

ATS-12-981

HOBBS OCD

Form 3160-3
(August 2007)

OCT 11 2012

R-111-POTASH

RECEIVED
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

5 Lease Serial No.
NMNM0149957/NMNM112278 **BT**

6 If Indian, Allottee or Tribe Name

7 If Unit or CA Agreement, Name and No.

1a. Type of work: ☒ DRILL ☐ REENTER

1b Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

2. Name of Operator Manzano, LLC

8 Lease Name and Well No.
GREEN FROG CAFE FED **39503**

9 API Well No.
44-30-025-40828

3a. Address P.O. BOX 2107, Roswell, NM 88202-2107

3b Phone No. (include area code)
< 23 1429 >
575-623-1996

10 Field and Pool, or Exploratory
SALT LAKE BONE SPRINGS **53560**

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface 810' FNL & 2310' FEL, Sec 18-T20S-R33E

At proposed prod. zone BHL 810' FNL & 2310' FWL, Sec 17-T20S-R33E

11. Sec., T R M. or Blk and Survey or Area
Sec 18-T20S-R33E

14. Distance in miles and direction from nearest town or post office*
30 miles east of Carlsbad

12. County or Parish
Lea

13 State
NM

15. Distance from proposed* location to nearest property or lease line, ft.
(Also to nearest drig. unit line, if any)
SHL- 810'

16. No. of acres in lease
559.47 ACRES+280 ACRE
839.47 ACRES TOTAL

17 Spacing Unit dedicated to this well
160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
330'

19 Proposed Depth
TVD-10040 shl 10120 bhl
MD - 14455

20. BLM/BIA Bond No. on file
NM-2567

21 Elevations (Show whether DF, KDB, RT, GL, etc.)
GL-3529'

22 Approximate date work will start*
10/01/2012

23. Estimated duration
30 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. I, must 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 must 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 BLM.

25 Signature *Paul Ragsdale*

Name (Printed/Typed)
Paul Ragsdale

Date
08/07/2012

Title
Engineer

Approved by (Signature) */s/ Jesse J. Juen*

Name (Printed/Typed)

Date
OCT 4 2012

Title
STATE DIRECTOR

Office
NM STATE OFFICE

Application approval 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.
Conditions of approval, if any, are attached

APPROVAL FOR TWO YEARS

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.

(Continued on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

OCT 22 2012

Manzano, LLC
DRILLING AND OPERATIONS PROGRAM

Green Frog Café Fed #1H
Surface Location
810 FNL & 2310 FEL
Section 18-T20S- R33E
Bottom Hole Location
810 FNL & 2310 FWL
Section 17-T20S-R33E
Lea County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, Manzano, LLC submits the following ten items of pertinent information in accordance with BLM requirements.

- 1. Geological surface formation: Permian**
- 2. The estimated tops of geologic markers are as follows:**

<u>Geologic Marker</u>	<u>Depth</u>
Red Beds	Surface
Rustler	1110'
Top of Salt	1205'
Base of Salt	2640'
Yates	2800'
Capitan Reef	3200'
Delaware	5300'
Cherry Canyon	5300'
Lower Brushy	7700'
Bone Springs	8050'
Top 1 st Sand	9060'
Top 2 nd Sand	9740'
TD	10120'

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

Water	125'-200'
Oil/Gas in Delaware	5300'-6500'
Oil/Gas in Bone Springs	9060'-10120'

No other formations are expected to give up oil, gas, or fresh water in measurable quantities.

see
COA

The surface fresh water sands will be protected by setting 20" casing at ¹²²⁰~~1430~~ in a 26" hole and circulating cement back to surface. Potash / salt sections will be protected by setting 13 3/8" casing at 2775' and circulating cement back to surface.

After the 13 3/8" casing is set and cemented, the hole size will be reduced to 12 1/4" and drilling will continue. 9 5/8" casing will be set at ~~5200~~ into the Delaware formation and cement circulated back to surface to protect the Capitan Reef.

The 9 5/8" casing will be drilled out with an 8 3/4" bit and drilled to a kick off point at 9563' tvd. At that point, directional drilling tools will be installed and the well will be "kicked off" and a curve will be drilled with the 2nd Bone Springs at 10,0040 tvd as the target. 7" casing will be set and cemented once the lateral is "landed" at 90°. Cement will be brought back into the intermediate and above the Capitan Reef.

The hole size will be reduced again to 6 1/8" and the lateral will be drilled across the section from west to east with a proposed tvd of 10,040' at the curve and a tvd of 10,120' and a md of 14,455'. A 4 1/2" liner will be run into the open hole with a 20 stage "port and packer" system. The liner will be hung and the rig will be moved off awaiting completion.

4. Proposed Casing Program:

see
COA

see
COA

HOLE SIZE	HOLE INTERVAL	CASING INTERVAL	CASING OD	NEW	WT	COLLAR	GRADE	Collapse Design Factor	Burst Design Factor	Tension Design Factor
26"	0-1130'	0'- 1430 ¹²²⁰	20"	new	106.5#	BT&C	J-55	1.125	1.125	1.6
17 1/2"	1100'-2775'	0'-100'	13 3/8"	new	61#	BT&C	J-55/K-55	1.125	1.125	1.6
17 1/2"		1100'-2000'	13 3/8"	new	54.5#	BT&C	J-55/K-55	1.125	1.125	1.6
17 1/2"		2000'-2775'	13 3/8"	new	61#	BT&C	J-55/K-55	1.125	1.125	1.6
12 1/2"	2900'-5200'	0'-100'	9 5/8"	new	40#	LT&C	L-80/HCK-5	1.125	1.125	1.6
12 1/2"		101'-4000'	9 5/8"	new	40#	LT&C	J-55/K-55	1.125	1.125	1.6
12 1/2"		4001'- 5200 ⁴⁹⁰⁰	9 5/8"	new	40#	LT&C	L-80/HCK-5	1.125	1.125	1.6
8 3/4"	5200'-10,040' tvd	0'-7000'	7"	new	26#	LT&C	P-110	1.125	1.125	1.6
8 3/4"		7001'-10,303' md	7"	new	26#	LT&C/BTC	P-110	1.125	1.125	1.6
6 1/8"	10,303'-14,455'	10,150'-14,455'	4 1/2"	new	11.6#	LT&C/BTC	P-110	1.125	1.125	1.6

5. Proposed Cement Program:

20" surface casing: 1500 sks Class "C" w/ 4% gel, 2% CACL₂, 1/8#/sk Cello Flake (yd @ 2.15 cuft/sk @ 12.5 PPG). Tail w/ 500 sks Class "C" w/ 2% CaCl₂ (yd @ 1.34 cuft/sk @ 14.8 PPG) Using 100 % excess cement circulated to surface.

13 3/8" intermediate casing: 1400 sks Howco Lite Class "C" (35:65:4) w/ 5# sk LCM 1 & 1/4 #/sk celloflake (yd @ 2.13 cuft/sk @ 12.5 PPG). Tail w/ 400 sks Class "C" NEAT (yd @ 1.33 cuft/sk @ 14.8 PPG). Using 100 % excess in open hole. Cement circulated to surface

9 5/8" intermediate casing: 1000 sks Liteweight Class "C" (35:65:4) w/ 5# sk LCM 1 & 1/4 #/sk celloflake (yd @ 2.23 cuft/sk @ 12.5 PPG). Tail w/ 250 sks Class "C" Neat (yd @ 1.33 cuft/sk @ 14.8 PPG). Using 100 % excess in open hole, 10% excess in casing annulus. Cement circulated to surface

*See
COA*

7" production casing 400 sks BJ Lite Class "H" (35:65:4) w/ 5# sk LCM 1 & 1/4 #/sk celloflake (yd @ 2.13 cuft/sk @ 12.5 PPG). Tail w/ 300 sks Class "H" Neat (yd @ 1.33 cuft/sk @ 14.8 PPG). Estimated Top of Cement is 3000' to cover the Capitan Reef using 50 % excess in open hole.

4 1/2" liner: . A 4 1/2" liner will be run into the open hole with a 20 stage "port and packer" system. No cement will be used.

The above cement volumes could be revised pending the caliper measurement from the open hole logs and using fluid calipers to calculate cement volumes..
All casing is new and API approved.

6. Minimum Specifications for Pressure Control:

Plan to nipple up on the 20" & the 13 3/8" with a 2M annular system and test to 1000 psig with a 3rd party testing unit. Nipple up on 9 5/8" with a 5M system and test to 3000 psig with independent tester. Nipple up on 7" with a 5M system and test to 3000 psig with an independent tester.

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. A 2" kill line and a 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock, floor safety valve (inside BOP), choke lines and choke manifold with 3000 psi WP rating.

7. Estimated BHP:

From: 0' -1130'	Anticipated Max. BHP 489 PSI
From: 1130'-2775'	Anticipated Max BHP 1443 psi
From: 2775'-5200'	Anticipated Max. BHP 2704 PSI
From: 5200'-10,040'	Anticipated Max. BHP 4594 PSI
From 10,040'-14,455'	Horizontal lateral-same BHP as above

- 8. Mud Program:** The applicable depths and properties of this system are as follows:

Depth	Type System	Weight(lb/gal)	Viscosity	Water Loss
0-1130' <i>1220</i>	fresh water gel	8.4-8.9	32-34	No control
1130'-2775'	Brine	9.5-10.0	28-29	No control
2775'-5200' <i>4900</i>	fresh water gel	8.6-9.1	28-32	No control
5200'-10,040'	Fresh water gel	8.4-9.0	28-34	15 cc
10,040'-14,455'	X Polymer	8.4-8.9	28-34	15 cc

The necessary mud products for weight addition and fluid loss control will be on location at all times.

9. Auxiliary Well Control and Monitoring Equipment:

- A Kelly cock will be in the drill string at all times.
- A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- Hydrogen Sulfide detection equipment will be in operation after drilling out the 9 5/8" casing shoe until the 7" casing is cemented. Breathing equipment will be on location upon drilling the 9 5/8" shoe until total depth is reached.

10. Testing, Logging and Coring Program:

- No drill stem test are planned
- No electric logs are planned at this time. *See COA*
- A mud log will be run from the top of the Delaware to TD.
- A Gamma Ray will be run in the lateral and to the top of the curve.

11. Potential Hazards:

- No abnormal pressures or temperatures are expected. H₂S has been detected in the Delaware in this area during drilling and there is some H₂S in the Delaware gas in the Lusk field. H₂S has not been detected in the Bone Springs zones. The rig will be equipped with H₂S monitors, H₂S warning signs and pit monitors. Wind socks will indicate wind direction. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur but lost circulation materials will be on site to help seal off any losses. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 4000 - 4600 psi. Estimated BHT: 120°.

GREEN FROG CAFE FED #1
CASING DESIGN FACTORS

HOLE SIZE	HOLE INTERVAL	CASING INTERVAL	CASING OD	NEW	WT	COLLAR	GRADE	Collapse Design Factor	Burst Design Factor	Tension Design Factor
26"	0-1130' <i>1220</i>	0'-1130'	20"	new	106.5#	BT&C	J-55	1.125	1.125	1.6
17 1/2"	1100'-2775'	0'-100'	13 3/8"	new	61#	BT&C	J-55/K-55	1.125	1.125	1.6
17 1/2"		1100'-2000'	13 3/8"	new	54#	BT&C	J-55/K-55	1.125	1.125	1.6
17 1/2"		2000'-2775'	13 3/8"	new	61#	BT&C	J-55/K-55	1.125	1.125	1.6
12 1/4"	2900'-5200' <i>4900</i>	0'-100'	9 5/8"	new	40#	LT&C	L-80/HCK-55	1.125	1.125	1.6
12 1/4"		101'-4000'	9 5/8"	new	40#	LT&C	J-55/K-55	1.125	1.125	1.6
12 1/4"		4001'-5200'	9 5/8"	new	40#	LT&C	L-80/HCK-55	1.125	1.125	1.6
8 3/4"	5200'-10,040'tvd	0'-100'	7"	new	26#	LT&C	P-110	1.125	1.125	1.6
8 3/4"		101'-7000'	7"	new	23#	LT&C	P-110	1.125	1.125	1.6
8 3/4"		7001'-10,303'md	7"	new	26#	LT&C/BTC	P-110	1.125	1.125	1.6
6 1/8"	10,303'-14,455'	10,150'-14,455'	4 1/2"	new	11.5#	LT&C/BTC	P-110	1.125	1.125	1.6



Weatherford

Drilling Services

Proposal

MANZANO LLC

GREEN FROG CAFÉ FEDERAL #1H

LEA CO, NM

WELL FILE: **PLAN 1**

JULY 30, 2012

Weatherford International, Ltd.

P O. Box 61028

Midland, TX 79711 USA

+1 432.561.8892 Main

+1 432 561 8895 Fax

www.weatherford.com

Manzano, LLC
Green Frog Cafe Federal #1H
Lea County, New Mexico

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	89.77	0.00	0.00	0.00	0.00	0.00	0.00	
2	9562.62	0.00	89.77	9562.62	0.00	0.00	0.00	0.00	0.00	
3	10303.42	88.90	89.77	10040.00	1.84	468.26	12.00	89.77	468.26	
4	14455.02	88.90	89.77	10120.00	18.15	4619.06	0.00	0.00	4619.10	PBHL

WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Green Frog Cafe Federal #1H	0.00	0.00	574653.17	735953.40	32°34'41.464N	103°42'05.505W	N/A

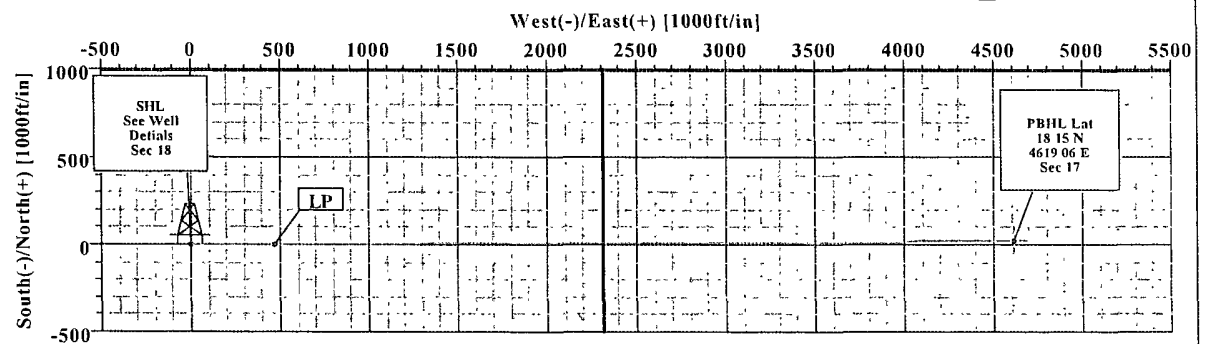
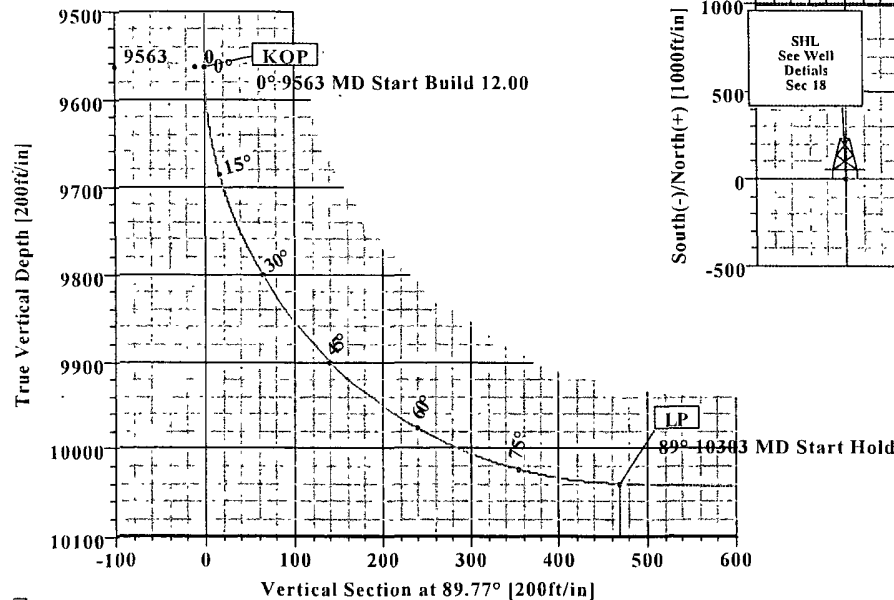
TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	10120.00	18.15	4619.06	574671.32	740572.46	Point

LEGEND	
	1
	Plan #1

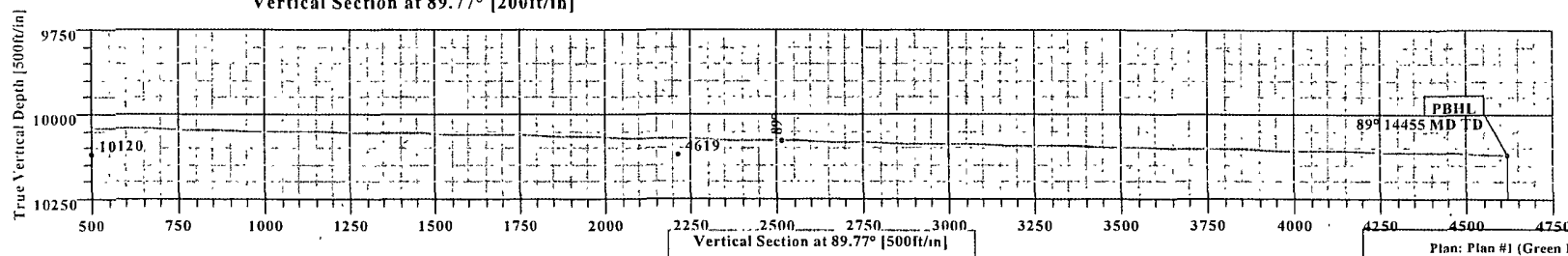
SITE DETAILS	
Green Frog Cafe Federal #1H	
Site Centre Northing:	574653.17
Easting:	735953.40
Ground Level:	3529.00
Positional Uncertainty:	0.00
Convergence:	0.34

FIELD DETAILS	
Lea Co., NM (NAD 83)	
Geodetic System:	US State Plane Coordinate System 1983
Ellipsoid:	GRS 1980
Zone:	New Mexico, Eastern Zone
Magnetic Model:	IGRF2010
System Datum:	Mean Sea Level
Local North:	Grid North

KB ELEV: 3545
 GL ELEV: 3529



Azimuths to Grid North True North: -0.34° Magnetic North: 7.14°	
Magnetic Field Strength: 48682nT Dip Angle: 60.45° Date: 1/15/2013 Model: IGRF2010 Total correction to Grid North: 7.14°	



Plan: Plan #1 (Green Frog Cafe Federal #1H/1)
 Created By: Russell W. Joyner
 Date: 7/30/2012



Weatherford®

Company: Manzano LLC **Date:** 7/30/2012 **Time:** 09 56 01 **Page:** 1
Field: Lea Co., NM (NAD 83) **Co-ordinate(NE) Reference:** Well Green Frog Cafe Federal #1H
Site: Green Frog Cafe Federal #1H **Vertical (TVD) Reference:** SITE 3545 0
Well: Green Frog Cafe Federal #1H **Section (VS) Reference:** Well (0.00N,0.00E,89.77Azi)
Wellpath: 1 **Survey Calculation Method:** Minimum Curvature **Db:** Sybase

Plan:	Plan #1	Date Composed:	7/30/2012
		Version:	1
Principal:	Yes	Tied-to:	From Surface

Field:	Lea Co , NM (NAD 83)		
Map System:	US State Plane Coordinate System 1983	Map Zone:	New Mexico, Eastern Zone
Geo Datum:	GRS 1980	Coordinate System:	Well Centre
Sys Datum:	Mean Sea Level	Geomagnetic Model:	IGRF2010

Site: Green Frog Cafe Federal #1H	
Site Position:	Northing: 574653.17 ft
From: Map	Latitude: 32 34 41.464 N
Position Uncertainty: 0.00 ft	Easting: 735953.40 ft
Ground Level: 3529 00 ft	Longitude: 103 42 5.505 W
	North Reference: Grid
	Grid Convergence: 0.34 deg

Well:	Green Frog Cafe Federal #1H				Slot Name:			
Well Position:	+N/-S	0 00 ft	Northing:	574653.17 ft	Latitude:	32	34	41.464 N
	+E/-W	0.00 ft	Easting :	735953 40 ft	Longitude:	103	42	5 505 W
Position Uncertainty:		0 00 ft						

Wellpath: 1		Drilled From:	Surface
Current Datum:	SITE	Tie-on Depth:	0 00 ft
Magnetic Data:	1/15/2013	Above System Datum:	Mean Sea Level
Field Strength:	48682 nT	Declination:	7 48 deg
Vertical Section: Depth From (TVD)	+N/-S	Mag Dip Angle:	60.45 deg
ft	ft	+E/-W	Direction
		ft	deg
0.00	0 00	0.00	89 77

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	89 77	0.00	0.00	0 00	0 00	0 00	0.00	0.00	
9562.62	0.00	89 77	9562.62	0.00	0 00	0 00	0.00	0.00	0 00	
10303.42	88 90	89 77	10040.00	1 84	468 26	12.00	12 00	0 00	89 77	
14455.02	88.90	89 77	10120.00	18.15	4619.06	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	Comments
9500.00	0 00	89.77	9500.00	0 00	0 00	0 00	0.00	574653.17	735953.40	KOP
9562.62	0.00	89.77	9562.62	0 00	0 00	0.00	0 00	574653.17	735953.40	
9575.00	1 49	89.77	9575.00	0.00	0.16	0.16	12 00	574653.17	735953.56	
9600.00	4 49	89.77	9599.96	0.01	1 46	1 46	12.00	574653.18	735954.86	
9625.00	7.49	89.77	9624.82	0.02	4 07	4.07	12 00	574653.19	735957.47	
9650.00	10 49	89.77	9649.51	0.03	7 97	7 97	12 00	574653.20	735961.37	
9675.00	13 49	89.77	9673.97	0.05	13 16	13 16	12.00	574653.22	735966.56	
9700.00	16 49	89.77	9698.11	0.08	19 63	19.63	12.00	574653.25	735973.03	
9725.00	19.49	89.77	9721.89	0 11	27.35	27.35	12.00	574653.28	735980.75	
9750.00	22 49	89.77	9745.23	0.14	36.30	36 30	12 00	574653.31	735989.70	
9775.00	25.49	89.77	9768.07	0.18	46 46	46 46	12.00	574653.35	735999.86	
9800.00	28.49	89.77	9790.34	0 23	57 80	57.80	12.00	574653.40	736011.20	
9825.00	31.49	89.77	9811.99	0.28	70 30	70 30	12.00	574653.45	736023.70	
9850.00	34.49	89.77	9832.96	0 33	83 90	83 91	12 00	574653.50	736037.30	
9875.00	37 49	89.77	9853.19	0.39	98 59	98 59	12 00	574653.56	736051.99	
9900.00	40.49	89.77	9872.62	0 45	114.32	114 32	12.00	574653.62	736067.72	
9925.00	43 49	89.77	9891.20	0.51	131.04	131.04	12.00	574653.68	736084.44	

Weatherford

WFT Plan Report - X & Y's



Weatherford

Company: Manzano LLC
 Field: Lea Co., NM (NAD 83)
 Site: Green Frog Cafe Federal #1H
 Well: Green Frog Cafe Federal #1H
 Wellpath: 1

Date: 7/30/2012 Time: 09:56:01 Page: 2
 Co-ordinate(NE) Reference: Well, Green Frog Cafe Federal #1H
 Vertical (TVD) Reference: SITE 3545 0
 Section (VS) Reference: Well (0.00N,0.00E,89.77Azi)
 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
9950.00	46.49	89.77	9908.88	0.58	148.71	148.71	12.00	574653.75	736102.11	
9975.00	49.49	89.77	9925.61	0.66	167.28	167.28	12.00	574653.83	736120.68	
10000.00	52.49	89.77	9941.35	0.73	186.71	186.71	12.00	574653.90	736140.11	
10025.00	55.49	89.77	9956.04	0.81	206.93	206.93	12.00	574653.98	736160.33	
10050.00	58.49	89.77	9969.66	0.90	227.89	227.89	12.00	574654.07	736181.29	
10075.00	61.49	89.77	9982.17	0.98	249.53	249.53	12.00	574654.15	736202.93	
10100.00	64.49	89.77	9993.52	1.07	271.80	271.80	12.00	574654.24	736225.20	
10125.00	67.49	89.77	10003.69	1.16	294.63	294.64	12.00	574654.33	736248.03	
10150.00	70.49	89.77	10012.66	1.25	317.97	317.97	12.00	574654.42	736271.37	
10175.00	73.49	89.77	10020.39	1.34	341.74	341.74	12.00	574654.51	736295.14	
10200.00	76.49	89.77	10026.86	1.44	365.88	365.89	12.00	574654.61	736319.28	
10225.00	79.49	89.77	10032.07	1.53	390.33	390.34	12.00	574654.70	736343.73	
10250.00	82.49	89.77	10035.98	1.63	415.02	415.02	12.00	574654.80	736368.42	
10275.00	85.49	89.77	10038.60	1.73	439.88	439.88	12.00	574654.90	736393.28	
10300.00	88.49	89.77	10039.92	1.83	464.84	464.85	12.00	574655.00	736418.24	
10303.42	88.90	89.77	10040.00	1.84	468.26	468.26	12.00	574655.01	736421.66	LP
10400.00	88.90	89.77	10041.86	2.22	564.82	564.83	0.00	574655.39	736518.22	
10500.00	88.90	89.77	10043.78	2.61	664.80	664.81	0.00	574655.78	736618.20	
10600.00	88.90	89.77	10045.71	3.01	764.78	764.79	0.00	574656.18	736718.18	
10700.00	88.90	89.77	10047.64	3.40	864.77	864.77	0.00	574656.57	736818.17	
10800.00	88.90	89.77	10049.57	3.79	964.75	964.75	0.00	574656.96	736918.15	
10900.00	88.90	89.77	10051.49	4.18	1064.73	1064.73	0.00	574657.35	737018.13	
11000.00	88.90	89.77	10053.42	4.58	1164.71	1164.72	0.00	574657.75	737118.11	
11100.00	88.90	89.77	10055.35	4.97	1264.69	1264.70	0.00	574658.14	737218.09	
11200.00	88.90	89.77	10057.27	5.36	1364.67	1364.68	0.00	574658.53	737318.07	
11300.00	88.90	89.77	10059.20	5.76	1464.65	1464.66	0.00	574658.93	737418.05	
11400.00	88.90	89.77	10061.13	6.15	1564.63	1564.64	0.00	574659.32	737518.03	
11500.00	88.90	89.77	10063.05	6.54	1664.61	1664.62	0.00	574659.71	737618.01	
11600.00	88.90	89.77	10064.98	6.93	1764.59	1764.60	0.00	574660.10	737717.99	
11700.00	88.90	89.77	10066.91	7.33	1864.57	1864.59	0.00	574660.50	737817.97	
11800.00	88.90	89.77	10068.84	7.72	1964.55	1964.57	0.00	574660.89	737917.95	
11900.00	88.90	89.77	10070.76	8.11	2064.53	2064.55	0.00	574661.28	738017.93	
12000.00	88.90	89.77	10072.69	8.51	2164.51	2164.53	0.00	574661.68	738117.91	
12100.00	88.90	89.77	10074.62	8.90	2264.49	2264.51	0.00	574662.07	738217.89	
12200.00	88.90	89.77	10076.54	9.29	2364.47	2364.49	0.00	574662.46	738317.87	
12300.00	88.90	89.77	10078.47	9.68	2464.46	2464.47	0.00	574662.85	738417.86	
12400.00	88.90	89.77	10080.40	10.08	2564.44	2564.46	0.00	574663.25	738517.84	
12500.00	88.90	89.77	10082.33	10.47	2664.42	2664.44	0.00	574663.64	738617.82	
12600.00	88.90	89.77	10084.25	10.86	2764.40	2764.42	0.00	574664.03	738717.80	
12700.00	88.90	89.77	10086.18	11.26	2864.38	2864.40	0.00	574664.43	738817.78	
12800.00	88.90	89.77	10088.11	11.65	2964.36	2964.38	0.00	574664.82	738917.76	
12900.00	88.90	89.77	10090.03	12.04	3064.34	3064.36	0.00	574665.21	739017.74	
13000.00	88.90	89.77	10091.96	12.43	3164.32	3164.34	0.00	574665.60	739117.72	
13100.00	88.90	89.77	10093.89	12.83	3264.30	3264.33	0.00	574666.00	739217.70	
13200.00	88.90	89.77	10095.82	13.22	3364.28	3364.31	0.00	574666.39	739317.68	
13300.00	88.90	89.77	10097.74	13.61	3464.26	3464.29	0.00	574666.78	739417.66	
13400.00	88.90	89.77	10099.67	14.01	3564.24	3564.27	0.00	574667.18	739517.64	
13500.00	88.90	89.77	10101.60	14.40	3664.22	3664.25	0.00	574667.57	739617.62	
13600.00	88.90	89.77	10103.52	14.79	3764.20	3764.23	0.00	574667.96	739717.60	
13700.00	88.90	89.77	10105.45	15.18	3864.18	3864.21	0.00	574668.35	739817.58	
13800.00	88.90	89.77	10107.38	15.58	3964.17	3964.20	0.00	574668.75	739917.57	
13900.00	88.90	89.77	10109.30	15.97	4064.15	4064.18	0.00	574669.14	740017.55	
14000.00	88.90	89.77	10111.23	16.36	4164.13	4164.16	0.00	574669.53	740117.53	

Weatherford

WFT Plan Report - X & Y's



Weatherford

Company: Manzano LLC
 Field: Lea Co , NM (NAD 83)
 Site: Green Frog Cafe Federal #1H
 Well: Green Frog Cafe Federal #1H
 Wellpath: 1

Date: 7/30/2012 Time: 09:56 01 Page: 3
 Co-ordinate(NE) Reference: Well: Green Frog Cafe Federal #1H
 Vertical (TVD) Reference: SITE 3545 0
 Section (VS) Reference: Well (0.00N,0 00E,89 77Azi)
 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
14100 00	88 90	89 77	10113 16	16.76	4264.11	4264.14	0 00	574669 93	740217.51	
14200 00	88.90	89.77	10115 09	17.15	4364.09	4364.12	0.00	574670.32	740317 49	
14300.00	88 90	89 77	10117 01	17.54	4464.07	4464 10	0 00	574670 71	740417 47	
14400.00	88 90	89 77	10118 94	17 93	4564.05	4564 08	0 00	574671.10	740517.45	
14455 02	88.90	89.77	10120 00	18.15	4619.06	4619 10	0.00	574671.32	740572 46	PBHL

Targets

Name	Description Dip.	TVD Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ---->			<--- Longitude --->		
PBHL			10120 00	18.15	4619 06	574671 32	740572 46	32	34	41 369 N	103	41	11.523 W

Casing Points

MD	TVD	Diameter	Hole Size	Name

Annotation

MD ft	TVD ft	
9562.62	9562.62	KOP
10303.42	10040.00	LP
14455.02	10120 00	PBHL

Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction

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

GeoDec v5.03

Report Date: July 30, 2012
Job Number: _____
Customer: Manzano, LLC
Well Name: Green Frog Cafe Federal #1H
API Number: _____
Rig Name: _____
Location: Lea County, New Mexico
Block: _____
Engineer: RWJ

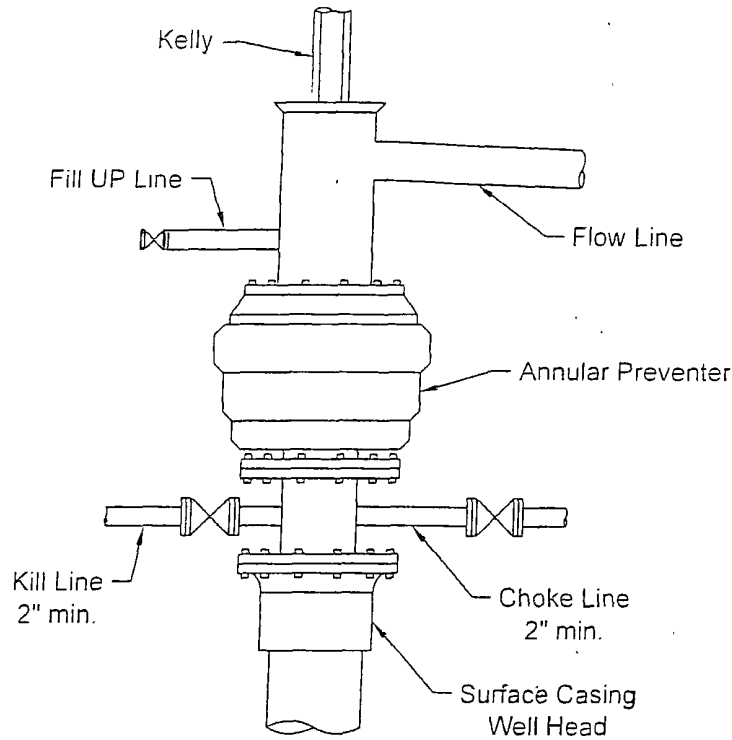
US State Plane 1983	Geodetic Latitude / Longitude
System: New Mexico Eastern Zone	System: Latitude / Longitude
Projection: Transverse Mercator/Gauss Kruger	Projection: Geodetic Latitude and Longitude
Datum: North American Datum 1983	Datum: North American Datum 1983
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
North/South: 574653.170 USFT	Latitude 32.5781877 DEG
East/West 735953.400 USFT	Longitude -103.7015244 DEG
Grid Convergence: .34°	
Total Correction: +7.14°	

Geodetic Location WGS84	Elevation =	0.0 Meters
Latitude =	32.57819° N	32° 34 min 41.476 sec
Longitude =	103.70152° W	103° 42 min 5.488 sec

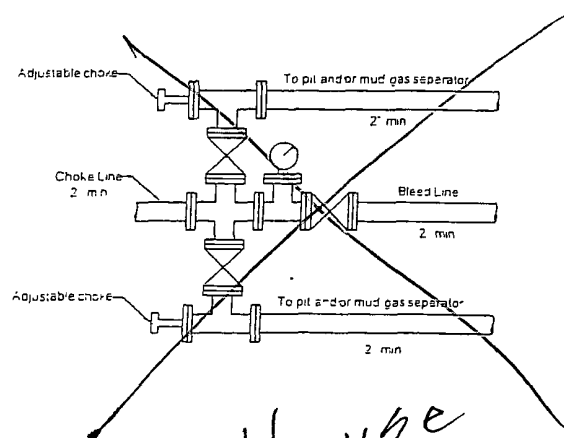
Magnetic Declination =	7.48°	[True North Offset]
Local Gravity =	.9988 g	Checksum = 6628
Local Field Strength =	48678 nT	Magnetic Vector X = 23801 nT
Magnetic Dip =	60.45°	Magnetic Vector Y = 3125 nT
Magnetic Model =	IGRF-2010g11	Magnetic Vector Z = 42348 nT
Spud Date =	Jan 15, 2013	Magnetic Vector H = 24005 nT

Signed: _____ Date: _____

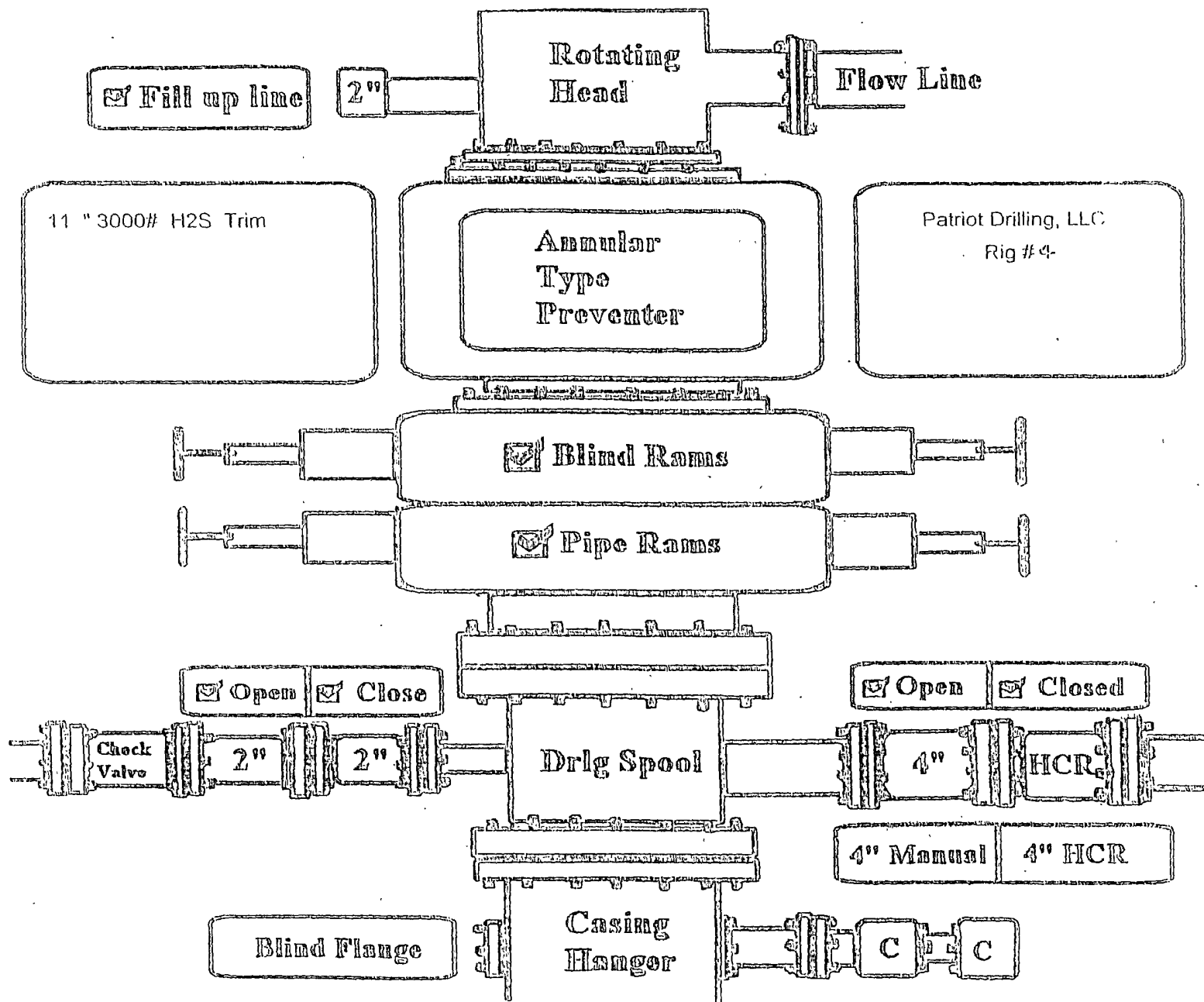
Typical low Pressure System
Schematic
Annular Preventer 2,000psi

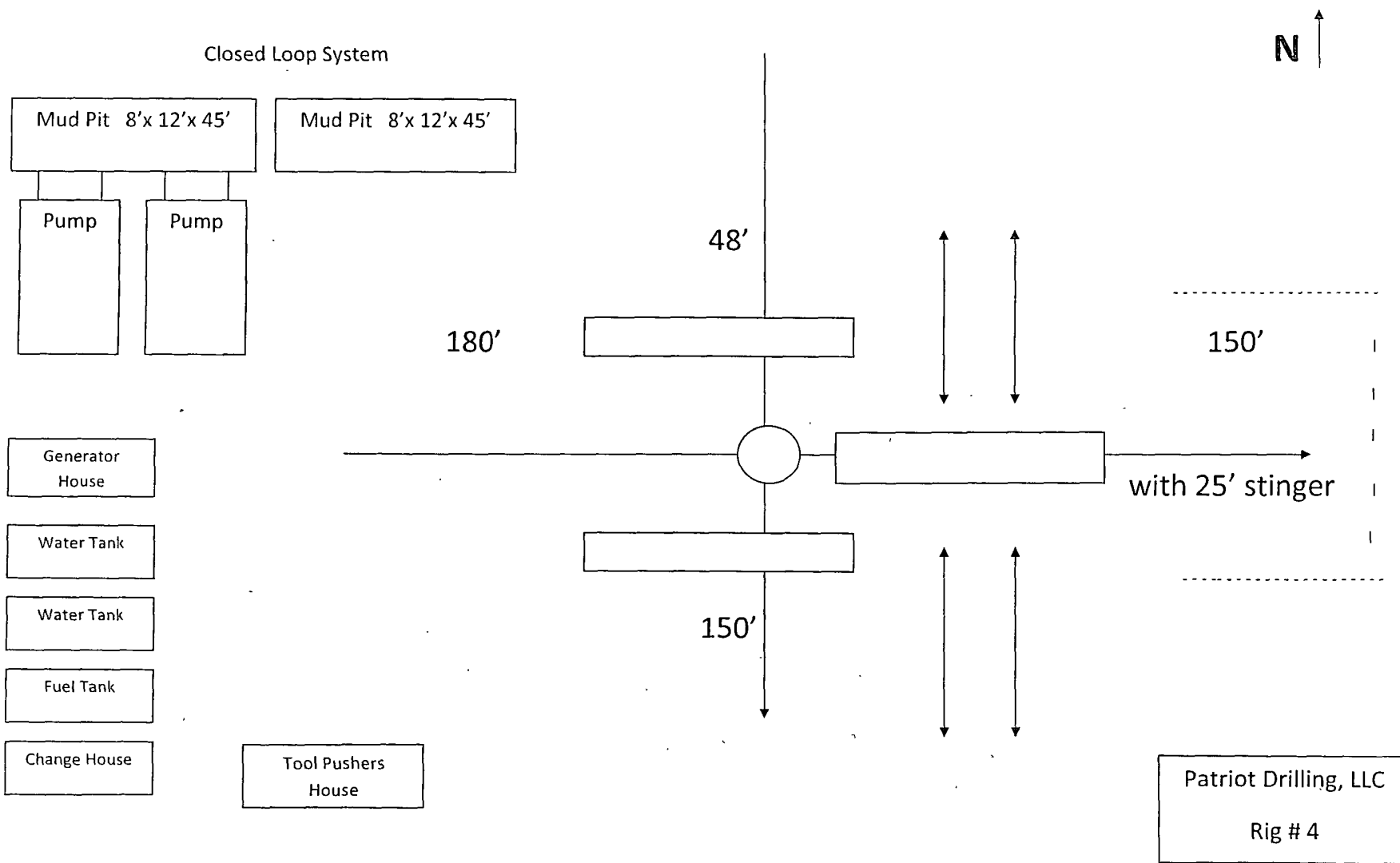


Typical 2,000 psi choke manifold assembly with at least these minimum features



Will use
5 M manifold
per 9/5/12 letter
received 9/10/12
#6





H2S WELL SITE DIAGRAM
DRILL RIG ORIENTATION

Manzano, LLC
Location Plat
GREEN FROG CAFÉ FED COM #1H
SEC 18-T20S-R33E

