ATS-11-104

OCD-HOBBS

HOBBS OCD

AUG 22 2011

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Form 3160 -3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

Ia. Typeofwork-. ☒ DRILL ☐ REENTER	5. Lease Serial No NMLC-060199B
	6. If Indian, Allotee or Tribe Name
	7 If Unit or CA Agreement, Name and No
Ib Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone	8, Lease Name and Well No. Brook Federal #1 <38762>
2 Name of Operator Mack Energy Corporation <13837>	9 API Well No. 30-025-40244
3a Address P.O. Box 960 Artesia, NM 88211-0960	3b PhoneNo. *(include area code)* (575)748-1288
	10. Field and Pool, or Exploratory Maljamar-Yeso West <44500>
4. Location of Well *(Report location clearly and inaccorounce with any State requirements*)* At surface 635 FNL & 10 FEL Unit B NORTHODOX At proposed prod. zone 330 FNL & 330 FEL Surface LOCATION	11 Sec., T. R. M. or Blk. and Survey or Area Sec. 30 T17S R32E
14. Distance in miles and direction from nearest town or post office* 3 miles SW of Maljamar, NM	12 County or Parish Lea 13 State NM

15 Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg unit line, if any) 330 ft	16. No. of acres in lease 80	17. Spacing Unit dedicated to this well 40
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 700 ft	19. Proposed Depth 7,047' MD 7,000' TVD	20 BLM/BIA Bond No. on file NMB000286
21 Elevations (Show whether DF, KDB, RT, GL, etc) 3928' GR	22 Approximate date work will start* 06/20/2011	23. Estimated duration 15 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, shall be attached to this form.

1 Well plat certified by a registered surveyor.
2. A Drilling Plan.
3 A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above),
5. Operator certification
6. Such other site specific information and/or plans as may be required by the authorized officer.

25 Signature Jerry W. Sherrell	Name *(Printed/Typed)* Jerry W. Sherrell	Date 6/17/11
Title Production Clerk		
Approved by *(Signature)* /s/ Don Peterson	Name *(Printed/Typed)*	Date AUG 18 2011
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrantor certify that the applicant holds lega orequitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C Section 1001 and Tide 43 U S C Section 1212, make it a crime for any person knowirilly and willfully to make to any department or agency ofthe United States any false, fictitious or fraudulent statements or representations as to any matter within its juris iction.

(Instructions on page 2)

Approval Subject to General Requirements & Special Stipulations Attached

Roswell Controlled Water Basin

KZ 08/22/11

AUG 24 2011

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Attached to Form 3160-3
Mack Energy Corporation
Brook Federal #1
SL 635 FNL & 10 FEL, NE/NE, Sec. 30 T17S R32E
BL 330 FNL & 330 FEL, NE/NE, Sec. 30 T17S R32E
Lea County, NM

HOBBS OCD

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DRILLING PROGRAM

1. **Geologic Name of Surface Formation**

   Quaternary

2. **Estimated Tops of Important Geologic Markers:**

Rustler	690'	Blinebry	5760'
Top Salt	750'	Tubb	6810'
Base Salt	1875'		
Yates	1975'		
Seven Rivers	2355'		
Queen	2958'		
San Andres	3720'		
Glorieta	5235'		

3. **Estimated Depths of Anticipated Fresh Water, Oil and Gas:**

Water Sand	150'	Fresh Water
Yates	1975'	Oil/Gas
San Andres	3720'	Oil/Gas
Blinebry	5760'	Oil/Gas
Tubb	6810'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 8 5/8" casing to ~~700'~~ and circulating cement back to surface will protect the surface fresh water sand. Salt section and zones above producing interval will be protected by the 5 ½" production casing set 7,047', sufficient cement will be pumped to circulate back to surface.

4. **Casing Program:**

See COA

Hole Size	Interval	OD Casing	Wt, Grade, Jt, cond, collapse/burst/tension
12 1/2"	0-~~700'~~755	8 5/8"	24#,J-55, ST&C, New, 4.004/5.9/7.86
7 7/8"	0-7047'	5 ½"	17#,L-80,LT&C, New, 1.704/2.714/2.58

5. **Cement Program:**

8 5/8" Surface Casing: Lead 350 sx, 35:65:0 Class C + 2.0% CaCl 2 +.13#/ sk Cello Flake +3#/sk LCM-1 +2.5% Sodium Metasilicate + 6% MPA 5, yield 1.78, excess 100% ,Tail 200sx Class C 1% CaCl2 1.34 yield.
5 ½" Production Casing: Lead 525sx Class H + 2.55% bwow R-3 + 3#/ sk LMC-1 + .005 GPS FP-6L + 4% Bwow Sodium Metasilicate, yield 2.15, excess 35%, Tail 525sx H 50:50:0 POZ Class H + 2% Sodium Chloride + 3#/sk LCM-1 + .2% FL-52 + 1% FL-62 + .05% ASA-301 + .005 gps FP-6L + .2% Sodium Metasilicate, yield 1.20.

Attached to Form 3160-3
Mack Energy Corporation
Brook Federal #1
SL 635 FNL & 10 FEL, NE/NE, Sec. 30 T17S R32E
BL 330 FNL & 330 FEL, NE/NE, Sec. 30 T17S R32E
Lea County, NM

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6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (3000 psi WP) minimum preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on bottom. The 11" BOP will be nippled up on the 8 5/8" surface casing and tested by a 3rd party to 2000 psi used continuously until TD is reached. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of intermediate casing. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #11) with a minimum 3000 psi WP rating

7. Types and Characteristics of the Proposed Mud System:

The well will be drilled to TD with a combination of brine and cut brine mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-~~700'~~ 755'	Fresh Water	8.5	28	N.C.
~~700~~'-TD'	Brine	10	30	N.C.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

8. Auxiliary Well Control and Monitoring Equipment:

A. Kelly cock will be kept in the drill string at all times.
B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

9. Logging, Testing and Coring Program: See COA

A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log from T.D. to 8 5/8 casing shoe.
B. Drill Stem test is not anticipated.
C. No conventional coring is anticipated.
D. Further testing procedures will be determined at TD.

10. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 3,000 psig. Low levels of Hydrogen sulfide have been monitors in producing wells in the area, so H2S may be present

while drilling of the well; a plan is attached to the Drilling program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations:

Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is June 20, 2011. Once commenced, the drilling operation should be finished in approximately 30 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

Attachment to Exhibit #10
NOTES REGARDING THE BLOWOUT PREVENTERS
Brooks Federal #1
Lea County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

Mack Energy Corporation

Minimum Blowout Preventer Requirements

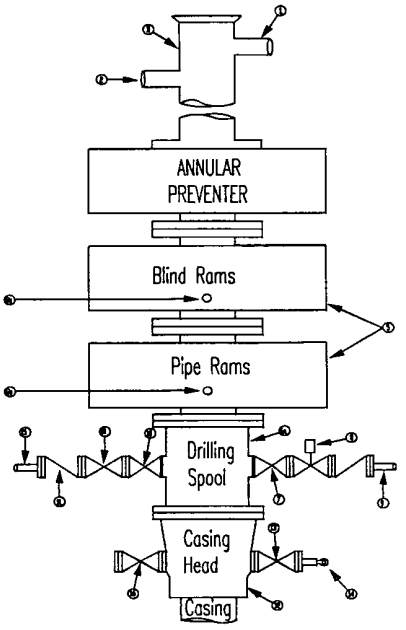
3000 psi Working Pressure
13 3/8 inch- 3 MWP
11 Inch - 3 MWP
EXHIBIT #10

Stack Requirements

NO.	Items	Min. I.D.	Min. Nominal
1	Flowline		2"
2	Fill up line		2"
3	Drilling nipple		
4	Annular preventer		
5	Two single or one dual hydraulically operated rams		
6a	Drilling spool with 2" min kill line and 3" min choke line outlets		2" Choke
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above)		
7	Valve Gate Plug	3 1/8	
8	Gate valve-power operated	3 1/8	
9	Line to choke manifold		3"
10	Valve Gate Plug	2 1/16	
11	Check valve	2 1/16	
12	Casing head		
13	Valve Gate Plug	1 13/16	
14	Pressure gauge with needle valve		
15	Kill line to rig mud pump manifold		2"

OPTIONAL

16	Flanged Valve	1 13/16	



CONTRACTOR'S OPTION TO 10
CONTRACTOR'S OPTION TO FURNISH: ME

1. All equipment and connections above bradenhead or casinghead Working pressure of preventers to be 2000 psi minimum.
2. Automatic accumulator (80 gallons, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers' position.
4. Kelly equipped with Kelly cock.
5. Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.

MEC TO FURNISH

1 Bradenhead or casing head and side valves.
2 Wear bushing If required

GENERAL NOTES·

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position
4. Chokes will be positioned so as not to hamper or delay changing of choke beans Replaceable parts for adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use
5. All valves to be equipped with hand-wheels or handles ready for immediate use.
6. Choke lines must be suitably anchored
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open Use outside valves except for emergency
9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Does not use kill line for routine fill up operations

Mack Energy Corporation

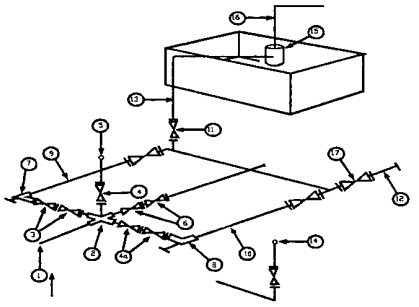
Exhibit #11

MIMIMUM CHOKE MANIFOLD

3,000, 5,000, and 10,000 PSI Working Pressure

3M will be used

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

*** Location of separator optional**

Below Substructure

Mimimum requirements

No.		3,000 MWP I.D.	Nominal	Rating	5,000 MWP I.D.	Nominal	Rating	10,000 MWP I.D.	Nominal	Rating
1	Line from drilling Spool		3"	3,000		3"	5,000		3"	10,000
2	Cross 3" x 3" x 3" x 2"			3,000			5,000			
2	Cross 3" x 3" x 3" x 2"									10,000
3	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
4	Valve Gate Plug	1 13/16		3,000	1 13/16		5,000	1 13/16		10,000
4a	Valves (1)	2 1/16		3,000	2 1/16		5,000	2 1/16		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
7	Adjustable Choke (3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		2"	10,000
11	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000
12	Line		3"	1,000		3"	1,000		3"	2,000
13	Line		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound Standpipe pressure quage			3,000			5,000			10,000
15	Gas Separator		2' x5'			2' x5'			2' x5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valve Gate Plug	3 1/8		3,000	3 1/8		5,000	3 1/8		10,000

(1) Only one required in Class 3M

(2) Gate valves only shall be used for Class 10 M

(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

1 All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.

2. All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.

3 All lines shall be securely anchored

4. Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available

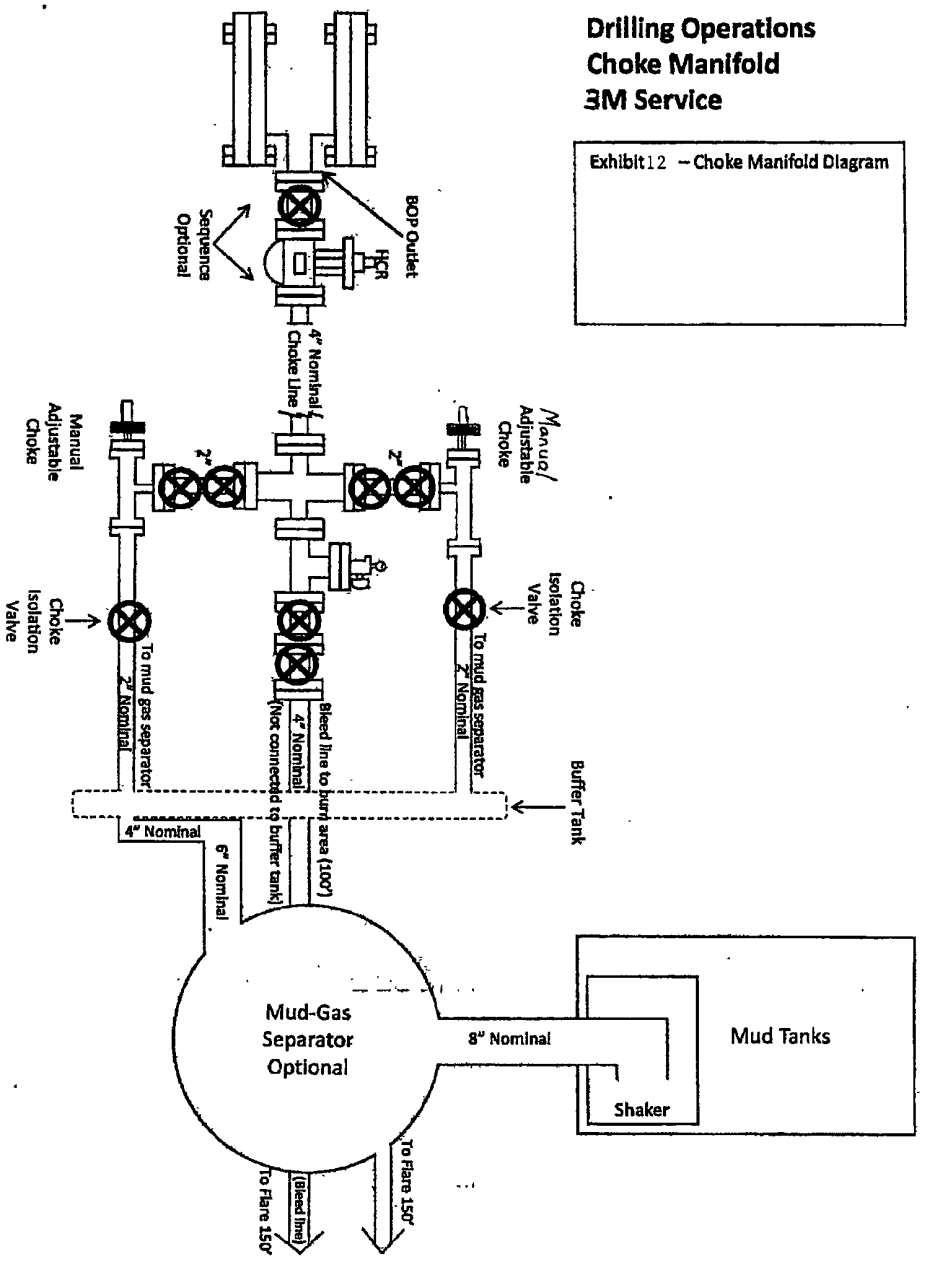
5. alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge

6 Line from drilling spool to choke manifold should bee as straight as possible. Lines downstream from chokes shall make turns by large bends or 90 degree bends using bull plugged tees

Mack Energy Corporation

MANIFOLD SCHEMATIC

Exhibit #12

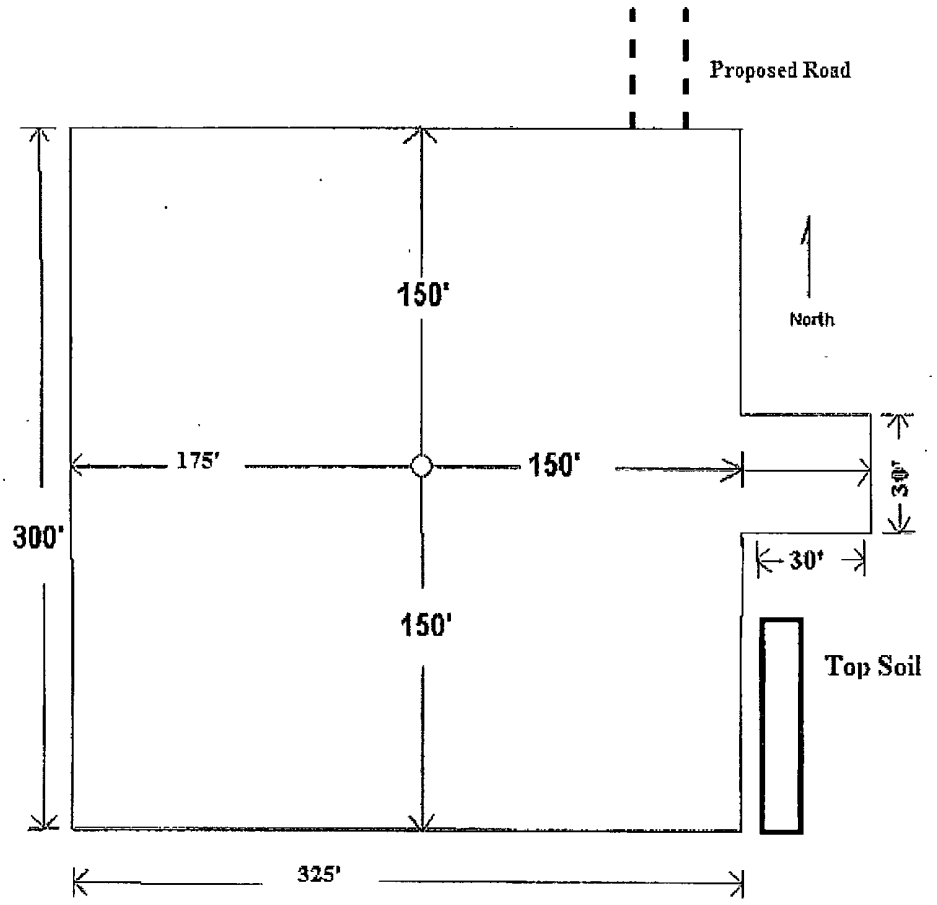


8. Well Site Layout:

A. The well site and elevation plat for the proposed well is shown in Exhibit #1. It was staked by John West Engineering, Hobbs, NM.

B. The drill pad layout, is shown in Exhibit #14. Dimensions of the pad are shown. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

C. Diagram below shows the proposed orientation of the location. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.



Exhibit# 14

Mack Energy Corp.

Lea
Brook Federal
Brook Federal #1
OH

Plan: Plan #1

PathFinder X&Y Report

16 June, 2011

PATHFINDER®

A Schlumberger Company

Project: Lea
Site: Brook Federal
Well: Brook Federal #1
Wellbore: OH
Plan: Plan #1 (Brook Federal #1/OH)

PATHFINDER
A Schlumberger Company

WELL DETAILS: Brook Federal #1

Ground Elevation: 3928.00
RKB Elevation: WELL @ 3947.00ft (Original Well Elev)
Rig Name: Original Well Elev

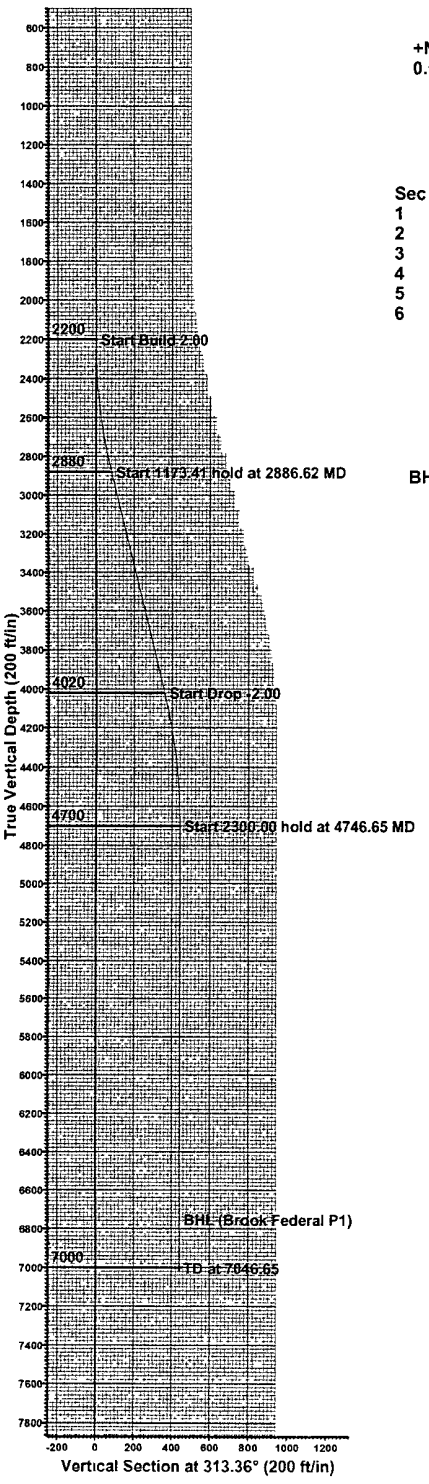
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	659184.00	664867.10	32° 48' 39.726620 N	103° 47' 48.196157 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2886.62	13.73	313.36	2880.07	56.22	-59.54	2.00	313.36	81.89	
4	4060.03	13.73	313.36	4019.93	247.48	-262.06	0.00	0.00	360.44	
5	4746.65	0.00	0.00	4700.00	303.70	-321.60	2.00	180.00	442.33	
6	7046.65	0.00	0.00	7000.00	303.70	-321.60	0.00	0.00	442.33	BHL (Brook Federal P1)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
BHL (Brook Federal P1)	7000.00	303.70	-321.60	659487.70	664545.50	Point

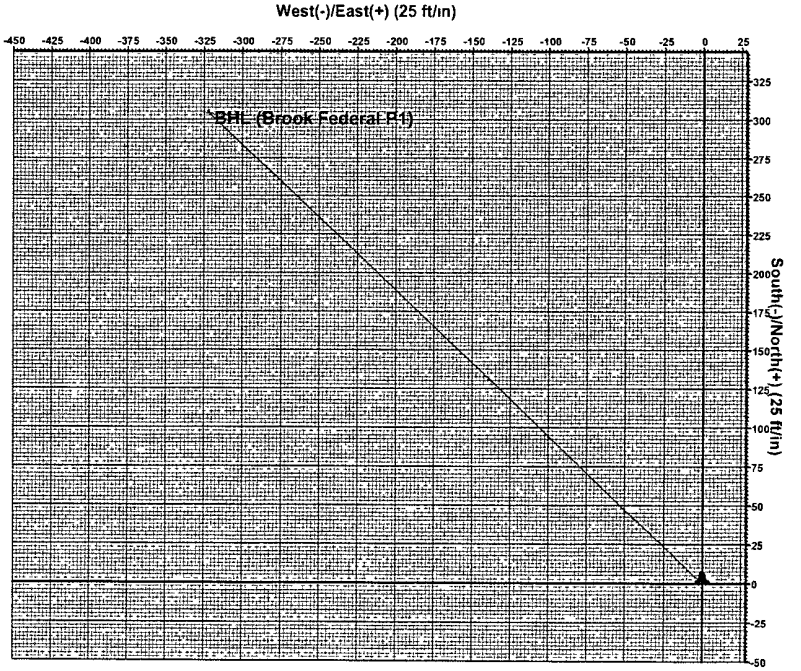


Azimuths to Grid North
True North: -0.29°
Magnetic North: 7.43°

Magnetic Field
Strength: 48975.8snT
Dip Angle: 60.71°
Date: 2011/06/15
Model: IGRF200510

PROJECT DETAILS: Lea
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level
Local North: Grid



Plan: Plan #1 (Brook Federal #1/OH)
Created By: Sherman Sholars Date: 14:05, June 16 2011
Checked _____ Date _____

Company:	Mack Energy Corp.	**Local Co-ordinate Reference:**	Well Brook Federal #1
Project:	Lea	**TVD Reference:**	WELL @ 3947.00ft (Original Well Elev)
Site:	Brook Federal	**MD Reference:**	WELL @ 3947.00ft (Original Well Elev)
Well:	Brook Federal #1	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Project Lea

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Brook Federal

Site Position:		**Northing:**	659,184.00 ft	**Latitude:**	32° 48' 39 726620 N
From:	Map	**Easting:**	664,867.10 ft	**Longitude:**	103° 47' 48.196157 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.29 °

Well Brook Federal #1

Well Position	**+N/-S** 0 00 ft	**Northing:**	659,184 00 ft	**Latitude:**	32° 48' 39 726620 N
	+E/-W 0.00 ft	**Easting:**	664,867.10 ft	**Longitude:**	103° 47' 48.196157 W
Position Uncertainty	0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,928.00 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2011/06/15	7.72	60 71	48,976

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0 00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	313.36

Survey Tool Program **Date** 2011/06/15

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,046.65	Plan #1 (OH)		

Company:	Mack Energy Corp.	Local Co-ordinate Reference:	Well Brook Federal #1
Project:	Lea	TVD Reference:	WELL @ 3947.00ft (Original Well Elev)
Site:	Brook Federal	MD Reference:	WELL @ 3947.00ft (Original Well Elev)
Well:	Brook Federal #1	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
0 00	0 00	0 00	0.00	-3,947 00	0 00	0.00	0 00	0 00	659,184.00	664,867.10
100 00	0.00	0.00	100.00	-3,847.00	0.00	0 00	0.00	0.00	659,184.00	664,867.10
200.00	0 00	0 00	200 00	-3,747.00	0.00	0.00	0 00	0 00	659,184 00	664,867 10
300.00	0.00	0 00	300 00	-3,647 00	0 00	0 00	0.00	0.00	659,184 00	664,867.10
400.00	0.00	0.00	400.00	-3,547.00	0.00	0 00	0.00	0 00	659,184 00	664,867 10
500.00	0.00	0.00	500 00	-3,447 00	0 00	0 00	0 00	0.00	659,184.00	664,867.10
600 00	0.00	0.00	600.00	-3,347 00	0 00	0 00	0.00	0.00	659,184 00	664,867.10
700 00	0.00	0.00	700 00	-3,247 00	0 00	0 00	0.00	0 00	659,184 00	664,867 10
800 00	0 00	0.00	800 00	-3,147 00	0.00	0 00	0 00	0 00	659,184 00	664,867.10
900.00	0 00	0.00	900 00	-3,047 00	0 00	0 00	0 00	0 00	659,184 00	664,867.10
1,000.00	0 00	0 00	1,000.00	-2,947.00	0 00	0 00	0 00	0 00	659,184 00	664,867.10
1,100.00	0 00	0.00	1,100 00	-2,847.00	0.00	0 00	0.00	0.00	659,184.00	664,867.10
1,200 00	0 00	0 00	1,200 00	-2,747.00	0 00	0.00	0.00	0.00	659,184.00	664,867.10
1,300.00	0 00	0 00	1,300 00	-2,647.00	0 00	0 00	0 00	0.00	659,184 00	664,867.10
1,400.00	0 00	0.00	1,400 00	-2,547 00	0 00	0.00	0 00	0 00	659,184.00	664,867.10
1,500.00	0.00	0 00	1,500 00	-2,447.00	0 00	0.00	0.00	0 00	659,184 00	664,867 10
1,600.00	0.00	0.00	1,600 00	-2,347 00	0 00	0.00	0 00	0.00	659,184 00	664,867 10
1,700.00	0 00	0 00	1,700 00	-2,247 00	0 00	0.00	0.00	0 00	659,184 00	664,867.10
1,800.00	0.00	0 00	1,800.00	-2,147.00	0.00	0 00	0.00	0 00	659,184 00	664,867 10
1,900 00	0.00	0 00	1,900.00	-2,047.00	0.00	0.00	0.00	0 00	659,184 00	664,867 10
2,000 00	0 00	0.00	2,000.00	-1,947 00	0 00	0.00	0 00	0.00	659,184 00	664,867 10
2,100.00	0 00	0 00	2,100 00	-1,847 00	0 00	0.00	0 00	0.00	659,184.00	664,867.10
2,200.00	0 00	0 00	2,200.00	-1,747.00	0 00	0.00	0.00	0.00	659,184.00	664,867 10
2,300 00	2 00	313.36	2,299.98	-1,647 02	1 20	-1 27	1.75	2.00	659,185 20	664,865 83
2,400 00	4.00	313.36	2,399 84	-1,547 16	4 79	-5 07	6.98	2 00	659,188 79	664,862 03
2,500 00	6.00	313.36	2,499.45	-1,447 55	10 78	-11 41	15 69	2 00	659,194.78	664,855.69
2,600.00	8.00	313 36	2,598.70	-1,348 30	19 14	-20 27	27 88	2.00	659,203 14	664,846 83

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Well Brook Federal #1
Project:	Lea	**TVD Reference:**	WELL @ 3947.00ft (Original Well Elev)
Site:	Brook Federal	**MD Reference:**	WELL @ 3947.00ft (Original Well Elev)
Well:	Brook Federal #1	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,700.00	10.00	313.36	2,697 47	-1,249.53	29.88	-31 64	43.52	2.00	659,213.88	664,835 46
2,800 00	12.00	313.36	2,795 62	-1,151 38	42.98	-45.52	62.60	2.00	659,226 98	664,821.58
2,886.62	13 73	313 36	2,880 07	-1,066 93	56.22	-59.54	81.89	2.00	659,240 22	664,807.56
2,900.00	13 73	313 36	2,893 06	-1,053 94	58.41	-61.85	85 07	0.00	659,242.41	664,805.25
3,000 00	13 73	313 36	2,990 20	-956 80	74.70	-79.11	108 81	0 00	659,258 70	664,787 99
3,100.00	13.73	313.36	3,087.35	-859.65	91 00	-96 37	132.54	0.00	659,275 00	664,770.73
3,200 00	13.73	313 36	3,184 49	-762.51	107 30	-113.63	156.28	0 00	659,291 30	664,753.47
3,300.00	13 73	313.36	3,281.63	-665.37	123.60	-130 89	180 02	0.00	659,307.60	664,736.21
3,400.00	13 73	313.36	3,378 77	-568.23	139 90	-148 14	203.76	0.00	659,323.90	664,718 96
3,500.00	13.73	313.36	3,475 91	-471.09	156.20	-165.40	227.50	0.00	659,340.20	664,701 70
3,600.00	13.73	313 36	3,573 05	-373.95	172 50	-182 66	251.24	0.00	659,356.50	664,684 44
3,700.00	13.73	313.36	3,670 19	-276.81	188 79	-199.92	274.98	0 00	659,372.79	664,667.18
3,800 00	13.73	313 36	3,767 34	-179.66	205.09	-217 18	298.72	0.00	659,389 09	664,649 92
3,900.00	13.73	313.36	3,864 48	-82.52	221.39	-234 44	322.46	0.00	659,405.39	664,632 66
4,000.00	13 73	313 36	3,961.62	14.62	237.69	-251.70	346 19	0.00	659,421.69	664,615.40
4,060.03	13 73	313 36	4,019.93	72.93	247.48	-262.06	360.44	0.00	659,431.48	664,605.04
4,100.00	12 93	313 36	4,058 83	111 83	253.80	-268.76	369 66	2.00	659,437.80	664,598 34
4,200 00	10.93	313 36	4,156.66	209 66	268 00	-283.80	390 34	2.00	659,452.00	664,583.30
4,300 00	8.93	313.36	4,255 16	308 16	279 84	-296.34	407.59	2.00	659,463 84	664,570 76
4,400 00	6 93	313.36	4,354.19	407.19	289 32	-306.37	421.39	2 00	659,473 32	664,560.73
4,500 00	4.93	313.36	4,453 65	506 65	296 41	-313.88	431.72	2 00	659,480.41	664,553.22
4,600 00	2.93	313.36	4,553.41	606 41	301 12	-318 87	438.58	2.00	659,485 12	664,548.23
4,700 00	0 93	313.36	4,653 35	706.35	303.44	-321.32	441.96	2 00	659,487 44	664,545.78
4,746 65	0 00	0.00	4,700.00	753.00	303 70	-321 60	442.33	2 00	659,487 70	664,545 50
4,800 00	0 00	0 00	4,753.35	806.35	303.70	-321.60	442 33	0.00	659,487.70	664,545 50
4,900 00	0 00	0 00	4,853 35	906.35	303 70	-321 60	442 33	0 00	659,487 70	664,545 50
5,000 00	0 00	0 00	4,953.35	1,006.35	303 70	-321.60	442.33	0 00	659,487 70	664,545.50

Company:	Mack Energy Corp.	**Local Co-ordinate Reference:**	Well Brook Federal #1
Project:	Lea	**TVD Reference:**	WELL @ 3947.00ft (Original Well Elev)
Site:	Brook Federal	**MD Reference:**	WELL @ 3947.00ft (Original Well Elev)
Well:	Brook Federal #1	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,100.00	0.00	0.00	5,053.35	1,106.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,200.00	0.00	0.00	5,153.35	1,206.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,300.00	0.00	0.00	5,253.35	1,306.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,400.00	0.00	0.00	5,353.35	1,406.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,500.00	0.00	0.00	5,453.35	1,506.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,600.00	0.00	0.00	5,553.35	1,606.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,700.00	0.00	0.00	5,653.35	1,706.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,800.00	0.00	0.00	5,753.35	1,806.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
5,900.00	0.00	0.00	5,853.35	1,906.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,000.00	0.00	0.00	5,953.35	2,006.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,100.00	0.00	0.00	6,053.35	2,106.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,200.00	0.00	0.00	6,153.35	2,206.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,300.00	0.00	0.00	6,253.35	2,306.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,400.00	0.00	0.00	6,353.35	2,406.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,500.00	0.00	0.00	6,453.35	2,506.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,600.00	0.00	0.00	6,553.35	2,606.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,700.00	0.00	0.00	6,653.35	2,706.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,800.00	0.00	0.00	6,753.35	2,806.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
6,900.00	0.00	0.00	6,853.35	2,906.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
7,000.00	0.00	0.00	6,953.35	3,006.35	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
7,046.65	0.00	0.00	7,000.00	3,053.00	303.70	-321.60	442.33	0.00	659,487.70	664,545.50
BHL (Brook Federal P1)										

Company:	Mack Energy Corp	**Local Co-ordinate Reference:**	Well Brook Federal #1
Project:	Lea	**TVD Reference:**	WELL @ 3947 00ft (Original Well Elev)
Site:	Brook Federal	**MD Reference:**	WELL @ 3947 00ft (Original Well Elev)
Well:	Brook Federal #1	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
BHL (Brook Federal P - plan hits target center - Point	0 00	0 00	7,000.00	303 70	-321 60	659,487.70	664,545 50	32° 48' 42.747870 N	3° 47' 51 946286 W

Checked By: _____ Approved By: _____ Date: _____

Project: Lea
Site: Brook Federal
Well: Brook Federal #1
Wellbore: OH
Plan: Plan #1 (Brook Federal #1/OH)

PATHFINDER®
A Schlumberger Company

WELL DETAILS: Brook Federal #1

Ground Elevation: 3928.00
RKB Elevation: WELL @ 3947.00ft (Original Well Elev)
Rig Name: Original Well Elev

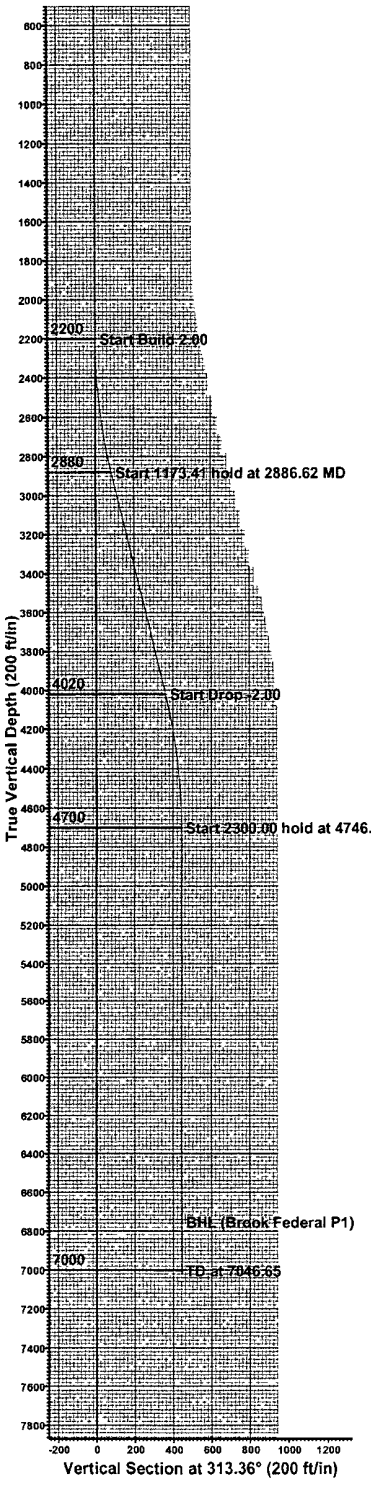
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	659184.00	664867.10	32° 48' 39.726620 N	103° 47' 48.196157 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2886.62	13.73	313.36	2880.07	56.22	-59.54	2.00	313.36	81.89	
4	4060.03	13.73	313.36	4019.93	247.48	-262.06	0.00	0.00	360.44	
5	4746.65	0.00	0.00	4700.00	303.70	-321.60	2.00	180.00	442.33	
6	7046.65	0.00	0.00	7000.00	303.70	-321.60	0.00	0.00	442.33	BHL (Brook Federal P1)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
BHL (Brook Federal P1)	7000.00	303.70	-321.60	659487.70	664545.50	Point

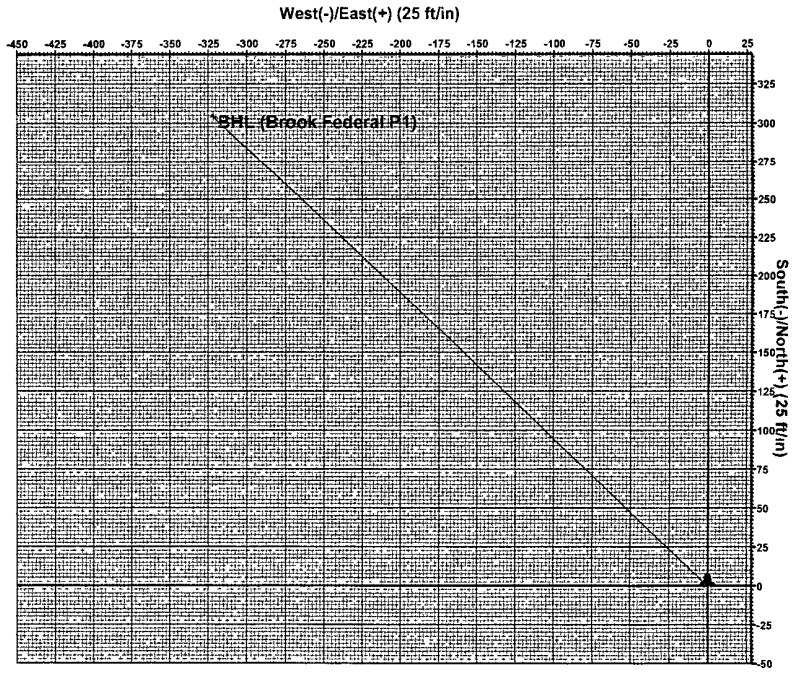


Azimuths to Grid North
True North: -0.29°
Magnetic North: 7.43°

Magnetic Field
Strength: 48975.8snT
Dip Angle: 60.71°
Date: 2011/06/15
Model: IGRF200510

PROJECT DETAILS: Lea
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level
Local North: Grid



Plan: Plan #1 (Brook Federal #1/OH)
Created By: Sherman Sholars Date: 14:05, June 16 2011
Checked _____ Date _____