

Form 3160-5
(April 2004)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: March 31, 2007**SUNDRY NOTICES AND REPORTS ON WELLS****Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.****SUBMIT IN TRIPLICATE- Other instructions on reverse side.**

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMLC-06344 NMNMO560353
2. Name of Operator Chi Operating, Inc.		6. If Indian, Allottee or Tribe Name
3a. Address P.O. Box 1799 Midland, TX 79702	3b. Phone No. (include area code) 432-685-5001	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 10' FNL & 370' FEL, Sec. 1-T19S-R30E		8. Well Name and No. Wizard Federal Com., Well No. 5
		9. API Well No. 30-015-38315
		10. Field and Pool, or Exploratory Area Benson Bone Spring
		11. County or Parish, State Eddy

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Chi Operating, Inc. is changing the plans for the 7" casing slightly through the turn of the casing, replacing the use of the 2 7/8" tubing. The 7" will make the entire turn to the 8700' TVD where the horizontal drilling will start.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct Name (Printed/Typed) George R. Smith		Title POA agent for Chi Operating, Inc.
Signature <i>George R. Smith</i>	Date 01/18/2011	APPROVED Date JAN 24 2011 /s/ Chris Walls BUREAU OF LAND MANAGEMENT CAPSAD FIELD OFFICE
THIS SPACE FOR FEDERAL OR STATE OFFICE USE Approved by _____ Title _____ Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. Office _____		
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.		

(Instructions on page 2)

APPLICATION FOR DRILLING

CHI OPERATING, INC.

Wizard Federal Com., Well No. 5

Surface Hole: 10' FNL & 370' FEL -Sec. 1-T19S-R30E

Bottom Hole: 330' FSL & 330' FEL -Sec. 1-T19S-R30E (horizontal drill)

Eddy County, New Mexico

Lease No.: LC-063613

(Development Well)

In conjunction with Form 3160-3, Application for Permit to Drill subject well, Chi Operating, Inc. submits the following items of pertinent information in accordance with BLM requirements:

1. The geologic surface formation is recent Permian with quaternary alluvium and other surficial deposits.

2. The estimated tops of geologic markers are as follows:

Anhydrite	400'	Bone Spring	6130'
Yates	2235'	1 st Bone Spring	7600'
Seven Rivers	2430'	2 nd Bone Spring	8530'
Queen	3100'	TVD.	8730'
Delaware	4050'		

3. The estimated depths at which water, oil or gas formations are anticipated to be encountered:

Water: Surface water between 100' - 300'.

Oil: Possible in the Delaware and the Bone Spring.

Gas: Possible in the Delaware

4. Proposed New Casing Program:

HOLE SIZE	CASING SIZE	WEIGHT	GRADE	JOINT	SETTING DEPTH FACTOR	COLLAPSE DESIGN FACTOR	BURST DESIGN FACTOR	TENSION DESIGN FACTOR
17 1/2"	13 3/8"	48.0#	H-40	STC	515'	2.88	6.46	15.32
12 1/4"	9 5/8"	40#	J/K-55	STC	2,050'	2.41	3.75	7.33
8 3/4"	7"	26.0#	P-110	LTC	8,700' TVD	1.38	2.33	3.43
6 1/8"	4 1/2"	11.6#	P-110	LTC	8700'-13459'	1.67	2.36	3.35

5. Cement Program

CASING	SETTING DEPTH	QUANTITY OF CEMENT	TOC	YIELD
13 3/8"	515'	600 sx Premium Plus +3% salt + 2%CaCl ₂ (wt. 14.8)	Surface	1.34
8 5/8"	2,050'	Lead:360 sx EconoCem + 3% salt + 2%CaCl ₂ +3 lbm/sk Gilsonite Tail: 650 sx Premium Plus + 1% CaCl ₂	"	2.06 1.34
7"	8700'	Lead: 360 sx EconoCem + 3% salt + 5 lbm/sk gilsonite Tail: 365 sx Halcem'	1850' 1550'	1.71 1.34
4 1/2" lateral	8730' TVD	No cement required. Open hole completion assembly		

Note: DV tool @ +/- 3700' if necessary.

6. Proposed Control Equipment: A 13 3/8" 5000 psi wp Shaffer Type E double gate hydraulic ram BOP with an annular preventer will be installed on the 13 3/8" casing. Casing and BOP will be tested to 500 psi before drilling out with the 12 1/4". Prior to drilling out the 8 3/4" casing shoe, the BOP will be tested as per Onshore Oil & Gas Order #2, with a 3,000 psi test. The pipe rams will be operated and checked daily, plus each time drill pipe is out of hole. This will be documented on driller's log. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head as needed. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the floor. BOP will be tested by an independent service company to 250 psi low and 3,000 psi high. The hydrill will be tested to 250 psi low and 1500 psi high. See Exhibit "E".

7. MUD PROGRAM

MUD PROGRAM		MUD WEIGHT	VIS.	W/L CONTROL
DEPTH	MUD			
0' - 515'	Fresh water mud:	8.4 - 8.6 ppg	28	No W/L control
515' - 2050'	Brine water	10 ppg	30-32	NC
2050' - 8700'	Brine, Fresh water *	8.4 - 9.5 ppg	30-32	NC
8700' - 13,459MD	2% KCl	8.4 ppg	28-32	NC
*NOTE:	Switch to fresh water mud if loose circulation			

8. Auxiliary Equipment: Blowout Preventer, gas detector, Kelly cock, pit level monitor, flow sensors and stabbing valve.

9. Testing, Logging, and Coring Program:

Drill Stem Tests: None

Open Hole Logs: 8700' to 6300': GR-CAL-CNL-LDT-
GR-CAL-DLL-Micro

8700'. to Surface: GR-Neutron

Coring: Rotary Sidewall: None Planned

Mud Logging: 10' samples-2000' to TD (2 sets of samples).

10. No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered the proposed mud program will be modified to increase the mud weight. Estimated evacuated BHP = 3,795 psi with a temperature of 147° and surface pressure of 2,960 psi.
11. H₂S: None expected. None in the previous drilling of wells in area, but the Mud Log Unit will be cautioned to use a gas trap to detect H₂S and if any is detected the mud weight will be increased along with H₂S inhibitors sufficient to control the gas. This well is being drilled in a close proximity to other wells. The well will be shut down until a mud separator and flare line can be installed on the choke manifold if the H₂S gas monitor continues to rise and approaches 10.
12. Anticipated starting date: February 1 2011
Anticipated completion of drilling operations: Approximately 5-6 weeks.



Weatherford

Drilling Services

Proposal



WIZARD FEDERAL #5H

EDDY COUNTY, NM

WELL FILE: PLAN 4

DECEMBER 21, 2010

Weatherford International, Ltd.

P.O. Box 61028

Midland, TX 79711 USA

+1.432.561.8892 Main

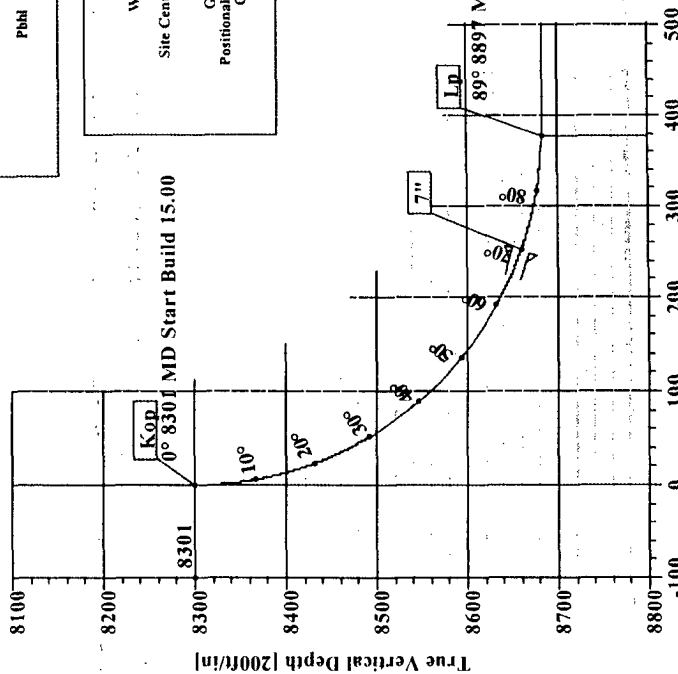
+1.432.561.8895 Fax

www.weatherford.com

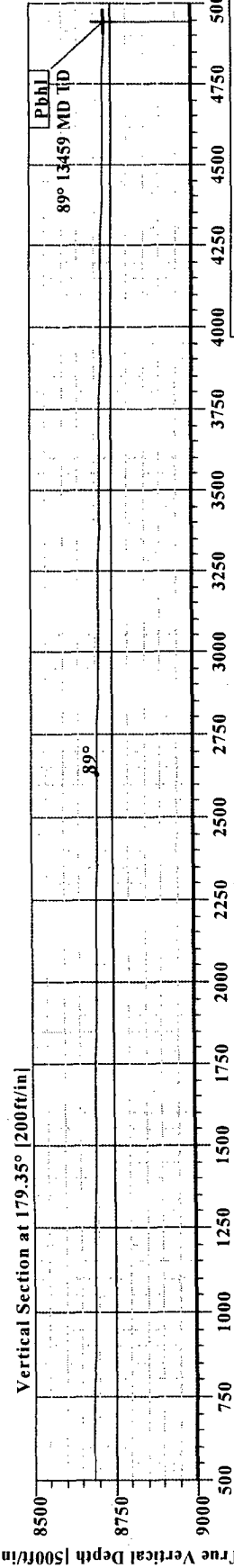


Wizard Federal #5H Eddy Co, NM

KBELEV: NA
GLELEV: 3517



True Vertical Depth [500ft/in]



Vertical Section at 179.35° [500ft/in]

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	179.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	8300.63	0.00	179.35	8300.63	0.00	0.00	0.00	0.00	0.00	0.00
3	8896.66	89.40	179.35	8682.58	-377.98	4.28	15.00	179.35	378.00	0.00
4	13459.42	89.40	179.35	8730.00	-4940.20	56.00	0.00	0.00	4940.52	Pbhl

WELL DETAILS

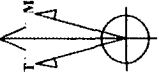
Name	+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
Wizard Federal #5H	0.00	0.00	617341.30	627889.80	32°41'47.330N	103°55'03.385W	N/A

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	North	East	Shape
Pbhl	8730.00	-4940.20	56.00	612401.10	627945.80	Point

SITE DETAILS

Wizard Federal #5H
Site Centre Northing: 617341.30
Easting: 627889.80
Ground Level: 3517.00
Positional Uncertainty: 0.00
Convergence: 0.22



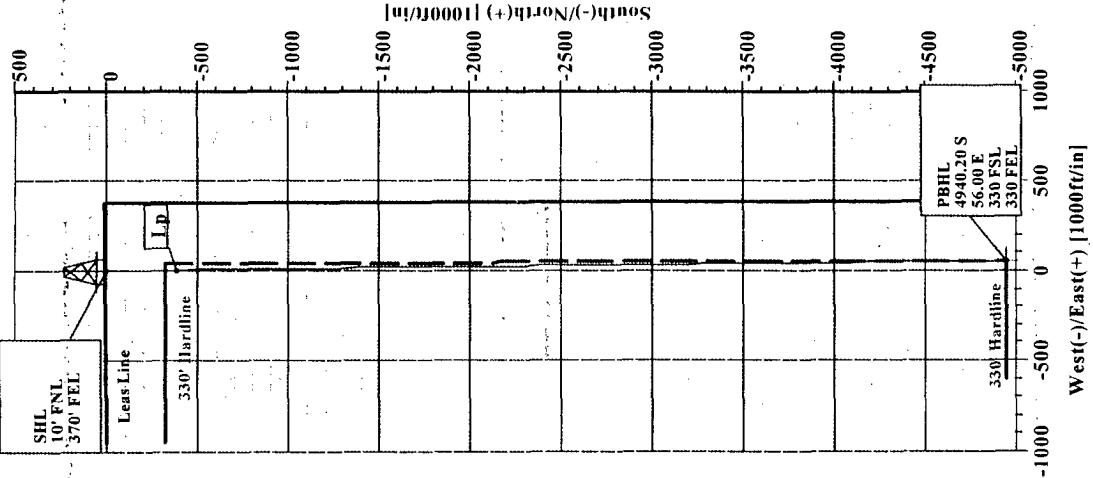
Azimuths to Grid North
True North: -0.22°
Magnetic North: 7.61°
Magnetic Field
Strength: 48929nT
Dip Angle: 60.57°
Date: 1/20/2011
Model: IGRF2010
Total Correction To Grid North 7.61°

CASING DETAILS

No.	TVD	MD	Name	Size
1	8659.56	8747.29	7"	7.000



Weatherford



Plan: Plan #3 (Wizard Federal #5H/1)

Created By: Russell W. Joyner

Date: 12/21/2010

Weatherford International Ltd.

WFT Plan Report - X & Y's



Weatherford

Company: Chi Energy Date: 12/21/2010 Time: 10:37:18 Page: 1
 Field: Eddy Co., NM (Nad 27) Co-ordinate(NE) Reference: Well: Wizard Federal #5H, Grid North
 Site: Wizard Federal #5H Vertical (TVD) Reference: SITE 0.0
 Well: Wizard Federal #5H Section (VS) Reference: Well (0.00N,0.00E,179.35Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Plan: Plan #3 Date Composed: 12/20/2010
 Version: 1
 Principal: Yes Tied-to: From Surface

Field: Eddy Co., NM (Nad 27)

Map System: US State Plane Coordinate System 1927 Map Zone: New Mexico, Eastern Zone
 Geo Datum: NAD27 (Clarke 1866) Coordinate System: Well Centre
 Sys Datum: Mean Sea Level Geomagnetic Model: IGRF2010

Site: Wizard Federal #5H

Site Position: Northing: 617341.30 ft Latitude: 32 41 47.330 N
 From: Map Easting: 627889.80 ft Longitude: 103 55 3.385 W
 Position Uncertainty: 0.00 ft North Reference: Grid
 Ground Level: 3517.00 ft Grid Convergence: 0.22 deg

Well: Wizard Federal #5H Slot Name:

Well Position: +N/-S 0.00 ft Northing: 617341.30 ft Latitude: 32 41 47.330 N
 +E/-W 0.00 ft Easting: 627889.80 ft Longitude: 103 55 3.385 W
 Position Uncertainty: 0.00 ft

Wellpath: 1 Drilled From: Surface
 Current Datum: SITE Tie-on Depth: 0.00 ft
 Magnetic Data: 1/20/2011 Height: 0.00 ft Above System Datum: Mean Sea Level
 Field Strength: 48929 nT Declination: 7.83 deg
 Vertical Section: Depth From (TVD) +N/-S ft Mag Dip Angle: 60.57 deg
 ft +E/-W ft Direction deg
 0.00 0.00 0.00 179.35

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
0.00	0.00	179.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8300.63	0.00	179.35	8300.63	0.00	0.00	0.00	0.00	0.00	0.00	
8896.66	89.40	179.35	8682.58	-377.98	4.28	15.00	15.00	0.00	179.35	
13459.42	89.40	179.35	8730.00	-4940.20	56.00	0.00	0.00	0.00	0.00	Pbhl

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comment
8300.00	0.00	179.35	8300.00	0.00	0.00	0.00	0.00	617341.30	627889.80	
8300.63	0.00	179.35	8300.63	0.00	0.00	0.00	0.00	617341.30	627889.80	Kop
8400.00	14.91	179.35	8398.88	-12.85	0.15	12.85	15.00	617328.45	627889.95	
8500.00	29.91	179.35	8491.07	-50.86	0.58	50.86	15.00	617290.44	627890.38	
8600.00	44.91	179.35	8570.28	-111.43	1.26	111.43	15.00	617229.87	627891.06	
8700.00	59.91	179.35	8631.11	-190.43	2.16	190.44	15.00	617150.87	627891.96	
8767.29	70.00	179.35	8659.56	-251.31	2.85	251.33	15.00	617089.99	627892.65	7"
8800.00	74.91	179.35	8669.42	-282.49	3.20	282.50	15.00	617058.81	627893.00	
8896.66	89.40	179.35	8682.58	-377.98	4.28	378.00	15.00	616963.32	627894.08	Lp
8900.00	89.40	179.35	8682.61	-381.32	4.32	381.34	0.00	616959.98	627894.12	
9000.00	89.40	179.35	8683.65	-481.31	5.46	481.34	0.00	616859.99	627895.26	
9100.00	89.40	179.35	8684.89	-581.30	6.59	581.33	0.00	616760.00	627896.39	
9200.00	89.40	179.35	8685.73	-681.28	7.72	681.33	0.00	616660.02	627897.52	
9300.00	89.40	179.35	8686.77	-781.27	8.86	781.32	0.00	616560.03	627898.66	
9400.00	89.40	179.35	8687.81	-881.26	9.99	881.32	0.00	616460.04	627899.79	
9500.00	89.40	179.35	8688.85	-981.25	11.12	981.31	0.00	616360.05	627900.92	
9600.00	89.40	179.35	8689.89	-1081.24	12.26	1081.31	0.00	616260.06	627902.06	

Weatherford International Ltd.

WFT Plan Report - X & Y's



Weatherford

Company: Chi Energy
Field: Eddy Co., NM (Nad 27)
Site: Wizard Federal #5H
Well: Wizard Federal #5H
Wellpath: 1

Date: 12/21/2010 Time: 10:37:18 Page: 2
Co-ordinate(NE) Reference: Well: Wizard Federal #5H, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,179.35Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comment
9700.00	89.40	179.35	8690.93	-1181.23	13.39	1181.30	0.00	616160.07	627903.19	
9800.00	89.40	179.35	8691.97	-1281.21	14.52	1281.30	0.00	616060.09	627904.32	
9900.00	89.40	179.35	8693.01	-1381.20	15.66	1381.29	0.00	615960.10	627905.46	
10000.00	89.40	179.35	8694.05	-1481.19	16.79	1481.29	0.00	615860.11	627906.59	
10100.00	89.40	179.35	8695.08	-1581.18	17.92	1581.28	0.00	615760.12	627907.72	
10200.00	89.40	179.35	8696.12	-1681.17	19.06	1681.27	0.00	615660.13	627908.86	
10300.00	89.40	179.35	8697.16	-1781.15	20.19	1781.27	0.00	615560.15	627909.99	
10400.00	89.40	179.35	8698.20	-1881.14	21.32	1881.26	0.00	615460.16	627911.12	
10500.00	89.40	179.35	8699.24	-1981.13	22.46	1981.26	0.00	615360.17	627912.26	
10600.00	89.40	179.35	8700.28	-2081.12	23.59	2081.25	0.00	615260.18	627913.39	
10700.00	89.40	179.35	8701.32	-2181.11	24.72	2181.25	0.00	615160.19	627914.52	
10800.00	89.40	179.35	8702.36	-2281.10	25.86	2281.24	0.00	615060.20	627915.66	
10900.00	89.40	179.35	8703.40	-2381.08	26.99	2381.24	0.00	614960.22	627916.79	
11000.00	89.40	179.35	8704.44	-2481.07	28.12	2481.23	0.00	614860.23	627917.92	
11100.00	89.40	179.35	8705.48	-2581.06	29.26	2581.23	0.00	614760.24	627919.06	
11200.00	89.40	179.35	8706.52	-2681.05	30.39	2681.22	0.00	614660.25	627920.19	
11300.00	89.40	179.35	8707.56	-2781.04	31.52	2781.22	0.00	614560.26	627921.32	
11400.00	89.40	179.35	8708.60	-2881.02	32.66	2881.21	0.00	614460.28	627922.46	
11500.00	89.40	179.35	8709.64	-2981.01	33.79	2981.20	0.00	614360.29	627923.59	
11600.00	89.40	179.35	8710.67	-3081.00	34.92	3081.20	0.00	614260.30	627924.72	
11700.00	89.40	179.35	8711.71	-3180.99	36.06	3181.19	0.00	614160.31	627925.86	
11800.00	89.40	179.35	8712.75	-3280.98	37.19	3281.19	0.00	614060.32	627926.99	
11900.00	89.40	179.35	8713.79	-3380.97	38.33	3381.18	0.00	613960.33	627928.13	
12000.00	89.40	179.35	8714.83	-3480.95	39.46	3481.18	0.00	613860.35	627929.26	
12100.00	89.40	179.35	8715.87	-3580.94	40.59	3581.17	0.00	613760.36	627930.39	
12200.00	89.40	179.35	8716.91	-3680.93	41.73	3681.17	0.00	613660.37	627931.53	
12300.00	89.40	179.35	8717.95	-3780.92	42.86	3781.16	0.00	613560.38	627932.66	
12400.00	89.40	179.35	8718.99	-3880.91	43.99	3881.16	0.00	613460.39	627933.79	
12500.00	89.40	179.35	8720.03	-3980.89	45.13	3981.15	0.00	613360.41	627934.93	
12600.00	89.40	179.35	8721.07	-4080.88	46.26	4081.15	0.00	613260.42	627936.06	
12700.00	89.40	179.35	8722.11	-4180.87	47.39	4181.14	0.00	613160.43	627937.19	
12800.00	89.40	179.35	8723.15	-4280.86	48.53	4281.13	0.00	613060.44	627938.33	
12900.00	89.40	179.35	8724.19	-4380.85	49.66	4381.13	0.00	612960.45	627939.46	
13000.00	89.40	179.35	8725.23	-4480.84	50.79	4481.12	0.00	612860.46	627940.59	
13100.00	89.40	179.35	8726.26	-4580.82	51.93	4581.12	0.00	612760.48	627941.73	
13200.00	89.40	179.35	8727.30	-4680.81	53.06	4681.11	0.00	612660.49	627942.86	
13300.00	89.40	179.35	8728.34	-4780.80	54.19	4781.11	0.00	612560.50	627943.99	
13400.00	89.40	179.35	8729.38	-4880.79	55.33	4881.10	0.00	612460.51	627945.13	
13459.42	89.40	179.35	8730.00	-4940.20	56.00	4940.52	0.00	612401.10	627945.80	Pbhl

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		
Lp			8682.00	-320.00	3.63	617021.30	627893.43	32	41	44.164 N	103	55	3.357 W
Pbhl			8730.00	-4940.20	56.00	612401.10	627945.80	32	40	58.443 N	103	55	2.956 W



Weatherford International Ltd.

WFT Plan Report - X & Y's



Weatherford

Company: Chi Energy
Field: Eddy Co., NM (Nad 27)
Site: Wizard Federal #5H
Well: Wizard Federal #5H
Wellpath: 1

Date: 12/21/2010 Time: 10:37:18 Page: 3
Co-ordinate(NE) Reference: Well: Wizard Federal #5H, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,179.35Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
8767.29	8659.56	7.000	8.500	7"

Annotation

MD ft	TVD ft	
8300.63	8300.63	Kop
8896.66	8682.58	Lp
13459.41	8730.00	Pbhl

Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction

**Weatherford****Weatherford Drilling Services**

GeoDec v5.03

Report Date: December 20, 2010
Job Number: _____
Customer: Chi Energy
Well Name: Wizard Federal #5H
API Number: _____
Rig Name: _____
Location: Eddy Co., NM
Block: _____
Engineer: R Joyner

US State Plane 1927	Geodetic Latitude / Longitude
System: New Mexico East 3001 (NON-EXACT)	System: Latitude / Longitude
Projection: SPC27 Transverse Mercator	Projection: Geodetic Latitude and Longitude
Datum: NAD 1927 (NADCON CONUS)	Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866	Ellipsoid: Clarke 1866
North/South 617341.300 USFT	Latitude 32.6964806 DEG
East/West 627889.800 USFT	Longitude -103.9176070 DEG
Grid Convergence: .22°	
Total Correction: +7.61°	

Geodetic Location WGS84	Elevation =	0.0 Meters
Latitude =	32.69648° N	32° 41 min 47.330 sec
Longitude =	103.91761° W	103° 55 min 3.385 sec

Magnetic Declination =	7.83°	[True North Offset]	
Local Gravity =	.9988 g	Checksum =	6664
Local Field Strength =	48925 nT	Magnetic Vector X =	23812 nT
Magnetic Dip =	60.57°	Magnetic Vector Y =	3275 nT
Magnetic Model =	IGRF-2010g11	Magnetic Vector Z =	42613 nT
Spud Date =	Jan 20, 2011	Magnetic Vector H =	24036 nT

Signed: _____

Date: _____

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Chi Operating, Inc.
LEASE NO.:	NMNM560353
WELL NAME & NO.:	Wizard Federal Com #5
SURFACE HOLE FOOTAGE:	10' FNL & 370' FEL
BOTTOM HOLE FOOTAGE:	330' FSL & 330' FEL
LOCATION:	Section 01, T. 19 S., R 30 E., NMPM
COUNTY:	Eddy County, New Mexico

A. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Secretary's Potash

Possible brine/water flows in the Salado and Artesia groups.

Possible lost circulation in the Artesia group.

- 1. The 13-3/8 inch surface casing shall be set at approximately 515 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.**
 - b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
- 2. The minimum required fill of cement behind the 8-5/8 inch intermediate casing is:
 - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**
- 3. The minimum required fill of cement behind the 7 inch production casing is:
 - ☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification. **Additional cement may be required as the excess cement calculates to 6%. A Sundry must be submitted prior to use if a DV tool is to be used.**
- 4. The minimum required fill of cement behind the 4-1/2 inch production liner is:
 - ☒ No cement required; operator is using an open hole completion assembly.
- 5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

CRW 012411