NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 16 2014
RECEIVED

OCD Artesia

14-520

TES 6-17-14

Form 3160-3
(March 2012)

HIGH CAVEKARST

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NM-110829
	6. If Indian, Allotee or Tribe Name
	7. If Unit or CA Agreement, Name and No.
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone	8. Lease Name and Well No. BROWNING FEDERAL COM 2H <305411>
2. Name of Operator LEGEND NATURAL GAS III, LP <258894>	9. API Well No. 30-015- 42441
3a. Address 777 MAIN ST., STE. 900 FORT WORTH, TX 76102 / 3b. Phone No. (include area code) 817-872-7822	10. Field and Pool, or Exploratory Willow Lake; Bone Spring, North (64450)
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface 150 FNL & 1290 FWL; At proposed prod. zone BH-330 FNL & 380 FWL	11. Sec., T. R. M. or Blk. and Survey or Area SECTION 20, T-24S, R-28E - SHL SECTION 17, T-24S, R-28E - BHL
14. Distance in miles and direction from nearest town or post office* APPROX 3.75 MILES WEST/SOUTHWEST OF MALAGA, NM	12. County or Parish EDDY / 13. State NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 150 FNL	16. No. of acres in lease 560 acres Legend Operates 400 acres	17. Spacing Unit dedicated to this well 160
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SURFACE-30' SUB-SURFACE Carlton 17 - 250' E (VERT) Browning Fed Com 3H - 1130' (HORIZ)	19. Proposed Depth 12906'MD; 7918'TVD	20. BLM/BIA Bond No. on file NMB000525
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3080'GR	22. Approximate date work will start* 04/01/2014	23. Estimated duration 2 MONTHS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, 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 [signature]	Name (Printed/Typed) JENNIFER MOSLEY ELROD	Date 01/20/2014
Title SR. REGULATORY ANALYST		
Approved by (Signature) /S/ STEPHEN J. CAFFEY	Name (Printed/Typed)	Date JUN 11 2014
Title FIELD MANAGER	Office CARLSBAD FIELD 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) *(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

The undersigned accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Date:	February 7, 2013
Lease #:	NM-110829 Browning Federal Com 2H
Legal Description:	Sec. 20-T24S-R28E/Sec. 17-T-24S-R-28E Eddy County, New Mexico
Formation(s):	Bone Springs
Bond Coverage:	Statewide
BLM Bond File #:	NMB000525

LEGEND NATURAL GAS, III L.P.

Jennifer Mosley Elrod
Sr. Regulatory Analyst

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-42441	96450	Willow Lake; Bone Spring, North

Property Code	Property Name	Well Number
305411	BROWNING FEDERAL COM	2H

OGRID No.	Operator Name	Elevation
258894	LEGEND NATURAL GAS III, LP	3080'

Surface Location

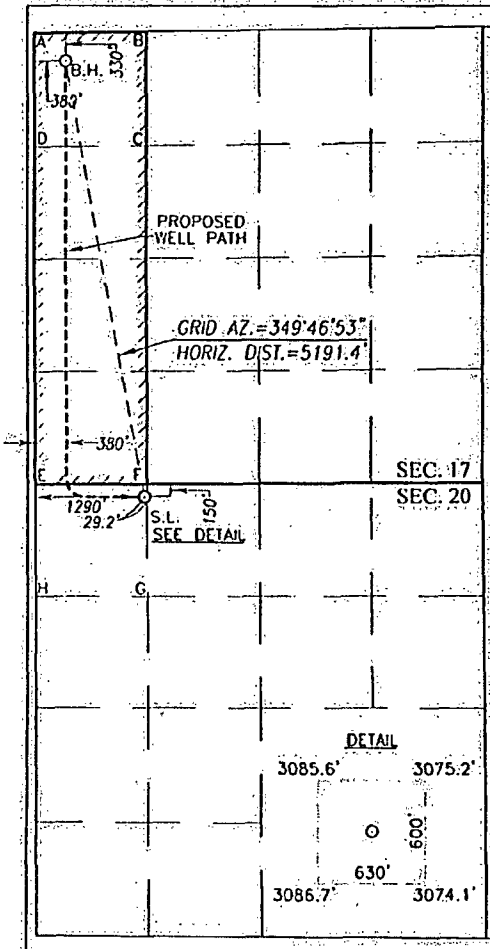
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	20	24-S	28-E		150	NORTH	1290	WEST	EDDY

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
D	17	24-S	28-E		330	NORTH	380	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			6-11 12906

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



SCALE: 1"=2000'

GEODETIC COORDINATES NAD 83 NME	GEODETIC COORDINATES NAD 27 NME
BOTTOM HOLE LOCATION Y=445355.5 N X=608216.9 E	BOTTOM HOLE LOCATION Y=445297.1 N X=567033.8 E
LAT.=32.224174° N LONG.=104.117057° W	LAT.=32.224053° N LONG.=104.116563° W

CORNER COORDINATES TABLE
NAD 27
A - Y=445621.3 N, X=566653.2 E
B - Y=445641.2 N, X=567974.4 E
C - Y=444315.2 N, X=567976.5 E
D - Y=444298.6 N, X=566655.9 E
E - Y=440333.5 N, X=566663.9 E
F - Y=440339.3 N, X=567892.7 E
G - Y=439012.9 N, X=567990.7 E
H - Y=439010.4 N, X=566671.5 E

NAD 83
A - Y=445679.7 N, X=607836.4 E
B - Y=445699.7 N, X=609157.6 E
C - Y=444373.6 N, X=609159.7 E
D - Y=444357.1 N, X=607839.1 E
E - Y=440391.8 N, X=607847.2 E
F - Y=440397.7 N, X=609166.0 E
G - Y=439071.2 N, X=609174.0 E
H - Y=439068.8 N, X=607854.8 E

GEODETIC COORDINATES NAD 83 NME	GEODETIC COORDINATES NAD 27 NME
SURFACE LOCATION Y=440247.6 N X=609137.7 E	SURFACE LOCATION Y=440189.3 N X=567954.4 E
LAT.=32.210128° N LONG.=104.114113° W	LAT.=32.210006° N LONG.=104.113620° W

OPERATOR CERTIFICATION

I hereby certify that the information 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 or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 08/27/2014

Jennifer Elrod
Printed Name

jelrod@lng2.com
E-mail Address

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 21, 2014
Date of Survey

Signature & Seal of Professional Surveyor:

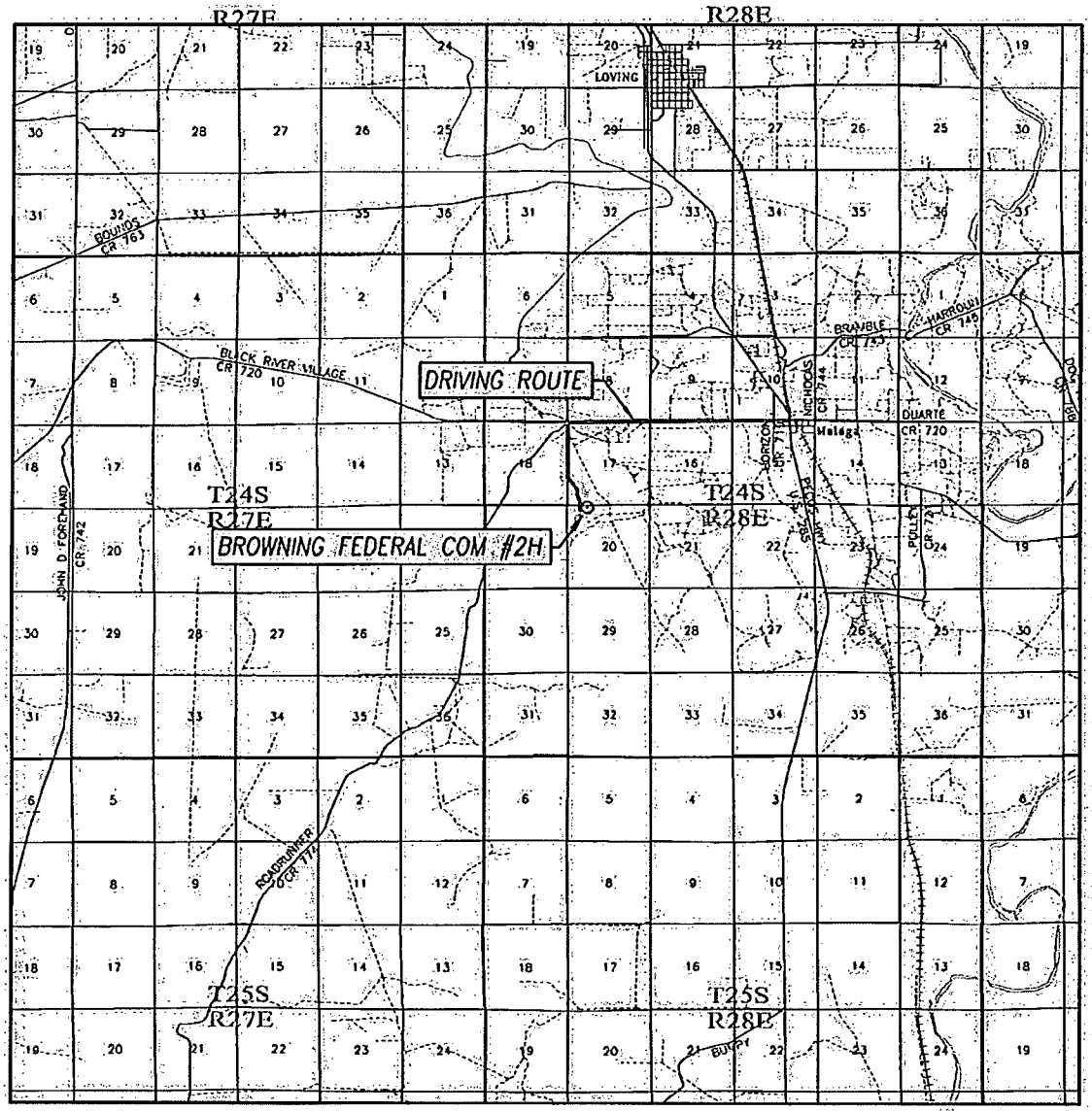
GARY G. EIDSON
NEW MEXICO
12641
PROFESSIONAL SURVEYOR

08/26/14

Certificate Number	Gary G. Eidson	12641
	Ronald J. Eidson	3239

ACK. REL. WO.: 131113115 JWSC W.O.: 14.13.0323

VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE LOCATION VERIFICATION MAP

SEC. 20 TWP. 24-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

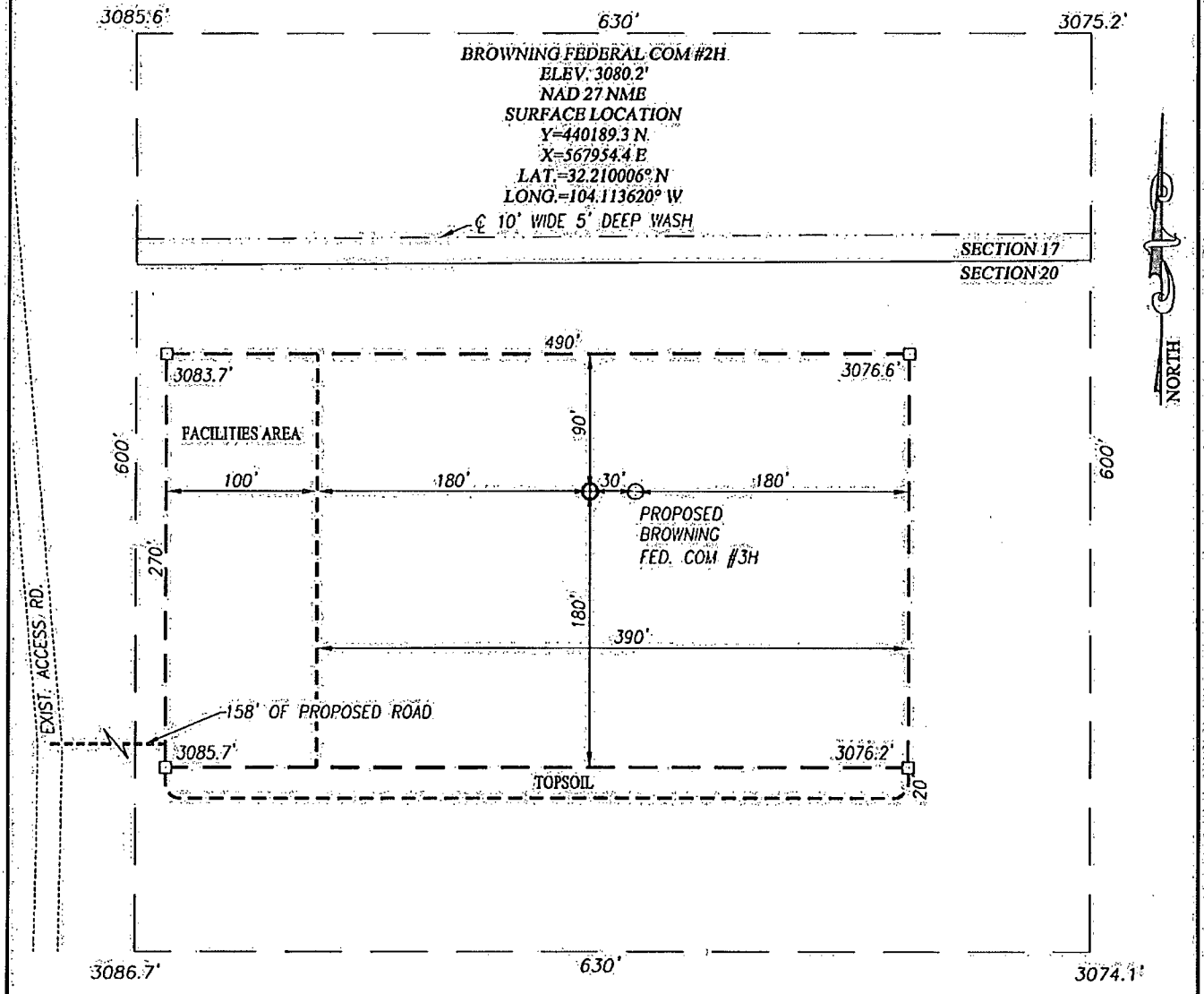
DESCRIPTION 150' FNL & 1290' FWL

ELEVATION 3080'

OPERATOR LEGEND NATURAL GAS III, LP

LEASE BROWNING FEDERAL COM

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz



NOTE:
SEE "LOCATION VERIFICATION MAP" FOR PROPOSED ROAD LOCATION.

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF US. HIGHWAY 285 & CO. RD. 720 (BLACK RIVER RD.) GO WEST ON BLACK RIVER RD. APPROX. 2.7 MILES TO CO. RD. 774 (ROAD RUNNER RD.); TURN LEFT AND GO SOUTH ON EXISTING LEASE RD. APPROX. 0.65 MILES. VEER LEFT AND GO SOUTHEAST APPROX. 0.2 MILES; VEER RIGHT AND GO SOUTH APPROX. 260 FEET; VEER LEFT AND GO SOUTHEAST APPROX. 0.1 MILE; VEER RIGHT AND GO SOUTH APPROX. 0.1 MILE; THIS LOCATION IS EAST APPROX. 450 FEET.

100 0 100 200 Feet

Scale: 1"=100'

LEGEND NATURAL GAS III, LP

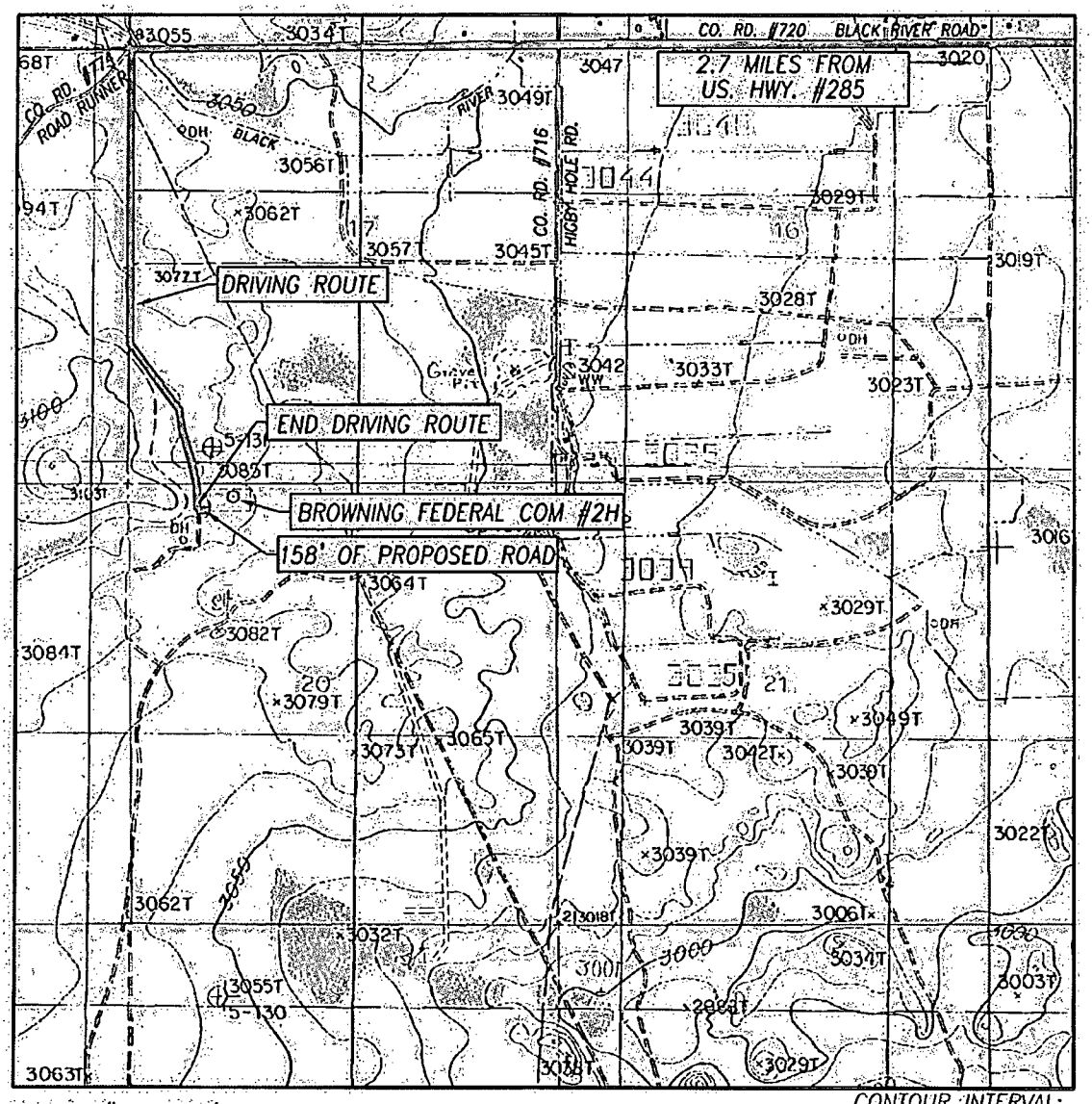
BROWNING FEDERAL COM #2H WELL
LOCATED 150 FEET FROM THE NORTH LINE
AND 1290 FEET FROM THE WEST LINE OF SECTION 20,
TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 11/21/13	CAD Date: 1/13/14	Drawn By: ACK
W.O. No.: 1311311	Rev: 1/27/14	Rel. W.O.:	Sheet 1 of 1

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz

EXHIBIT #1

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
MALAGA, N.M. - 10'

SEC. 20 TWP. 24-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 150' FNL & 1290' FWL

ELEVATION 3080'

OPERATOR LEGEND NATURAL GAS III, LP

LEASE BROWNING FEDERAL COM

U.S.G.S. TOPOGRAPHIC MAP
MALAGA, N.M.

DIRECTIONS TO BROWNING FEDERAL COM #2H:

FROM THE INTERSECTION OF US. HIGHWAY 285 & CO. RD. 720 (BLACK RIVER RD.) GO WEST ON BLACK RIVER RD. APPROX. 2.7 MILES TO CO. RD. 774 (ROAD RUNNER RD.); TURN LEFT AND GO SOUTH ON EXISTING LEASE RD. APPROX. 0.65 MILES. VEER LEFT AND GO SOUTHEAST APPROX. 0.2 MILES; VEER RIGHT AND GO SOUTH APPROX. 260 FEET; VEER LEFT AND GO SOUTHEAST APPROX. 0.1 MILE; VEER RIGHT AND GO SOUTH APPROX. 0.1 MILE; THIS LOCATION IS EAST APPROX. 450 FEET.

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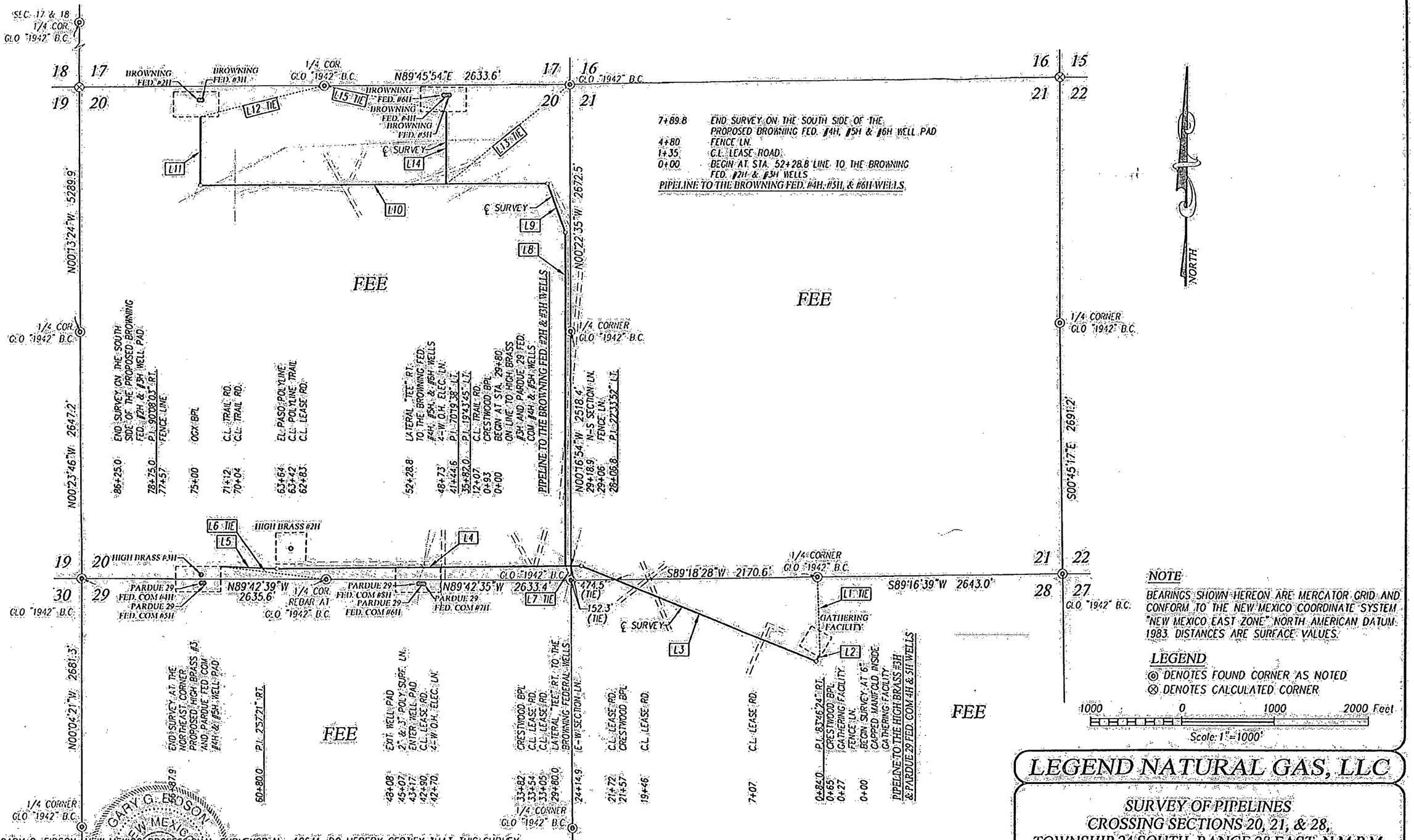
EXHIBIT #2



NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

LEGEND

⊙ DENOTES FOUND CORNER AS NOTED
⊗ DENOTES CALCULATED CORNER

I, GARY G. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 12641, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, THAT I AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

GARY G. EIDSON DATE: 2/4/14

GARY G. EIDSON NEW MEXICO 12641 PROFESSIONAL SURVEYOR

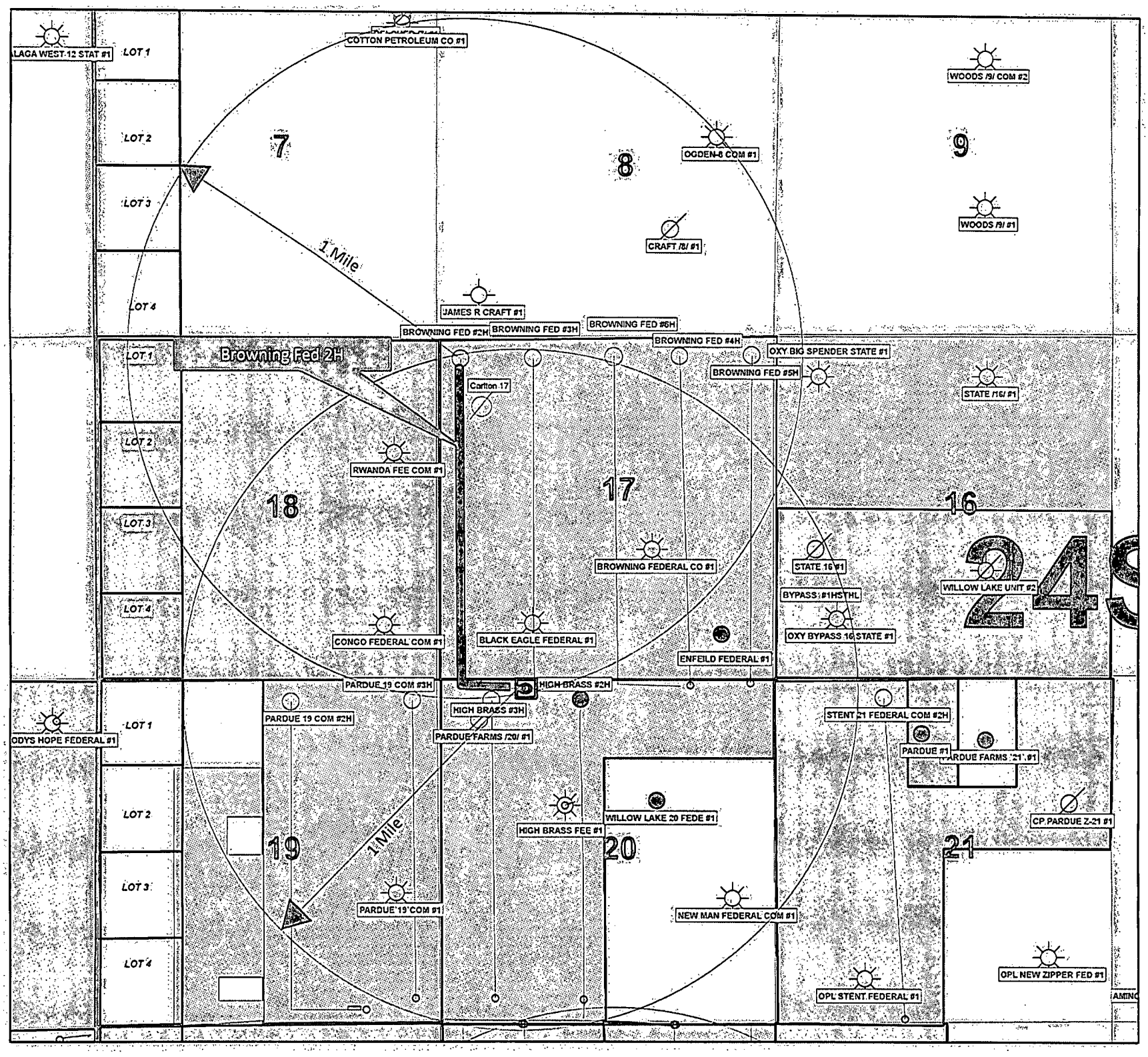
PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz

LEGEND NATURAL GAS, LLC

SURVEY OF PIPELINES CROSSING SECTIONS 20, 21, & 28, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO

Survey Date: 1/23, 24 & 27/14	CAD Date: 2/3/14		Drawn By: ACK
W.O. No.: 14110082	Rev.:	Rel. W.O.:	Sheet 1 of 2

EXHIBIT #3



Legend

Well Symbols

- Oil Producing Well
- Dry Hole
- Junked and abandoned
- Proposed Well
- Possible well
- Gas Producer
- Oil and Gas Producer
- SWD
- Location

N

1 inch = 2000 feet

EXHIBIT #4

LEGEND
NATURAL GAS III, LP

Browning Federal 2H
Existing Wells 1 Mi. Radius
Sec. 20 T24S R28E
Eddy County, New Mexico

Author: JMG		Date: 24 January, 2014
Map: 1 Mile Radius		

DESCRIPTION TO THE HIGH BRASS #3H & PARDUE 29 FED. COM 4H & 5H WELLS

SURVEY OF A PIPELINE CROSSING SECTIONS 20, 21 & 28, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE NORTHEAST QUARTER OF SECTION 28, WHICH LIES S02°00'43"E 829.8 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 28; THEN S28°19'41"W 84.0 FEET; THEN N67°53'55"W 2722.8 FEET; THEN S89°32'13"W 3273.2 FEET; THEN N87°30'26"W 607.9 FEET TO A POINT IN THE SOUTHWEST QUARTER OF SAID SECTION 20, WHICH LIES N82°58'53"W 1141.1 FEET FROM THE SOUTH QUARTER CORNER OF SAID SECTION 20.

TOTAL LENGTH EQUALS 6687.9 FEET OR 405.33 RODS.

DESCRIPTION TO THE BROWNING FED. #2H & #3H WELLS

SURVEY OF A PIPELINE CROSSING SECTION 20, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE SOUTHEAST CORNER OF SAID SECTION 20, WHICH LIES N22°09'58"W 163.9 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION; THEN N00°11'41"W 3582.0 FEET; THEN N19°55'26"W 562.6 FEET; THEN S89°44'56"W 3730.4 FEET; THEN N00°07'01"W 750.0 FEET TO A POINT IN THE NORTHWEST QUARTER OF SAID SECTION, WHICH LIES S75°51'25"W 1375.0 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 20.

TOTAL LENGTH EQUALS 8625.0 FEET OR 522.73 RODS.

DESCRIPTION TO THE BROWNING FED. #4H, #5H, & #6H WELLS

SURVEY OF A PIPELINE CROSSING SECTION 20, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE NORTHEAST QUARTER OF SAID SECTION 20, WHICH LIES S50°33'38"W 1708.2 FEET FROM THE NORTHEAST CORNER OF SAID SECTION; THEN N00°00'01"E 789.8 FEET TO A POINT IN THE NORTHEAST QUARTER OF SAID SECTION, WHICH LIES S77°46'56"E 1344.8 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 20.

TOTAL LENGTH EQUALS 789.8 FEET OR 47.87 RODS.

SECTION 20 TOTAL LENGTH EQUALS 13183.8 FEET OR 799.02 RODS.
SECTION 21 TOTAL LENGTH EQUALS 503.9 FEET OR 30.54 RODS.
SECTION 28 TOTAL LENGTH EQUALS 2415.0 FEET OR 146.36 RODS.

TOTAL COMBINED SECTIONS 20, 21 & 28 LENGTH EQUALS 16102.7 FEET OR 975.92 RODS

PIPELINE TO THE HIGH BRASS #3H & PARDUE 29 FED. COM 4H & 5H WELLS

LINE	BEARING	DISTANCE
L1 TIE	S02°00'43"E	829.8'
L2	S28°19'41"W	84.0'
L3	N67°53'55"W	2722.8'
L4	S89°32'13"W	3273.2'
L5	N87°30'26"W	607.9'
L6 TIE	N82°58'53"W	1144.1'

PIPELINES TO THE BROWNING FED. #2H & #3H WELLS

LINE	BEARING	DISTANCE
L7 TIE	N22°09'58"W	163.9'
L8	N00°11'41"W	3582.0'
L9	N19°55'26"W	562.6'
L10	S89°44'56"W	3730.4'
L11	N00°07'01"W	750.0'
L12 TIE	S75°51'25"W	1375.0'

PIPELINE TO THE BROWNING FED. #4H, #5H, & #6H WELLS

LINE	BEARING	DISTANCE
L13 TIE	S50°33'38"W	1708.2'
L14	N00°00'01"E	789.8'
L15 TIE	S77°46'56"E	1344.8'

NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM, "NEW MEXICO EAST ZONE," NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

I, GARY G. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 12641, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

GARY G. EIDSON _____

DATE: 2/4/14

NEW MEXICO 12641 PROFESSIONAL SURVEYOR

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz

NORTH

1000 0 1000 2000 FEET
Scale: 1" = 1000'

LEGEND NATURAL GAS, LLC

SURVEY OF PIPELINES CROSSING SECTIONS 20, 21, & 28, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO

Survey Date: 1/23, 24 & 27/14	CAD Date: 2/3/14	Drawn By: ACK
W.O. No. 14110082	Rev:	Rel. W.O.:	Sheet 2 of 2

EXHIBIT #3

Legend Natural Gas, III L.P.
DRILLING AND OPERATIONS PROGRAM
Browning Federal Com 2H
SHL: 150 FNL & 1290 FEL
BHL: 330 FNL & 380 FEL
SHL: Section 20, T-24S, R-28E
BHL: Section 17, T-24S, R-28E
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, Legend Natural Gas, III L.P. submits the following eleven items of pertinent information in accordance with BLM requirements.

1. **Geological Surface Information:** Permian

2. **Formation Tops:**

The estimated tops of geologic markers and estimated depths at which anticipated water and hydrocarbons are expected to be encountered are as follows:

Rustler	0 ft	Out Cropping at Surface
Fresh Water	48 ft	
Top of Salt	690 ft	
Base of Salt / Lamar	2,316 ft	
Bell Canyon	2,560 ft	
Cherry Canyon	3,362 ft	
Brushy Canyon	4,542 ft	Oil/Gas
Bone Spring	6,093 ft	Oil/Gas
1st Bone Spring	7,013 ft	Oil/Gas
2nd Bone Spring	7,743 ft	Oil/Gas

The IHS formation tops data base has indicated that the Rustler formation on our federal acreage is out cropping at the surface. The Federal wells listed below border to the east and west of our federal acreage (Section 19 is in between the listed wells below).

Well Name	Location	Surface Casing Depth
Really Scary Federal Com 4H	Section 33 T24S R28E, Eddy County, NM	425 ft
Really Scary Federal Com 2H	Section 33 T24S R28E, Eddy County, NM	442 ft
Buckwheat 33 Federal 2H	Section 33 T24S R28E, Eddy County, NM	400 ft
Quien Sabe 25 Federal 1H	Section 25 T24S R27E, Eddy County, NM	180 ft

No other formations are expected to give up oil, gas, or fresh water in measurable quantities. Setting 11-3/4" casing at 400 ft MD/TVD and circulating cement back to surface will protect the surface fresh water sand. The Salt section will be protected by setting 8-5/8" casing at 2,525 ft MD and circulating cement back to surface. Any zones below the 8-5/8" casing shoe and above TD that contain commercial quantities of hydrocarbons will have cemented isolation. This isolation will be achieved by cementing the 5-1/2" production casing string from TD to Surface. Each cement job will have an adequate amount of Open Hole excess cement volume to ensure cement is circulated to surface (see proposed cement program for Open Hole excess volumes

program Legend Natural Gas III L.P. personnel will always react to protect the wellbore and/or environment.

3. Proposed Casing Program:

Hole Size	Hole Interval MD	Casing Interval	Casing	Weight	Grade	Connection	Safety Factors Collapse / Burst / Tension
14-3/4"	0 - 400'	0 - 400'	11-3/4"	42#	H-40	STC	5.94 / 1.33 / 28.45
							Hole Assumes 8.4 ppg MW
10-5/8"	400' - 2,525'	0 - 2,525'	8-5/8"	32#	J-55	LTC	1.93 / 1.84 / 6.23
							Hole Assumes 10.0 ppg MW
7-7/8"	2,525' - 12,906'	0 - 12,906'	5-1/2"	17#	P-110	BTC	1.90 / 1.25 / 4.02
							Hole Assumes 9.5 ppg MW

**Note: All casing run in hole will be in NEW condition from the mill
**Note: While running all casing strings in hole, the pipe will be kept at a minimum of 1/3 full at all times to avoid approaching the collapse pressure rating of the casing

4. Proposed Cement Program:

Surface: 14-3/4" Hole, 11-3/4" Casing

Type	Interval	Density	Excess	Hole Volume w/ Excess (cubic-ft)	Yield (cu-ft/sack)	Mix Water (gal/sack)	Sacks	Cement
Lead	0 - 300'	12.9 ppg	125%	293	1.96	10.06	150	(35:65) Poz (Fly Ash): Class C Cement + 0.005 lbs/sack Static Free + 1% bwoc Calcium Chloride + 5% bwoc Sodium Chloride + 0.25 lbs/sack Cello Flake + 3 lbs/sack LCM-1 + 0.1% bwoc FL-52 + 5% bwoc MPA-5 + 6% bwoc Bentonite II + 96.5% Fresh Water
Tail	300' - 400'	14.8 ppg	100%	114	1.35	6.34	85	Class C Cement + 0.005 lbs/sack Static Free + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 56.3% Fresh Water

Intermediate: 10-5/8" Hole, 8-5/8" Casing

Type	Interval	Density	Excess	Hole Volume w/ Excess (cubic-ft)	Yield (cu-ft/sack)	Mix Water (gal/sack)	Sacks	Cement
Lead	0 - 400'	12.9 ppg	0%	106	1.91	9.64	56	(35:65) Poz (Fly Ash): Class C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 0.2% bwoc FL-52 + 0.005 gps FP-6L + 5% bwoc MPA-5 + 4% bwoc Bentonite II + 92.4% Fresh Water
Lead	400' - 1,525'	12.9 ppg	100%	473	1.91	9.64	248	(35:65) Poz (Fly Ash): Class C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 0.2% bwoc FL-52 + 0.005 gps FP-6L + 5% bwoc MPA-5 + 4% bwoc Bentonite II + 92.4% Fresh Water
Tail	1,525' - 2,525'	14.8 ppg	100%	434	1.34	6.35	324	Class C Cement + 0.005 lbs/sack Static Free + 2% bwoc Calcium Chloride + 0.005 gps FP-6L + 56.3% Fresh Water

Production: 7-7/8" Hole, 5-1/2" Casing

Type	Interval	Density	Excess	Hole Volume w/ Excess (cubic-ft)	Yield (cu-ft/sack)	Mix Water (gal/sack)	Sacks	Cement
Lead	0 - 2,525'	12.0 ppg	0%	448	2.11	11.81	212	(60:40) Poz (Fly Ash):Class C Cement + 3% bwow Sodium Chloride + 0.3% bwoc FL-52 + 0.7% bwoc Sodium Metasilicate + 6% bwoc MPA-5 + 120.1% Fresh Water
Lead	2,525' - 4,500'	12.0 ppg	30%	445	2.11	11.81	211	(60:40) Poz (Fly Ash):Class C Cement + 3% bwow Sodium Chloride + 0.3% bwoc FL-52 + 0.7% bwoc Sodium Metasilicate + 6% bwoc MPA-5 + 120.1% Fresh Water
Tail	4,500' - 12,906'	13.2 ppg	30%	1904	1.57	7.99	1,213	(15:61:11) Poz (Fly Ash):Class C Cement:CSE-2 + 0.005% bwoc Static Free + 0.3% bwoc FL-25 + 0.4% bwoc FL-52 + 0.005 gps FP-6L + 0.5% bwoc BA-10A + 76.6% Fresh Water

See COA

- The above cement volumes could be revised pending on the amount of time the hole is open by adjusting the % excess
- The 8-5/8" Intermediate cement job is designed to circulate cement to surface
- The 5-1/2" Production cement job is designed to circulate cement to surface

5. Well Control Equipment:

See COA

The blowout preventer (BOP) equipment will consist of a double ram-type preventer and annular preventer as provided for in Onshore Order #2. The BOP will be hydraulically operated and the ram type preventers will be equipped with blind rams on top and 5" drill pipe rams on bottom. A 13-5/8" BOP will be used during the drilling of the well. A 13-5/8" permanent multi-bowl (A & B sections) casing head will be installed on the 11-3/4" Surface casing. The BOP and Multi-bowl casing head will be tested to a minimum of 5,000 psi by a third party testing service and used continuously until total depth has been reached. The 8-5/8" casing string will be run using a casing hanger landing system which is run through the 13-5/8" BOPs and landed out in the casing hanger landing profile in the Multi-bowl casing head system. The 8-5/8" pack-off will then be installed once the casing hanger has been landed out and pressure tested to 5,000 psi. Doing this allows us to not have to Nipple down the 13-5/8" BOP stack and allows us to maintain well control integrity throughout the duration. 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 drilling reports. Other accessories to the BOP equipment will include the IBOP (Kelly Cock), floor safety valve, choke & kill lines, and a choke manifold rated to 5,000 psi all of which will be tested to working pressure by an independent third party tester. Anytime a component of the BOP stack or choke manifold is changed/replaced or installed the BOP equipment will be re-tested as required.

6. Proposed Mud System:

Depth (MD)	Mud Type	Weight (ppg)	Viscosity	Water Loss	pH	Chlorides (ppm)
0 - 400	SPUD	8.4 - 9.4	32 - 34	N/C	10	1 - 4K
400 - 2,525	Brine	9.5 - 10.0	28	N/C	10	186K
2,525 - 7,500	Cut-Brine	9.0 - 9.5	28	N/C	10	40 - 80K
7,500 - 8,200	Cut-Brine/polymer	9.0 - 9.5	32 - 34	N/C	10	80 - 110K
8,200 - 12,906	Cut-Brine/polymer	9.0 - 9.5	33 - 34	N/C	10	90 - 170K

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

Visual or electronic mud monitoring equipment shall be in place to detect losses or gains in drilling fluid volumes.

7. Auxiliary Well Control Equipment and Monitoring Systems:

a. An IBOP (Kelly Cock) will be in the Top Drive System (TDS) at all times
b. A full opening safety valve having the appropriate connections (4-1/2" IF Connection) will be on the rig floor at all times in the ready position.
c. Hydrogen Sulfide (H_2S) detection equipment will be in operation and breathing equipment on standby upon drilling out the 11-3/4" Surface casing shoe and until the 5-1/2" casing string is cemented in place.

See COA

8. Testing, Logging, and Coring Program:

a. No open hole or cased hole wireline logs are planned during the drilling phase of the well
b. Gamma Ray will be captured from about 300 ft above KOP and throughout the curve and lateral
c. Mud logging program will consist of lagged 10 ft samples and commence at around 5,000 ft MD (about 2,500 ft above KOP) to total depth of the horizontal hole interval
d. Drill stem testing is not anticipated
e. No conventional coring operations are planned

See COA

9. Estimated Bottom Hole Pressure & Temperature:

a. BHP @ Lateral TD: 3,786 psi
b. BHT @ Lateral TD: 137°

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

No abnormal pressures and temperatures are anticipated. We have determined from wells nearby in the area that any hazardous volumes of H_2S are not anticipated on being encountered. If a large volume of H_2S is encountered, the operator will comply with the provisions of Onshore Oil & Gas Order No. 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill the well.

11. Anticipated Starting Date and Duration of Operations:

Location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon as possible after BLM approval. Rig move and drilling operations is anticipated to take 20 days.

LEGEND NATURAL GAS

Project: Eddy County, NM (Nad27)
Site: Sec 20 T24S R 28E
Well: Browning Federal 2H
Wellbore: Wellbore #1
Design: Plan#1 012314
Rig: TBD

PHOENIX TECHNOLOGY SERVICES

Azimuths to Grid North
True North: -0.12°
Magnetic North: 7.40°

Magnetic Field
Strength: 48290.3nT
Dip Angle: 60.02°
Date: 1/23/2014
Model: IGRF2010_14

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00		Begin 1°/100' Build
3	1750.00	8.50	270.00	1745.83	0.00	-42.93	1.00	270.00	11.15		Hold 8.5°, 270° Azm
4	7051.43	8.50	270.00	7000.00	0.00	-648.02	0.00	0.00	153.42		Begin 2°/100' Drop
5	7451.43	0.00	0.00	7400.00	0.00	-679.43	2.00	180.00	156.00		Begin Vertical Hold
6	7525.55	0.00	0.00	7474.54	0.00	-679.43	0.00	0.00	156.00		KOP, 12°/100' Build
7	8278.06	90.30	359.54	7940.00	479.95	-683.34	12.00	359.54	629.02		Hold 90.30°, 359.54° Azm
8	10178.85	90.30	359.54	7930.05	2360.67	-693.63	0.00	0.00	2502.31	T1 Browning Federal 2H	Begin 2°/100' Drop
9	10181.21	90.25	359.54	7930.04	2363.01	-693.62	2.00	-177.28	2504.62		Hold 90.25°, 359.54° Azm
10	12966.11	90.25	359.54	7918.00	5107.60	-920.60	0.00	0.00	5190.15	BHL Browning Federal 2H	TD at 12966.11

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL Browning Federal 2H	7918.00	5107.60	-920.60	445297.10	567033.60	32° 13' 28.55751 N	104° 6' 59.62558 W	Point
- plan hits target center								
T1 Browning Federal 2H	7930.05	2360.68	-693.63	442950.65	567655.77	32° 12' 59.60143 N	104° 6' 59.43518 W	Point
- plan misses target center by 0.06ft at 10178.85ft MD (7930.05 TVD, 2360.68 N, -693.63 E)								

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well Browning Federal 2H, Grid North

Latitude: 32° 12' 36.02363 N
Longitude: 104° 6' 49.03136 W

Grid East: 567954.40
Grid North: 440189.30
Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14
Sample Date: 23-Jan-14
Magnetic Declination: 7.51°
Dip Angle from Horizontal: 60.02°
Magnetic Field Strength: 48290

To convert a Magnetic Direction to a Grid Direction, Add 7.40°
To convert a Magnetic Direction to a True Direction, Add 7.51° East
To convert a True Direction to a Grid Direction, Subtract 0.12°

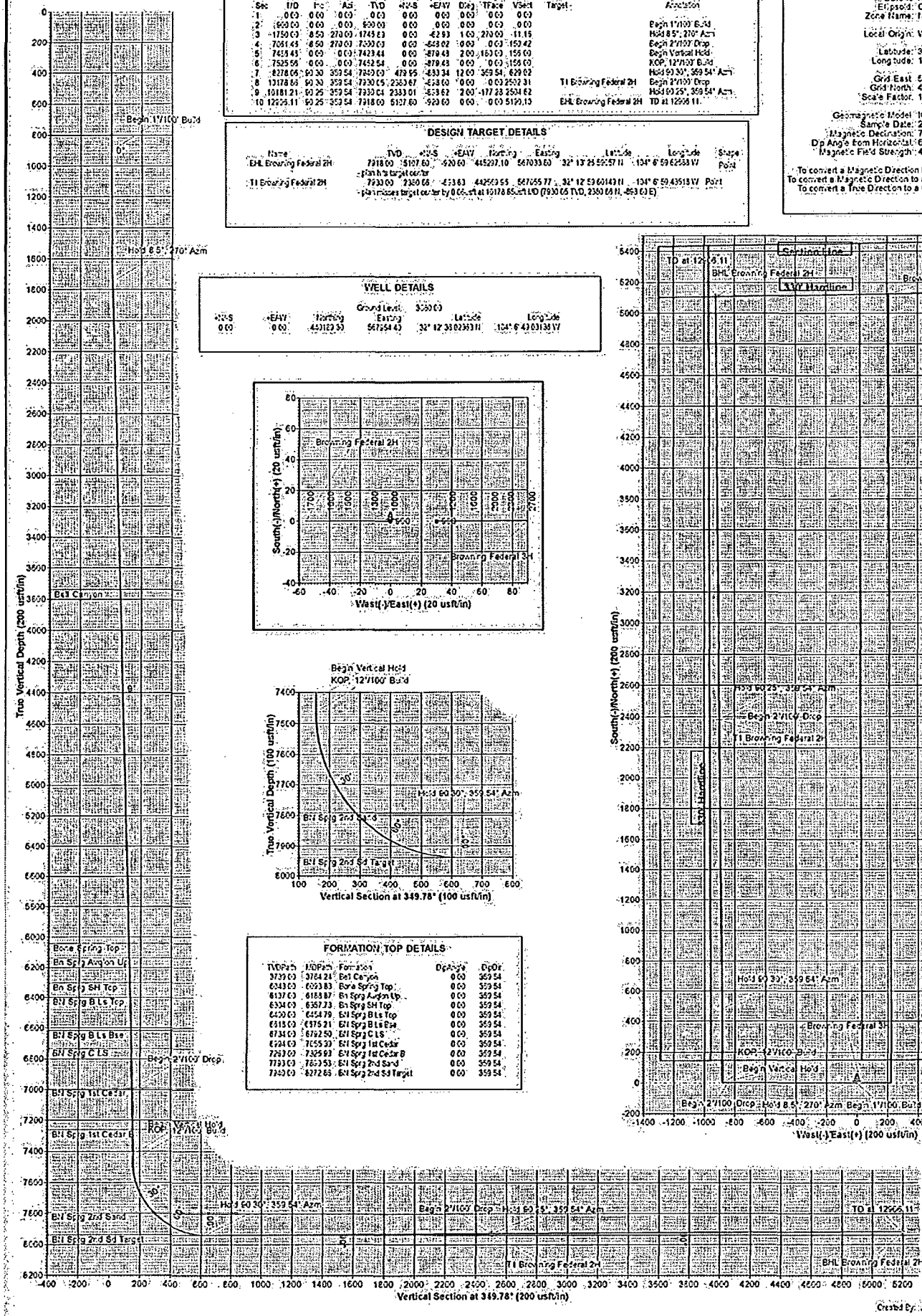
WELL DETAILS

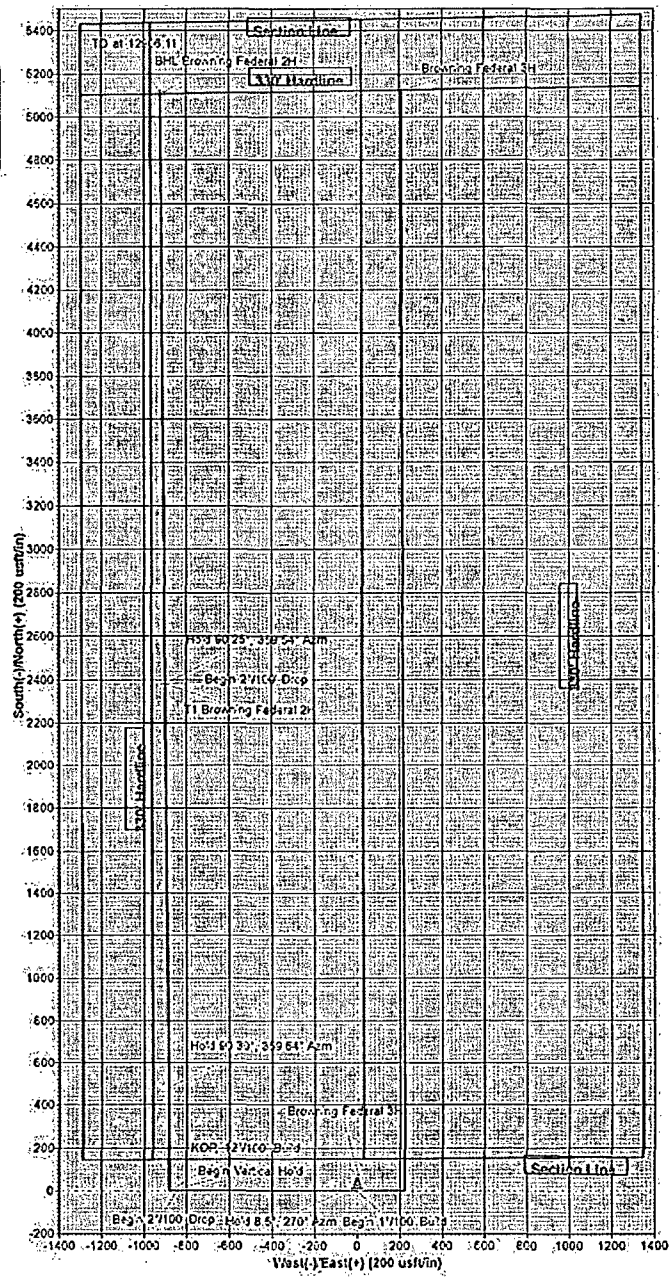
Ground Level: 3530.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	440182.93	567654.43	32° 12' 36.02363 N	104° 6' 43.03136 W

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3739.00	3784.24	Bell Canyon	0.00	359.54
6343.00	6093.83	Bone Spring Top	0.00	359.54
6137.00	6188.87	Bn Spg Avalon Up	0.00	359.54
6334.00	6357.73	Bn Spg SH Top	0.00	359.54
6450.00	6454.79	Bn Spg B Ls Top	0.00	359.54
6518.00	6575.21	Bn Spg B Ls Bse	0.00	359.54
6734.00	6762.50	Bn Spg C LS	0.00	359.54
6924.00	7255.59	Bn Spg 1st Cedar	0.00	359.54
7293.00	7325.93	Bn Spg 1st Cedar B	0.00	359.54
7793.00	7853.53	Bn Spg 2nd Sand	0.00	359.54
7940.00	8272.65	Bn Spg 2nd Sd Target	0.00	359.54





Created By: Jim Vance Date: 8:30, January 30 2014

LEGEND NATURAL GAS

Legend Natural Gas iV, LP

Eddy County, NM (Nad27)
Sec 20 T24S R 28E
Browning Federal 2H

Wellbore #1

Plan: Plan#1 012314

Standard Planning Report

23 January, 2014

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Browning Federal 2H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3105.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3105.00usft (TBD)
Site:	Sec 20 T24S R 28E	North Reference:	Grid
Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 012314		

Project	Eddy County, NM (Nad27)		
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	Sec 20 T24S R 28E				
Site Position:		Northing:	440,189.30 usft	Latitude:	32° 12' 36.02364 N
From:	Map	Easting:	567,954.40 usft	Longitude:	104° 6' 49.03136 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	Browning Federal 2H					
Well Position	+N/-S	0.00 usft	Northing:	440,189.30 usft	Latitude:	32° 12' 36.02364 N
	+E/-W	0.00 usft	Easting:	567,954.40 usft	Longitude:	104° 6' 49.03136 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,080.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	1/23/2014	7.51	60.02	48,290

Design	Plan#1 012314				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	349.78	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,750.00	8.50	270.00	1,746.89	0.00	-62.93	1.00	1.00	0.00	270.00	
7,061.46	8.50	270.00	7,000.00	0.00	-848.02	0.00	0.00	0.00	0.00	
7,486.46	0.00	0.00	7,423.44	0.00	-879.48	2.00	-2.00	0.00	180.00	
7,525.56	0.00	0.00	7,462.54	0.00	-879.48	0.00	0.00	0.00	0.00	
8,278.06	90.30	359.54	7,940.00	479.95	-883.35	12.00	12.00	0.00	359.54	BHL Browning Federa
10,178.85	90.30	359.54	7,930.05	2,380.66	-898.65	0.00	0.00	0.00	0.00	T1 Browning Federal
10,181.20	90.25	359.54	7,930.04	2,383.00	-898.67	2.00	-2.00	0.00	-180.00	
12,906.11	90.25	359.54	7,918.00	5,107.80	-920.60	0.00	0.00	0.00	0.00	BHL Browning Federa

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Browning Federal 2H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3105.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3105.00usft (TBD)
Site:	Sec 20 T24S R 28E	North Reference:	Grid
Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 012314		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin 1°/100' Build									
1,000.00	1.00	270.00	999.99	0.00	-0.87	0.15	1.00	1.00	0.00
1,100.00	2.00	270.00	1,099.96	0.00	-3.49	0.62	1.00	1.00	0.00
1,200.00	3.00	270.00	1,199.86	0.00	-7.85	1.39	1.00	1.00	0.00
1,300.00	4.00	270.00	1,299.68	0.00	-13.96	2.48	1.00	1.00	0.00
1,400.00	5.00	270.00	1,399.37	0.00	-21.80	3.87	1.00	1.00	0.00
1,500.00	6.00	270.00	1,498.90	0.00	-31.39	5.57	1.00	1.00	0.00
1,600.00	7.00	270.00	1,598.26	0.00	-42.71	7.58	1.00	1.00	0.00
1,700.00	8.00	270.00	1,697.40	0.00	-55.76	9.89	1.00	1.00	0.00
1,750.00	8.50	270.00	1,746.89	0.00	-62.93	11.16	1.00	1.00	0.00
Hold 8.5°, 270° Azm									
1,800.00	8.50	270.00	1,796.34	0.00	-70.32	12.47	0.00	0.00	0.00
1,900.00	8.50	270.00	1,895.24	0.00	-85.11	15.10	0.00	0.00	0.00
2,000.00	8.50	270.00	1,994.14	0.00	-99.89	17.72	0.00	0.00	0.00
2,100.00	8.50	270.00	2,093.04	0.00	-114.67	20.34	0.00	0.00	0.00
2,200.00	8.50	270.00	2,191.94	0.00	-129.45	22.96	0.00	0.00	0.00
2,300.00	8.50	270.00	2,290.84	0.00	-144.23	25.58	0.00	0.00	0.00
2,400.00	8.50	270.00	2,389.75	0.00	-159.01	28.20	0.00	0.00	0.00
2,500.00	8.50	270.00	2,488.65	0.00	-173.79	30.83	0.00	0.00	0.00
2,600.00	8.50	270.00	2,587.55	0.00	-188.57	33.45	0.00	0.00	0.00
2,700.00	8.50	270.00	2,686.45	0.00	-203.35	36.07	0.00	0.00	0.00
2,800.00	8.50	270.00	2,785.35	0.00	-218.13	38.69	0.00	0.00	0.00
2,900.00	8.50	270.00	2,884.25	0.00	-232.92	41.31	0.00	0.00	0.00
3,000.00	8.50	270.00	2,983.16	0.00	-247.70	43.94	0.00	0.00	0.00
3,100.00	8.50	270.00	3,082.06	0.00	-262.48	46.56	0.00	0.00	0.00
3,200.00	8.50	270.00	3,180.96	0.00	-277.26	49.18	0.00	0.00	0.00
3,300.00	8.50	270.00	3,279.86	0.00	-292.04	51.80	0.00	0.00	0.00
3,400.00	8.50	270.00	3,378.76	0.00	-306.82	54.42	0.00	0.00	0.00
3,500.00	8.50	270.00	3,477.66	0.00	-321.60	57.04	0.00	0.00	0.00
3,600.00	8.50	270.00	3,576.56	0.00	-336.38	59.67	0.00	0.00	0.00
3,700.00	8.50	270.00	3,675.47	0.00	-351.16	62.29	0.00	0.00	0.00
3,764.24	8.50	270.00	3,739.00	0.00	-360.66	63.97	0.00	0.00	0.00
Bell Canyon									
3,800.00	8.50	270.00	3,774.37	0.00	-365.94	64.91	0.00	0.00	0.00
3,900.00	8.50	270.00	3,873.27	0.00	-380.72	67.53	0.00	0.00	0.00
4,000.00	8.50	270.00	3,972.17	0.00	-395.51	70.15	0.00	0.00	0.00
4,100.00	8.50	270.00	4,071.07	0.00	-410.29	72.78	0.00	0.00	0.00
4,200.00	8.50	270.00	4,169.97	0.00	-425.07	75.40	0.00	0.00	0.00
4,300.00	8.50	270.00	4,268.88	0.00	-439.85	78.02	0.00	0.00	0.00
4,400.00	8.50	270.00	4,367.78	0.00	-454.63	80.64	0.00	0.00	0.00
4,500.00	8.50	270.00	4,466.68	0.00	-469.41	83.26	0.00	0.00	0.00
4,600.00	8.50	270.00	4,565.58	0.00	-484.19	85.88	0.00	0.00	0.00
4,700.00	8.50	270.00	4,664.48	0.00	-498.97	88.51	0.00	0.00	0.00

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Browning Federal 2H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3105.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3105.00usft (TBD)
Site:	Sec 20 T24S R 28E	North Reference:	Grid
Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 012314		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	8.50	270.00	4,763.38	0.00	-513.75	91.13	0.00	0.00	0.00
4,900.00	8.50	270.00	4,862.29	0.00	-528.53	93.75	0.00	0.00	0.00
5,000.00	8.50	270.00	4,961.19	0.00	-543.32	96.37	0.00	0.00	0.00
5,100.00	8.50	270.00	5,060.09	0.00	-558.10	98.99	0.00	0.00	0.00
5,200.00	8.50	270.00	5,158.99	0.00	-572.88	101.61	0.00	0.00	0.00
5,300.00	8.50	270.00	5,257.89	0.00	-587.66	104.24	0.00	0.00	0.00
5,400.00	8.50	270.00	5,356.79	0.00	-602.44	106.86	0.00	0.00	0.00
5,500.00	8.50	270.00	5,455.70	0.00	-617.22	109.48	0.00	0.00	0.00
5,600.00	8.50	270.00	5,554.60	0.00	-632.00	112.10	0.00	0.00	0.00
5,700.00	8.50	270.00	5,653.50	0.00	-646.78	114.72	0.00	0.00	0.00
5,800.00	8.50	270.00	5,752.40	0.00	-661.56	117.35	0.00	0.00	0.00
5,900.00	8.50	270.00	5,851.30	0.00	-676.34	119.97	0.00	0.00	0.00
6,000.00	8.50	270.00	5,950.20	0.00	-691.12	122.59	0.00	0.00	0.00
6,093.83	8.50	270.00	6,043.00	0.00	-704.99	125.05	0.00	0.00	0.00
Bone Spring Top									
6,100.00	8.50	270.00	6,049.10	0.00	-705.91	125.21	0.00	0.00	0.00
6,188.87	8.50	270.00	6,137.00	0.00	-719.04	127.54	0.00	0.00	0.00
Bn Sprg Avglon Up.									
6,200.00	8.50	270.00	6,148.01	0.00	-720.69	127.83	0.00	0.00	0.00
6,300.00	8.50	270.00	6,246.91	0.00	-735.47	130.45	0.00	0.00	0.00
6,357.73	8.50	270.00	6,304.00	0.00	-744.00	131.97	0.00	0.00	0.00
Bn Sprg SH Top									
6,400.00	8.50	270.00	6,345.81	0.00	-750.25	133.08	0.00	0.00	0.00
6,454.79	8.50	270.00	6,400.00	0.00	-758.35	134.51	0.00	0.00	0.00
BN Sprg B Ls Top									
6,500.00	8.50	270.00	6,444.71	0.00	-765.03	135.70	0.00	0.00	0.00
6,600.00	8.50	270.00	6,543.61	0.00	-779.81	138.32	0.00	0.00	0.00
6,675.21	8.50	270.00	6,618.00	0.00	-790.93	140.29	0.00	0.00	0.00
BN Sprg B Ls Bse									
6,700.00	8.50	270.00	6,642.51	0.00	-794.59	140.94	0.00	0.00	0.00
6,792.50	8.50	270.00	6,734.00	0.00	-808.26	143.37	0.00	0.00	0.00
BN Sprg C LS									
6,800.00	8.50	270.00	6,741.42	0.00	-809.37	143.56	0.00	0.00	0.00
6,900.00	8.50	270.00	6,840.32	0.00	-824.15	146.19	0.00	0.00	0.00
7,000.00	8.50	270.00	6,939.22	0.00	-838.93	148.81	0.00	0.00	0.00
7,055.39	8.50	270.00	6,994.00	0.00	-847.12	150.26	0.00	0.00	0.00
BN Sprg 1st Cedar									
7,061.46	8.50	270.00	7,000.00	0.00	-848.02	150.42	0.00	0.00	0.00
Begin 2°/100' Drop									
7,100.00	7.73	270.00	7,038.16	0.00	-853.46	151.38	2.00	-2.00	0.00
7,200.00	5.73	270.00	7,137.46	0.00	-865.18	153.46	2.00	-2.00	0.00
7,300.00	3.73	270.00	7,237.12	0.00	-873.42	154.92	2.00	-2.00	0.00
7,325.93	3.21	270.00	7,263.00	0.00	-874.99	155.20	2.00	-2.00	0.00
BN Sprg 1st Cedar B									
7,400.00	1.73	270.00	7,337.00	0.00	-878.18	155.77	2.00	-2.00	0.00
7,486.46	0.00	0.00	7,423.44	0.00	-879.48	156.00	2.00	-2.00	-104.10
Begin Vertical Hold									
7,500.00	0.00	0.00	7,436.99	0.00	-879.48	156.00	0.00	0.00	0.00
7,525.56	0.00	0.00	7,462.54	0.00	-879.48	156.00	0.00	0.00	0.00
KOP, 12°/100' Build									
7,600.00	8.93	359.54	7,536.69	5.79	-879.53	161.71	12.00	12.00	0.00
7,700.00	20.93	359.54	7,633.13	31.51	-879.74	187.06	12.00	12.00	0.00
7,800.00	32.93	359.54	7,722.12	76.72	-880.10	231.62	12.00	12.00	0.00

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Browning Federal 2H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3105.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3105.00usft (TBD)
Site:	Sec 20 T24S R 28E	North Reference:	Grid
Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 012314		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,890.53	43.80	359.54	7,793.00	132.83	-880.55	286.91	12.00	12.00	0.00
BN Sprg 2nd Sand									
7,900.00	44.93	359.54	7,799.77	139.45	-880.61	293.44	12.00	12.00	0.00
8,000.00	56.93	359.54	7,862.68	216.95	-881.23	369.81	12.00	12.00	0.00
8,100.00	68.93	359.54	7,908.10	305.83	-881.95	457.41	12.00	12.00	0.00
8,200.00	80.93	359.54	7,934.04	402.21	-882.72	552.41	12.00	12.00	0.00
8,272.86	89.68	359.54	7,940.00	474.75	-883.31	623.90	12.00	12.00	0.00
BN Sprg 2nd Sd Target									
8,278.06	90.30	359.54	7,940.00	479.95	-883.35	629.02	12.00	12.00	0.00
Hold 90.30°, 359.54° Azm									
8,300.00	90.30	359.54	7,939.89	501.89	-883.52	650.65	0.00	0.00	0.00
8,400.00	90.30	359.54	7,939.36	601.89	-884.33	749.20	0.00	0.00	0.00
8,500.00	90.30	359.54	7,938.84	701.88	-885.13	847.75	0.00	0.00	0.00
8,600.00	90.30	359.54	7,938.32	801.88	-885.94	946.31	0.00	0.00	0.00
8,700.00	90.30	359.54	7,937.79	901.87	-886.74	1,044.86	0.00	0.00	0.00
8,800.00	90.30	359.54	7,937.27	1,001.87	-887.55	1,143.41	0.00	0.00	0.00
8,900.00	90.30	359.54	7,936.74	1,101.86	-888.35	1,241.97	0.00	0.00	0.00
9,000.00	90.30	359.54	7,936.22	1,201.86	-889.16	1,340.52	0.00	0.00	0.00
9,100.00	90.30	359.54	7,935.70	1,301.86	-889.96	1,439.07	0.00	0.00	0.00
9,200.00	90.30	359.54	7,935.17	1,401.85	-890.77	1,537.62	0.00	0.00	0.00
9,300.00	90.30	359.54	7,934.65	1,501.85	-891.57	1,636.18	0.00	0.00	0.00
9,400.00	90.30	359.54	7,934.13	1,601.84	-892.38	1,734.73	0.00	0.00	0.00
9,500.00	90.30	359.54	7,933.60	1,701.84	-893.18	1,833.28	0.00	0.00	0.00
9,600.00	90.30	359.54	7,933.08	1,801.83	-893.99	1,931.83	0.00	0.00	0.00
9,700.00	90.30	359.54	7,932.56	1,901.83	-894.79	2,030.39	0.00	0.00	0.00
9,800.00	90.30	359.54	7,932.03	2,001.82	-895.60	2,128.94	0.00	0.00	0.00
9,900.00	90.30	359.54	7,931.51	2,101.82	-896.40	2,227.49	0.00	0.00	0.00
10,000.00	90.30	359.54	7,930.99	2,201.81	-897.21	2,326.04	0.00	0.00	0.00
10,100.00	90.30	359.54	7,930.46	2,301.81	-898.01	2,424.60	0.00	0.00	0.00
10,178.85	90.30	359.54	7,930.05	2,380.66	-898.65	2,502.31	0.00	0.00	0.00
Begin 2°/100' Drop									
10,181.20	90.25	359.54	7,930.04	2,383.00	-898.67	2,504.62	2.00	-2.00	0.00
Hold 90.25°, 359.54° Azm									
10,200.00	90.25	359.54	7,929.95	2,401.80	-898.82	2,523.15	0.00	0.00	0.00
10,300.00	90.25	359.54	7,929.51	2,501.80	-899.62	2,621.70	0.00	0.00	0.00
10,400.00	90.25	359.54	7,929.07	2,601.80	-900.43	2,720.25	0.00	0.00	0.00
10,500.00	90.25	359.54	7,928.63	2,701.79	-901.23	2,818.81	0.00	0.00	0.00
10,600.00	90.25	359.54	7,928.19	2,801.79	-902.04	2,917.36	0.00	0.00	0.00
10,700.00	90.25	359.54	7,927.75	2,901.78	-902.84	3,015.91	0.00	0.00	0.00
10,800.00	90.25	359.54	7,927.30	3,001.78	-903.65	3,114.47	0.00	0.00	0.00
10,900.00	90.25	359.54	7,926.86	3,101.78	-904.45	3,213.02	0.00	0.00	0.00
11,000.00	90.25	359.54	7,926.42	3,201.77	-905.26	3,311.57	0.00	0.00	0.00
11,100.00	90.25	359.54	7,925.98	3,301.77	-906.06	3,410.12	0.00	0.00	0.00
11,200.00	90.25	359.54	7,925.54	3,401.76	-906.87	3,508.68	0.00	0.00	0.00
11,300.00	90.25	359.54	7,925.10	3,501.76	-907.67	3,607.23	0.00	0.00	0.00
11,400.00	90.25	359.54	7,924.65	3,601.75	-908.48	3,705.78	0.00	0.00	0.00
11,500.00	90.25	359.54	7,924.21	3,701.75	-909.28	3,804.34	0.00	0.00	0.00
11,600.00	90.25	359.54	7,923.77	3,801.75	-910.09	3,902.89	0.00	0.00	0.00
11,700.00	90.25	359.54	7,923.33	3,901.74	-910.89	4,001.44	0.00	0.00	0.00
11,800.00	90.25	359.54	7,922.89	4,001.74	-911.70	4,100.00	0.00	0.00	0.00
11,900.00	90.25	359.54	7,922.44	4,101.73	-912.50	4,198.55	0.00	0.00	0.00
12,000.00	90.25	359.54	7,922.00	4,201.73	-913.31	4,297.10	0.00	0.00	0.00
12,100.00	90.25	359.54	7,921.56	4,301.72	-914.11	4,395.65	0.00	0.00	0.00

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Browning Federal 2H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3105.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3105.00usft (TBD)
Site:	Sec 20 T24S R 28E	North Reference:	Grid
Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 012314		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,200.00	90.25	359.54	7,921.12	4,401.72	-914.92	4,494.21	0.00	0.00	0.00
12,300.00	90.25	359.54	7,920.68	4,501.72	-915.72	4,592.76	0.00	0.00	0.00
12,400.00	90.25	359.54	7,920.24	4,601.71	-916.53	4,691.31	0.00	0.00	0.00
12,500.00	90.25	359.54	7,919.79	4,701.71	-917.33	4,789.87	0.00	0.00	0.00
12,600.00	90.25	359.54	7,919.35	4,801.70	-918.14	4,888.42	0.00	0.00	0.00
12,700.00	90.25	359.54	7,918.91	4,901.70	-918.94	4,986.97	0.00	0.00	0.00
12,800.00	90.25	359.54	7,918.47	5,001.70	-919.75	5,085.52	0.00	0.00	0.00
12,900.00	90.25	359.54	7,918.03	5,101.69	-920.55	5,184.08	0.00	0.00	0.00
12,906.11	90.25	359.54	7,918.00	5,107.80	-920.60	5,190.10	0.00	0.00	0.00
TD at 12906.11									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL Browning Federal 2 - plan hits target center - Point	0.00	0.00	7,918.00	5,107.80	-920.60	445,297.10	567,033.80	32° 13' 26.59057 N	104° 6' 59.62688 W
T1 Browning Federal 2H - plan misses target center by 0.05usft at 10178.85usft MD (7930.05 TVD, 2380.66 N, -898.65 E) - Point	0.00	0.00	7,930.00	2,380.66	-898.63	442,569.96	567,055.77	32° 12' 59.60149 N	104° 6' 59.43518 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,764.24	3,739.00	Bell Canyon		0.00	359.54
6,093.83	6,043.00	Bone Spring Top		0.00	359.54
6,188.87	6,137.00	Bn Sprg Avalon Up.		0.00	359.54
6,357.73	6,304.00	Bn Sprg SH Top		0.00	359.54
6,454.79	6,400.00	BN Sprg B Ls Top		0.00	359.54
6,675.21	6,618.00	BN Sprg B Ls Bse		0.00	359.54
6,792.50	6,734.00	BN Sprg C LS		0.00	359.54
7,055.39	6,994.00	BN Sprg 1st Cedar		0.00	359.54
7,325.93	7,263.00	BN Sprg 1st Cedar B		0.00	359.54
7,890.53	7,793.00	BN Sprg 2nd Sand		0.00	359.54
8,272.86	7,940.00	BN Sprg 2nd Sd Target		0.00	359.54

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Browning Federal 2H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3105.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3105.00usft (TBD)
Site:	Sec 20 T24S R 28E	North Reference:	Grid
Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 012314		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
900.00	900.00	0.00	0.00	Begin 1°/100' Build
1,750.00	1,746.89	0.00	-62.93	Hold 8.5°, 270° Azm
7,061.46	7,000.00	0.00	-848.02	Begin 2°/100' Drop
7,486.46	7,423.44	0.00	-879.48	Begin Vertical Hold
7,525.56	7,462.54	0.00	-879.48	KOP, 12°/100' Build
8,278.06	7,940.00	479.95	-883.35	Hold 90.30°, 359.54° Azm
10,178.85	7,930.05	2,380.66	-898.65	Begin 2°/100' Drop
10,181.20	7,930.04	2,383.00	-898.67	Hold 90.25°, 359.54° Azm
12,906.11	7,918.00	5,107.80	-920.60	TD at 12906.11

LEGEND NATURAL GAS

Legend Natural Gas iV, LP

Eddy County, NM (Nad27)
Sec 20 T24S R 28E
Browning Federal 2H

Wellbore #1
Plan#1 012314

Anticollision Report

23 January, 2014

LEGEND NATURAL GAS

Anticollision Report

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3105.00usft (TBD)
Reference Site:	Sec 20 T24S R 28E	MD Reference:	WELL @ 3105.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass 5000 GCR DB
Reference Design:	Plan#1 012314	Offset TVD Reference:	Reference Datum

Reference	Plan#1 012314		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 50.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program — Date 1/23/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	12,906.11	Plan#1 012314 (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 20 T24S R 28E						
Browning Federal 3H - Wellbore #1 - Plan#1 012314	900.00	900.00	30.10	26.34	7.995	CC, ES
Browning Federal 3H - Wellbore #1 - Plan#1 012314	12,906.11	12,874.62	1,130.25	940.29	5.950	SF

Offset Design — Sec 20 T24S R 28E - Browning Federal 3H - Wellbore #1 - Plan#1 012314 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	30.10	30.10				
50.00	50.00	50.00	50.00	0.03	0.04	90.00	0.00	30.10	30.10	30.03	0.07	428.534	
100.00	100.00	100.00	100.00	0.08	0.08	90.00	0.00	30.10	30.10	29.93	0.17	178.556	
150.00	150.00	150.00	150.00	0.20	0.20	90.00	0.00	30.10	30.10	29.71	0.39	76.524	
200.00	200.00	200.00	200.00	0.31	0.31	90.00	0.00	30.10	30.10	29.48	0.62	48.697	
250.00	250.00	250.00	250.00	0.42	0.42	90.00	0.00	30.10	30.10	29.28	0.84	35.711	
300.00	300.00	300.00	300.00	0.53	0.53	90.00	0.00	30.10	30.10	29.03	1.07	28.193	
350.00	350.00	350.00	350.00	0.65	0.65	90.00	0.00	30.10	30.10	28.81	1.29	23.290	
400.00	400.00	400.00	400.00	0.76	0.76	90.00	0.00	30.10	30.10	28.58	1.52	19.840	
450.00	450.00	450.00	450.00	0.87	0.87	90.00	0.00	30.10	30.10	28.36	1.74	17.280	
500.00	500.00	500.00	500.00	0.98	0.98	90.00	0.00	30.10	30.10	28.13	1.97	15.305	
550.00	550.00	550.00	550.00	1.10	1.10	90.00	0.00	30.10	30.10	27.91	2.19	13.735	
600.00	600.00	600.00	600.00	1.21	1.21	90.00	0.00	30.10	30.10	27.68	2.42	12.457	
650.00	650.00	650.00	650.00	1.32	1.32	90.00	0.00	30.10	30.10	27.46	2.64	11.397	
700.00	700.00	700.00	700.00	1.43	1.43	90.00	0.00	30.10	30.10	27.23	2.87	10.503	
750.00	750.00	750.00	750.00	1.55	1.55	90.00	0.00	30.10	30.10	27.01	3.09	9.739	
800.00	800.00	800.00	800.00	1.66	1.66	90.00	0.00	30.10	30.10	26.78	3.32	9.079	
850.00	850.00	850.00	850.00	1.77	1.77	90.00	0.00	30.10	30.10	26.56	3.54	8.503	
900.00	900.00	900.00	900.00	1.88	1.88	90.00	0.00	30.10	30.10	26.34	3.76	7.995	CC, ES
950.00	950.00	949.73	949.73	1.99	1.99	90.00	0.00	30.32	30.54	26.56	3.98	7.681	
1,000.00	999.99	999.45	999.44	2.09	2.09	90.00	0.00	30.98	31.84	27.65	4.19	7.607	
1,050.00	1,049.98	1,049.11	1,049.10	2.19	2.19	90.00	0.00	32.04	34.02	29.63	4.39	7.754	
1,100.00	1,099.66	1,098.71	1,098.67	2.30	2.29	90.00	0.00	33.55	37.06	32.47	4.59	8.079	
1,150.00	1,149.92	1,148.57	1,148.50	2.40	2.40	90.00	0.00	35.29	40.76	35.97	4.79	8.506	
1,200.00	1,199.86	1,198.40	1,198.30	2.51	2.50	90.00	0.00	37.02	44.90	39.91	5.00	8.987	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

LEGEND NATURAL GAS

Anticollision Report

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3105.00usft (TBD)
Reference Site:	Sec 20 T24S R 28E	MD Reference:	WELL @ 3105.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass 5000 GCR DB
Reference Design:	Plan#1 012314	Offset TVD Reference:	Reference Datum

Offset Design — Sec 20 T24S R 28E - Browning Federal 3H - Wellbore #1 - Plan#1 012314 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,250.00	1,249.78	1,248.19	1,248.06	2.61	2.61	90.00	0.00	38.76	49.48	44.28	5.20	9.509	
1,300.00	1,299.68	1,297.93	1,297.77	2.72	2.71	90.00	0.00	40.50	54.49	49.08	5.41	10.073	
1,350.00	1,349.54	1,347.64	1,347.45	2.84	2.82	90.00	0.00	42.23	59.93	54.31	5.62	10.668	
1,400.00	1,399.37	1,397.29	1,397.07	2.95	2.93	90.00	0.00	43.97	65.81	59.98	5.83	11.296	
1,450.00	1,449.16	1,446.89	1,446.64	3.07	3.03	90.00	0.00	45.70	72.12	66.08	6.04	11.949	
1,500.00	1,498.90	1,496.43	1,496.15	3.19	3.14	90.00	0.00	47.43	78.86	72.62	6.24	12.628	
1,550.00	1,548.61	1,545.92	1,545.60	3.32	3.25	90.00	0.00	49.15	86.04	79.58	6.46	13.327	
1,600.00	1,598.26	1,595.33	1,594.99	3.44	3.36	90.00	0.00	50.88	93.64	86.98	6.67	14.048	
1,650.00	1,647.66	1,644.68	1,644.31	3.58	3.47	90.00	0.00	52.60	101.68	94.80	6.88	14.785	
1,700.00	1,697.40	1,693.66	1,693.56	3.71	3.58	90.00	0.00	54.32	110.15	103.06	7.09	15.539	
1,750.00	1,746.89	1,743.16	1,742.73	3.85	3.69	90.00	0.00	56.04	119.04	111.74	7.30	16.307	
1,800.00	1,796.34	1,792.33	1,791.86	4.00	3.80	90.00	0.00	57.75	128.16	120.64	7.52	17.046	
1,850.00	1,845.79	1,841.49	1,841.00	4.15	3.91	90.00	0.00	59.47	137.27	129.53	7.74	17.739	
1,900.00	1,895.24	1,890.65	1,890.13	4.30	4.02	90.00	0.00	61.18	146.38	138.42	7.96	18.397	
1,950.00	1,944.69	1,939.81	1,939.26	4.45	4.13	90.00	0.00	62.90	155.49	147.31	8.18	19.017	
2,000.00	1,994.14	1,988.98	1,988.40	4.60	4.24	90.00	0.00	64.62	164.60	156.20	8.40	19.598	
2,050.00	2,043.59	2,038.14	2,037.53	4.76	4.35	90.00	0.00	66.33	173.71	165.09	8.62	20.151	
2,100.00	2,093.04	2,087.30	2,086.66	4.91	4.46	90.00	0.00	68.05	182.83	173.98	8.84	20.674	
2,150.00	2,142.49	2,136.47	2,135.79	5.07	4.57	90.00	0.00	69.76	191.94	182.87	9.07	21.170	
2,200.00	2,191.94	2,185.63	2,184.93	5.23	4.68	90.00	0.00	71.48	201.05	191.76	9.29	21.641	
2,250.00	2,241.39	2,234.79	2,234.06	5.39	4.80	90.00	0.00	73.19	210.16	200.65	9.51	22.089	
2,300.00	2,290.84	2,283.95	2,283.19	5.55	4.91	90.00	0.00	74.91	219.27	209.53	9.74	22.515	
2,350.00	2,340.30	2,333.12	2,332.32	5.71	5.02	90.00	0.00	76.63	228.38	218.42	9.96	22.921	
2,400.00	2,389.75	2,382.28	2,381.46	5.88	5.13	90.00	0.00	78.34	237.50	227.31	10.19	23.308	
2,450.00	2,439.20	2,431.44	2,430.59	6.04	5.24	90.00	0.00	80.06	246.61	236.19	10.42	23.677	
2,500.00	2,488.65	2,480.60	2,479.72	6.20	5.36	90.00	0.00	81.77	255.72	245.08	10.64	24.031	
2,550.00	2,538.10	2,529.77	2,528.86	6.37	5.47	90.00	0.00	83.49	264.83	253.96	10.87	24.368	
2,600.00	2,587.55	2,578.93	2,577.99	6.53	5.58	90.00	0.00	85.20	273.94	262.85	11.09	24.691	
2,650.00	2,637.00	2,628.09	2,627.12	6.70	5.69	90.00	0.00	86.92	283.06	271.73	11.32	25.001	
2,700.00	2,686.45	2,677.26	2,676.25	6.87	5.81	90.00	0.00	88.64	292.17	280.62	11.55	25.298	
2,750.00	2,735.90	2,726.42	2,725.39	7.03	5.92	90.00	0.00	90.35	301.28	289.50	11.78	25.582	
2,800.00	2,785.35	2,775.58	2,774.52	7.20	6.03	90.00	0.00	92.07	310.39	298.39	12.00	25.856	
2,850.00	2,834.80	2,824.74	2,823.65	7.37	6.14	90.00	0.00	93.78	319.50	307.27	12.23	26.119	
2,900.00	2,884.25	2,873.91	2,872.79	7.54	6.26	90.00	0.00	95.50	328.61	316.15	12.46	26.372	
2,950.00	2,933.70	2,923.07	2,921.92	7.71	6.37	90.00	0.00	97.21	337.73	325.04	12.69	26.615	
3,000.00	2,983.16	2,972.23	2,971.05	7.87	6.48	90.00	0.00	98.93	346.84	333.92	12.92	26.849	
3,050.00	3,032.61	3,021.39	3,020.18	8.04	6.60	90.00	0.00	100.65	355.95	342.80	13.15	27.075	
3,100.00	3,082.06	3,070.56	3,069.32	8.21	6.71	90.00	0.00	102.36	365.06	351.69	13.38	27.292	
3,150.00	3,131.51	3,119.72	3,118.45	8.38	6.82	90.00	0.00	104.08	374.17	360.57	13.61	27.502	
3,200.00	3,180.96	3,168.88	3,167.58	8.55	6.93	90.00	0.00	105.79	383.28	369.45	13.83	27.705	
3,250.00	3,230.41	3,218.05	3,216.71	8.72	7.05	90.00	0.00	107.51	392.40	378.33	14.06	27.901	
3,300.00	3,279.86	3,267.21	3,265.85	8.89	7.16	90.00	0.00	109.22	401.51	387.21	14.29	28.090	
3,350.00	3,329.31	3,316.37	3,314.98	9.06	7.27	90.00	0.00	110.94	410.62	396.10	14.52	28.273	
3,400.00	3,378.76	3,365.53	3,364.11	9.23	7.39	90.00	0.00	112.66	419.73	404.98	14.75	28.450	
3,450.00	3,428.21	3,414.70	3,413.25	9.40	7.50	90.00	0.00	114.37	428.84	413.86	14.98	28.621	
3,500.00	3,477.66	3,463.86	3,462.38	9.58	7.62	90.00	0.00	116.09	437.96	422.74	15.21	28.787	
3,550.00	3,527.11	3,513.02	3,511.51	9.75	7.73	90.00	0.00	117.80	447.07	431.62	15.44	28.948	
3,600.00	3,576.56	3,562.19	3,560.64	9.92	7.84	90.00	0.00	119.52	456.18	440.50	15.67	29.104	
3,650.00	3,626.02	3,611.35	3,609.78	10.09	7.96	90.00	0.00	121.24	465.29	449.39	15.90	29.255	
3,700.00	3,675.47	3,660.51	3,658.91	10.26	8.07	90.00	0.00	122.95	474.40	458.27	16.14	29.401	
3,750.00	3,724.92	3,709.67	3,708.04	10.43	8.18	90.00	0.00	124.67	483.51	467.15	16.37	29.544	
3,800.00	3,774.37	3,758.84	3,757.18	10.61	8.30	90.00	0.00	126.38	492.63	476.03	16.60	29.682	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3105.00usft (TBD)
Reference Site:	Sec 20 T24S R 28E	MD Reference:	WELL @ 3105.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass 5000 GCR DB
Reference Design:	Plan#1 012314	Offset TVD Reference:	Reference Datum

Offset Design — Sec 20 T24S R 28E - Browning Federal 3H - Wellbore #1 - Plan#1 012314 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,850.00	3,823.82	3,808.00	3,806.31	10.78	8.41	90.00	0.00	128.10	501.74	484.91	16.83	29.816	
3,900.00	3,873.27	3,857.16	3,855.44	10.85	8.52	90.00	0.00	129.81	510.65	493.79	17.05	29.947	
3,950.00	3,922.72	3,906.32	3,904.57	11.12	8.64	90.00	0.00	131.53	519.98	502.67	17.29	30.073	
4,000.00	3,972.17	3,955.49	3,953.71	11.29	8.75	90.00	0.00	133.25	529.07	511.55	17.52	30.197	
4,050.00	4,021.62	4,004.65	4,002.84	11.47	8.87	90.00	0.00	134.96	538.19	520.43	17.75	30.317	
4,100.00	4,071.07	4,053.81	4,051.97	11.64	8.98	90.00	0.00	136.68	547.30	529.31	17.98	30.433	
4,150.00	4,120.52	4,102.98	4,101.11	11.81	9.09	90.00	0.00	138.39	556.41	538.19	18.21	30.547	
4,200.00	4,169.97	4,152.14	4,150.24	11.99	9.21	90.00	0.00	140.11	565.52	547.07	18.45	30.658	
4,250.00	4,219.43	4,201.30	4,199.37	12.16	9.32	90.00	0.00	141.82	574.63	555.95	18.68	30.766	
4,300.00	4,268.88	4,250.46	4,248.50	12.33	9.43	90.00	0.00	143.54	583.74	564.83	18.91	30.871	
4,350.00	4,318.33	4,299.63	4,297.64	12.50	9.55	90.00	0.00	145.26	592.86	573.71	19.14	30.973	
4,400.00	4,367.78	4,348.79	4,346.77	12.68	9.66	90.00	0.00	146.97	601.97	582.59	19.37	31.073	
4,450.00	4,417.23	4,397.95	4,395.90	12.85	9.78	90.00	0.00	148.69	611.08	591.48	19.60	31.171	
4,500.00	4,466.68	4,447.11	4,445.03	13.02	9.89	90.00	0.00	150.40	620.19	600.35	19.84	31.266	
4,550.00	4,516.13	4,496.28	4,494.17	13.20	10.00	90.00	0.00	152.12	629.30	609.23	20.07	31.359	
4,600.00	4,565.58	4,545.44	4,543.30	13.37	10.12	90.00	0.00	153.83	638.41	618.11	20.30	31.449	
4,650.00	4,615.03	4,594.60	4,592.43	13.54	10.23	90.00	0.00	155.55	647.53	626.99	20.53	31.538	
4,700.00	4,664.48	4,643.77	4,641.57	13.72	10.35	90.00	0.00	157.27	656.64	635.87	20.76	31.624	
4,750.00	4,713.93	4,692.93	4,690.70	13.89	10.46	90.00	0.00	158.98	665.75	644.75	21.00	31.708	
4,800.00	4,763.38	4,742.09	4,739.83	14.07	10.57	90.00	0.00	160.70	674.86	653.63	21.23	31.791	
4,850.00	4,812.83	4,791.25	4,788.96	14.24	10.69	90.00	0.00	162.41	683.97	662.51	21.46	31.872	
4,900.00	4,862.29	4,840.42	4,838.10	14.41	10.80	90.00	0.00	164.13	693.09	671.39	21.69	31.950	
4,950.00	4,911.74	4,889.58	4,887.23	14.59	10.92	90.00	0.00	165.84	702.20	680.27	21.92	32.028	
5,000.00	4,961.19	4,938.74	4,936.36	14.76	11.03	90.00	0.00	167.56	711.31	689.15	22.16	32.103	
5,050.00	5,010.64	4,987.90	4,985.50	14.94	11.14	90.00	0.00	169.28	720.42	698.03	22.39	32.177	
5,100.00	5,060.09	5,037.07	5,034.63	15.11	11.26	90.00	0.00	170.99	729.53	706.91	22.62	32.249	
5,150.00	5,109.54	5,086.23	5,083.76	15.28	11.37	90.00	0.00	172.71	738.64	715.79	22.85	32.320	
5,200.00	5,158.99	5,135.39	5,132.89	15.46	11.49	90.00	0.00	174.42	747.76	724.67	23.09	32.389	
5,250.00	5,208.44	5,184.56	5,182.03	15.63	11.60	90.00	0.00	176.14	756.87	733.55	23.32	32.457	
5,300.00	5,257.89	5,233.72	5,231.16	15.81	11.72	90.00	0.00	177.85	765.98	742.43	23.55	32.523	
5,350.00	5,307.34	5,282.88	5,280.29	15.98	11.83	90.00	0.00	179.57	775.09	751.31	23.78	32.588	
5,400.00	5,356.79	5,332.04	5,329.43	16.15	11.94	90.00	0.00	181.29	784.20	760.19	24.02	32.652	
5,450.00	5,406.24	5,381.21	5,378.56	16.33	12.06	90.00	0.00	183.00	793.31	769.06	24.25	32.714	
5,500.00	5,455.70	5,430.37	5,427.69	16.50	12.17	90.00	0.00	184.72	802.43	777.94	24.48	32.775	
5,550.00	5,505.15	5,479.53	5,476.82	16.68	12.29	90.00	0.00	186.43	811.54	786.82	24.72	32.835	
5,600.00	5,554.60	5,528.69	5,525.96	16.85	12.40	90.00	0.00	188.15	820.65	795.70	24.95	32.894	
5,650.00	5,604.05	5,577.86	5,575.09	17.03	12.51	90.00	0.00	189.87	829.76	804.58	25.18	32.952	
5,700.00	5,653.50	5,627.02	5,624.22	17.20	12.63	90.00	0.00	191.58	838.87	813.46	25.41	33.009	
5,750.00	5,702.95	5,676.18	5,673.35	17.37	12.74	90.00	0.00	193.30	847.99	822.34	25.65	33.064	
5,800.00	5,752.40	5,725.35	5,722.49	17.55	12.86	90.00	0.00	195.01	857.10	831.22	25.88	33.119	
5,850.00	5,801.85	5,774.51	5,771.62	17.72	12.97	90.00	0.00	196.73	866.21	840.10	26.11	33.172	
5,900.00	5,851.30	5,823.67	5,820.75	17.90	13.09	90.00	0.00	198.44	875.32	848.98	26.35	33.225	
5,950.00	5,900.75	5,872.83	5,869.89	18.07	13.20	90.00	0.00	200.16	884.43	857.85	26.58	33.276	
6,000.00	5,950.20	5,922.00	5,919.02	18.25	13.31	90.00	0.00	201.88	893.54	866.73	26.81	33.327	
6,050.00	5,999.65	5,971.16	5,968.15	18.42	13.43	90.00	0.00	203.59	902.66	875.61	27.04	33.376	
6,100.00	6,049.10	6,020.32	6,017.28	18.60	13.54	90.00	0.00	205.31	911.77	884.49	27.28	33.425	
6,150.00	6,098.56	6,069.49	6,066.42	18.77	13.66	90.00	0.00	207.02	920.88	893.37	27.51	33.473	
6,200.00	6,148.01	6,118.65	6,115.55	18.95	13.77	90.00	0.00	208.74	929.99	902.25	27.74	33.520	
6,250.00	6,197.46	6,167.81	6,164.68	19.12	13.89	90.00	0.00	210.45	939.10	911.13	27.98	33.566	
6,300.00	6,246.91	6,216.97	6,213.82	19.30	14.00	90.00	0.00	212.17	948.22	920.00	28.21	33.612	
6,350.00	6,296.36	6,266.14	6,262.95	19.47	14.11	90.00	0.00	213.89	957.33	928.88	28.44	33.657	
6,400.00	6,345.81	6,315.30	6,312.08	19.65	14.23	90.00	0.00	215.60	966.44	937.76	28.68	33.701	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3105.00usft (TBD)
Reference Site:	Sec 20 T24S R 28E	MD Reference:	WELL @ 3105.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass 5000 GCR DB
Reference Design:	Plan#1 012314	Offset TVD Reference:	Reference Datum

Offset Design — Sec 20 T24S R 28E - Browning Federal 3H - Wellbore #1 - Plan#1 012314 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,450.00	6,395.26	6,384.46	6,361.21	19.82	14.34	90.00	0.00	217.32	975.55	946.64	28.91	33.744	
6,500.00	6,444.71	6,413.62	6,410.35	20.00	14.46	90.00	0.00	219.03	984.66	955.52	29.14	33.786	
6,550.00	6,494.16	6,462.79	6,459.46	20.17	14.57	90.00	0.00	220.75	993.77	964.40	29.38	33.828	
6,600.00	6,543.61	6,516.59	6,513.25	20.34	14.69	90.00	0.00	222.60	1,002.87	973.25	29.62	33.859	
6,650.00	6,593.06	6,592.64	6,589.29	20.52	14.85	90.00	0.00	223.89	1,011.10	981.20	29.90	33.816	
6,700.00	6,642.51	6,645.87	6,642.51	20.69	14.96	90.00	0.00	223.91	1,018.50	988.37	30.13	33.805	
6,750.00	6,691.97	6,695.32	6,691.97	20.87	15.05	90.00	0.00	223.91	1,025.69	995.54	30.35	33.803	
6,800.00	6,741.42	6,744.77	6,741.42	21.04	15.15	90.00	0.00	223.91	1,033.28	1,002.71	30.57	33.798	
6,850.00	6,790.87	6,794.22	6,790.87	21.22	15.25	90.00	0.00	223.91	1,040.67	1,009.88	30.80	33.793	
6,900.00	6,840.32	6,843.67	6,840.32	21.39	15.35	90.00	0.00	223.91	1,048.06	1,017.04	31.02	33.788	
6,950.00	6,889.77	6,893.12	6,889.77	21.57	15.45	90.00	0.00	223.91	1,055.45	1,024.21	31.24	33.783	
7,000.00	6,939.22	6,942.57	6,939.22	21.74	15.55	90.00	0.00	223.91	1,062.84	1,031.38	31.47	33.778	
7,050.00	6,988.67	6,992.02	6,988.67	21.92	15.65	90.00	0.00	223.91	1,070.23	1,038.54	31.69	33.773	
7,100.00	7,038.16	7,041.51	7,038.16	22.03	15.74	90.00	0.00	223.91	1,077.37	1,045.43	31.93	33.738	
7,150.00	7,087.76	7,091.11	7,087.76	22.20	15.84	90.00	0.00	223.91	1,083.66	1,051.50	32.16	33.694	
7,200.00	7,137.46	7,140.82	7,137.46	22.32	15.94	90.00	0.00	223.91	1,089.08	1,056.70	32.38	33.631	
7,250.00	7,187.26	7,190.61	7,187.26	22.42	16.04	90.00	0.00	223.91	1,093.64	1,061.05	32.59	33.554	
7,300.00	7,237.12	7,240.47	7,237.12	22.52	16.14	90.00	0.00	223.91	1,097.33	1,064.53	32.80	33.459	
7,350.00	7,287.04	7,290.39	7,287.04	22.61	16.25	90.00	0.00	223.91	1,100.14	1,067.16	32.99	33.350	
7,400.00	7,337.00	7,340.35	7,337.00	22.69	16.35	90.00	0.00	223.91	1,102.09	1,068.92	33.17	33.223	
7,450.00	7,386.99	7,390.34	7,386.99	22.76	16.45	90.00	0.00	223.91	1,103.16	1,069.81	33.35	33.078	
7,500.00	7,436.99	7,440.34	7,436.99	22.83	16.55	90.00	0.00	223.91	1,103.39	1,069.86	33.53	32.907	
7,512.83	7,449.82	7,453.17	7,449.82	22.85	16.58	90.00	0.00	223.91	1,103.39	1,069.82	33.58	32.860	
7,550.00	7,486.98	7,490.33	7,486.98	22.91	16.65	90.03	0.00	223.91	1,103.40	1,069.67	33.73	32.717	
7,600.00	7,536.69	7,540.80	7,537.36	22.98	16.75	90.17	2.61	223.90	1,103.44	1,069.51	33.93	32.525	
7,650.00	7,585.58	7,591.55	7,587.46	23.06	16.66	90.29	10.57	223.88	1,103.51	1,069.38	34.13	32.337	
7,700.00	7,633.13	7,642.58	7,636.69	23.14	16.96	90.40	23.90	223.84	1,103.61	1,069.28	34.33	32.149	
7,750.00	7,678.81	7,693.88	7,684.47	23.22	17.07	90.48	42.50	223.79	1,103.74	1,069.20	34.54	31.956	
7,800.00	7,722.12	7,745.43	7,730.19	23.30	17.17	90.54	66.26	223.72	1,103.90	1,069.13	34.77	31.751	
7,850.00	7,762.59	7,797.23	7,773.28	23.38	17.28	90.58	94.94	223.63	1,104.08	1,069.06	35.02	31.526	
7,900.00	7,799.77	7,849.24	7,813.18	23.48	17.40	90.58	128.28	223.54	1,104.28	1,068.97	35.31	31.270	
7,950.00	7,833.25	7,901.45	7,849.34	23.58	17.54	90.55	165.90	223.43	1,104.50	1,068.84	35.66	30.975	
8,000.00	7,862.68	7,953.84	7,881.28	23.70	17.72	90.50	207.40	223.31	1,104.73	1,068.67	36.06	30.635	
8,050.00	7,887.71	8,006.37	7,908.56	23.83	17.94	90.41	252.26	223.18	1,104.95	1,068.44	36.54	30.244	
8,100.00	7,908.10	8,059.02	7,930.78	23.99	18.22	90.30	299.06	223.04	1,105.23	1,068.15	37.08	29.803	
8,150.00	7,923.59	8,111.74	7,947.64	24.17	18.53	90.18	349.89	222.89	1,105.49	1,067.78	37.71	29.315	
8,200.00	7,934.04	8,164.52	7,958.91	24.39	18.89	90.04	401.41	222.74	1,105.74	1,067.33	38.41	28.785	
8,250.00	7,939.32	8,217.30	7,964.42	24.63	19.29	89.90	453.88	222.59	1,106.00	1,066.81	39.18	28.225	
8,300.00	7,939.69	8,268.60	7,964.94	24.91	19.71	89.83	505.17	222.44	1,106.25	1,066.25	40.01	27.651	
8,350.00	7,939.62	8,318.60	7,964.81	25.22	20.15	89.83	555.17	222.29	1,106.51	1,065.62	40.89	27.058	
8,400.00	7,939.36	8,368.60	7,964.69	25.56	20.62	89.83	605.17	222.15	1,106.77	1,064.96	41.81	26.471	
8,450.00	7,939.10	8,418.60	7,964.57	25.94	21.12	89.83	655.17	222.00	1,107.03	1,064.23	42.81	25.861	
8,500.00	7,938.84	8,468.59	7,964.45	26.34	21.65	89.83	705.17	221.86	1,107.29	1,063.45	43.84	25.259	
8,550.00	7,938.58	8,518.59	7,964.33	26.77	22.19	89.83	755.16	221.71	1,107.55	1,062.62	44.91	24.646	
8,600.00	7,938.32	8,568.59	7,964.20	27.23	22.77	89.83	805.16	221.57	1,107.81	1,061.75	46.07	24.048	
8,650.00	7,938.05	8,618.59	7,964.08	27.72	23.36	89.83	855.16	221.42	1,108.07	1,060.82	47.26	23.448	
8,700.00	7,937.79	8,668.59	7,963.96	28.22	23.98	89.83	905.16	221.28	1,108.33	1,059.86	48.47	22.866	
8,750.00	7,937.53	8,718.59	7,963.84	28.76	24.61	89.83	955.16	221.13	1,108.59	1,058.86	49.74	22.290	
8,800.00	7,937.27	8,768.59	7,963.71	29.30	25.26	89.83	1,005.16	220.98	1,108.85	1,057.83	51.02	21.733	
8,850.00	7,937.01	8,818.59	7,963.59	29.88	25.93	89.83	1,055.16	220.84	1,109.11	1,056.76	52.35	21.185	
8,900.00	7,936.74	8,868.59	7,963.47	30.48	26.61	89.83	1,105.16	220.69	1,109.38	1,055.67	53.70	20.658	
8,950.00	7,936.48	8,918.59	7,963.35	31.07	27.31	89.83	1,155.15	220.55	1,109.64	1,054.55	55.09	20.142	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3105.00usft (TBD)
Reference Site:	Sec 20 T24S R 28E	MD Reference:	WELL @ 3105.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass 5000 GCR DB
Reference Design:	Plan#1 012314	Offset TVD Reference:	Reference Datum

Offset Design — Sec 20 T24S R 28E - Browning Federal 3H - Wellbore #1 - Plan#1 012314 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.00	7,936.22	8,968.59	7,963.23	31.69	28.02	89.83	1,205.15	220.40	1,109.90	1,053.40	56.49	19.646	
9,050.00	7,935.96	9,018.59	7,963.10	32.33	28.73	89.83	1,255.15	220.26	1,110.16	1,052.23	57.93	19.164	
9,100.00	7,935.70	9,068.58	7,962.98	32.93	29.46	89.83	1,305.15	220.11	1,110.42	1,051.04	59.38	18.701	
9,150.00	7,935.44	9,118.58	7,962.86	33.64	30.20	89.83	1,355.15	219.97	1,110.68	1,049.82	60.85	18.251	
9,200.00	7,935.17	9,168.58	7,962.74	34.31	30.95	89.83	1,405.15	219.82	1,110.94	1,048.59	62.34	17.820	
9,250.00	7,934.91	9,218.58	7,962.61	35.00	31.71	89.83	1,455.15	219.68	1,111.20	1,047.34	63.86	17.401	
9,300.00	7,934.65	9,268.58	7,962.49	35.70	32.48	89.83	1,505.15	219.53	1,111.46	1,046.08	65.38	17.000	
9,350.00	7,934.39	9,318.58	7,962.37	36.41	33.25	89.83	1,555.15	219.38	1,111.72	1,044.79	66.92	16.612	
9,400.00	7,934.13	9,368.58	7,962.25	37.12	34.03	89.83	1,605.14	219.24	1,111.98	1,043.50	68.48	16.239	
9,450.00	7,933.86	9,418.58	7,962.13	37.85	34.82	89.83	1,655.14	219.09	1,112.24	1,042.19	70.05	15.878	
9,500.00	7,933.60	9,468.58	7,962.00	38.58	35.61	89.83	1,705.14	218.95	1,112.50	1,040.87	71.63	15.532	
9,550.00	7,933.34	9,518.58	7,961.88	39.32	36.41	89.83	1,755.14	218.80	1,112.76	1,039.54	73.22	15.197	
9,600.00	7,933.08	9,568.58	7,961.76	40.07	37.21	89.83	1,805.14	218.66	1,113.02	1,038.20	74.82	14.876	
9,650.00	7,932.82	9,618.58	7,961.64	40.83	38.02	89.83	1,855.14	218.51	1,113.28	1,036.84	76.44	14.565	
9,700.00	7,932.56	9,668.57	7,961.52	41.59	38.84	89.83	1,905.14	218.37	1,113.54	1,035.48	78.06	14.265	
9,750.00	7,932.29	9,718.57	7,961.39	42.36	39.65	89.83	1,955.14	218.22	1,113.80	1,034.11	79.69	13.976	
9,800.00	7,932.03	9,768.57	7,961.27	43.13	40.48	89.83	2,005.13	218.08	1,114.06	1,032.73	81.33	13.698	
9,850.00	7,931.77	9,818.57	7,961.15	43.91	41.30	89.83	2,055.13	217.93	1,114.32	1,031.34	82.98	13.429	
9,900.00	7,931.51	9,868.57	7,961.03	44.69	42.13	89.83	2,105.13	217.78	1,114.58	1,029.95	84.63	13.169	
9,950.00	7,931.25	9,918.57	7,960.90	45.48	42.97	89.83	2,155.13	217.64	1,114.84	1,028.55	86.30	12.919	
10,000.00	7,930.99	9,968.57	7,960.78	46.28	43.80	89.83	2,205.13	217.49	1,115.11	1,027.14	87.97	12.677	
10,050.00	7,930.72	10,018.57	7,960.66	47.08	44.64	89.83	2,255.13	217.35	1,115.37	1,025.72	89.64	12.442	
10,100.00	7,930.46	10,068.57	7,960.54	47.88	45.48	89.83	2,305.13	217.20	1,115.63	1,024.30	91.32	12.216	
10,150.00	7,930.20	10,118.57	7,960.42	48.69	46.33	89.83	2,355.13	217.06	1,115.89	1,022.88	93.01	11.997	
10,200.00	7,929.95	10,168.57	7,960.29	49.47	47.18	89.83	2,405.12	216.91	1,116.15	1,021.48	94.67	11.790	
10,250.00	7,929.73	10,218.57	7,960.17	50.28	48.03	89.83	2,455.12	216.77	1,116.41	1,020.04	96.36	11.585	
10,300.00	7,929.51	10,268.55	7,960.06	51.10	48.88	89.83	2,505.11	216.62	1,116.67	1,018.63	98.04	11.390	
10,350.00	7,929.29	10,318.55	7,959.96	51.92	49.66	89.83	2,555.11	216.48	1,116.93	1,017.23	99.69	11.204	
10,400.00	7,929.07	10,368.55	7,959.86	52.74	50.51	89.83	2,605.10	216.33	1,117.19	1,015.78	101.40	11.017	
10,450.00	7,928.85	10,418.55	7,959.77	53.57	51.37	89.83	2,655.10	216.18	1,117.45	1,014.33	103.12	10.837	
10,500.00	7,928.63	10,468.55	7,959.67	54.40	52.23	89.83	2,705.10	216.04	1,117.71	1,012.87	104.84	10.661	
10,550.00	7,928.41	10,518.54	7,959.57	55.23	53.10	89.83	2,755.10	215.89	1,117.97	1,011.41	106.56	10.492	
10,600.00	7,928.19	10,568.54	7,959.48	56.07	53.96	89.83	2,805.10	215.75	1,118.23	1,009.95	108.28	10.327	
10,650.00	7,927.97	10,618.54	7,959.38	56.91	54.82	89.83	2,855.10	215.60	1,118.49	1,008.48	110.01	10.167	
10,700.00	7,927.75	10,668.54	7,959.28	57.74	55.69	89.83	2,905.10	215.46	1,118.75	1,007.01	111.74	10.012	
10,750.00	7,927.52	10,718.54	7,959.19	58.59	56.56	89.83	2,955.10	215.31	1,119.01	1,005.53	113.48	9.861	
10,800.00	7,927.30	10,768.54	7,959.09	59.43	57.43	89.83	3,005.10	215.17	1,119.27	1,004.05	115.22	9.715	
10,850.00	7,927.08	10,818.54	7,958.99	60.28	58.30	89.83	3,055.09	215.02	1,119.53	1,002.57	116.96	9.572	
10,900.00	7,926.86	10,868.54	7,958.90	61.13	59.17	89.83	3,105.09	214.88	1,119.79	1,001.09	118.70	9.434	
10,950.00	7,926.64	10,918.54	7,958.80	61.98	60.05	89.83	3,155.09	214.73	1,120.05	999.61	120.45	9.299	
11,000.00	7,926.42	10,968.54	7,958.70	62.83	60.92	89.83	3,205.09	214.58	1,120.31	998.12	122.19	9.168	
11,050.00	7,926.20	11,018.54	7,958.61	63.68	61.80	89.83	3,255.09	214.44	1,120.57	996.63	123.94	9.041	
11,100.00	7,925.98	11,068.54	7,958.51	64.54	62.68	89.83	3,305.09	214.29	1,120.83	995.14	125.70	8.917	
11,150.00	7,925.76	11,118.53	7,958.42	65.39	63.55	89.83	3,355.09	214.15	1,121.09	993.64	127.45	8.796	
11,200.00	7,925.54	11,168.53	7,958.32	66.25	64.43	89.83	3,405.09	214.00	1,121.35	992.15	129.21	8.679	
11,250.00	7,925.32	11,218.53	7,958.22	67.11	65.31	89.83	3,455.09	213.86	1,121.62	990.65	130.97	8.564	
11,300.00	7,925.10	11,268.53	7,958.13	67.98	66.20	89.83	3,505.08	213.71	1,121.88	989.15	132.73	8.453	
11,350.00	7,924.87	11,318.53	7,958.03	68.84	67.08	89.83	3,555.08	213.57	1,122.14	987.65	134.49	8.344	
11,400.00	7,924.65	11,368.53	7,957.93	69.70	67.96	89.83	3,605.08	213.42	1,122.40	986.14	136.25	8.238	
11,450.00	7,924.43	11,418.53	7,957.84	70.57	68.84	89.83	3,655.08	213.28	1,122.66	984.64	138.02	8.134	
11,500.00	7,924.21	11,468.53	7,957.74	71.43	69.73	89.83	3,705.08	213.13	1,122.92	983.13	139.79	8.033	
11,550.00	7,923.99	11,518.53	7,957.64	72.30	70.61	89.83	3,755.08	212.98	1,123.18	981.62	141.56	7.935	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3105.00usft (TBD)
Reference Site:	Sec 20 T24S R 28E	MD Reference:	WELL @ 3105.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass 5000 GCR DB
Reference Design:	Plan#1 012314	Offset TVD Reference:	Reference Datum

Offset Design — Sec 20 T24S R 28E - Browning Federal 3H - Wellbore #1 - Plan#1 012314 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,600.00	7,923.77	11,568.53	7,957.55	73.17	71.50	89.83	3,805.09	212.84	1,123.44	980.11	143.33	7.838	
11,650.00	7,923.55	11,618.53	7,957.45	74.04	72.39	89.83	3,855.08	212.69	1,123.70	978.60	145.10	7.744	
11,700.00	7,923.33	11,668.53	7,957.35	74.91	73.27	89.83	3,905.08	212.55	1,123.96	977.09	146.87	7.653	
11,750.00	7,923.11	11,718.53	7,957.26	75.79	74.16	89.83	3,955.07	212.40	1,124.22	975.58	148.65	7.563	
11,800.00	7,922.89	11,768.52	7,957.16	76.66	75.05	89.83	4,005.07	212.26	1,124.48	974.06	150.42	7.476	
11,850.00	7,922.67	11,818.52	7,957.06	77.53	75.94	89.83	4,055.07	212.11	1,124.74	972.54	152.20	7.390	
11,900.00	7,922.44	11,868.52	7,956.97	78.41	76.83	89.83	4,105.07	211.97	1,125.00	971.03	153.98	7.306	
11,950.00	7,922.22	11,918.52	7,956.87	79.28	77.72	89.83	4,155.07	211.82	1,125.26	969.51	155.76	7.225	
12,000.00	7,922.00	11,968.52	7,956.77	80.16	78.61	89.83	4,205.07	211.68	1,125.52	967.99	157.54	7.145	
12,050.00	7,921.78	12,018.52	7,956.68	81.04	79.50	89.83	4,255.07	211.53	1,125.79	966.47	159.32	7.066	
12,100.00	7,921.56	12,068.52	7,956.58	81.92	80.39	89.83	4,305.07	211.38	1,126.05	964.95	161.10	6.990	
12,150.00	7,921.34	12,118.52	7,956.49	82.80	81.29	89.83	4,355.07	211.24	1,126.31	963.42	162.88	6.915	
12,200.00	7,921.12	12,168.52	7,956.39	83.68	82.18	89.83	4,405.06	211.09	1,126.57	961.90	164.67	6.841	
12,250.00	7,920.90	12,218.52	7,956.29	84.56	83.07	89.83	4,455.06	210.95	1,126.83	960.37	166.45	6.770	
12,300.00	7,920.68	12,268.52	7,956.20	85.44	83.97	89.83	4,505.06	210.80	1,127.09	958.85	168.24	6.699	
12,350.00	7,920.46	12,318.52	7,956.10	86.32	84.86	89.83	4,555.06	210.66	1,127.35	957.32	170.03	6.630	
12,400.00	7,920.24	12,368.51	7,956.00	87.21	85.76	89.83	4,605.06	210.51	1,127.61	955.79	171.82	6.563	
12,450.00	7,920.02	12,418.51	7,955.91	88.09	86.65	89.83	4,655.06	210.37	1,127.87	954.27	173.61	6.497	
12,500.00	7,919.79	12,468.51	7,955.81	88.97	87.55	89.83	4,705.06	210.22	1,128.13	952.74	175.40	6.432	
12,550.00	7,919.57	12,518.51	7,955.71	89.86	88.44	89.83	4,755.06	210.08	1,128.39	951.21	177.19	6.368	
12,600.00	7,919.35	12,568.51	7,955.62	90.74	89.34	89.83	4,805.06	209.93	1,128.65	949.68	178.98	6.306	
12,650.00	7,919.13	12,618.51	7,955.52	91.63	90.24	89.83	4,855.05	209.78	1,128.91	948.15	180.77	6.245	
12,700.00	7,918.91	12,668.51	7,955.42	92.52	91.13	89.83	4,905.05	209.64	1,129.18	946.61	182.56	6.185	
12,750.00	7,918.69	12,718.51	7,955.33	93.40	92.03	89.83	4,955.05	209.49	1,129.44	945.08	184.36	6.126	
12,800.00	7,918.47	12,768.51	7,955.23	94.29	92.93	89.83	5,005.05	209.35	1,129.70	943.55	186.15	6.069	
12,850.00	7,918.25	12,818.51	7,955.13	95.18	93.83	89.83	5,055.05	209.20	1,129.96	942.01	187.94	6.012	
12,900.00	7,918.03	12,868.51	7,955.04	96.07	94.72	89.83	5,105.05	209.06	1,130.22	940.48	189.74	5.957	
12,906.11	7,918.00	12,874.62	7,955.03	96.18	94.83	89.83	5,111.16	209.04	1,130.25	940.29	189.96	5.950 SF	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3105.00usft (TBD)
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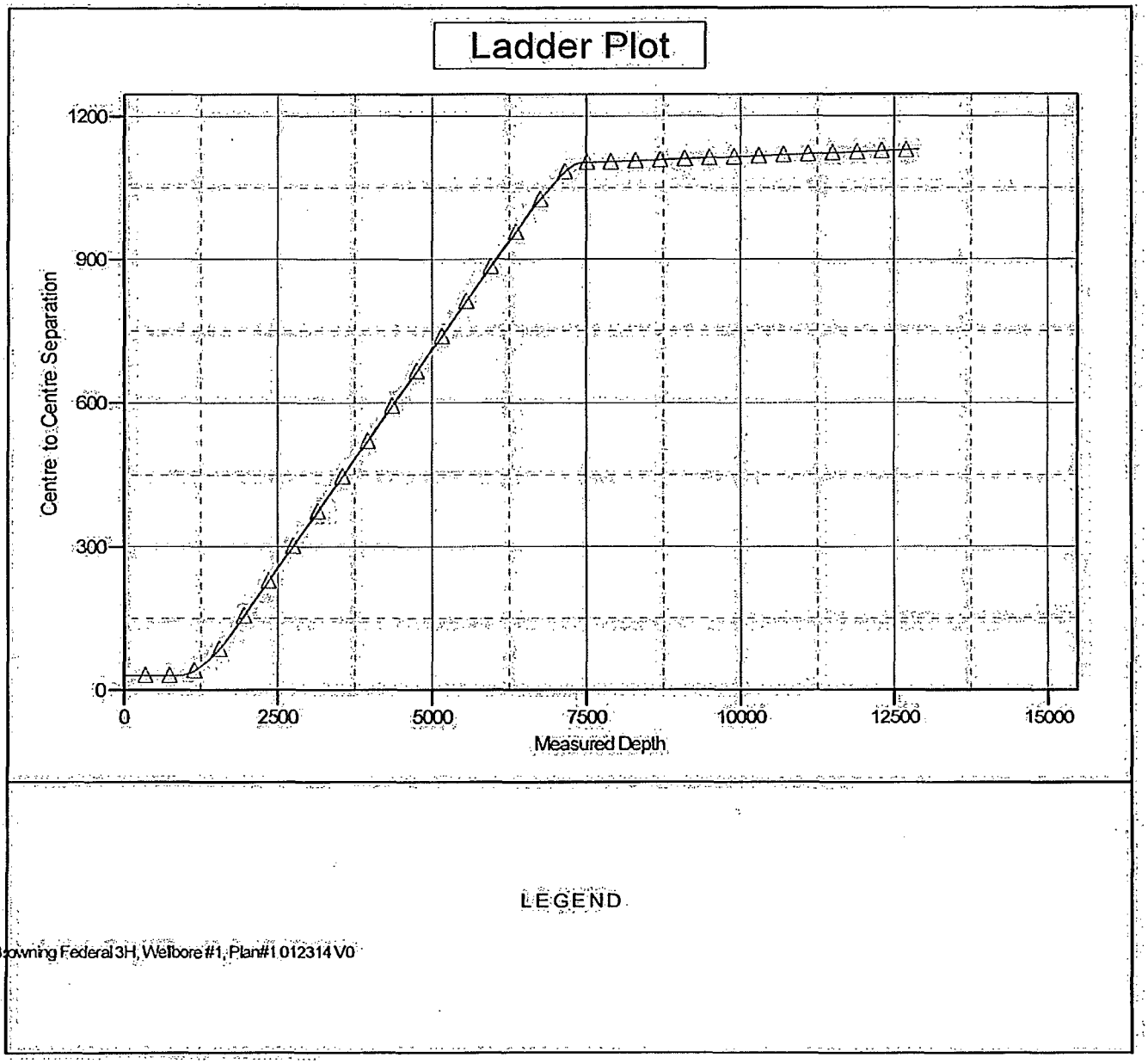
Reference Well:	Browning Federal 2H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass 5000 GCR DB
Reference Design:	Plan#1 012314	Offset TVD Reference:	Reference Datum

Reference Depths are relative to WELL @ 3105.00usft (TBD)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: Browning Federal 2H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.12°



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Browning Federal 2H
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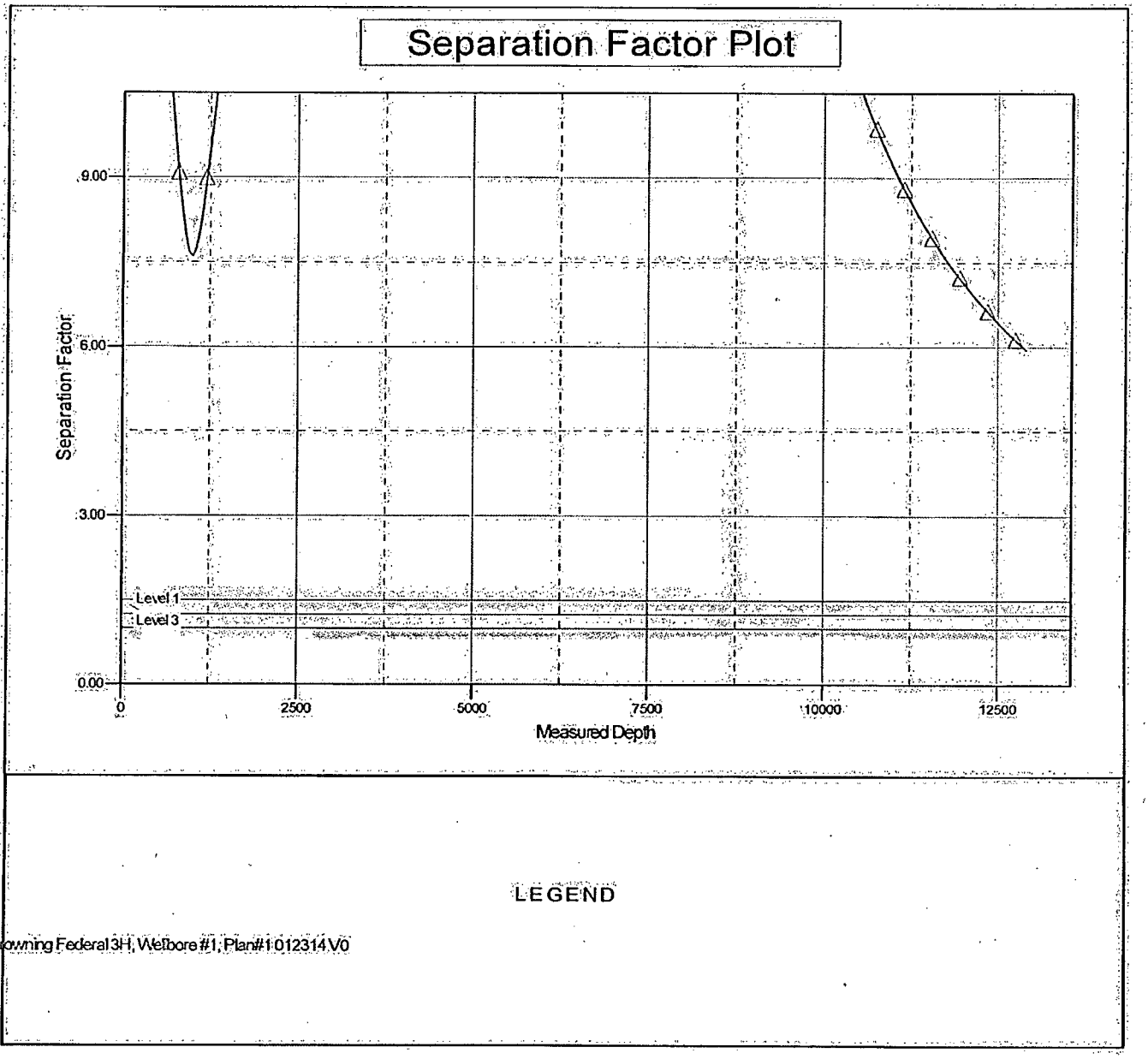
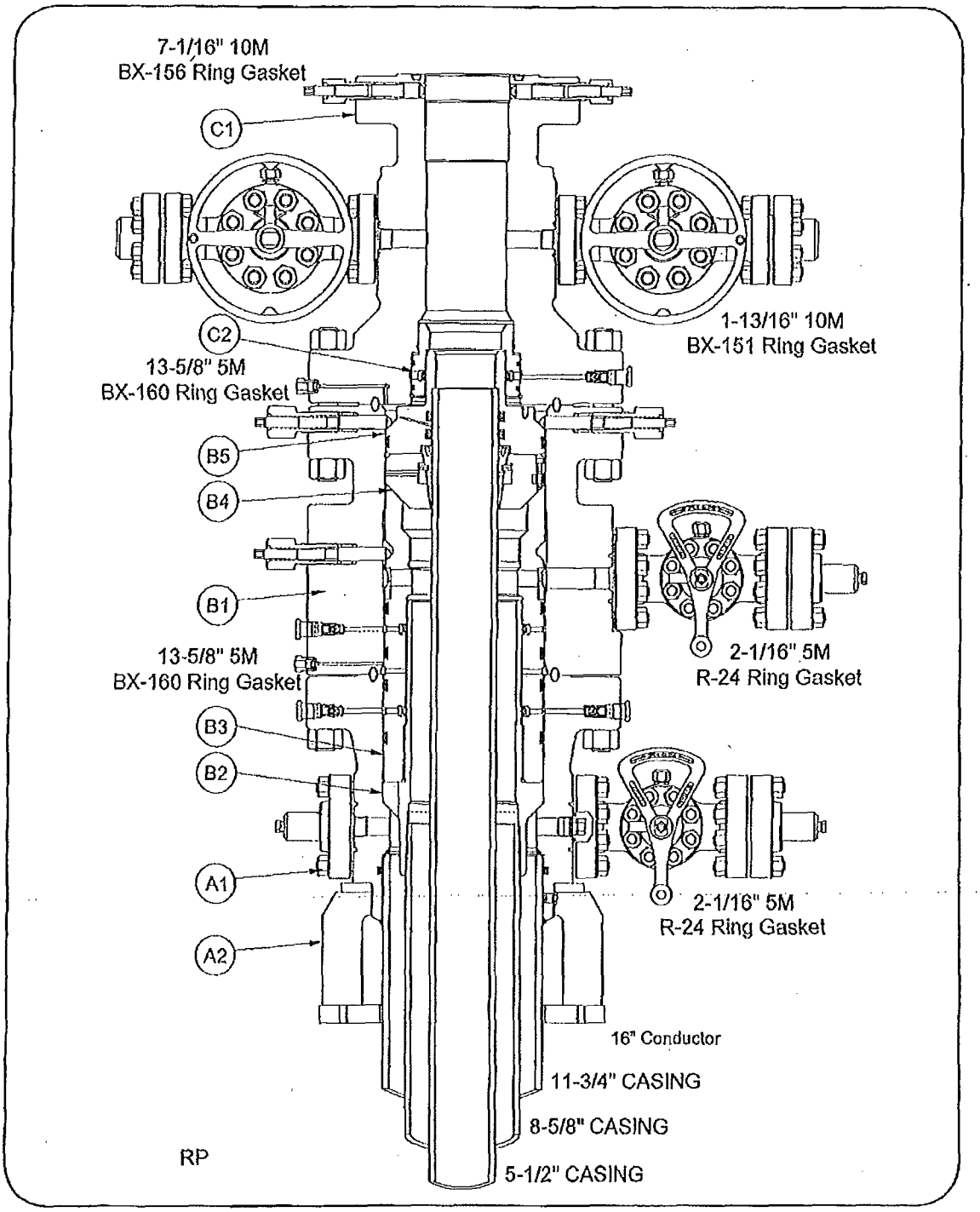
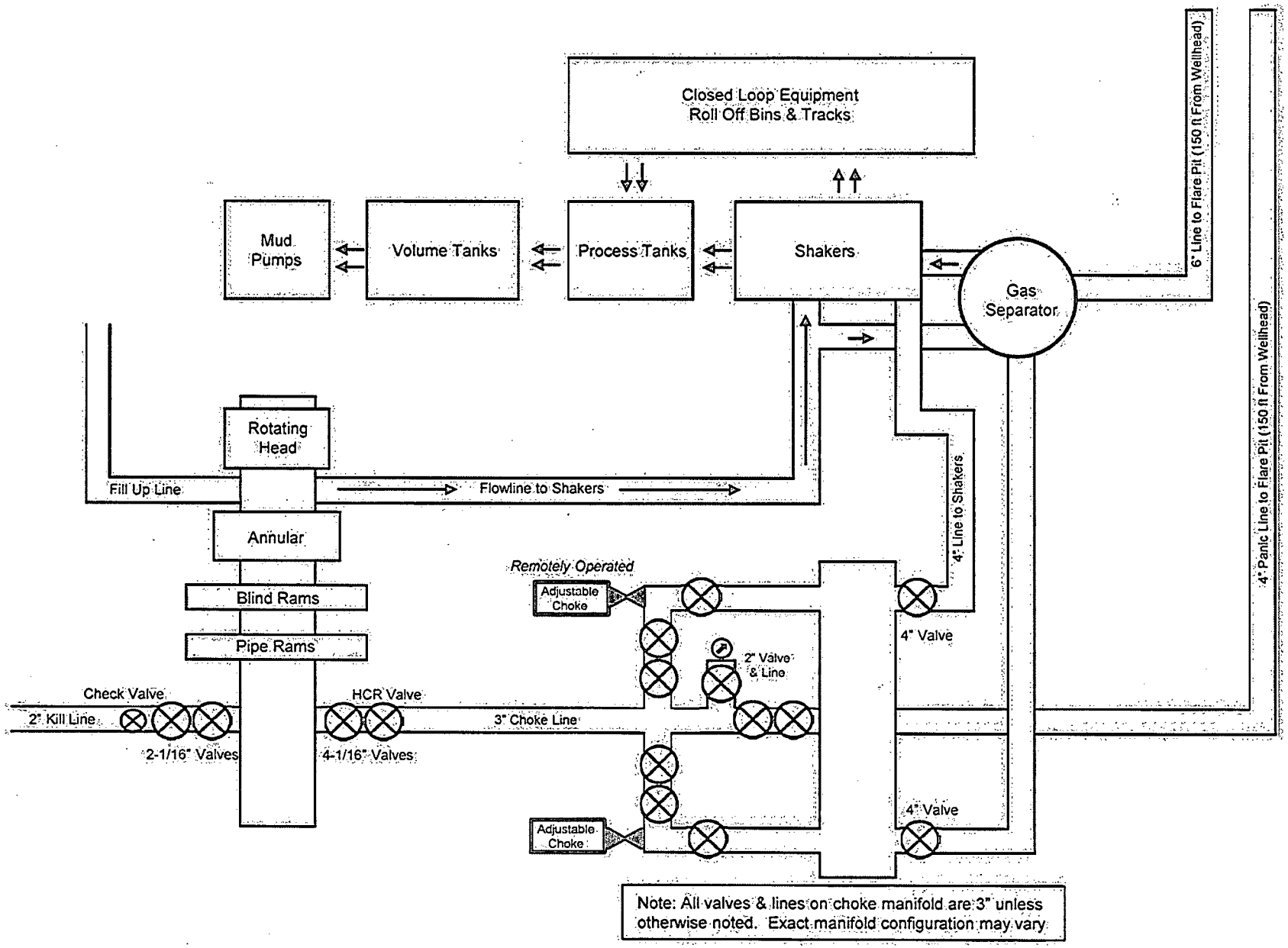


System Drawing



	13-5/8" 5M MBS System 11-3/4" x 8-5/8" x 5-1/2"	CAMERON

13-5/8" 5M BOPE & Closed Loop Equipment Schematic



Notes Regarding Blowout Preventers

Legend Natural Gas, III LP
Browning Federal Com 2H

1. The drilling nipple will be constructed so it can be removed mechanically without the aid of a welder. The minimum internal diameter will equal BOP bore.
2. Wear ring will be properly installed in head.
3. Blowout preventer and all associated fittings will be in operable condition to withstand 5,000 psi working pressure.
4. A full bore safety valve tested to a minimum of 5,000 psi working pressure with proper thread connections will be on the rig floor at all times.
5. All choke lines will be anchored to prevent movement.
6. Hand wheels and extensions will be properly installed and tested
7. Hydraulic BOP control panel will be located as near in proximity to drillers controls as possible
8. All BOP equipment will meet Onshore Order #2 regulations and requirements.

Design Plan
Operating and Maintenance Plan
Closure Plan

Browning Federal Com 2H
SHL: 150 FNL & 1290 FEL
BHL: 330 FNL & 380 FEL
SHL: Section 20, T-24S, R-28E
BHL: Section 17, T-24S, R-28E
Eddy County, New Mexico

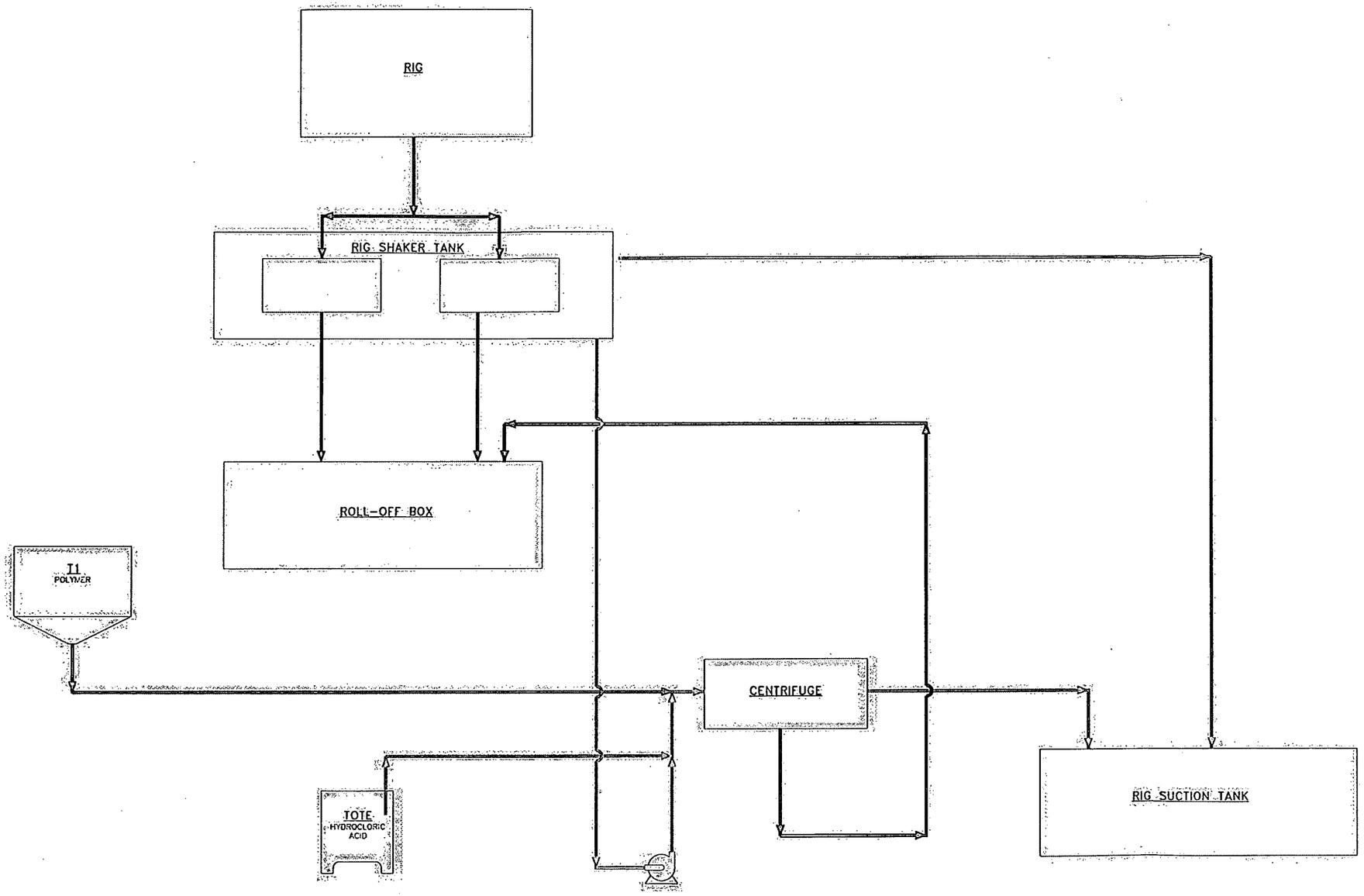
Legend Natural Gas, III L.P. will be using all above ground steel pits for fluid and cuttings while drilling. If a tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. All leaks should be kept to less than 5 barrels. Rig crews will monitor the tanks at all times.

Equipment List:
2- Shale Shakers
1- 5500 Centrifuge
3-Roll Off Bins w/ Tracks
1-Rig steel pits (1,000 bbl capacity)
2-500 bbl Frac Tanks

During drilling operations all drilling fluids waste and cuttings will be hauled off via CRI (Controlled Recovery Inc.) Permit R-9166.

Dewatering Process:
CRS Reprocessing Services dewatering process will include the use of the H&H 5500 centrifuge that has a 16" x 56" rotating assembly. Mud will be pulled from the sand trap on the rig pits and pumped to the centrifuge using a 2x3 centrifugal pump. We will introduce our coagulant for the flocculation process on the downstream side of the 2x3 centrifugal pump. For this application we will be using hydrochloric acid as our coagulant. The acid will be located in the same area as our equipment and will be in a 300 gallon chemical tote. We will inject the acid into the mud using an LMI chemical injection pump. This pump has a max processing rate of 10 gallons per hour. After the acid has been introduced we will inject polymer mixture using an electrical positive displacement pump. The polymer we will use is packaged in 55# bags stored on a pallet located next to our operating area. We will mix the polymer in a 5 to 6 bbls tank using fresh water on the first batch. Once the dewatering process starts we will recycle our effluent from the centrifuge to build new batches of polymer. Once the acid and polymer are injected into the mud on the downstream side of the 2x3 centrifugal pump the mud will then enter the centrifuge. The flocculation process will occur by the hydrochloric acid clinging to the solids suspended in the fluid and the polymer causing the solids to clump together. This process plus the g-force of the centrifuge strips the fluid of all suspended solids and returns a clear clean effluent to the active pits. The solids are discharged down the centrifuge discharge slide into the roll off bin and the effluent is returned through a 6" pvc pipe to the rig suction tank.

See CRS Dewatering Process Diagram



LEGEND

- DIRTY WATER
- POLYMER
- HYDROCLORIC ACID
- CLEAN WATER
- WASTE/SOLIDS
- EFFLUENT

REV	DESCRIPTION	BY	DATE
A	ISSUE FOR REVIEW	KC	1/17/14

CRS
REPROCESSING SERVICES
13551 TRITON PARK BLVD., SUITE 1200, LOUISVILLE, KENTUCKY 40223

CHECK BY:	DATE	APPRVD BY	DATE
DRAWN BY: KC	DATE: 1/17/14	SCALE: NTS	

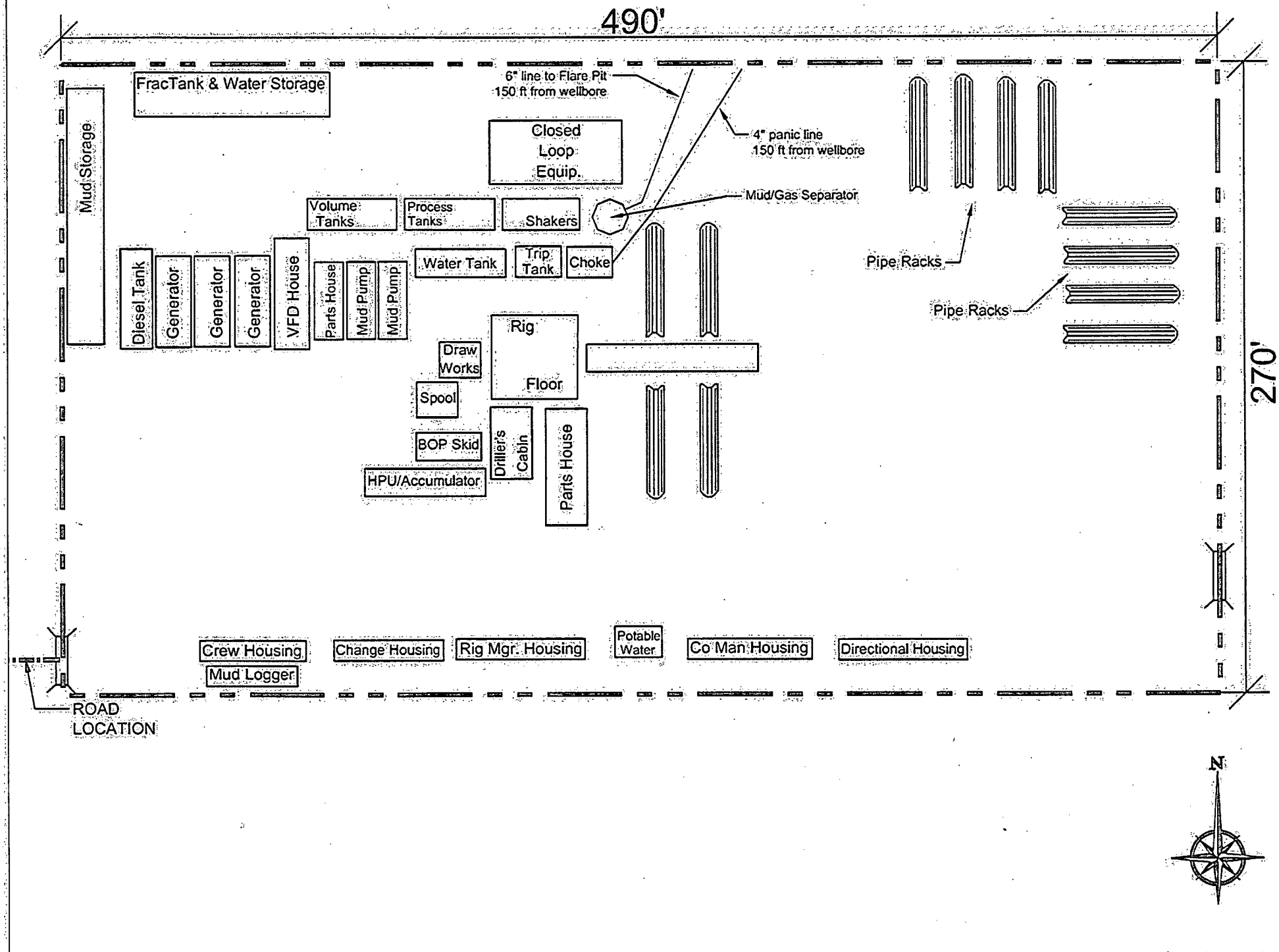
TITLE:
DEWATERING DIAGRAM USING ROLL-OFF BOX

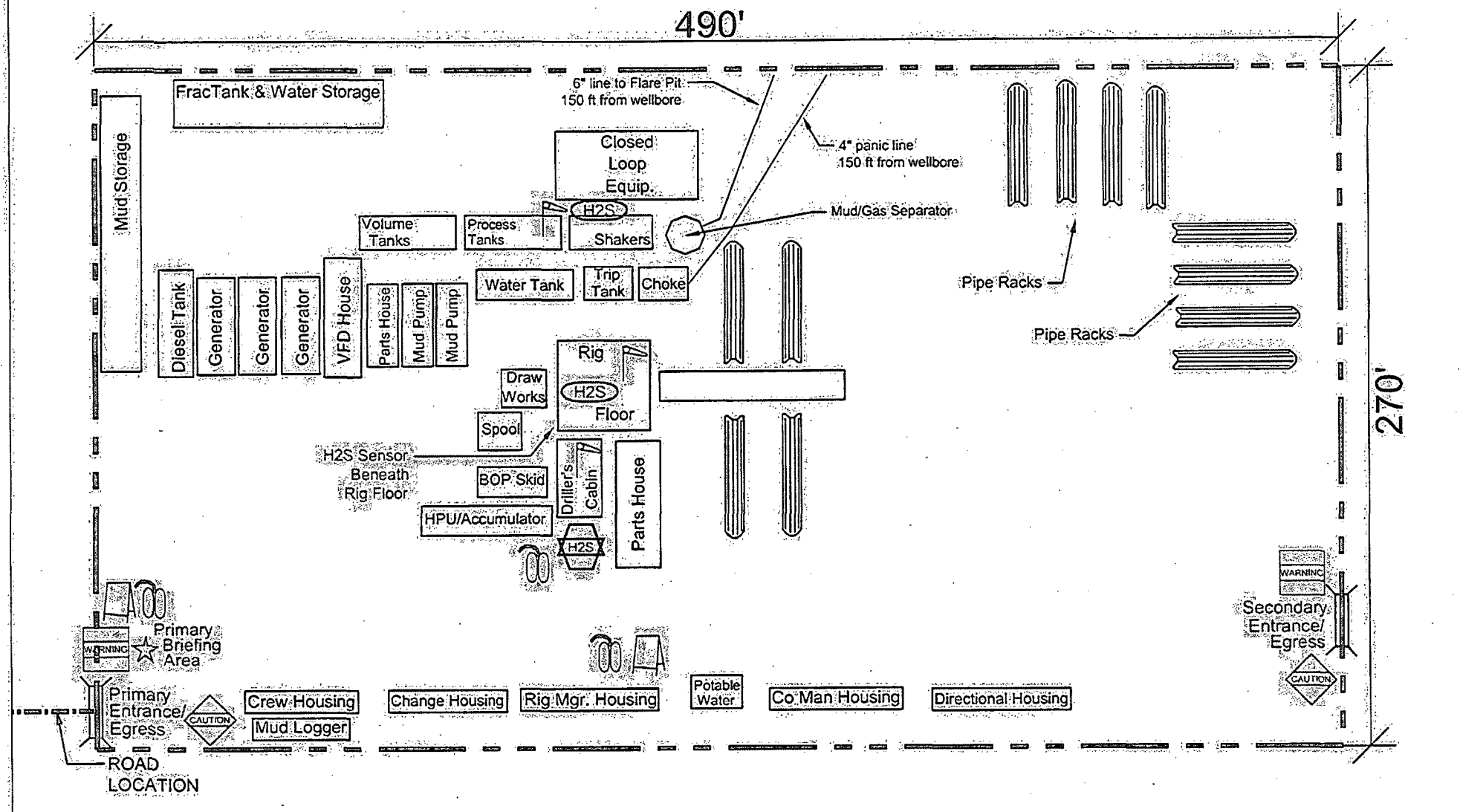
CUST:

SITE:

CAPX: | REV: A

DRAWING NUMBER
THW-XX-XXX-201


490'
270'
FracTank & Water Storage
Mud Storage
6" line to Flare Pit
150 ft from wellbore
4" panic line
150 ft from wellbore
Closed
Loop
Equip.
Mud/Gas Separator
Volume
Tanks
Process
Tanks
Shakers
Diesel Tank
Generator
Generator
Generator
VFD House
Parts House
Mud Pump
Mud Pump
Water Tank
Trip
Tank
Choke
Pipe Racks
Pipe Racks
Rig
Floor
Draw
Works
Spool
BOP Skid
HPU/Accumulator
Driller's
Cabin
Parts House
Crew Housing
Mud Logger
Change Housing
Rig Mgr. Housing
Potable
Water
Co Man Housing
Directional Housing
ROAD
LOCATION
N



LEGEND NATURAL GAS
Rig Location Layout
Safety Equipment Location

Location Dimensions:
490 ft x 270 ft

- Wind indicators
- Location entrance warning sign used to control location in event of an emergency
- Caution (H2S Gas, May Be Fatal)
- Site briefing area
- Self-contained breathing apparatus (SCBA)
- H2S sensors located around the rig
- H2S monitor control/alarm box

Prevailing Wind Direction, S/SW

N

Legend Natural Gas III, LP

777 Main Street
Suite 900
Fort Worth, TX 76102
Legal's:
BROWNING FEDERAL WELL 2H
Eddy County NM
Lat 32.210006° N
Long 104.113620° W

H_2S

"Contingency Plan"

Escape
Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crews should then block entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

Assumed 100 ppm ROE= 3000'
100 ppm H2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H2S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate ;my public places encompassed by the 100 ppm ROE.
- Be equipped with H2S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operator and for local officials to aid in operation. See list of phone numbers attached.
- Have received training in the
  - Detection of H2S, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

Ignition of Gas Source
Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (S02). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Characteristics of H2S and S02

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H2S	1.189 Air = 1	10ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO2	2.21 Air = 1	2ppm	N/A	1000ppm

Contacting Authorities

Legend Natural Gas III, LP personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Legend Natural Gas III, LP response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H2S) TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H2S)

2. The proper use and maintenance of personal protective equipment and life support systems.

3. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.

4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H2S metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.

2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

3. The contents and requirements of the H_2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

1. Well Control Equipment

A. Flare line

B. Choke manifold -With Remotely Operated Choke

C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit

D. Auxiliary equipment may include if applicable: annular preventer and rotating head.

E. Mud/Gas Separator

2. Protective equipment for essential personnel:

A. 30-minute SCBA units located in the doghouse and at briefing areas, as indicated on well site diagram. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

3. H_2S detection and monitoring equipment:

A. Portable H2S monitors positioned on location for best coverage and response. These unites have warning lights and audible sirens when H2S levels of 20 PPM are reached. These units are usually capable of detecting S02 , which is a byproduct of burning H2S.

4. Visual warning systems:

A. Wind direction indicators as shown on well site diagram

B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

5. Mud program:

A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

6. Metallurgy:

A. B lowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H2S trim.

B. All elastomers used for packing and seals shall be H2S trim.

7. Communication:

A. Radio communications in company vehicles including cellular telephones and 2-way radio

B. Land line (telephone) communications at Office

8. Well testing:

A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H_2S environment will use the closed chamber method of testing.

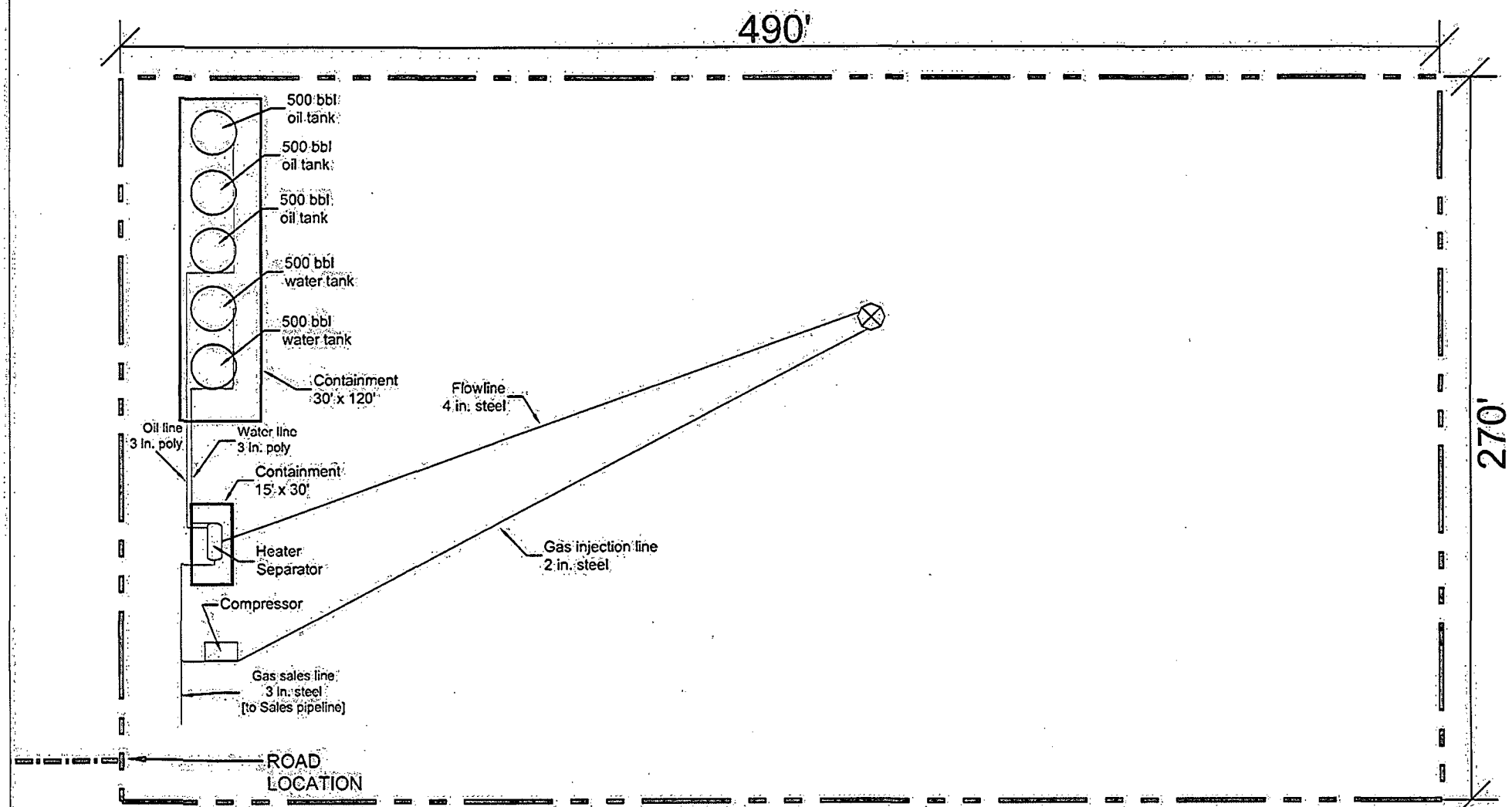
B. There will be no drill stem testing.

Emergency Assistance Telephone List

PUBLIC SAFETY:			**911 or**
Eddy County Sheriff's Department		Number:	(575)887-7551
Fire Department:			
	Loco Hills	Number:	(575)677-2349
	Artesia	Number:	(575)746-5051
	Carlsbad	Number:	(575)885-3125
	Happy Valley Carlsbad	Number:	(575)887-6353
	Loving	Number:	(575)745-3600
	Hope	Number:	(575)484-3222
Ambulance:	Artesia	Number:	(575)746-5050
	Carlsbad	Number:	(575)885-2111
	Careplus	Number:	(575)887-5969
	Loving	Number:	(575)887-1191
Hospitals:	Artesia General Hospital	Number:	(575)748-3333
AirMed:	Medevac	Number:	(888)303-9112
Dept. of Public Safety		Number:	(575)887-7551
New Mexico Oil Conservation		Number:	(575)476-3440
U.S. Dept. of Labor		Number:	(866)487-2365
Highway Department		Number:	(575)885-3281

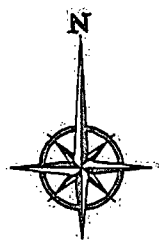
Legend Natural Gas, Inc.

LEGEND NATURAL GAS			Office:	(817)-872-7808
Company Drilling Consultants:				
Name:			Number:	
Name:			Number:	
EHS Coordinator 24hr. Emergency Contact				
Name:	Jody Fontenot	jfontenot@LNG2.com	Number:	(940)-210-0430
Drilling Manager				
Name:	David Dunn	ddunn@LNG2.com	Number:	(817)944-1023
Drilling Superintendent				
Name:	Scott Zacharie	szacharie@LNG2.com	Number:	(214)906-8365
Drilling Company				
Name:			Number:	
Name:			Number:	
Tool Pusher:				
Name:			Number:	
Name:			Number:	
Safety Consultants				
Cliff Strasner			Cell	(432) 894-9789
Craig Strasner			Cell	(432) 894-0341



BROWNING FEDERAL #2H
ELEV. 3,080.2'
NAD 27 NME
SURFACE LOCATION
Y = 440189.3 N
X = 567954.4 E
LAT. = 32.210006 DEG. N
LONG. = 104.113620 DEG. W

Final Pad = 270' x 490'



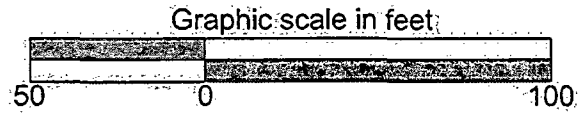


EXHIBIT #5

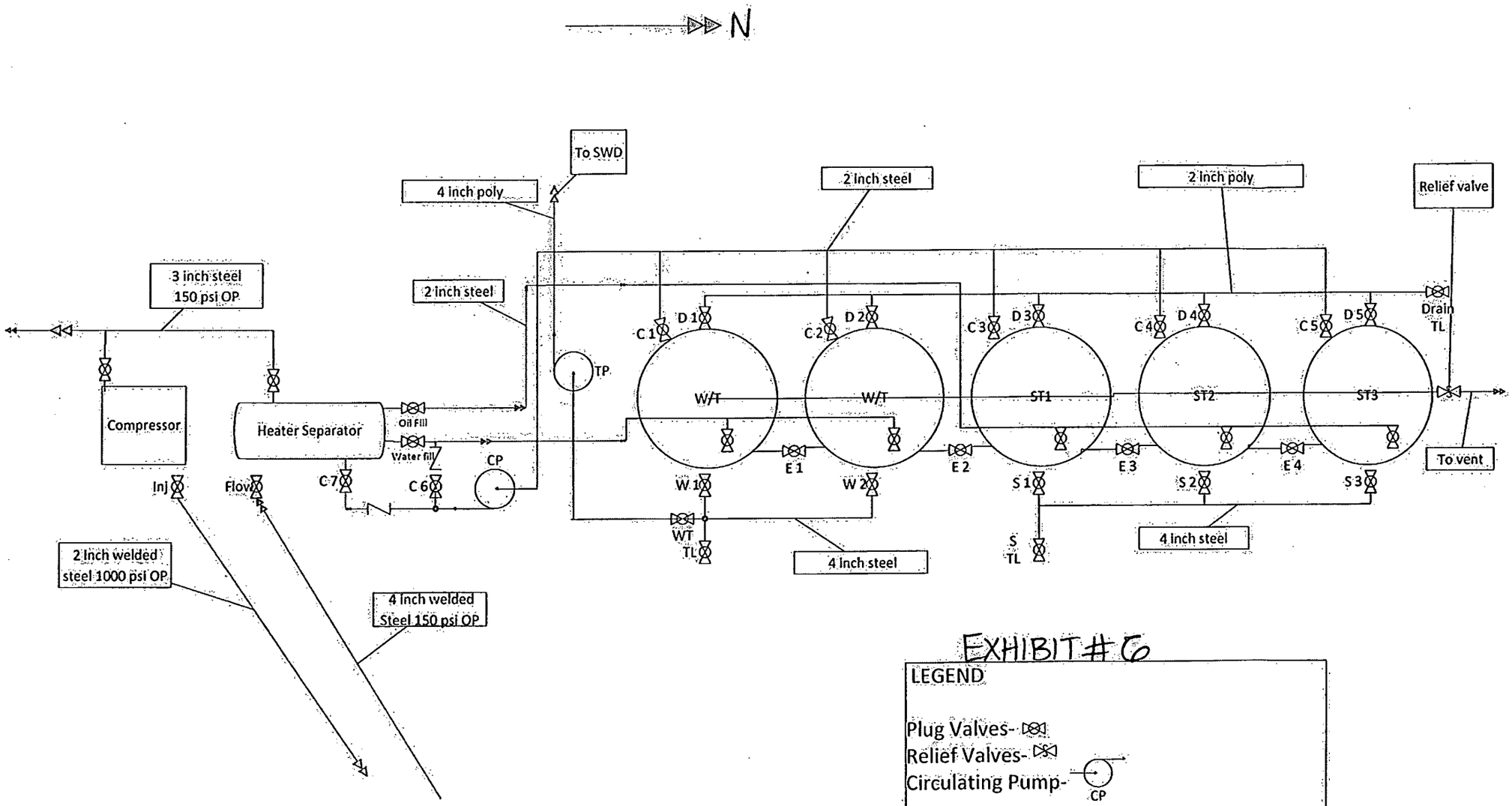


EXHIBIT #6

LEGEND

Plug Valves-

Relief Valves-

Circulating Pump- CP

Water Transfer pump- TP

Lines Connected-

Lines Crossing-

Legend Natural Gas III, LP
Multi-Point Surface Use Plan of Operations

Browning Federal Com 2H
SHL: 150 FNL & 1290 FEL
BHL: 330 FNL & 380 FEL
SHL: Section 20, T-24S, R-28E
BHL: Section 17, T-24S, R-28E
Eddy County, New Mexico

The plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above described well: The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations so that a complete appraisal can be made of the environmental effect associated with the operations.

1. **Existing Roads:**
   a. The well site and elevation plat for the proposed well are reflected on the well site layout Form C-102. The well was staked by John West Surveying Company.
   b. **Exhibit #2** is a portion of a topographic map showing the well and roads in the vicinity of the location. The well site is indicated on **Exhibit #2**
   c. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue with this lease.

   Directions:
   From the intersection of US Highway 285 & CR 720 (Black River Rd.) go west on Black River Road approx. 2.7 miles to CR 774 (Road Runner Rd.); turn left and go south on an existing lease road approx. 0.65 miles. Veer left and go southeast approximately 0.2 miles; veer right and go south approximately 260 feet; veer left and go southeast approximately 0.1 mile; this location is east approximately 480 feet. Location is approximately 3.75 miles west/southwest of Malaga, NM.

2. **Planned Access Road:**
   Legend Natural Gas III, LP will be using existing caliche road to access the Browning Federal Com 2H well; from there, an additional 158' of caliche road will need to be constructed. Width of the road is 14' wide with a crown design. The maximum with of surface disturbance needed to construct the road is 25 feet. The road is crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches are 3 feet wide with 3:1 slopes.

3. **Location of Existing Facilities: (Exhibit #4)**
   Wells within a mile radius of proposed surface-hole location include:
   - Cotton Petroleum Co #1
   - Ogden-8 #1
   - Craft/8/#1
   - James R Craft #1
   - Browning Federal Com 3H (Proposed Location, Legend Natural Gas III, LP)
   - Browning Federal Com 4H (Proposed Location, Legend Natural Gas III, LP)
   - Browning Federal Com 5H (Proposed Location, Legend Natural Gas III, LP)
   - Browning Federal Com 6H (Proposed Location, Legend Natural Gas III, LP)
   - Oxy Big Spender State #1
   - State 16#1
   - Bypass #1HSTHL
   - Oxy Bypass 16 State #1
   - Carlton 17
   - Enfield Federal #1
   - Black Eagle Federal #1
   - Browning Federal CO #1
   - High Brass 2H
   - High Brass Fee #1
   - High Brass 3H (Proposed Location, Legend Natural Gas III, LP)
   - Willow Lake 20 FED #1
   - New Man Federal Com #1
   - Pardue Farms/20/#1
   - Pardue 19 Com #1
   - Pardue 19 Com 3H (Permitted Location, Legend Natural Gas III, LP)
   - Pardue 19 Federal Com 2H (Proposed Location, Legend Natural Gas III, LP)
   - Congo Federal Com #1
   - Rwanda Fee Com #1

4. **Location of Existing and/or Proposed Facilities:**
   a. In the event the well is found productive, a tank battery and other surface facilities will be constructed onsite (**See Exhibit C-102 & Exhibit#5 & #6**)
   b. **Exhibit #3** shows the proposed pipeline route to the Browning Federal Com 4H, 5H, and 6H facility. The proposed route is 8625.0' in length, all included in section 20. 1"-6" steel, buried gas sales line with a working PSI of 150, Starting at the S/E corner of section 20 running N 3582' with a slight turn N/W 562.6' then 3730.4' W to tie-in point for Browning Federal Com 2H and 3H pad. Browning 2H & 3H pad will consist of a 750.0' 4" sales line (stated L11) tying into proposed pipeline route. Browning Federal Com 4H, 5H, and 6H will consist of a 789.8' 4" sales line (stated L14) tying into intersection point of proposed pipeline; and 1-4" poly waterline on surface with an operating PSI of 120 or less. being more particularly described in **Exhibit #3**

c. A buried flow line from the well head to the separator is proposed and will be 150' of 4" welded steel line carrying oil, gas, and water with less than 150 psi.
d. All flow lines will adhere to API Standards
e. An Onsite Inspection was conducted with BLM representative, Indra Dahal on **December 11, 2013** with no issues being found during the inspection.

5. **Location and Types of Water Supply:**
This well will be drilled using a combination of water mud systems (outlined in the Drilling Program). The water will be obtained from commercial water stations in the area and hauled to a location by transport truck using the existing and proposed roads shown in **Exhibit #2**. On occasion, water will be obtained from a pre-existing water well, running a pump directly to the drill rig. In these cases where a poly pipeline is used to transport water for drilling purposes, the existing and proposed road shown in **Exhibit #2** will be utilized.

6. **Construction Materials**
All caliche utilized for the drilling pad and proposed access road will be obtained from an existing pit or from prevailing deposits found under the location. All roads will be constructed of 6" rolled and compacted caliche. Where BLM recommends use of extra caliche, will obtain from other locations close by for roads, if available.

7. **Methods of Handling Waste Material:**
a. All trash, junk, and other waste material will be removed from the well site within 30 days after finishing drilling and/or completion operations. All waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.
b. The supplier will pick up slats, including broken sacks, remaining after the completion of the well.
c. A port-o-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
d. Disposal of fluids to be transported by an approved disposal company.

8. **Ancillary Facilities:**
No campsite or other facilities will be constructed as a result of this well

9. **Well Site Layout:**
a. **Exhibit #1** shows the proposed well site layout with dimensions of the pad layout.
b. Mud pits in the active circulating system will be steel pits and a closed loop system will be utilized.

10. Plans for Surface Reclamation:

Surface is privately owned; per discussion with the landowner we will keep the pad the same size for future drilling and completion operations off this same pad to minimize the footprint.

11. Surface Ownership:

The surface is owned by Pardue Limited. PO Box 2018 (126 N. Canyon), Carlsbad, New Mexico 88220. Phone number is 575-887-9525. A Surface Use Agreement between Pardue Limited and Legend Natural Gas III, LP has been executed. A copy of the Multi-Point Surface Use and Operations Plan has been mailed to Pardue Limited. (See Exhibit #8 & Exhibit #9)

12. Other Information

a. The area surrounding the well site is grassland. The vegetation is moderately sparse with native prairie grass and mesquite bushes. No wildlife was observed but is likely that deer, rabbits, coyotes, and rodents traverse the area.
b. There is no permanent or live water in the general proximity of the location.
c. Topsoil will be stockpiled 30' wide on the SOUTH SIDE of the location until it is needed for interim reclamation.
d. This pad location is designated for the Browning Federal Com 2H and the Browning Federal Com 3H

13. Operator's Representatives:

Drilling: David Dunn: 817-872-7805
Drilling: Scott Zacharie: 817-872-7806
Operations: Jason Vining: 817-872-7845
Operations: Ron Dahle: 817-872-7811
Land: John McCauley: 281-644-5972
Geology: Dan Emmers: 817-872-7853
Regulatory: Jennifer Elrod: 817-872-7822
Environmental: Brad Bingham: 817-872-7808
HSE- Jody Fontenot: 817-872-7809

MEMORANDUM OF SURFACE USE AND OCCUPANCY AGREEMENT

THE STATE OF NEW MEXICO §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF EDDY §

A Surface Use and Occupancy Agreement has been made and entered on the 26th day of September, 2013, by and between Pardue Limited Company, whose address is P.O. Box 2018, Carlsbad, New Mexico 88220, hereinafter called "GRANTOR" and Legend Natural Gas III, LP whose address is 15021 Katy Freeway, Suite 200, Houston, Texas 77094, hereinafter called "GRANTEE"

WITNESSETH:

Grantor and Grantee have entered into a Surface Use and Occupancy Agreement for Entry, Roadway, Well Location and other Associated Surface Disturbing Activities (the "Agreement") for a term of five (5) years from the 26th day of September, 2013, upon and subject to the terms and conditions therein stated, for the use of the Grantor's surface to access, develop, operate and produce under applicable oil, gas and mineral leases within Grantor's ranch, more particularly described on Exhibit "A", attached hereto and made a part hereof.

A copy of the executed Surface Use and Occupancy Agreement herein referred to is located at the office of Grantee at its address as listed first above.

In Witness whereof, the parties hereto have executed this Instrument on the 9th day October, 2013, to evidence of record in the Official Public Records of the County Clerk of Eddy County, New Mexico, the existence of said Surface Use and Occupancy Agreement and for all other purposes.

PARDUE LIMITED COMPANY

By: Marvin N. Van Soest

Marvin N. Van Soest
Printed Name

CO-Manager
Printed Title

LEGEND NATURAL GAS III, LP

By:

Aaron Thesman
Vice President-Land

LEGEND NATURAL GAS III LP
ATTN JOHN MCCAULEY
15021 KATY FREEWAY STE 200
HOUSTON TX 77094

ACKNOWLEDGMENTS

STATE OF NEW MEXICO §
§
COUNTY OF EDDY §

The foregoing instrument was acknowledged before me on the 15th day of October, 2013, by MARVIN N. VANSOEST, as CO-MANAGER of Pardue Limited Company, a New Mexico limited liability company, on behalf of said limited liability company.

My commission expires:

05/05/2014

Mary Hilt
Notary Public, State of New Mexico

STATE OF TEXAS §
§
COUNTY OF HARRIS §

This instrument was acknowledged before me on this 8th day of October, 2013, by Aaron Thesman, Vice President-Land of Legend Natural Gas III, LP, a Delaware limited partnership, on behalf of said limited partnership.

My commission expires:

1-14-2017

Carolyn Ann Turner
Notary Public, State of Texas

CAROLYN ANN TURNER
My Commission Expires
January 14, 2017

Exhibit "A"

Attached to and made a part of that certain Memorandum of Surface Use and Occupancy Agreement by and between Pardue Limited Company and Legend Natural Gas III, LP dated October ____, 2013.

TOTAL ACRES	OUR NET ACRES	SEC.	TWP.	RGE.	DESCRIPTION
65	65	18	24S	28E	N/2S/2NE/4, SW/4SE/4NE/4, SE/4SW/4NE/4, E/2SW/4SW/4NE/4
360	360	19	24S	28E	N/2NE/4NE/4, N/2SE/4NE/4NE/4, SW/4NE/4NE/4, E/2SE/4NE/4, SW/4SE/4NE/4, S/2NW/4SE/4NE/4, N/2NE/4SW/4NE/4, S/2SW/4NE/4, NW/4SW/4NE/4, S/2NE/4NE/4SE/4, N/2SE/4NE/4SE/4, W/2NE/4SE/4, N/2NE/4SE/4SE/4, SE/4SE/4SE/4, W/2SE/4SE/4, N/2SW/4SE/4, SE/4SW/4SE/4, S/2SW/4SW/4SE/4, N/2NW/4SE/4, S/2SE/4NW/4SE/4, SW/4NW/4SE/4, SE/4NE/4SW/4, W/2NE/4SW/4, NE/4SE/4SW/4, S/2SE/4SE/4SW/4,W/2SE/4SW/4, SE/4NW/4, NE/4NE/4SW/4, N/2SE/4SE/4SW/4
610	603.33	20	24S	28E	E/2NE/4SW/4, SW/4NE/4SW/4, E/2NE/4SE/4SW/4, S/2SE/4SW/4, NW/4SE/4SW/4, SW/4SW/4, N/2NW/4SW/4, SE/4NW/4SW/4, W/2SW/4NW/4SW/4, W/2NE/4NE/4NW/4, SE/4NE/4NW/4, W/2NE/4NW/4, E/2SE/4NW/4, SW/4SE/4NW/4, NE/4SW/4NW/4, E/2SE/4SW/4NW/4, W/2SW/4NW/4, NW/4NW/4, NW/4SE/4NW/4 (1/3 interest), E/2
320	320	21	24S	28E	S/2
640	640	28	24S	28E	All
275	275	29	24S	28E	W/2NE/4, SE/4SE/4, NE/4NW/4, N/2SE/4NW/4, E/2S/2SE/4NW/4, E/2W/2S/2SE/4NW/4,W/2NW/4
120	120	32	24S	28E	E/2NE/4, NW/4NE/4
640	640	33	24S	28E	All

RECEPTION NO: 1311737 STATE OF NEW MEXICO, COUNTY OF EDDY
RECORDED 10/25/2013 12:21 PM
BOOK 0955 PAGE 0872
DARLENE ROSPRIM, COUNTY CLERK

SEAL

7012 1640 0002 3400 7441

Pardue Limited
126 North Canyon
Carlsbad, New Mexico 88220

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Sent To: Pardue Limited
Street, Apt. No., or PO Box No.: 126 North Canyon
City, State, ZIP+4: Carlsbad, NM 88220

PS Form 3800, August 2006 See Reverse for Instructions

7012 1640 0002 3400 7441

LEGEND NATURAL GAS, III L.P.
777 Main Street, Suite 900
Fort Worth, Texas 76102

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exists; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in the APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 12 day of February, 20 14.

Signed: _____

Name: Jennifer Mosley Elrod
Title: Sr. Regulatory Analyst
Address: 777 Main Street, Suite 900, Fort Worth, Texas 76102
Phone: (817) 872-7822

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Legend Natural Gas III Limited Partnership - Elrod, Jennifer
LEASE NO.:	NMNM110829
WELL NAME & NO.:	Browning Federal Com - 2H
SURFACE HOLE FOOTAGE:	[150] ' F [N] L [1290] ' F [W] L
BOTTOM HOLE FOOTAGE:	[330] ' F [N] L [380] ' F [W] L
LOCATION:	Section 020, T024. S., R 028 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

Tank Battery Liners and Berms:
Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:
A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Drilling:

Communitization Agreement
A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch

All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattleguards
An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

Fence Requirement
Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM. Operator has stated that they will have monitoring equipment in place prior to drilling out of the surface shoe.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

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

Wait on cement (WOC) time prior to drilling out 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. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. 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.

Possibility of water flows in the Salado and Castile.
Possibility of lost circulation in the Rustler, Salado, and Delaware.

A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH. THEREFORE, ONE INCH OPERATIONS ARE NOT SUFFICIENT TO PROTECT CAVE KARST RESOURCES. A CASING DESIGN THAT HAS A ONE INCH JOB PERFORMED DOES NOT COUNT AS A SOLID SHEATH.

1. The **11-3/4** inch surface casing shall be set at approximately **400** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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.

Formation below the 11-3/4" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

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 cave/karst.**

Formation below the 8-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to 24% - Additional cement may be required.**

4. 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.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**

   a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
   b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
   c. **Manufacturer representative shall install the test plug for the initial BOP test.**
   d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
   e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    c. The results of the test shall be reported to the appropriate BLM office.

    d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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II. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.
5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*).

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state: Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

(X) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
( ) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
b. Activities of other parties including, but not limited to:
    (1) Land clearing.
    (2) Earth-disturbing and earth-moving work.
    (3) Blasting.
    (4) Vandalism and sabotage.
c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system,

impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-

way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

III. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will

need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

(Insert Seed Mixture Here)

Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed