: 1 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: HAT217G IADC BIT GRADE: 5 / 5 / WT / A / E / I / WT / BHA
NOZZLES: 20, 20, 20, n/a: 0.92 in² TFA

REASON FOR BHA CHANGE

Finished milling on cones from last Tri Cone Bit. We will now pick up BHA#6, and go back to drilling the lateral.

FORMATION CHARACTERISTICS

Formation was very abrasive and wore out the bit in limited time.

MWD COMMENTS

MWD ran very well with no issues to report.

SIDETRACKING PROCEDURE COMMENTS

BHA Report

BHA 5 - Lateral 1 Section

~~RUN SUMMARY~~

The bha was in great condition, other than the bit which was severely worn.



BHA Report

BHA 6 - Lateral 1 Section

Drilling & Evaluation Services
v4 2 2384

FILE #: 4014154
JOB TYPE: Horizontal
RIG & NO: Patterson 623

WELL NAME: Glenwood28Federal
COMPANY: Cimarex Energy Company
SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Mexico

DIR Supervisor: Shane Perry, Richard Zamora
MWD Supervisor: Adam Langley, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 6.13 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Halliburton	11119930	FMH3643zr	6.125	0	0		3 1/2" REG Pin	0.75 ft	0.75 ft
1	Drilling Motor	PES	401265222	LE7838	5.25	0	1.23	3 1/2" REG Box	3 1/2" IF Box	22.15 ft	22.90 ft
1	Float Sub	WFT	207075		4.71	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	24.48 ft
1	Muleshoe	PES	8946		4.75	2.5	0	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	27.79 ft
1	MWD Tool Carrier	PES	475401		4.75	2.75	3.07	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	58.94 ft
1	Fin Cutter Sub	PES	475031		4.75	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	60.91 ft
1	Flex NMDC	WFT	475-9970		4.77	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	91.94 ft
1	Flex NMDC	WFT	475-18828		4.8	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	123.10 ft

(O.D. units are in; I.D. units are in, FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2008/05/02 TO 2008/05/04
DEPTH IN: 10017.00 ft
DEPTH OUT: 11200.00 ft
DRILL HRS: 41.75
ORIENTING HRS: 9.00
ROTATING HRS: 32.75
ANGLE IN: 88.20 °
ANGLE OUT: 88.89 °
BUILD: 0.69 °
HOLE MADE: 1183.00 ft
AVG R.O.P.: 28.34 ft/hr

MOTOR INFORMATION

MANFCT. PES
SERIAL #: 401265222
MODEL: LE7838
LOBE CFG: 7/8
BIT TO BEND: 2.95
SETTING: 1.50 °
KICK PAD: No
STABILIZER: No
MOTOR HRS: 50.50

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	0	0	0
STROKE VOLUME:	0.0 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	344 gal/min		
PUMP PRESSURE:	OFF BTM: 1978 psi	ON BTM: 2050 psi	

MUD INFORMATION

MUD TYPE: Brine or Salt
LIQUID BASE: Water
DENSITY: 9.7 lb/gal
TEMP: 90 °F
VISCOSITY: 30 sec/qt
pH: 10
WTR LOSS: 100 cc/30min
SAND: 0
LIQUID RATE: 0 gal/min
PLAST VISC: 1 cP
SOLIDS: 1.4
GAS TYPE:
YIELD PT: 1 lb/100 ft²
OIL: 0
GAS RATE: -0 cu ft/min

BIT INFORMATION

MANFCT: Halliburton TYPE: FMH3643zr IADC BIT GRADE: ?/?/?/?/?/?/?/?
NOZZLES: 22, 22, 22, n/a: 1.114 in² TFA

REASON FOR BHA CHANGE

FORMATION CHARACTERISTICS

MWD COMMENTS

SIDETRACKING PROCEDURE COMMENTS



BHA Report

BHA 6 - Lateral 1 Section

Drilling & Evaluation Services
v4 2.2384

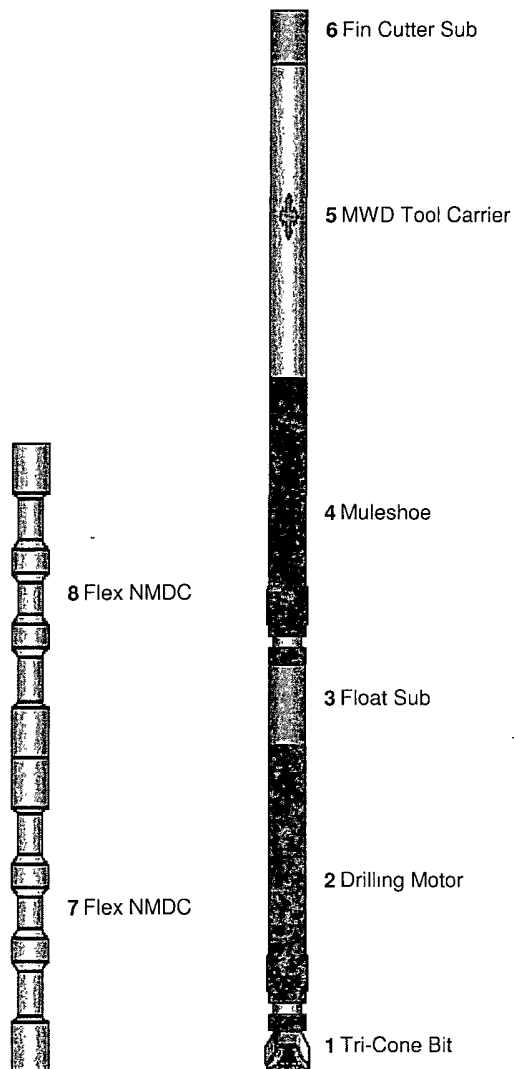
~~RUN SUMMARY~~

Glenwood28Federal

BHA NO.: 1

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	Tri-Cone Bit	10965692		0	6.125	0		3 1/2" REG Pin	0.75 ft	0.75 ft
2	1	Drilling Motor	401604585	4 3/4" (121mm)	0	5.5	0	3 1/2" IF Box	3 1/2" IF Box	23.14 ft	23.89 ft
3	1	Float Sub	207075	4.71	4.71	4.71	2.25	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	25.47 ft
4	1	Muleshoe	8946		4.75	4.75	2.5	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	28.78 ft
5	1	MWD Tool Carrier	475401		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	59.93 ft
6	1	Fin Cutter Sub	475031		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	61.90 ft
7	1	Flex NMDC	475-9970	4.77	4.74	4.77	2.25	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	92.93 ft
8	1	Flex NMDC	475-18828	4.80	4.8	4.8	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	124.09 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 124.09 ft


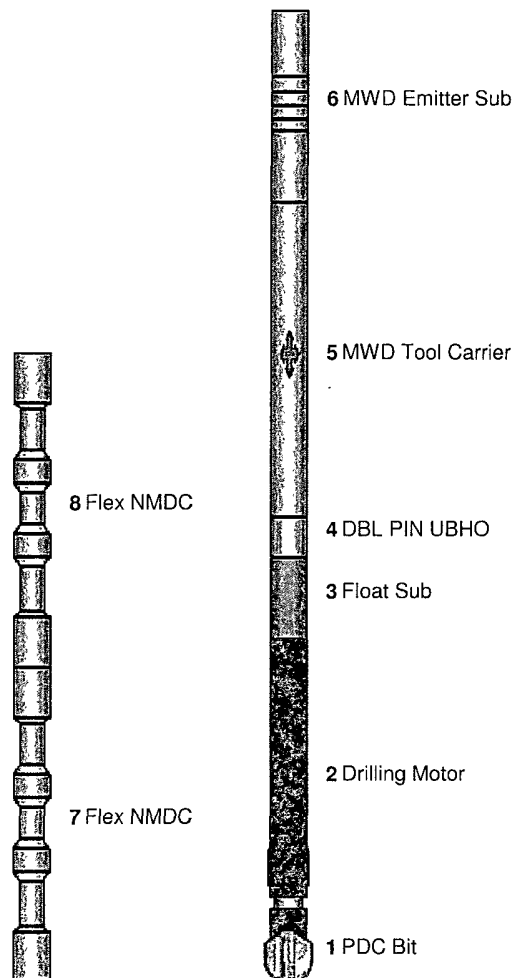
— COMMENTS —

Glenwood28Federal

BHA NO.: 2

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	10993351		0	6.125	0		3 1/2" REG Pin	0.75 ft	0.75 ft
2	1	Drilling Motor	475-1940	4 3/4" (121mm)	0	5.51	0	3 1/2" REG Pin	3 1/2" IF Box	23.22 ft	23.97 ft
3	1	Float Sub	207075	4.71	4.71	4.71	2.25	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	25.55 ft
4	1	DBL PIN UBHO	AA428043-B3	4.75	4.75	4.75	2.5	3 1/2" IF Pin	3 1/2" IF Pin	3.57 ft	29.12 ft
5	1	MWD Tool Carrier	475-384	4.67	4.67	4.65	3.25	3 1/2" IF Box	3 1/2" IF Box	19.38 ft	48.50 ft
6	1	MWD Emitter Sub	475-068	4.65	4.54	4.65	2.25	3 1/2" IF Pin	3 1/2" IF Box	9.52 ft	58.02 ft
7	1	Flex NMDC	475-9970	4.77	4.74	4.77	2.25	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	89.05 ft
8	1	Flex NMDC	475-18828	4.80	4.8	4.8	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	120.21 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 120.21 ft


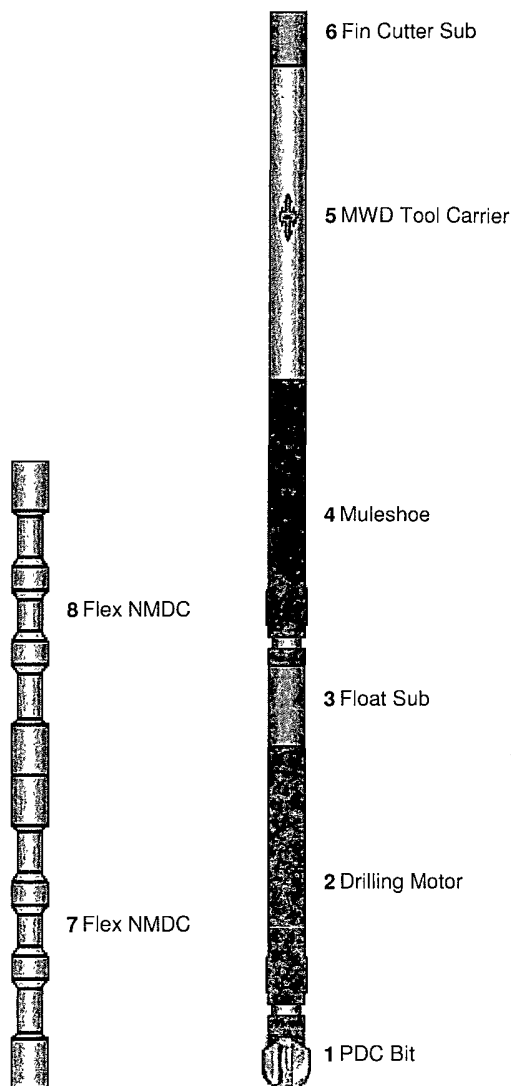
— COMMENTS —

Glenwood28Federal

BHA NO.: 3

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	10829368		0	6.13	0		3 1/2" REG Pin	0.75 ft	0.75 ft
2	1	Drilling Motor	401604	4 3/4" (121mm)	0	4.75	0	3 1/2" IF Box	3 1/2" IF Box	23.22 ft	23.97 ft
3	1	Float Sub	207075	4.71	4.71	4.71	2.25	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	25.55 ft
4	1	Muleshoe	8946		4.75	4.75	2.5	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	28.86 ft
5	1	MWD Tool Carrier	475401		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	60.01 ft
6	1	Fin Cutter Sub	475031		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	61.98 ft
7	1	Flex NMDC	475-9970	4.77	4.74	4.77	2.25	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	93.01 ft
8	1	Flex NMDC	475-18828	4.80	4.8	4.8	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	124.17 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 124.17 ft


COMMENTS

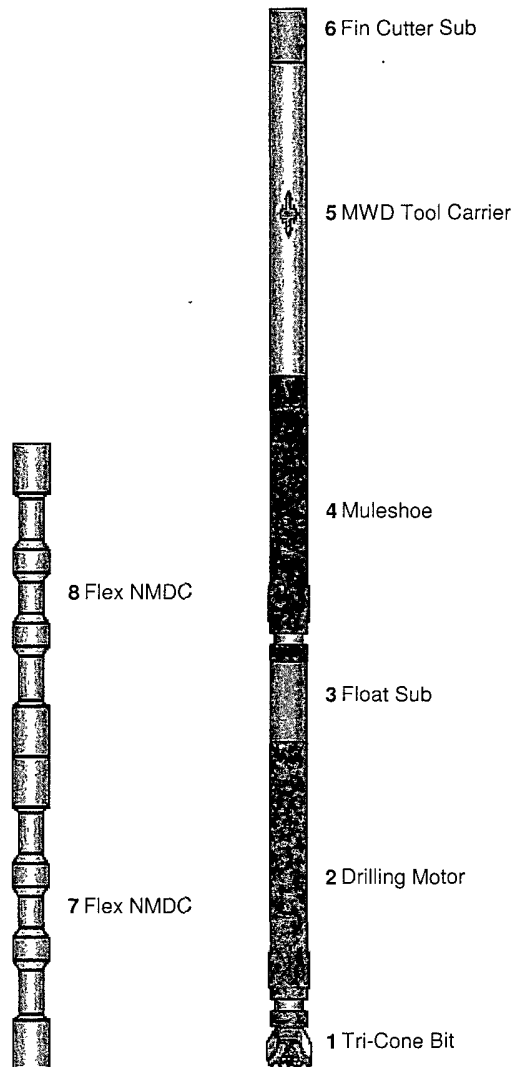
Glenwood28Federal

BHA NO.: 4

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	Tri-Cone Bit	10965692		0	6.125	0		3 1/2" REG Pin	0.75 ft	0.75 ft
2	1	Drilling Motor	401604585	4 3/4" (121mm)	0	5.5	0	3 1/2" IF Box	3 1/2" IF Box	23.14 ft	23.89 ft
3	1	Float Sub	207075	4.71	4.71	4.71	2.25	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	25.47 ft
4	1	Muleshoe	8946		4.75	4.75	2.5	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	28.78 ft
5	1	MWD Tool Carrier	475401		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	59.93 ft
6	1	Fin Cutter Sub	475031		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	61.90 ft
7	1	Flex NMDC	475-9970	4.77	4.74	4.77	2.25	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	92.93 ft
8	1	Flex NMDC	475-18828	4.80	4.8	4.8	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	124.09 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 124.09 ft



COMMENTS

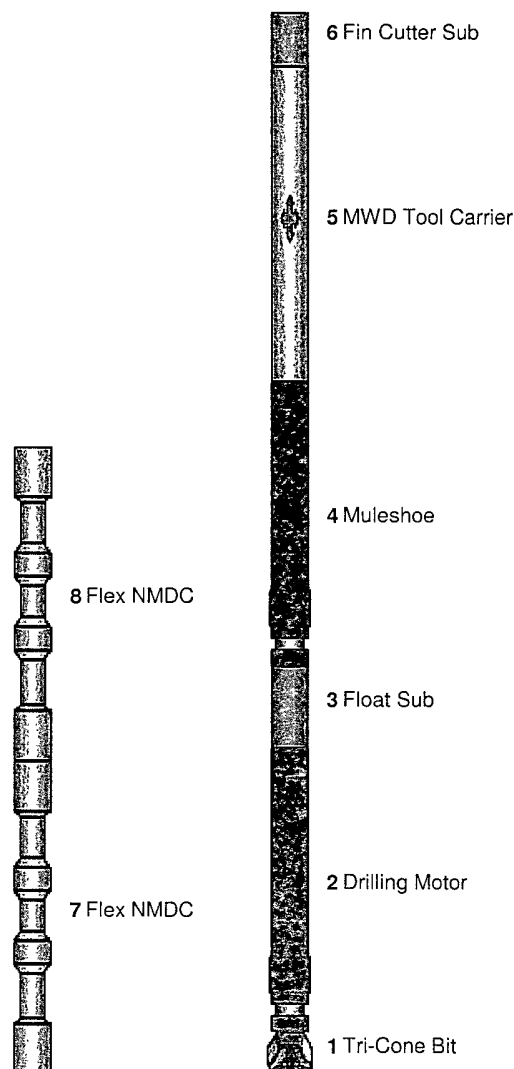
Glenwood28Federal

BHA NO.: 5

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	Tri-Cone Bit	c24082		0	6.13	0		Pin	0.75 ft	0.75 ft
2	1	Drilling Motor	3720787	4 3/4" (121mm)	0	5.25	0	3 1/2" IF Box	3 1/2" IF Box	25.50 ft	26.25 ft
3	1	Float Sub	207075	4.71	4.71	4.71	2.25	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	27.83 ft
4	1	Muleshoe	8946		4.75	4.75	2.5	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	31.14 ft
5	1	MWD Tool Carrier	475401		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	62.29 ft
6	1	Fin Cutter Sub	475031		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	64.26 ft
7	1	Flex NMDC	475-9970	4.77	4.74	4.77	2.25	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	95.29 ft
8	1	Flex NMDC	475-18828	4.80	4.8	4.8	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	126.45 ft

(O.D. units are in; I D. units are in; FNeck units are ft)

TOTAL: 126.45 ft



COMMENTS

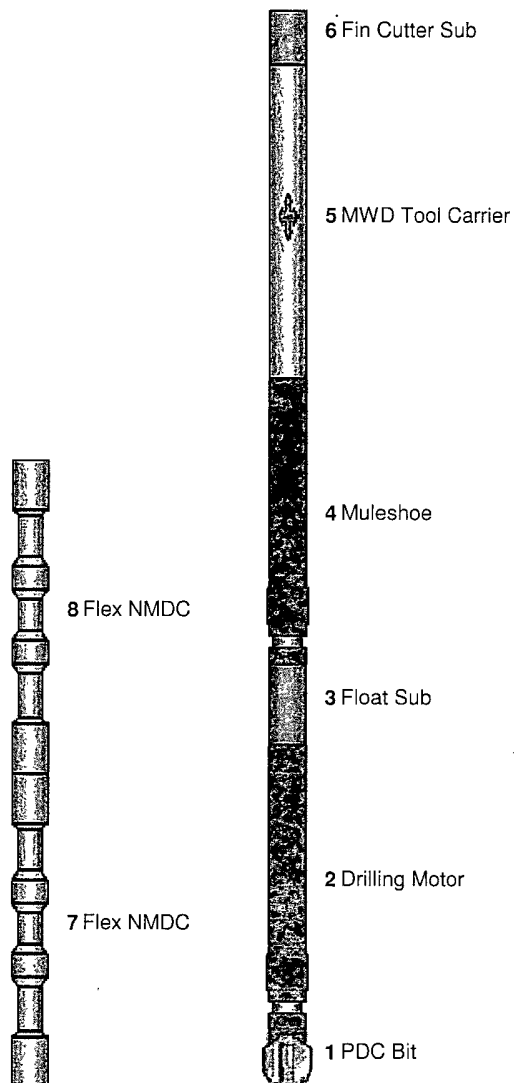
Glenwood28Federal

BHA NO.: 6

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	11119930		0	6.125	0		3 1/2" REG Pin	0.75 ft	0.75 ft
2	1	Drilling Motor	401265222	4 3/4" (121mm)	0	5.25	0	3 1/2" REG Box	3 1/2" IF Box	22.15 ft	22.90 ft
3	1	Float Sub	207075	4.71	4.71	4.71	2.25	3 1/2" IF Pin	3 1/2" IF Box	1.58 ft	24.48 ft
4	1	Muleshoe	8946		4.75	4.75	2.5	3 1/2" IF Pin	3 1/2" IF Box	3.31 ft	27.79 ft
5	1	MWD Tool Carrier	475401		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.15 ft	58.94 ft
6	1	Fin Cutter Sub	475031		4.75	4.75	2.75	3 1/2" IF Pin	3 1/2" IF Box	1.97 ft	60.91 ft
7	1	Flex NMDC	475-9970	4.77	4.74	4.77	2.25	3 1/2" IF Pin	3 1/2" IF Box	31.03 ft	91.94 ft
8	1	Flex NMDC	475-18828	4.80	4.8	4.8	2.75	3 1/2" IF Pin	3 1/2" IF Box	31.16 ft	123.10 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 123.10 ft



COMMENTS



Motor / RSS Evaluation Report

Drilling & Evaluation Services
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BHA 1 - Curve Section, Motor #401604585

FILE #: 4014154
JOB TYPE: Horizontal
RIG & NO: Patterson 623

WELL NAME: Glenwood28Federal
COMPANY: Cimarex Energy Company
SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Mexico

DIR Supervisor: Lance Mosteller, Jay Vinson, Mike Vice
MWD Supervisor: Robin Feys

BHA SURVEY TYPE: Electromagnetic MWD

HOLE SIZE: 6.125 in

GENERAL INFORMATION:

BHA #: 1
DATE IN: 2008/04/18
DATE OUT: 2008/04/21
ANGLE IN: 0.00 °
ANGLE OUT: 77.22 °
ORIENTING HRS: 35.50
START DEPTH: 6730.00 ft
END DEPTH: 7222.00 ft
HOLE MADE: 492.00 ft
AVG ROP: 12.62 ft/hr
ROTATING HRS: 3.50

MOTOR INFORMATION:

MANFCT: PES
SERIAL #: 401604585
MODEL: LE7838
LOBE: 7/8
SETTING: 1.83 °
BIT TO BEND: 2.91 ft
KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: EBX9425R
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi
IADC BIT GRADE: 1 / 1 / BF / N / E / I / BT / PR
TOTAL FLOW RATE: 223.16 gal/min
NOZZLES: 20, 20, 20, n/a: 0.92 in² TFA
PUMP PRESS: (OFF) 0.00 psi
(ON) 1881.00 psi

MUD INFORMATION:

MUD TYPE: Brine or Salt
DENSITY: 0 lb/gal
SAND: 0.000
SOLIDS: 0.000
OIL: 0.000
TEMP: 0 °F
LIQUID BASE: Water
VISCOSITY: 0 sec/qt
WATER LOSS: 0.00 cc/30min
PLASTIC VISC: 0.0 cP
YIELD POINT: 0.0 lb/100 ft²
pH: 0.0
LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min
(All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 1.00
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 39.00
MOTOR HOURS THIS RUN: 40.00
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 40.00
TOTAL BRT HOURS: 40.00

MOTOR EVALUATION COMMENTS:

Motor only has 40hrs on it. Kept motor for back up.

REASON FOR BHA CHANGE:

ROP dropped to 5 to 8 ft per hr.

COMMENTS FROM LAST DAY RAN:



Motor / RSS Evaluation Report

Drilling & Evaluation Services
v4 2 2384

BHA 2 - Lateral 1 Section, Motor #475-1940

FILE #: 4014154
JOB TYPE: Horizontal
RIG & NO: Patterson 623

WELL NAME: Glenwood28Federal
COMPANY: Cimarex Energy Company
SURFACE LOCATION: 660' FWL of SEC28,T-16-S,R-29-E

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Mexico

DIR Supervisor: Jay Vinson, Lance Mosteller, Mike Vice

MWD Supervisor: Robin Feys

BHA SURVEY TYPE: Electromagnetic MWD

HOLE SIZE: 6.125 in

GENERAL INFORMATION:

BHA #: 2
DATE IN: 2008/04/21
DATE OUT: 2008/04/25
ANGLE IN: 0.00 °
ANGLE OUT: 0.00 °
ORIENTING HRS: 12.75
START DEPTH: 7222.00 ft
END DEPTH: 8796.00 ft
HOLE MADE: 1574.00 ft
AVG ROP: 27.98 ft/hr
ROTATING HRS: 43.50

MOTOR INFORMATION:

MANFCT: WFT
SERIAL #: 475-1940
MODEL: LE7838
LOBE: 5.35
SETTING: 1.50 °
BIT TO BEND: 2.95 ft
KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: fmh3543zz
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi
IADC BIT GRADE: 1 / 3 / WT / S / X / 1 / BT / BHA
TOTAL FLOW RATE: 0.00 gal/min
NOZZLES: 22.5, 22.5, 22.5, 22.5: 1.553 in² TFA
PUMP PRESS: (OFF) 0.00 psi
(ON) 0.00 psi

MUD INFORMATION:

MUD TYPE: Brine or Salt
DENSITY: 10 lb/gal
SAND: 0.000
SOLIDS: 1.700
OIL: 0.000
TEMP: 135 °F
LIQUID BASE: Water
VISCOSITY: 35 sec/qt
WATER LOSS: 0.00 cc/30min
PLASTIC VISC: 1.0 cP
YIELD POINT: 1.0 lb/100 ft²
pH: 10.5
LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min
(All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 12.00
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 56.25
MOTOR HOURS THIS RUN: 68.25
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 68.25
TOTAL BRT HOURS: 68.25

MOTOR EVALUATION COMMENTS:

Motor gave good build rates performed as expected.

REASON FOR BHA CHANGE:

POOH for the MWD. Couldn't get a signal at 8796 MD.

COMMENTS FROM LAST DAY RAN:



Motor / RSS Evaluation Report Drilling & Evaluation Services

v4 2.2384

BHA 3 - Lateral 1 Section, Motor #401604

FILE #: 4014154 WELL NAME: Glenwood28Federal SERVICE CO.: Weatherford Directional Services
JOB TYPE: Horizontal COMPANY: Cimarex Energy Company SURVEY TYPE: Positive Pulse MWD
RIG & NO: Patterson 623 SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Mexico

DIR Supervisor: Lance Mosteller, Shane Perry
MWD Supervisor: Robin Feys, Paul Pierron SR, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 6.125 in

GENERAL INFORMATION:

BHA #: 3 START DEPTH: 8796.00 ft
DATE IN: 2008/04/25 END DEPTH: 9568.00 ft
DATE OUT: 2008/04/28 HOLE MADE: 772.00 ft
ANGLE IN: 0.00 ° AVG ROP: 16.17 ft/hr
ANGLE OUT: 89.40 °
ORIENTING HRS: 12.25 ROTATING HRS: 35.50

MOTOR INFORMATION:

MANFCT: PES
SERIAL #: 401604
MODEL:
LOBE: 7/8 BIT TO BEND: 2.97 ft
SETTING: 1.50 ° KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: FMH3543ZZ IADC BIT GRADE: 8 / 3 / CR / M / X / I / BT / PR
BIT PRESS DROP: 0.00 psi TOTAL FLOW RATE: 268.00 gal/min PUMP PRESS: (OFF) 1900.00 psi
MTR PRESS DROP: 0.00 psi NOZZLES: 22.5, 22.5, 22.5, 22.5: 1.553 in² TFA (ON) 2050.00 psi

MUD INFORMATION:

MUD TYPE: Brine or Salt LIQUID BASE: Water (All units are imperial.)
DENSITY: 10 lb/gal VISCOSITY: 29 sec/qt
SAND: 0.000 WATER LOSS: 0.00 cc/30min LIQUID RATE: 0.00 gal/min
SOLIDS: 0.000 PLASTIC VISC: 0.0 cP GAS TYPE:
OIL: 0.000 YIELD POINT: 0.0 lb/100 ft² GAS RATE: 0.00 cu ft/min
TEMP: 0 °F pH: 0.0

TIME INFORMATION:

CIRCULATING HOURS: 3.75
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 47.75
MOTOR HOURS THIS RUN: 51.50
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 51.50
TOTAL BRT HOURS: 51.50

MOTOR EVALUATION COMMENTS:

Motor performed as expected try to rotate, bit appears to be wore out.
On surface, tested motor, showed to be week (too easy to turn).

REASON FOR BHA CHANGE:

Bit wouldnt drill it appears to be wore out.
On surface bit showed extreme wear (cored out).

COMMENTS FROM LAST DAY RAN:

POOH for suspection of bit being worn out.



Motor / RSS Evaluation Report Drilling & Evaluation Services

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BHA 4 - Lateral 1 Section, Motor #401604585

FILE #: 4014154
JOB TYPE: Horizontal
RIG & NO: Patterson 623

WELL NAME: Glenwood28Federal
COMPANY: Cimarex Energy Company
SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Mexico

DIR Supervisor: Shane Perry, Lance Mosteller
MWD Supervisor: Robin Feys, Paul Pierron SR, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 6.125 in

GENERAL INFORMATION:

BHA #: 4
DATE IN: 2008/04/28
DATE OUT: 2008/05/01
ANGLE IN: 89.17 °
ANGLE OUT: 0.00 °
ORIENTING HRS: 8.25
START DEPTH: 9568.00 ft
END DEPTH: 9981.00 ft
HOLE MADE: 413.00 ft
AVG ROP: 13.88 ft/hr
ROTATING HRS: 21.50

MOTOR INFORMATION:

MANFCT: PES
SERIAL #: 401604585
MODEL: LE7838
LOBE: 7/8
SETTING: 1.50 °
BIT TO BEND: 2.91 ft
KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: EBX9425R
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi
IADC BIT GRADE: 1 / 2 / *BC / M / E / 1 / BT / TQ
TOTAL FLOW RATE: 235.60 gal/min
NOZZLES: 23, 23, 23, n/a: 1.217 in² TFA
PUMP PRESS: (OFF) 1950.00 psi
(ON) 2050.00 psi

MUD INFORMATION:

MUD TYPE: Brine or Salt
DENSITY: 10 lb/gal
SAND: 0.000
SOLIDS: 1.200
OIL: 0.000
TEMP: 90 °F
LIQUID BASE: Water
VISCOSITY: 31 sec/qt
WATER LOSS: 100.00 cc/30min
PLASTIC VISC: 1.0 cP
YIELD POINT: 1.0 lb/100 ft²
pH: 10.0
LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min
(All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 6.25
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 29.75
MOTOR HOURS THIS RUN: 36.00
PREVIOUS HOURS: 40.00
TOTAL MOTOR HOURS: 76.00
TOTAL BRT HOURS: 36.00

MOTOR EVALUATION COMMENTS:

Motor was torquing up and stalling when trying to rotate.
On surface, found set screw below adjustable housing missing.

REASON FOR BHA CHANGE:

Bit torquing up and motor stalling.

COMMENTS FROM LAST DAY RAN:



Motor / RSS Evaluation Report Drilling & Evaluation Services

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BHA 5 - Lateral 1 Section, Motor #3720787

FILE #: 4014154
JOB TYPE: Horizontal
RIG & NO: Patterson 623

WELL NAME: Glenwood28Federal
COMPANY: Cimarex Energy Company
SURFACE LOCATION: 660' FWL of SEC28, T-16-S, R-29-E

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Mexico

DIR Supervisor: Shane Perry, Richard Zamora
MWD Supervisor: Adam Langley, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 6.125 in

GENERAL INFORMATION:

BHA #: 5
DATE IN: 2008/05/01
DATE OUT: 2008/05/02
ANGLE IN: 88.20 °
ANGLE OUT: 88.20 °
ORIENTING HRS: 0.00
START DEPTH: 9981.00 ft
END DEPTH: 10017.00 ft
HOLE MADE: 36.00 ft
AVG ROP: 6.00 ft/hr
ROTATING HRS: 6.00

MOTOR INFORMATION:

MANFCT: PES
SERIAL #: 3720787
MODEL: LE7838
LOBE: 7/8
SETTING: 1.83 °
BIT TO BEND: 5.84 ft
KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: HAT217G
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi
IADC BIT GRADE: 5 / 5 / WT / A / E / I / WT / BHA
TOTAL FLOW RATE: 235.00 gal/min
NOZZLES: 20, 20, 20, n/a: 0.92 in² TFA
PUMP PRESS: (OFF) 1970.00 psi
(ON) 2076.00 psi

MUD INFORMATION:

MUD TYPE: Brine or Salt
DENSITY: 10 lb/gal
SAND: 0.000
SOLIDS: 1.200
OIL: 0.000
TEMP: 90 °F
LIQUID BASE: Water
VISCOSITY: 31 sec/qt
WATER LOSS: 100.00 cc/30min
PLASTIC VISC: 1.0 cP
YIELD POINT: 1.0 lb/100 ft²
pH: 10.0
LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min
(All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 1.50
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 6.00
MOTOR HOURS THIS RUN: 7.50
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 7.50
TOTAL BRT HOURS: 7.50

MOTOR EVALUATION COMMENTS:

Motor ran very well with no issues.

REASON FOR BHA CHANGE:

Finished milling on cones from last Tri Cone Bit. We will now pick up BHA#6, and go back to drilling the lateral.

COMMENTS FROM LAST DAY RAN:

Rig shut down for rig service, to fix the clutch.



Motor / RSS Evaluation Report Drilling & Evaluation Services

v4 2 2384

BHA 6 - Lateral 1 Section, Motor #401265222

FILE #: 4014154 WELL NAME: Glenwood28Federal SERVICE CO.: Weatherford Directional Services
JOB TYPE: Horizontal COMPANY: Cimarex Energy Company SURVEY TYPE: Positive Pulse MWD
RIG & NO: Patterson 623 SURFACE LOCATION: 660' FWL of SEC28,T-16-S,R-29-E FIELD / LOCATION: Eddy Co. NM (NAD 83) / New Me:

DIR Supervisor: Shane Perry, Richard Zamora
MWD Supervisor: Adam Langley, Steve Dudley

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 6.13 in

GENERAL INFORMATION:

BHA #: 6 START DEPTH: 10017.00 ft
DATE IN: 2008/05/02 END DEPTH: 11200.00 ft
DATE OUT: 2008/05/04 HOLE MADE: 1183.00 ft
ANGLE IN: 88.20 ° AVG ROP: 28.34 ft/hr
ANGLE OUT: 88.89 °
ORIENTING HRS: 9.00 ROTATING HRS: 32.75

MOTOR INFORMATION:

MANFCT: PES
SERIAL #: 401265222
MODEL: LE7838
LOBE: 7/8 BIT TO BEND: 2.95 ft
SETTING: 1.50 ° KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: FMH3643zr IADC BIT GRADE: ?/?/?/?/?/?/?/?
BIT PRESS DROP: 0.00 psi TOTAL FLOW RATE: 344.00 gal/min PUMP PRESS: (OFF) 1978.00 psi
MTR PRESS DROP: 0.00 psi NOZZLES: 22, 22, 22, n/a: 1.114 in² TFA (ON) 2050.00 psi

MUD INFORMATION:

MUD TYPE: Brine or Salt LIQUID BASE: Water (All units are imperial.)
DENSITY: 10 lb/gal VISCOSITY: 30 sec/qt
SAND: 0.000 WATER LOSS: 100.00 cc/30min LIQUID RATE: 0.00 gal/min
SOLIDS: 1.400 PLASTIC VISC: 1.0 cP GAS TYPE:
OIL: 0.000 YIELD POINT: 1.0 lb/100 ft² GAS RATE: 0.00 cu ft/min
TEMP: 90 °F pH: 10.0

TIME INFORMATION:

CIRCULATING HOURS: 8.75
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 41.75
MOTOR HOURS THIS RUN: 50.50
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 50.50
TOTAL BRT HOURS: 50.50

MOTOR EVALUATION COMMENTS:

REASON FOR BHA CHANGE:

COMMENTS FROM LAST DAY RAN: