

OCD Artesia

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NM-102909

6. If Indian, Allottee, or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
FULL CHOKE FEDERAL COM 5H9. API Well No.
30-015-10. Field and Pool, or Exploratory
Willow Lake; Bone Spring (64450) /11. Sec., T. R. M. or Blk. and Survey or Area
SECTION 5 T-25S R-28E
SECTION 32 T-24S R-28E12. County or Parish
EDDY13. State
NM1a. Type of work: ☒ DRILL☐ REENTER1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other☒ Single Zone ☐ Multiple Zone

2. Name of Operator LEGEND NATURAL GAS III, LP

3a. Address 777 MAIN ST., STE. 900
FORT WORTH, TX 761023b. Phone No. (include area code)
817-872-7822

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

At surface 290 FNL & 1030 FWL

At proposed prod. zone BH-330 FNL & 1510 FWL

14. Distance in miles and direction from nearest town or post office*
APPROX 8.44MILES WEST/SOUTHWEST OF MALAGA, NM15. Distance from proposed* location to nearest property or lease line, ft.
(Also to nearest drig. unit line, if any)

290 FNL

16. No. of acres in lease
160 Acres17. Spacing Unit dedicated to this well
16018. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
SURFACE-30'
SUB-SURFACE
Huber State 1-1021' (vent)
FWL Choke Com 2H-2108' (Hobbs)19. Proposed Depth
12949' MD; 8000' TVD20. BLM/BIA Bond No. on file
NMB00052521. Elevations (Show whether DF, KDB, RT, GL, etc.)
3036' GR22. Approximate date work will start*
05/01/201423. 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

Name (Printed/Typed)

JENNIFER MOSLEY ELROD

Date

03/25/2014

Title

SR REGULATORY ANALYST

Approved by (Signature)

Name (Printed/Typed)

/S/ STEPHEN J. CAFFEY
CARLSBAD FIELD OFFICE

Date

Title

FIELD MANAGER

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)
RECEIVED

CARLSBAD CONTROLLED WATER BASIN

AUG 11 2014
ARTESIA DISTRICTSEE ATTACHED FOR
CONDITIONS OF APPROVALAPPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

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 3 day of April, 20 14.

Signed: Jennifer M. Elrod

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

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 30-015-42576	Pool Code 04450	Pool Name Willow Lake; Bone Spring
Property Code 313580	Property Name FULL CHOKE FEDERAL COM	
OGRID No. 258894	Operator Name LEGEND NATURAL GAS III, LP	
		Well Number 5H
		Elevation 3036'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
4	5	25-S	28-E		290	NORTH	1030	WEST	EDDY

Bottom Hole Location If Different From Surface

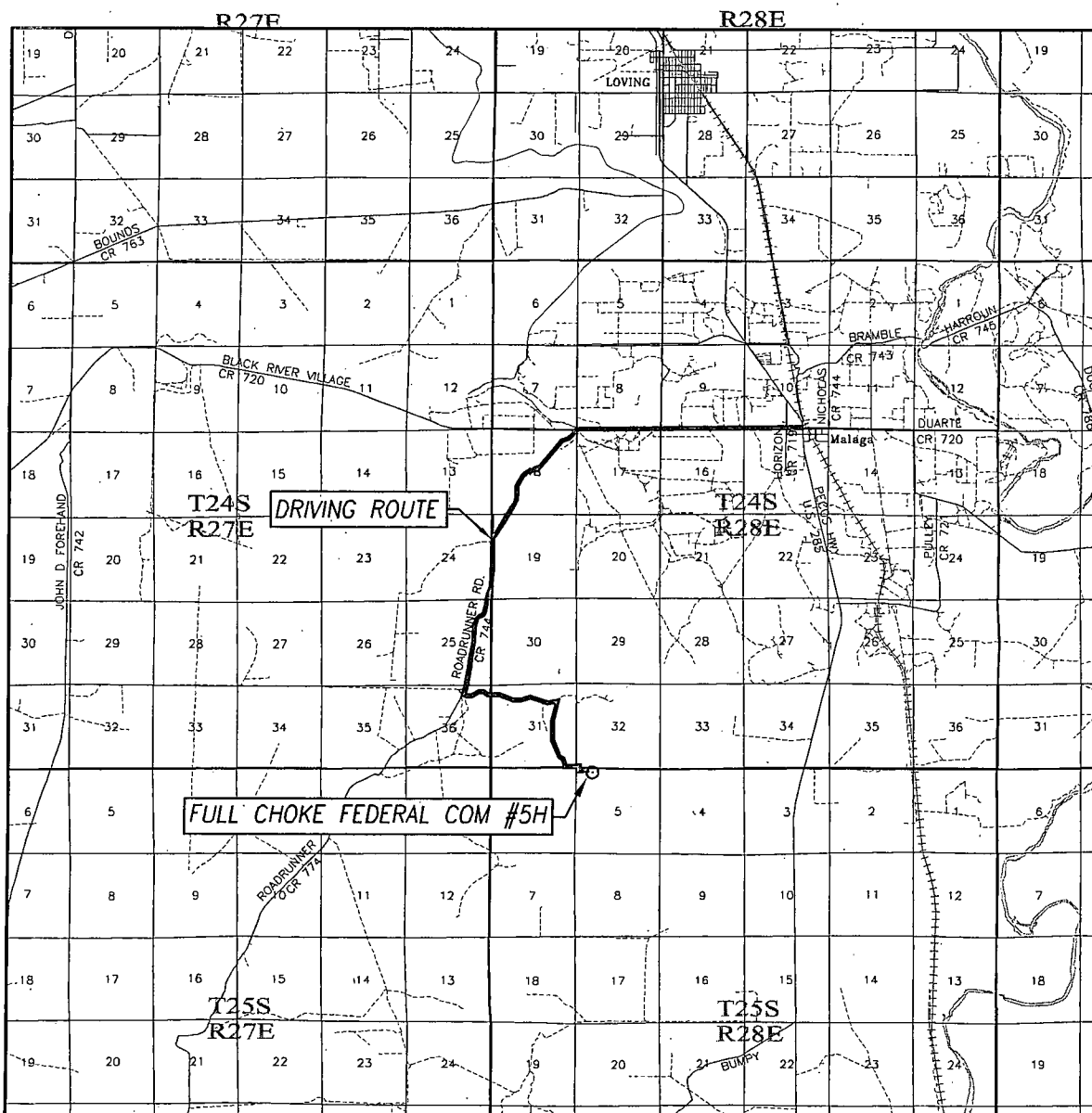
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	32	24-S	28-E		330	NORTH	1510	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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=429408.3 N X=609398.5 E LAT.=32.180330° N LONG.=104.113342° W BOTTOM HOLE LOCATION Y=429350.1 N X=568215.0 E LAT.=32.180208° N LONG.=104.112849° 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. <i>[Signature]</i> 4/3/14 Signature Date Jennifer Elrod Printed Name j.elrod@lng2.com E-mail Address
	CORNER COORDINATES TABLE NAD 27 A - Y=424320.4 N, X=566717.4 E B - Y=429680.3 N, X=568031.2 E C - Y=429678.4 N, X=569357.8 E D - Y=424329.4 N, X=569377.4 E E - Y=422980.8 N, X=569369.5 E F - Y=422978.4 N, X=568036.8 E G - Y=424324.9 N, X=568047.4 E	
	NAD 83 A - Y=424378.4 N, X=607901.0 E B - Y=429738.4 N, X=609214.7 E C - Y=429736.6 N, X=610541.3 E D - Y=424387.5 N, X=610561.0 E E - Y=423038.8 N, X=610533.2 E F - Y=423036.4 N, X=609220.5 E G - Y=424382.9 N, X=609231.0 E	
	GEODETIC COORDINATES NAD 83 NME GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=424092.0 N X=608927.9 E LAT.=32.165718° N LONG.=104.114898° W SURFACE LOCATION Y=424033.9 N X=567744.3 E LAT.=32.165597° N LONG.=104.114405° W	
DETAIL	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. MARCH 4, 2014 Date of Survey Signature & Seal of Professional Surveyor: <i>[Signature]</i> GARY G. EIDSON NEW MEXICO 12641 REGISTERED PROFESSIONAL SURVEYOR 3/27/14 Certificate Number Gary G. Eidson 12641 Ruthie J. Eidson 3239 ACK JWSC W.O.: 14.11.0039	

VICINITY MAP



SCALE: 1" = 2 MILES
DRIVING ROUTE: SEE LOCATION VERIFICATION MAP

SEC. 5 TWP. 25-S RGE. 28-E

SURVEY N.M.P.M.

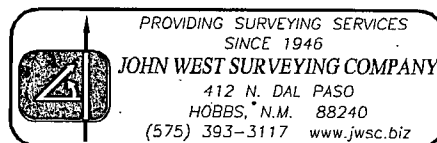
COUNTY EDDY STATE NEW MEXICO

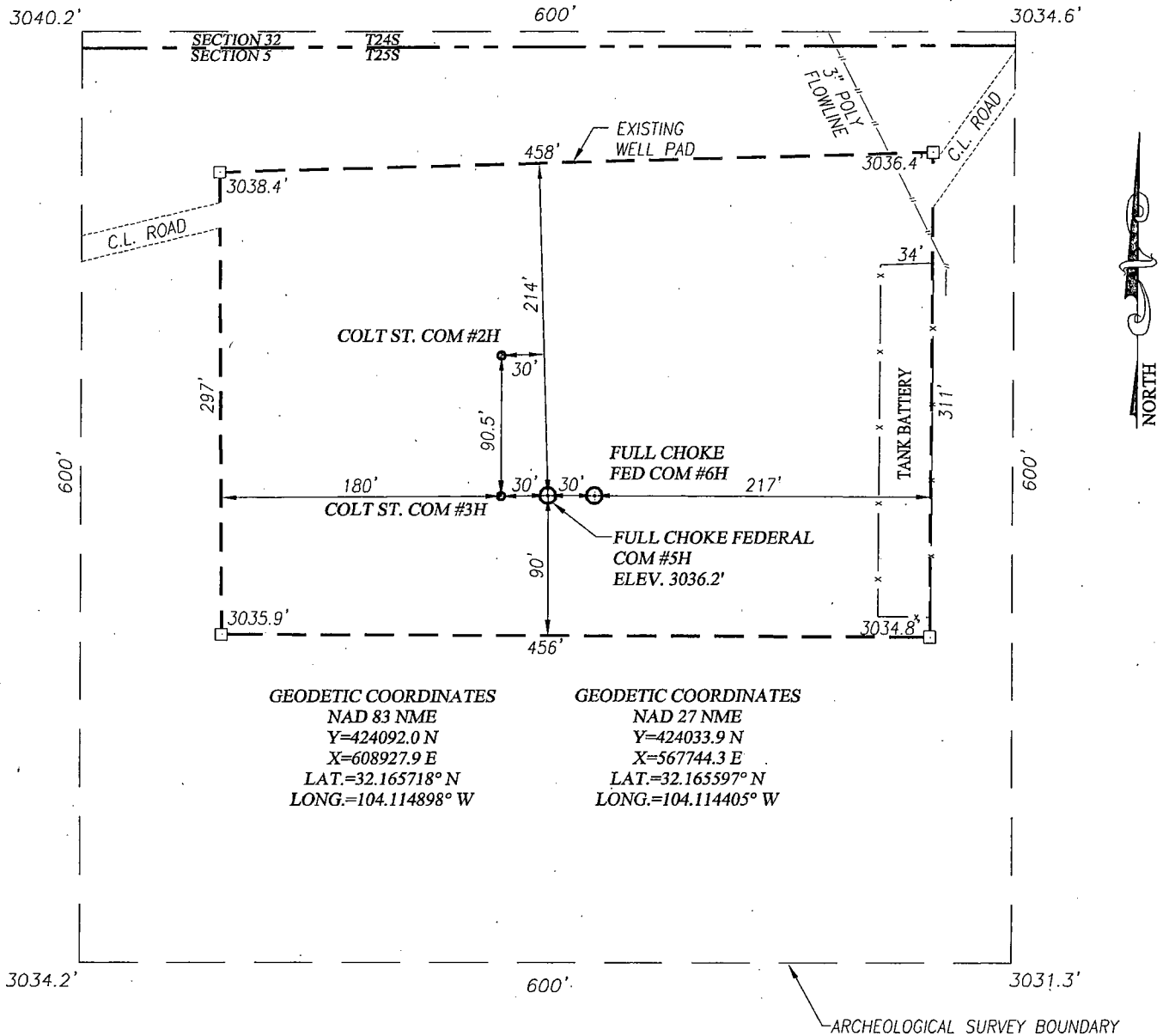
DESCRIPTION 290' FNL & 1030' FWL

ELEVATION 3036'

OPERATOR LEGEND NATURAL GAS III, LP

LEASE FULL CHOKE FEDERAL COM



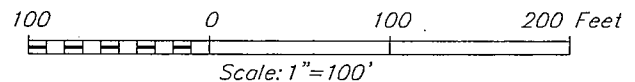


NOTE:

- 1) SEE "LOCATION VERIFICATION MAP" FOR PROPOSED ROAD LOCATION.
- 2) PROPOSED PIPELINE AND ELECTRIC LINE NOT SPECIFIED.

DIRECTIONS TO FULL CHOKE FEDERAL COM #5H:

FROM THE INTERSECTION OF U.S. HIGHWAY 285 & CO. RD. 720 (BLACK RIVER) TURN WEST AND GO APPROX. 2.7 MILES; TURN LEFT AT CO. RD. 774 (ROAD RUNNER) AND GO SOUTHWEST APPROX. 3.5 MILES; TURN LEFT AND GO EAST APPROX. 1.15 MILES; TURN RIGHT AT INTERSECTION AND GO SOUTH APPROX. 0.45 MILES; ROAD VEERS LEFT AND GOES SOUTHEAST APPROX. 0.3 MILES; TURN RIGHT AT "T" AND GO EAST APPROX. 900 FEET; TURN RIGHT AND GO SOUTH APPROX. 300 FEET; TURN LEFT AND GO EAST APPROX. 600 FEET TO THE WEST SIDE OF THE COLT STATE COM #3H WELL PAD. THIS WELL IS 30 FEET EAST OF THE COLT ST. COM #3H WELL.



LEGEND NATURAL GAS III, LP

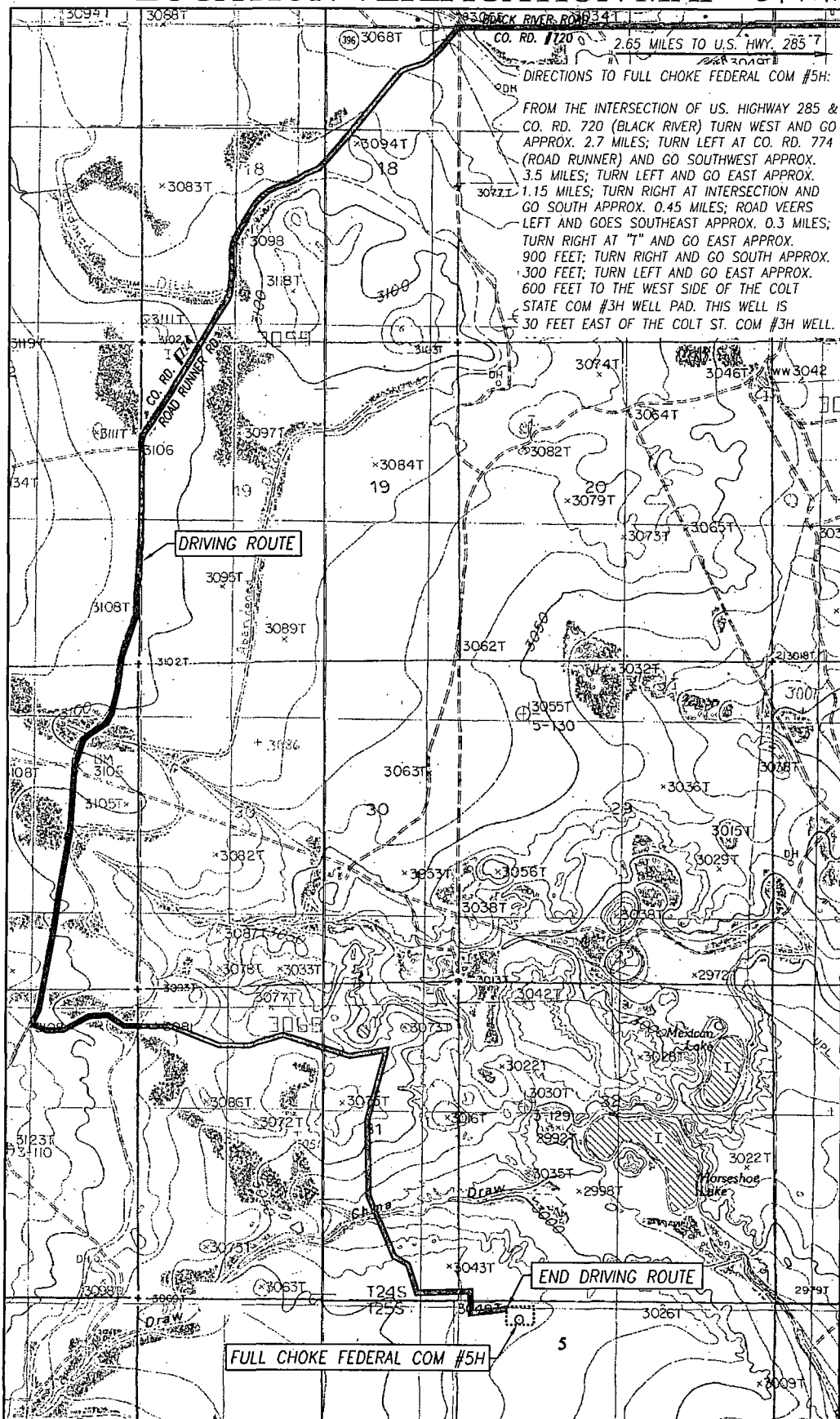
FULL CHOKE FEDERAL COM #5H WELL
LOCATED 290 FEET FROM THE NORTH LINE
AND 1030 FEET FROM THE WEST LINE OF SECTION 5,
TOWNSHIP 25 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



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

Survey Date: 3/4/14	CAD Date: 3/25/14	Drawn By: ACK
W.O. No.: 14110039	Rev: .	Rel. W.O.: .
Sheet 1 of 1		

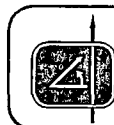
LOCATION VERIFICATION MAP EXHIBIT #2



SEC. 5 TWP. 25-S RGE. 28-E
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 290' FNL & 1030' FWL
 ELEVATION 3036'
 OPERATOR LEGEND NATURAL GAS III, LP
 LEASE FULL CHOKE FEDERAL COM
 U.S.G.S. TOPOGRAPHIC MAP
 MALAGA, N.M. SURVEY N.M.P.M.

SCALE: 1" = 2000'

CONTOUR INTERVAL:
 MALAGA, N.M. - 10'
 BOND DRAW, N.M. - 5'



PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO HOBBS, N.M. 88240
 (575) 393-3117 www.jwsc.biz
 TBPLS# 10021000

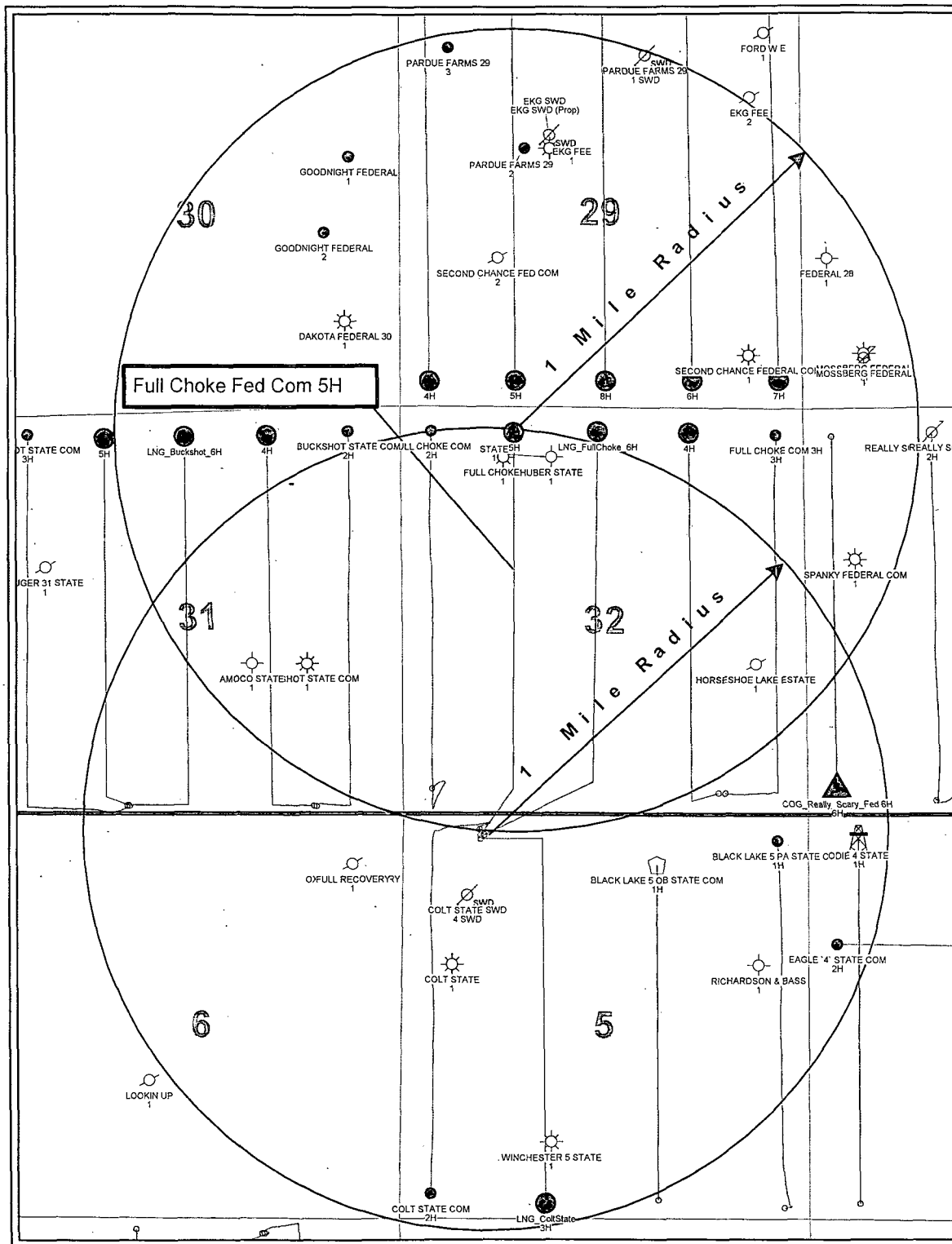


EXHIBIT #3



PERMIAN NM - CAPROCK2

Full Choke Fed Com 5H Mile Radius Map



POSTED WELL DATA

Well Name
Well Number

WELL SYMBOLS

- Abandoned Well
- Dry Hole
- Gas Well
- Junked
- Large Triangle
- Oil Well
- Vernon Symbol Standards - Permit
- Salt Water Disposal
- Drilling Well
- NEW DRILL WELL - Injectors

April 1, 2014

458'

EXHIBIT #4

ROAD
LOCATION

ROAD
LOCATION

297'

311'

500 bbl
oil tank

500 bbl
oil tank

500 bbl
oil tank

500 bbl
water tank

500 bbl
water tank

Containment
30' x 120'

Oil line
3 in. poly

Water line
3 in. poly

Containment
15' x 30'

Heater
Separator

Compressor

Gas sales line
3 in. steel
[to Sales pipeline]

Flowline
4 in. steel

Gas injection line
2 in. steel

FULL CHOKE FEDERAL COM #5H

NAD 27 NME

ELEV = 3036.2'

Y = 424033.9 N

X = 567744.3 E

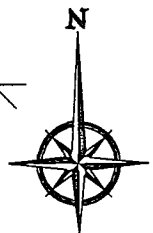
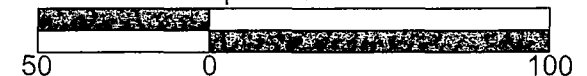
LAT. = 32.165597 DEG. N

LONG. = 104.114405 DEG. W

456'

Final Pad = ~457' x ~304'

Graphic scale in feet



Legend Natural Gas, III L.P.
DRILLING AND OPERATIONS PROGRAM

Full Choke Federal Com 5H
SHL: 290 FNL & 1030 FWL
BHL: 330 FNL & 1510 FWL
SHL: Section 5, T-24S, R-28E
BHL: Section 32, 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 5 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 2,500 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

below). If wellbore conditions arise that require immediate action and/or a change to this program Legend Natural Gas III L.P. personnel will always react to protect the wellbore and/or environment.

3. Proposed Casing Program:

See COA

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' - 2,500' ^{2,150'}	0 - 2,500' ^{2,150'}	8-5/8"	32#	J-55	LTC	1.93 / 1.84 / 6.23 Hole Assumes 10.0 ppg MW
7-7/8"	2,500' - 12,950'	0 - 12,950'	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% bwoc 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' - 1,500'	12.9 ppg	100%	462	1.91	9.64	242	(35:65) Poz (Fly Ash): Class C Cement + 0.005 lbs/sack Static Free + 5% bwoc 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	1,500' - 2,500'	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 - 2,500'	12.0 ppg	0%	443	2.11	11.81	210	(60:40) Poz (Fly Ash):Class C Cement + 3% bwoc Sodium Chloride + 0.3% bwoc FL-52 + 0.7% bwoc Sodium Metasilicate + 6% bwoc MPA-5 + 120.1% Fresh Water
Lead	2,500' - 4,500'	12.0 ppg	30%	451	2.11	11.81	214	(60:40) Poz (Fly Ash):Class C Cement + 3% bwoc Sodium Chloride + 0.3% bwoc FL-52 + 0.7% bwoc Sodium Metasilicate + 6% bwoc MPA-5 + 120.1% Fresh Water
Tail	4,500' - 12,950'	13.2 ppg	30%	1,914	1.57	7.99	1,219	(15:81:11) 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

- 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.

See (OK)

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 - 2,500	Brine	9.5 - 10.0	28	N/C	10	186K
2,500 - 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 - 12,950	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:

- An IBOP (Kelly Cock) will be in the Top Drive System (TDS) at all times
- 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.
- 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.

8. Testing, Logging, and Coring Program:

- No open hole or cased hole wireline logs are planned during the drilling phase of the well
- Gamma Ray will be captured from about 300 ft above KOP and throughout the curve and lateral
- 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
- Drill stem testing is not anticipated
- No conventional coring operations are planned

9. Estimated Bottom Hole Pressure & Temperature:

- BHP @ Lateral TD: 3,786 psi
- 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.

Project: Eddy County, NM (Nad27)
Site: Sec 5 T25S R 28E
Well: Full Choke Fed Com 5H
Wellbore: Wellbore #1
Design: Plan#1 033114
Rig: TBD



PHOENIX
TECHNOLOGY SERVICES



Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1856
Zone Name: New Mexico East 3001
Local Origin: Well Full Choke Fed Com 5H, Grid North
Latitude: 32° 9' 58.14809 N
Longitude: 104° 6' 51.85960 W
Grid East: 567744.30
Grid North: 424033.90
Scale Factor: 1.000
Geomagnetic Model: IGRF2010_14
Sample Date: 31-Mar-14
Magnetic Declination: 7.49°
Dip Angle from Horizontal: 59.97°
Magnetic Field Strength: 48246
To convert a Magnetic Direction to a Grid Direction, Add 7.37°
To convert a Magnetic Direction to a True Direction, Add 7.49° East
To convert a True Direction to a Grid Direction, Subtract 0.12°

WELL DETAILS

Ground Level: 3036.00
Northing: 424033.90
Easting: 567744.30
Latitude: 32° 9' 58.14809 N
Longitude: 104° 6' 51.85960 W

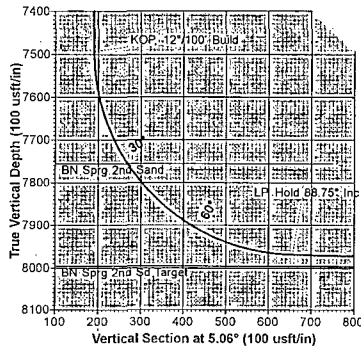
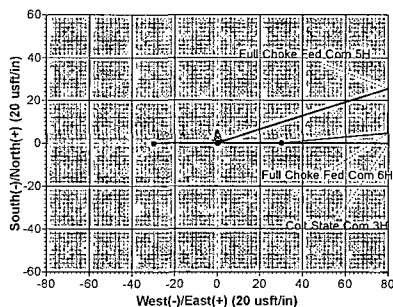
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSecl	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		Begin 2.00'/100' Build
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00		Hold 4.25' 72.30 Azm
3	712.31	4.25	72.30	712.12	2.39	7.49	2.00	72.30	3.04		Begin 1.5'/100' Drop
4	7127.63	4.25	72.30	7109.83	148.81	460.01	0.00	0.00	186.81		Begin Vertical Hold
5	7410.71	0.00	0.00	7392.65	150.00	470.00	1.50	180.00	190.87		KOP 127/100° Build
6	7510.71	0.00	0.00	7492.65	150.00	470.00	0.00	0.00	190.87		LP Hold 88.75° Inc
7	8250.30	88.75	0.01	7970.00	617.05	470.06	12.00	0.01	656.10	BHL Full Choke Fed Com 5H	Begin 2.7'/100' Build
8	10089.64	88.75	0.01	8010.13	2455.86	470.31	0.00	0.00	2487.87	T1 Full Choke Fed Com 5H	Hold 90.22°
9	10163.23	90.22	0.01	8010.79	2529.54	470.32	2.00	0.00	2561.17		TD at 12949.91
10	12949.91	90.22	0.01	8000.00	5316.20	470.70	0.00	0.00	5337.00	BHL Full Choke Fed Com 5H	

DESIGN TARGET DETAILS

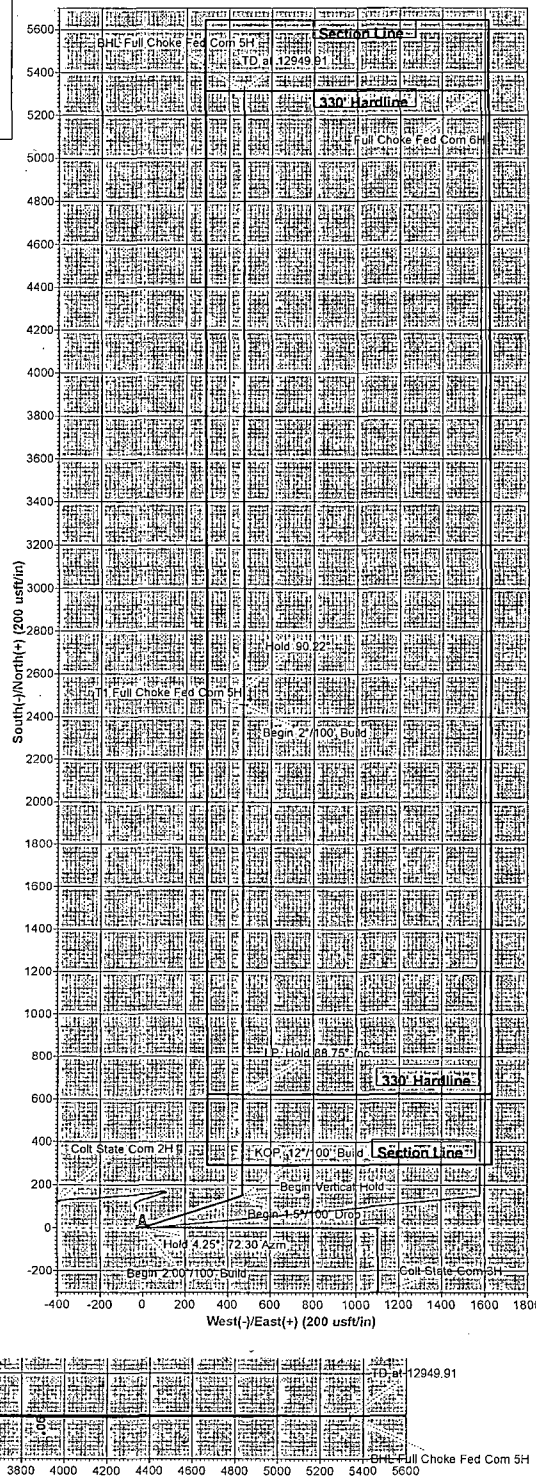
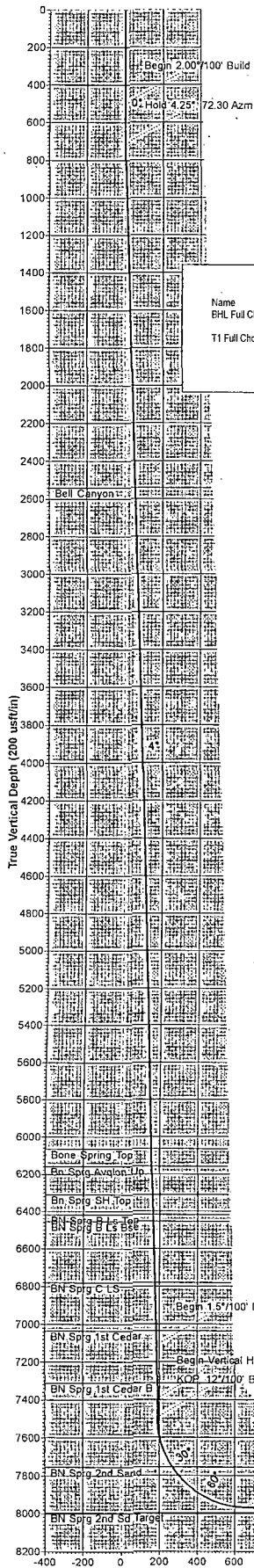
Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude	Shape
BHL Full Choke Fed Com 5H	8000.00	5316.20	470.70	428350.10	568215.00	32° 10' 48.74977 N	104° 6' 46.32949 W	Point
T1 Full Choke Fed Com 5H	8010.00	2455.86	470.31	428489.86	568214.61	32° 10' 20.44374 N	104° 6' 48.32949 W	Point

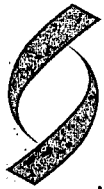
- plan hits target center
- plan misses target center by 0.13usft at 10089.64usft MD (8010.13 TVD, 2455.86 N, 470.31 E)



FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
2540.00	2545.23	Bel Canyon	0.00	
6065.00	6080.93	Bone Spring Top	0.00	
6158.00	6173.18	Bn Sprg Avalon Up.	0.00	
6311.00	6326.61	Bn Sprg SH Top	0.00	
6420.00	6436.91	Bn Sprg B Ls Top	0.00	
6456.00	6472.00	Bn Sprg B Ls Bse	0.00	
6781.00	6797.80	Bn Sprg C Ls	0.00	
7036.00	7053.60	Bn Sprg 1st Cedar	0.00	
7312.00	7330.06	Bn Sprg 1st Cedar B	0.00	
7756.00	7789.65	Bn Sprg 2nd Sand	0.00	
7986.00	9442.09	Bn Sprg 2nd Sd Target	0.00	





PHOENIX
TECHNOLOGY SERVICES

Legend Natural Gas iV, LP

Eddy County, NM (Nad27)

Sec 5 T25S R 28E

Full Choke Fed Com 5H

Wellbore #1

Plan: Plan#1 033114

Standard Planning Report

02 April, 2014



PHOENIX
TECHNOLOGY SERVICES



Planning Report



Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3061.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3061.00usft (TBD)
Site:	Sec 5 T25S R 28E	North Reference:	Grid
Well:	Full Choke Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 033114		

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 5 T25S R 28E		
Site Position:		Northing:	424,033.80 usft
From:	Map	Easting:	567,714.40 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 9' 56.14770 N
		Longitude:	104° 6' 52.20746 W
		Grid Convergence:	0.12 °

Well:	Full Choke Fed Com 5H		
Well Position	+N/-S	0.10 usft	Northing:
	+E/-W	29.90 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			3,036.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	3/31/2014	7.49	59.97	48,246

Design	Plan#1 033114			
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	5.06

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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
712.31	4.25	72.30	712.12	2.39	7.49	2.00	2.00	0.00	72.30	
7,127.63	4.25	72.30	7,109.83	146.81	460.01	0.00	0.00	0.00	0.00	
7,410.71	0.00	0.00	7,392.65	150.00	470.00	1.50	-1.50	0.00	180.00	
7,510.71	0.00	0.00	7,492.65	150.00	470.00	0.00	0.00	0.00	0.00	
8,250.30	88.75	0.01	7,970.00	617.05	470.06	12.00	12.00	0.00	0.01	BHL Full Choke Fed C
10,089.65	88.75	0.01	8,010.13	2,455.96	470.31	0.00	0.00	0.00	0.00	T1 Full Choke Fed Cc
10,163.23	90.22	0.01	8,010.79	2,529.54	470.32	2.00	2.00	0.00	0.00	
12,949.91	90.22	0.01	8,000.00	5,316.20	470.70	0.00	0.00	0.00	0.00	BHL Full Choke Fed C



Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3061.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3061.00usft (TBD)
Site:	Sec 5 T25S R 28E	North Reference:	Grid
Well:	Full Choke Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1-033114		

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
Begin 2.00°/100' Build									
600.00	2.00	72.30	599.98	0.53	1.66	0.68	2.00	2.00	0.00
700.00	4.00	72.30	699.84	2.12	6.65	2.70	2.00	2.00	0.00
712.31	4.25	72.30	712.12	2.39	7.49	3.04	2.00	2.00	0.00
Hold 4.25°, 72.30 Azim									
800.00	4.25	72.30	799.57	4.36	13.68	5.55	0.00	0.00	0.00
900.00	4.25	72.30	899.29	6.62	20.73	8.42	0.00	0.00	0.00
1,000.00	4.25	72.30	999.02	8.87	27.78	11.28	0.00	0.00	0.00
1,100.00	4.25	72.30	1,098.74	11.12	34.84	14.15	0.00	0.00	0.00
1,200.00	4.25	72.30	1,198.47	13.37	41.89	17.01	0.00	0.00	0.00
1,300.00	4.25	72.30	1,298.19	15.62	48.95	19.88	0.00	0.00	0.00
1,400.00	4.25	72.30	1,397.92	17.87	56.00	22.74	0.00	0.00	0.00
1,500.00	4.25	72.30	1,497.64	20.12	63.05	25.61	0.00	0.00	0.00
1,600.00	4.25	72.30	1,597.37	22.37	70.11	28.47	0.00	0.00	0.00
1,700.00	4.25	72.30	1,697.09	24.63	77.16	31.33	0.00	0.00	0.00
1,800.00	4.25	72.30	1,796.82	26.88	84.21	34.20	0.00	0.00	0.00
1,900.00	4.25	72.30	1,896.55	29.13	91.27	37.06	0.00	0.00	0.00
2,000.00	4.25	72.30	1,996.27	31.38	98.32	39.93	0.00	0.00	0.00
2,100.00	4.25	72.30	2,096.00	33.63	105.38	42.79	0.00	0.00	0.00
2,200.00	4.25	72.30	2,195.72	35.88	112.43	45.66	0.00	0.00	0.00
2,300.00	4.25	72.30	2,295.45	38.13	119.48	48.52	0.00	0.00	0.00
2,400.00	4.25	72.30	2,395.17	40.38	126.54	51.39	0.00	0.00	0.00
2,500.00	4.25	72.30	2,494.90	42.64	133.59	54.25	0.00	0.00	0.00
2,545.23	4.25	72.30	2,540.00	43.65	136.78	55.55	0.00	0.00	0.00
Bell Canyon									
2,600.00	4.25	72.30	2,594.62	44.89	140.64	57.12	0.00	0.00	0.00
2,700.00	4.25	72.30	2,694.35	47.14	147.70	59.98	0.00	0.00	0.00
2,800.00	4.25	72.30	2,794.08	49.39	154.75	62.84	0.00	0.00	0.00
2,900.00	4.25	72.30	2,893.80	51.64	161.81	65.71	0.00	0.00	0.00
3,000.00	4.25	72.30	2,993.53	53.89	168.86	68.57	0.00	0.00	0.00
3,100.00	4.25	72.30	3,093.25	56.14	175.91	71.44	0.00	0.00	0.00
3,200.00	4.25	72.30	3,192.98	58.39	182.97	74.30	0.00	0.00	0.00
3,300.00	4.25	72.30	3,292.70	60.64	190.02	77.17	0.00	0.00	0.00
3,400.00	4.25	72.30	3,392.43	62.90	197.07	80.03	0.00	0.00	0.00
3,500.00	4.25	72.30	3,492.15	65.15	204.13	82.90	0.00	0.00	0.00
3,600.00	4.25	72.30	3,591.88	67.40	211.18	85.76	0.00	0.00	0.00
3,700.00	4.25	72.30	3,691.60	69.65	218.24	88.63	0.00	0.00	0.00
3,800.00	4.25	72.30	3,791.33	71.90	225.29	91.49	0.00	0.00	0.00
3,900.00	4.25	72.30	3,891.06	74.15	232.34	94.35	0.00	0.00	0.00
4,000.00	4.25	72.30	3,990.78	76.40	239.40	97.22	0.00	0.00	0.00
4,100.00	4.25	72.30	4,090.51	78.65	246.45	100.08	0.00	0.00	0.00
4,200.00	4.25	72.30	4,190.23	80.91	253.50	102.95	0.00	0.00	0.00
4,300.00	4.25	72.30	4,289.96	83.16	260.56	105.81	0.00	0.00	0.00
4,400.00	4.25	72.30	4,389.68	85.41	267.61	108.68	0.00	0.00	0.00
4,500.00	4.25	72.30	4,489.41	87.66	274.67	111.54	0.00	0.00	0.00
4,600.00	4.25	72.30	4,589.13	89.91	281.72	114.41	0.00	0.00	0.00
4,700.00	4.25	72.30	4,688.86	92.16	288.77	117.27	0.00	0.00	0.00

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3061.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3061.00usft (TBD)
Site:	Sec 5 T25S R 28E	North Reference:	Grid
Well:	Full Choke Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 033114		

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	4.25	72.30	4,788.59	94.41	295.83	120.14	0.00	0.00	0.00
4,900.00	4.25	72.30	4,888.31	96.66	302.88	123.00	0.00	0.00	0.00
5,000.00	4.25	72.30	4,988.04	98.92	309.93	125.86	0.00	0.00	0.00
5,100.00	4.25	72.30	5,087.76	101.17	316.99	128.73	0.00	0.00	0.00
5,200.00	4.25	72.30	5,187.49	103.42	324.04	131.59	0.00	0.00	0.00
5,300.00	4.25	72.30	5,287.21	105.67	331.10	134.46	0.00	0.00	0.00
5,400.00	4.25	72.30	5,386.94	107.92	338.15	137.32	0.00	0.00	0.00
5,500.00	4.25	72.30	5,486.66	110.17	345.20	140.19	0.00	0.00	0.00
5,600.00	4.25	72.30	5,586.39	112.42	352.26	143.05	0.00	0.00	0.00
5,700.00	4.25	72.30	5,686.12	114.67	359.31	145.92	0.00	0.00	0.00
5,800.00	4.25	72.30	5,785.84	116.92	366.36	148.78	0.00	0.00	0.00
5,900.00	4.25	72.30	5,885.57	119.18	373.42	151.65	0.00	0.00	0.00
6,000.00	4.25	72.30	5,985.29	121.43	380.47	154.51	0.00	0.00	0.00
6,080.93	4.25	72.30	6,066.00	123.25	386.18	156.83	0.00	0.00	0.00
Bone Spring Top									
6,100.00	4.25	72.30	6,085.02	123.68	387.53	157.37	0.00	0.00	0.00
6,173.18	4.25	72.30	6,158.00	125.33	392.69	159.47	0.00	0.00	0.00
Bn Sprg Avqion Up.									
6,200.00	4.25	72.30	6,184.74	125.93	394.58	160.24	0.00	0.00	0.00
6,300.00	4.25	72.30	6,284.47	128.18	401.63	163.10	0.00	0.00	0.00
6,326.61	4.25	72.30	6,311.00	128.78	403.51	163.87	0.00	0.00	0.00
Bn Sprg SH Top									
6,400.00	4.25	72.30	6,384.19	130.43	408.69	165.97	0.00	0.00	0.00
6,435.91	4.25	72.30	6,420.00	131.24	411.22	167.00	0.00	0.00	0.00
BN Sprg B Ls Top									
6,472.00	4.25	72.30	6,456.00	132.05	413.77	168.03	0.00	0.00	0.00
BN Sprg B Ls Bse									
6,500.00	4.25	72.30	6,483.92	132.68	415.74	168.83	0.00	0.00	0.00
6,600.00	4.25	72.30	6,583.64	134.93	422.79	171.70	0.00	0.00	0.00
6,700.00	4.25	72.30	6,683.37	137.19	429.85	174.56	0.00	0.00	0.00
6,797.90	4.25	72.30	6,781.00	139.39	436.75	177.37	0.00	0.00	0.00
BN Sprg C LS									
6,800.00	4.25	72.30	6,783.10	139.44	436.90	177.43	0.00	0.00	0.00
6,900.00	4.25	72.30	6,882.82	141.69	443.95	180.29	0.00	0.00	0.00
7,000.00	4.25	72.30	6,982.55	143.94	451.01	183.16	0.00	0.00	0.00
7,053.60	4.25	72.30	7,036.00	145.15	454.79	184.69	0.00	0.00	0.00
BN Sprg 1st Cedar									
7,100.00	4.25	72.30	7,082.27	146.19	458.06	186.02	0.00	0.00	0.00
7,127.63	4.25	72.30	7,109.83	146.81	460.01	186.81	0.00	0.00	0.00
Begin 1.5°/100' Drop									
7,200.00	3.16	72.30	7,182.04	148.23	464.46	188.62	1.50	-1.50	0.00
7,300.00	1.66	72.30	7,281.95	149.51	468.47	190.25	1.50	-1.50	0.00
7,330.06	1.21	72.30	7,312.00	149.74	469.19	190.54	1.50	-1.50	0.00
BN Sprg 1st Cedar B									
7,400.00	0.16	72.30	7,381.94	150.00	469.99	190.86	1.50	-1.50	0.00
7,410.71	0.00	0.00	7,392.65	150.00	470.00	190.87	1.50	-1.50	0.00
Begin Vertical Hold									
7,500.00	0.00	0.00	7,481.94	150.00	470.00	190.87	0.00	0.00	0.00
7,510.71	0.00	0.00	7,492.65	150.00	470.00	190.87	0.00	0.00	0.00
KOP, 12°/100' Build									
7,600.00	10.71	0.01	7,581.42	158.32	470.00	199.16	12.00	12.00	0.00
7,700.00	22.71	0.01	7,677.02	187.03	470.01	227.76	12.00	12.00	0.00
7,789.66	33.47	0.01	7,756.00	229.19	470.01	269.75	12.00	12.00	0.00

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3061.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3061.00usft (TBD)
Site:	Sec 5 T25S R 28E	North Reference:	Grid
Well:	Full Choke Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 033114		

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)
BN Sprg 2nd Sand									
7,800.00	34.71	0.01	7,764.56	234.99	470.01	275.53	12.00	12.00	0.00
7,900.00	46.71	0.01	7,840.22	300.10	470.02	340.38	12.00	12.00	0.00
8,000.00	58.71	0.01	7,900.69	379.52	470.03	419.49	12.00	12.00	0.00
8,100.00	70.71	0.01	7,943.32	469.77	470.04	509.39	12.00	12.00	0.00
8,200.00	82.71	0.01	7,966.26	566.92	470.06	606.16	12.00	12.00	0.00
8,250.30	88.75	0.01	7,970.00	617.05	470.06	656.10	12.00	12.00	0.00
LP, Hold 88.75° Inc									
8,300.00	88.75	0.01	7,971.09	666.74	470.07	705.60	0.00	0.00	0.00
8,400.00	88.75	0.01	7,973.27	766.72	470.08	805.19	0.00	0.00	0.00
8,500.00	88.75	0.01	7,975.45	866.69	470.10	904.78	0.00	0.00	0.00
8,600.00	88.75	0.01	7,977.63	966.67	470.11	1,004.36	0.00	0.00	0.00
8,700.00	88.75	0.01	7,979.81	1,066.65	470.12	1,103.95	0.00	0.00	0.00
8,800.00	88.75	0.01	7,981.99	1,166.62	470.14	1,203.54	0.00	0.00	0.00
8,900.00	88.75	0.01	7,984.17	1,266.60	470.15	1,303.13	0.00	0.00	0.00
9,000.00	88.75	0.01	7,986.36	1,366.57	470.16	1,402.72	0.00	0.00	0.00
9,100.00	88.75	0.01	7,988.54	1,466.55	470.18	1,502.30	0.00	0.00	0.00
9,200.00	88.75	0.01	7,990.72	1,566.53	470.19	1,601.89	0.00	0.00	0.00
9,300.00	88.75	0.01	7,992.90	1,666.50	470.21	1,701.48	0.00	0.00	0.00
9,400.00	88.75	0.01	7,995.08	1,766.48	470.22	1,801.07	0.00	0.00	0.00
9,442.09	88.75	0.01	7,996.00	1,808.56	470.22	1,842.98	0.00	0.00	0.00
BN Sprg 2nd Sd Target									
9,500.00	88.75	0.01	7,997.26	1,866.46	470.23	1,900.65	0.00	0.00	0.00
9,600.00	88.75	0.01	7,999.45	1,966.43	470.25	2,000.24	0.00	0.00	0.00
9,700.00	88.75	0.01	8,001.63	2,066.41	470.26	2,099.83	0.00	0.00	0.00
9,800.00	88.75	0.01	8,003.81	2,166.38	470.27	2,199.42	0.00	0.00	0.00
9,900.00	88.75	0.01	8,005.99	2,266.36	470.29	2,299.01	0.00	0.00	0.00
10,000.00	88.75	0.01	8,008.17	2,366.34	470.30	2,398.59	0.00	0.00	0.00
10,089.65	88.75	0.01	8,010.13	2,455.96	470.31	2,487.87	0.00	0.00	0.00
Begin 2°/100' Build									
10,100.00	88.96	0.01	8,010.33	2,466.31	470.31	2,498.18	2.00	2.00	0.00
10,163.23	90.22	0.01	8,010.79	2,529.54	470.32	2,561.17	2.00	2.00	0.00
Hold 90.22°									
10,200.00	90.22	0.01	8,010.64	2,566.31	470.33	2,597.79	0.00	0.00	0.00
10,300.00	90.22	0.01	8,010.26	2,666.31	470.34	2,697.40	0.00	0.00	0.00
10,400.00	90.22	0.01	8,009.87	2,766.31	470.35	2,797.01	0.00	0.00	0.00
10,500.00	90.22	0.01	8,009.48	2,866.31	470.37	2,896.62	0.00	0.00	0.00
10,600.00	90.22	0.01	8,009.10	2,966.31	470.38	2,996.23	0.00	0.00	0.00
10,700.00	90.22	0.01	8,008.71	3,066.31	470.40	3,095.84	0.00	0.00	0.00
10,800.00	90.22	0.01	8,008.32	3,166.31	470.41	3,195.45	0.00	0.00	0.00
10,900.00	90.22	0.01	8,007.93	3,266.30	470.42	3,295.07	0.00	0.00	0.00
11,000.00	90.22	0.01	8,007.55	3,366.30	470.44	3,394.68	0.00	0.00	0.00
11,100.00	90.22	0.01	8,007.16	3,466.30	470.45	3,494.29	0.00	0.00	0.00
11,200.00	90.22	0.01	8,006.77	3,566.30	470.46	3,593.90	0.00	0.00	0.00
11,300.00	90.22	0.01	8,006.39	3,666.30	470.48	3,693.51	0.00	0.00	0.00
11,400.00	90.22	0.01	8,006.00	3,766.30	470.49	3,793.12	0.00	0.00	0.00
11,500.00	90.22	0.01	8,005.61	3,866.30	470.50	3,892.73	0.00	0.00	0.00
11,600.00	90.22	0.01	8,005.23	3,966.30	470.52	3,992.34	0.00	0.00	0.00
11,700.00	90.22	0.01	8,004.84	4,066.30	470.53	4,091.95	0.00	0.00	0.00
11,800.00	90.22	0.01	8,004.45	4,166.30	470.54	4,191.56	0.00	0.00	0.00
11,900.00	90.22	0.01	8,004.06	4,266.30	470.56	4,291.17	0.00	0.00	0.00
12,000.00	90.22	0.01	8,003.68	4,366.30	470.57	4,390.78	0.00	0.00	0.00
12,100.00	90.22	0.01	8,003.29	4,466.30	470.58	4,490.39	0.00	0.00	0.00



Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3061.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3061.00usft (TBD)
Site:	Sec 5 T25S R 28E	North Reference:	Grid
Well:	Full Choke Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 033114		

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	90.22	0.01	8,002.90	4,566.29	470.60	4,590.01	0.00	0.00	0.00	
12,300.00	90.22	0.01	8,002.52	4,666.29	470.61	4,689.62	0.00	0.00	0.00	
12,400.00	90.22	0.01	8,002.13	4,766.29	470.63	4,789.23	0.00	0.00	0.00	
12,500.00	90.22	0.01	8,001.74	4,866.29	470.64	4,888.84	0.00	0.00	0.00	
12,600.00	90.22	0.01	8,001.35	4,966.29	470.65	4,988.45	0.00	0.00	0.00	
12,700.00	90.22	0.01	8,000.97	5,066.29	470.67	5,088.06	0.00	0.00	0.00	
12,800.00	90.22	0.01	8,000.58	5,166.29	470.68	5,187.67	0.00	0.00	0.00	
12,900.00	90.22	0.01	8,000.19	5,266.29	470.69	5,287.28	0.00	0.00	0.00	
12,949.91	90.22	0.01	8,000.00	5,316.20	470.70	5,337.00	0.00	0.00	0.00	
TD at 12949.91										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
BHL Full Choke Fed Cor	0.00	0.00	8,000.00	5,316.20	470.70	429,350.10	568,215.00	32° 10' 48.74978 N	104° 6' 46.25675 W	
- plan hits target center										
- Point										
T1 Full Choke Fed Com	0.00	0.00	8,010.00	2,455.96	470.31	426,489.86	568,214.61	32° 10' 20.44375 N	104° 6' 46.32949 W	
- plan misses target center by 0.13usft at 10089.64usft MD (8010.13 TVD, 2455.96 N, 470.31 E)										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,545.23	2,540.00	Bell Canyon		0.00		
6,080.93	6,066.00	Bone Spring Top		0.00		
6,173.18	6,158.00	Bn Sprg Avqilon Up.		0.00		
6,326.61	6,311.00	Bn Sprg SH Top		0.00		
6,435.91	6,420.00	BN Sprg B Ls Top		0.00		
6,472.00	6,456.00	BN Sprg B Ls Bse		0.00		
6,797.90	6,781.00	BN Sprg C LS		0.00		
7,053.60	7,036.00	BN Sprg 1st Cedar		0.00		
7,330.06	7,312.00	BN Sprg 1st Cedar B		0.00		
7,789.66	7,756.00	BN Sprg 2nd Sand		0.00		
9,442.09	7,996.00	BN Sprg 2nd Sd Target		0.00		



Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Company:	Legend Natural Gas IV, LP	TVD Reference:	WELL @ 3061.00usft (TBD)
Project:	Eddy County, NM (Nad27)	MD Reference:	WELL @ 3061.00usft (TBD)
Site:	Sec 5 T25S R 28E	North Reference:	Grid
Well:	Full Choke Fed Com 5H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan#1 033114		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Begin 2.00°/100' Build
712.31	712.12	2.39	7.49	Hold 4.25°, 72.30 Azm
7,127.63	7,109.83	146.81	460.01	Begin 1.5°/100' Drop
7,410.71	7,392.65	150.00	470.00	Begin Vertical Hold
7,510.71	7,492.65	150.00	470.00	KOP, 12°/100' Build
8,250.30	7,970.00	617.05	470.06	LP, Hold 88.75° Inc
10,089.65	8,010.13	2,455.96	470.31	Begin 2°/100' Build
10,163.23	8,010.79	2,529.54	470.32	Hold 90.22°
12,949.91	8,000.00	5,316.20	470.70	TD at 12949.91



PHOENIX
TECHNOLOGY SERVICES

Legend Natural Gas iV, LP

Eddy County, NM (Nad27)

Sec 5 T25S R 28E

Full Choke Fed Com 5H

Wellbore #1

Plan#1 033114

Anticollision Report

02 April, 2014



PHOENIX
TECHNOLOGY SERVICES



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Reference	Plan#1 033114		
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 4/2/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.00	12,949.91	Plan#1 033114 (Wellbore #1)	MWD
			Description
			MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 5 T25S R 28E						
Colt State Com 2H - Wellbore #1 - Wellbore #1	0.00	0.99	94.37			
Colt State Com 2H - Wellbore #1 - Wellbore #1	2,950.00	2,954.12	125.11	111.40	9.122 SF	
Colt State Com 3H - Wellbore #1 - Plan#1 033114	500.00	500.00	29.90	27.93	15.203 CC	
Colt State Com 3H - Wellbore #1 - Plan#1 033114	2,068.92	2,077.23	33.56	23.81	3.441 ES	
Colt State Com 3H - Wellbore #1 - Plan#1 033114	2,100.00	2,108.06	33.79	23.81	3.386 SF	
Full Choke Fed Com 6H - Wellbore #1 - Plan#1 033114	500.00	500.00	30.10	28.13	15.305 CC	
Full Choke Fed Com 6H - Wellbore #1 - Plan#1 033114	700.00	697.92	30.36	27.55	10.806 ES	
Full Choke Fed Com 6H - Wellbore #1 - Plan#1 033114	12,949.91	13,130.49	1,109.75	912.83	5.636 SF	

Offset Design												
Sec 5 T25S R 28E - Colt State Com 2H - Wellbore #1 - Wellbore #1												
Survey Program: 100-MWD												
Reference												
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	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
0.00	0.00	0.99	-0.01	0.00	0.00	-18.04	89.73	-29.22	94.37			
50.00	50.00	50.67	49.67	0.03	0.04	-18.06	89.81	-29.28	94.46	94.39	0.07	1,327.656
100.00	100.00	100.00	99.00	0.08	0.09	-18.12	90.02	-29.45	94.72	94.55	0.17	559.642
150.00	150.00	149.92	148.91	0.20	0.20	-18.19	90.42	-29.70	95.18	94.79	0.39	242.219
200.00	200.00	199.49	198.48	0.31	0.31	-18.22	91.05	-29.98	95.87	95.25	0.62	155.647
250.00	250.00	248.73	247.71	0.42	0.42	-18.32	91.92	-30.43	96.85	96.01	0.84	115.406
300.00	300.00	297.94	296.90	0.53	0.53	-18.54	93.08	-31.22	98.23	97.17	1.06	92.454
350.00	350.00	348.09	347.02	0.65	0.63	-18.82	94.40	-32.18	99.77	98.50	1.28	78.068
400.00	400.00	398.28	397.19	0.76	0.74	-18.06	95.63	-33.03	101.21	99.72	1.49	67.777
450.00	450.00	448.53	447.43	0.87	0.84	-19.24	96.78	-33.78	102.54	100.83	1.70	60.149
500.00	500.00	498.80	497.68	0.98	0.93	-19.38	97.82	-34.41	103.72	101.81	1.92	54.137
550.00	550.00	549.11	547.98	1.09	1.04	-19.71	98.75	-34.91	104.78	102.66	2.12	49.413
600.00	599.98	599.42	598.28	1.20	1.14	-20.46	99.56	-35.29	105.71	103.38	2.33	45.350
650.00	649.93	649.70	648.56	1.31	1.25	-21.66	100.23	-35.59	106.57	104.02	2.54	41.884
700.00	699.84	699.94	698.79	1.42	1.35	-23.31	100.74	-35.84	107.39	104.63	2.76	38.946
750.00	749.70	750.10	748.95	1.53	1.46	-25.27	101.11	-36.04	108.22	105.25	2.98	36.334
800.00	799.57	800.26	799.11	1.65	1.57	-27.20	101.36	-36.17	109.05	105.85	3.20	34.089
850.00	849.43	849.93	848.76	1.76	1.67	-29.11	101.57	-36.30	109.97	106.56	3.42	32.160
900.00	899.29	899.59	898.43	1.88	1.77	-31.01	101.84	-36.51	111.11	107.47	3.64	30.516
950.00	949.15	949.74	948.59	2.01	1.88	-32.88	102.09	-36.72	112.34	108.47	3.86	29.066

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error: 0.00 usft
Sec 5 T25S R 28E - Colt State Com 2H - Wellbore #1 - Wellbore #1													Offset Well Error: 0.00 usft
Survey Program: 100-MWD													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Offset Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,000.00	999.02	999.91	998.76	2.13	1.98	-34.69	102.23	-36.84	113.55	109.46	4.09	27.770	
1,050.00	1,048.88	1,049.91	1,048.75	2.25	2.09	-36.44	102.32	-36.86	114.77	110.45	4.32	26.590	
1,100.00	1,098.74	1,099.91	1,098.76	2.37	2.20	-38.13	102.39	-36.80	116.03	111.49	4.54	25.540	
1,150.00	1,148.60	1,149.37	1,148.22	2.50	2.30	-39.71	102.60	-36.67	117.45	112.68	4.77	24.634	
1,200.00	1,198.47	1,198.84	1,197.69	2.62	2.40	-41.14	103.09	-36.48	119.13	114.14	4.99	23.863	
1,250.00	1,248.33	1,248.22	1,247.05	2.75	2.51	-42.43	103.85	-36.26	121.07	115.85	5.22	23.211	
1,300.00	1,298.19	1,297.59	1,296.41	2.87	2.61	-43.60	104.88	-36.05	123.27	117.83	5.44	22.663	
1,350.00	1,348.06	1,347.19	1,346.00	3.00	2.72	-44.65	106.16	-35.84	125.69	120.03	5.67	22.187	
1,400.00	1,397.92	1,396.81	1,395.59	3.13	2.82	-45.58	107.63	-35.59	128.26	122.36	5.89	21.771	
1,450.00	1,447.78	1,446.70	1,445.46	3.25	2.93	-46.44	109.20	-35.32	130.91	124.79	6.12	21.401	
1,500.00	1,497.64	1,496.61	1,495.35	3.38	3.03	-47.28	110.73	-35.08	133.58	127.24	6.34	21.060	
1,550.00	1,547.51	1,546.50	1,545.21	3.51	3.14	-48.08	112.29	-34.81	136.28	129.71	6.57	20.744	
1,600.00	1,597.37	1,596.40	1,595.08	3.63	3.25	-48.77	113.97	-34.42	139.00	132.21	6.80	20.452	
1,650.00	1,647.23	1,646.23	1,646.87	3.76	3.36	-49.32	115.69	-33.61	141.43	134.40	7.03	20.116	
1,700.00	1,697.09	1,696.08	1,696.88	3.89	3.47	-49.70	117.19	-32.00	143.13	135.87	7.27	19.701	
1,750.00	1,746.96	1,745.09	1,751.59	4.02	3.59	-49.77	118.69	-29.19	143.98	136.48	7.51	19.181	
1,800.00	1,796.82	1,805.84	1,804.14	4.15	3.71	-49.40	120.38	-24.86	143.85	136.11	7.75	18.563	
1,850.00	1,846.68	1,857.98	1,855.94	4.27	3.83	-48.63	122.25	-19.26	142.89	134.89	8.00	17.863	
1,900.00	1,896.55	1,909.87	1,907.34	4.40	3.95	-47.47	124.31	-12.49	141.21	132.96	8.25	17.108	
1,950.00	1,946.41	1,961.06	1,957.87	4.53	4.08	-45.88	126.72	-4.67	139.03	130.51	8.52	16.324	
2,000.00	1,996.27	2,011.99	2,007.94	4.66	4.21	-43.79	129.56	4.20	136.51	127.73	8.79	15.537	
2,050.00	2,046.13	2,062.66	2,057.62	4.79	4.35	-41.40	132.50	13.71	133.79	124.72	9.07	14.756	
2,100.00	2,096.00	2,112.96	2,108.86	4.92	4.50	-38.78	135.36	23.64	130.95	121.60	9.35	14.006	
2,150.00	2,145.86	2,162.35	2,155.20	5.05	4.64	-36.18	138.02	33.38	128.28	118.65	9.63	13.320	
2,200.00	2,195.72	2,211.07	2,202.91	5.17	4.78	-33.54	140.84	42.84	126.14	116.23	9.91	12.729	
2,250.00	2,245.58	2,260.10	2,250.98	5.30	4.92	-30.90	143.80	52.05	124.57	114.38	10.19	12.221	
2,300.00	2,295.45	2,309.20	2,299.19	5.43	5.07	-28.35	146.77	60.86	123.50	113.03	10.47	11.790	
2,350.00	2,345.31	2,358.36	2,347.60	5.56	5.21	-26.13	149.58	68.89	122.91	112.15	10.75	11.432	
2,400.00	2,395.17	2,408.03	2,396.69	5.69	5.35	-24.33	152.17	76.00	122.68	111.66	11.03	11.127	
2,450.00	2,445.04	2,459.15	2,447.30	5.82	5.49	-22.72	154.22	82.86	122.22	110.92	11.30	10.817	
2,500.00	2,494.90	2,508.37	2,496.15	5.95	5.62	-21.61	155.86	88.74	121.79	110.23	11.56	10.536	
2,550.00	2,544.76	2,557.77	2,545.28	6.08	5.75	-20.96	157.38	93.58	121.68	109.86	11.82	10.295	
2,600.00	2,594.62	2,607.80	2,595.11	6.21	5.88	-20.59	158.78	97.85	121.67	109.60	12.07	10.080	
2,650.00	2,644.49	2,657.85	2,644.99	6.34	6.00	-20.43	160.01	101.71	121.65	109.33	12.32	9.872	
2,679.85	2,674.26	2,687.62	2,674.69	6.41	6.07	-20.43	160.66	103.82	121.63	109.16	12.47	9.753	
2,700.00	2,694.35	2,707.61	2,694.63	6.47	6.12	-20.47	161.10	105.15	121.64	109.07	12.57	9.678	
2,750.00	2,744.21	2,757.22	2,744.13	6.59	6.23	-20.71	162.18	108.15	121.79	108.98	12.81	9.504	
2,800.00	2,794.08	2,806.64	2,793.49	6.72	6.34	-21.27	163.20	110.45	122.13	109.08	13.05	9.358	
2,850.00	2,843.94	2,855.92	2,842.75	6.85	6.44	-22.41	163.99	111.49	122.75	109.47	13.28	9.241	
2,900.00	2,893.80	2,905.09	2,891.91	6.98	6.54	-24.04	164.61	111.40	123.72	110.22	13.50	9.163	
2,950.00	2,943.66	2,954.12	2,940.93	7.11	6.63	-26.02	165.17	110.47	125.11	111.40	13.72	9.122 SF	
3,000.00	2,993.53	3,002.91	2,989.69	7.24	6.71	-28.29	165.68	108.69	127.01	113.09	13.92	9.126	
3,050.00	3,043.39	3,051.00	3,037.70	7.37	6.79	-30.81	166.14	106.10	129.52	115.40	14.11	9.177	
3,100.00	3,093.25	3,099.72	3,086.29	7.50	6.86	-33.63	166.51	102.50	132.74	118.44	14.29	9.286	
3,150.00	3,143.11	3,147.71	3,134.05	7.63	6.93	-36.71	166.71	97.84	136.82	122.35	14.47	9.455	
3,200.00	3,192.98	3,197.65	3,183.73	7.76	7.01	-39.78	166.83	92.69	141.40	126.76	14.64	9.658	
3,250.00	3,242.84	3,247.67	3,233.51	7.89	7.08	-42.56	166.91	87.89	146.09	131.28	14.81	9.864	
3,300.00	3,292.70	3,297.34	3,282.92	8.02	7.15	-45.37	166.45	82.83	150.93	135.95	14.98	10.078	
3,350.00	3,342.57	3,346.29	3,331.53	8.15	7.22	-48.33	165.25	77.27	156.05	140.91	15.13	10.310	
3,400.00	3,392.43	3,393.91	3,378.75	8.28	7.29	-51.28	163.78	71.22	161.87	146.58	15.29	10.588	
3,450.00	3,442.29	3,440.86	3,425.21	8.41	7.35	-54.17	162.20	64.63	168.58	153.14	15.44	10.918	
3,500.00	3,492.15	3,486.83	3,470.60	8.54	7.42	-56.86	160.88	57.52	176.41	160.82	15.59	11.313	

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Sec 5 T25S R 28E - Colt State Com 2H - Wellbore #1 - Wellbore #1													Offset Well Error:	0.00 usft
Survey Program: 100-MWD														
Reference		Offset		Semi Major Axis		Distance		Minimum		Separation		Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
3,550.00	3,542.02	3,532.93	3,516.04	8.67	7.49	-59.35	159.86	49.76	185.37	169.62	15.75	11.769		
3,600.00	3,591.88	3,579.79	3,562.14	8.80	7.56	-61.68	158.90	41.39	195.16	179.24	15.91	12.264		
3,650.00	3,641.74	3,627.27	3,608.76	8.93	7.63	-63.86	157.94	32.51	205.62	189.54	16.08	12.788		
3,700.00	3,691.60	3,676.84	3,657.47	9.06	7.71	-65.87	156.93	23.36	216.24	199.99	16.25	13.307		
3,750.00	3,741.47	3,725.37	3,705.21	9.19	7.78	-67.65	155.94	14.66	226.84	210.42	16.42	13.811		
3,800.00	3,791.33	3,771.96	3,750.98	9.32	7.86	-69.26	154.94	6.05	237.89	221.29	16.60	14.330		
3,850.00	3,841.19	3,818.55	3,796.69	9.44	7.94	-70.76	153.90	-2.94	249.46	232.68	16.78	14.866		
3,900.00	3,891.06	3,865.32	3,842.51	9.57	8.03	-72.16	152.87	-12.23	261.48	244.51	16.97	15.412		
3,950.00	3,940.92	3,912.90	3,889.08	9.70	8.12	-73.45	151.86	-21.90	273.88	256.70	17.15	15.966		
4,000.00	3,990.78	3,962.03	3,937.21	9.83	8.22	-74.63	150.95	-31.76	286.27	268.93	17.35	16.504		
4,050.00	4,040.64	4,010.74	3,984.96	9.96	8.32	-75.67	150.16	-41.34	298.63	281.09	17.54	17.027		
4,100.00	4,090.51	4,058.89	4,032.16	10.09	8.42	-76.63	149.31	-50.80	311.06	293.32	17.73	17.540		
4,150.00	4,140.37	4,108.10	4,080.41	10.22	8.53	-77.54	148.37	-60.45	323.52	305.59	17.93	18.040		
4,200.00	4,190.23	4,158.39	4,129.78	10.35	8.65	-78.36	147.56	-70.01	335.79	317.65	18.14	18.514		
4,250.00	4,240.10	4,205.56	4,176.12	10.48	8.77	-79.06	146.97	-78.79	347.97	329.64	18.34	18.976		
4,300.00	4,289.96	4,250.98	4,220.68	10.61	8.88	-79.69	146.51	-87.56	360.55	342.01	18.54	19.450		
4,350.00	4,339.82	4,298.72	4,267.47	10.74	9.00	-80.29	146.09	-97.03	373.45	354.70	18.74	19.924		
4,400.00	4,389.68	4,347.97	4,315.75	10.87	9.13	-80.87	145.57	-106.73	386.28	367.33	18.95	20.382		
4,450.00	4,439.55	4,397.54	4,364.38	11.00	9.26	-81.43	144.93	-116.35	399.01	379.84	19.16	20.824		
4,500.00	4,489.41	4,447.30	4,413.21	11.13	9.39	-81.97	144.18	-125.84	411.59	392.22	19.37	21.248		
4,550.00	4,539.27	4,494.94	4,459.99	11.26	9.52	-82.46	143.43	-134.86	424.12	404.54	19.58	21.662		
4,600.00	4,589.13	4,542.01	4,506.19	11.39	9.65	-82.92	142.78	-143.87	436.81	417.03	19.79	22.076		
4,650.00	4,639.00	4,590.99	4,554.24	11.52	9.78	-83.35	142.14	-153.30	449.57	429.57	20.00	22.479		
4,700.00	4,688.86	4,640.48	4,602.83	11.65	9.92	-83.77	141.43	-162.70	462.23	442.02	20.21	22.867		
4,750.00	4,738.72	4,690.88	4,652.33	11.78	10.06	-84.17	140.70	-172.11	474.75	454.31	20.43	23.237		
4,800.00	4,788.59	4,741.50	4,702.10	11.91	10.21	-84.54	140.01	-181.31	487.05	466.41	20.65	23.589		
4,850.00	4,838.45	4,792.40	4,752.19	12.04	10.35	-84.91	139.13	-190.34	499.14	478.28	20.87	23.922		
4,900.00	4,888.31	4,842.54	4,801.56	12.17	10.49	-85.31	137.87	-199.03	511.02	489.94	21.08	24.239		
4,950.00	4,938.17	4,888.94	4,847.23	12.30	10.63	-85.68	136.60	-207.12	522.96	501.67	21.29	24.560		
5,000.00	4,988.04	4,929.00	4,886.63	12.43	10.75	-86.00	135.53	-214.25	535.16	513.67	21.49	24.901		
5,050.00	5,037.90	4,975.82	4,932.62	12.56	10.89	-86.31	134.59	-222.98	547.77	526.06	21.71	25.236		
5,100.00	5,087.76	5,023.00	4,978.84	12.69	11.03	-86.55	134.26	-232.44	561.09	539.17	21.92	25.595		
5,150.00	5,137.62	5,063.73	5,018.69	12.82	11.17	-86.74	134.27	-240.88	574.74	552.62	22.13	25.976		
5,200.00	5,187.49	5,111.74	5,065.65	12.95	11.32	-86.92	134.34	-250.82	588.45	566.10	22.35	26.334		
5,250.00	5,237.35	5,165.65	5,118.44	13.08	11.49	-87.10	134.36	-261.77	601.95	579.38	22.58	26.663		
5,300.00	5,287.21	5,219.15	5,170.94	13.21	11.66	-87.30	134.11	-272.09	614.95	592.14	22.81	26.965		
5,350.00	5,337.08	5,265.02	5,215.96	13.34	11.81	-87.48	133.88	-280.87	627.88	604.86	23.02	27.275		
5,400.00	5,386.94	5,310.82	5,260.88	13.47	11.96	-87.65	133.74	-289.80	641.00	617.77	23.23	27.588		
5,450.00	5,436.80	5,356.77	5,305.91	13.60	12.11	-87.81	133.52	-298.93	654.30	630.85	23.45	27.900		
5,500.00	5,486.66	5,400.00	5,348.25	13.73	12.26	-87.99	133.09	-307.67	667.78	644.12	23.66	28.222		
5,550.00	5,536.53	5,446.66	5,393.89	13.86	12.42	-88.18	132.50	-317.32	681.48	657.60	23.88	28.537		
5,600.00	5,586.39	5,494.00	5,440.15	13.99	12.58	-88.36	131.87	-327.39	695.48	671.38	24.10	28.857		
5,650.00	5,636.25	5,542.10	5,487.13	14.12	12.75	-88.55	131.09	-337.65	709.50	685.18	24.32	29.171		
5,700.00	5,686.12	5,594.59	5,538.46	14.25	12.93	-88.76	129.94	-348.56	723.26	698.71	24.55	29.458		
5,750.00	5,735.98	5,648.91	5,591.67	14.38	13.12	-88.97	128.73	-359.45	736.67	711.89	24.79	29.722		
5,800.00	5,785.84	5,700.53	5,642.31	14.51	13.29	-89.16	127.70	-369.40	749.71	724.70	25.01	29.973		
5,850.00	5,835.70	5,747.93	5,688.81	14.64	13.45	-89.36	126.45	-378.52	762.73	737.50	25.23	30.229		
5,900.00	5,885.57	5,796.16	5,736.10	14.77	13.61	-89.58	124.79	-387.83	775.80	750.35	25.45	30.480		
5,950.00	5,935.43	5,845.49	5,784.47	14.90	13.78	-89.81	122.89	-397.31	788.83	763.16	25.68	30.722		
6,000.00	5,985.29	5,894.16	5,832.20	15.03	13.95	-90.04	120.86	-406.59	801.82	775.92	25.90	30.960		
6,050.00	6,035.15	5,942.26	5,879.39	15.16	14.12	-90.26	118.86	-415.77	814.81	788.69	26.12	31.195		
6,100.00	6,085.02	5,986.72	5,922.97	15.29	14.27	-90.47	117.02	-424.31	827.88	801.54	26.33	31.438		

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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#1.033.114	Offset TVD Reference:	Reference Datum

Offset Design: Sec 5 T25S R 28E - Colt State Com 2H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 usft
Survey Program: 100-MWD												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured	Vertical	Measured	Vertical	Reference	Offset	Azimuth	Offset Wellbore Centre	Between	Between	Minimum	Separation		
Depth	Depth	Depth	Depth	(usft)	(usft)	from North	+N-S	Centres	Ellipses	Separation	Factor		
(usft)	(usft)	(usft)	(usft)			(°)	(usft)	(usft)	(usft)	(usft)			
6,150.00	6,134.88	6,028.49	5,963.87	15.42	14.42	-90.66	115.29	-432.62	841.29	814.75	26.54	31.697	
6,200.00	6,184.74	6,074.88	6,009.23	15.55	14.58	-90.86	113.35	-442.15	855.03	828.27	26.76	31.951	
6,250.00	6,234.61	6,130.72	6,063.89	15.68	14.78	-91.09	110.88	-453.32	868.52	841.52	27.00	32.167	
6,300.00	6,284.47	6,185.91	6,117.99	15.81	14.97	-91.32	108.23	-463.88	881.61	854.37	27.24	32.368	
6,350.00	6,334.33	6,240.83	6,171.90	15.94	15.16	-91.57	105.19	-473.97	894.34	866.86	27.47	32.553	
6,400.00	6,384.19	6,297.98	6,228.07	16.07	15.35	-91.83	101.92	-483.98	906.66	878.95	27.71	32.716	
6,450.00	6,434.06	6,358.92	6,288.09	16.20	15.55	-92.08	98.69	-493.99	918.47	890.51	27.96	32.849	
6,500.00	6,483.92	6,422.47	6,350.84	16.33	15.75	-92.33	95.22	-503.43	929.51	901.30	28.21	32.946	
6,550.00	6,533.78	6,470.78	6,398.58	16.46	15.90	-92.55	92.45	-510.24	940.20	911.77	28.43	33.066	
6,600.00	6,583.64	6,514.00	6,441.29	16.59	16.03	-92.75	89.83	-516.35	950.94	922.30	28.64	33.199	
6,650.00	6,633.51	6,560.73	6,487.42	16.72	16.18	-92.98	86.70	-523.11	961.87	933.01	28.86	33.326	
6,700.00	6,683.37	6,609.00	6,534.99	16.85	16.33	-93.23	82.96	-530.42	973.18	944.09	29.08	33.460	
6,750.00	6,733.23	6,648.50	6,573.87	16.98	16.46	-93.45	79.78	-536.58	984.70	955.41	29.29	33.622	
6,800.00	6,783.10	6,694.80	6,619.46	17.11	16.61	-93.68	76.28	-543.91	996.37	966.87	29.50	33.770	
6,850.00	6,832.96	6,764.61	6,688.32	17.24	16.83	-93.96	71.73	-554.46	1,007.70	977.93	29.77	33.848	
6,900.00	6,882.82	6,828.75	6,751.82	17.37	17.02	-94.15	68.68	-562.87	1,017.93	987.90	30.03	33.901	
6,950.00	6,932.68	6,884.50	6,807.11	17.50	17.18	-94.27	66.81	-569.74	1,027.76	997.49	30.26	33.961	
7,000.00	6,982.55	6,938.66	6,860.88	17.63	17.33	-94.35	65.85	-576.16	1,037.30	1,006.80	30.50	34.013	
7,050.00	7,032.41	6,994.56	6,916.41	17.76	17.49	-94.36	66.05	-582.61	1,046.60	1,015.87	30.74	34.052	
7,100.00	7,082.27	7,064.20	6,985.66	17.89	17.68	-94.30	67.48	-589.79	1,055.23	1,024.23	31.00	34.036	
7,150.00	7,132.14	7,120.88	7,042.09	18.01	17.82	-94.23	69.14	-594.84	1,063.08	1,031.83	31.25	34.022	
7,200.00	7,182.04	7,173.82	7,094.83	18.12	17.96	-94.18	70.41	-599.35	1,070.21	1,038.73	31.48	33.993	
7,250.00	7,231.98	7,231.85	7,152.66	18.21	18.10	-94.15	71.31	-603.93	1,076.45	1,044.74	31.71	33.944	
7,300.00	7,281.95	7,294.74	7,215.41	18.30	18.25	-94.14	71.59	-608.28	1,081.62	1,049.67	31.95	33.857	
7,350.00	7,331.94	7,366.18	7,286.75	18.38	18.41	-94.15	71.30	-611.96	1,085.29	1,053.10	32.19	33.714	
7,400.00	7,381.94	7,444.00	7,364.53	18.46	18.56	-94.17	71.02	-614.19	1,087.18	1,054.74	32.44	33.512	
7,450.00	7,431.94	7,498.10	7,418.63	18.55	18.66	-94.17	70.86	-614.86	1,087.82	1,055.17	32.65	33.320	
7,500.00	7,481.94	7,534.00	7,454.52	18.64	18.73	-94.20	70.37	-615.26	1,088.53	1,055.71	32.82	33.170	
7,550.00	7,531.89	7,565.00	7,485.47	18.73	18.79	-94.36	68.81	-616.00	1,090.15	1,057.16	32.98	33.050	
7,600.00	7,581.42	7,584.40	7,504.74	18.84	18.84	-94.81	66.77	-616.93	1,093.47	1,060.33	33.14	32.995	
7,650.00	7,629.97	7,606.52	7,526.54	18.96	18.89	-95.60	63.44	-618.48	1,098.58	1,065.27	33.31	32.976	
7,700.00	7,677.02	7,627.00	7,546.58	19.09	18.94	-96.67	59.51	-620.12	1,105.28	1,071.78	33.50	32.992	
7,750.00	7,722.05	7,659.00	7,577.63	19.23	19.03	-98.14	52.34	-623.00	1,113.54	1,079.82	33.73	33.017	
7,800.00	7,764.56	7,674.68	7,592.73	19.39	19.08	-99.67	48.42	-624.59	1,123.60	1,089.65	33.96	33.089	
7,850.00	7,804.10	7,690.00	7,607.36	19.56	19.12	-101.41	44.22	-626.28	1,135.59	1,101.36	34.22	33.181	
7,900.00	7,840.22	7,706.59	7,623.07	19.76	19.17	-103.36	39.21	-628.15	1,149.44	1,114.90	34.53	33.286	
7,950.00	7,872.53	7,721.00	7,636.57	19.97	19.21	-105.44	34.42	-629.72	1,165.08	1,130.21	34.87	33.409	
8,000.00	7,900.69	7,727.81	7,642.90	20.22	19.24	-107.52	32.02	-630.43	1,182.47	1,147.24	35.23	33.564	
8,050.00	7,924.37	7,732.01	7,646.79	20.50	19.25	-109.65	30.50	-630.87	1,201.46	1,165.88	35.58	33.770	
8,100.00	7,943.32	7,732.43	7,647.18	20.82	19.25	-111.76	30.35	-630.91	1,221.84	1,185.97	35.87	34.064	
8,150.00	7,957.34	7,729.67	7,644.62	21.18	19.24	-113.84	31.35	-630.63	1,243.32	1,207.26	36.06	34.479	
8,200.00	7,966.26	7,721.00	7,636.57	21.58	19.21	-115.84	34.42	-629.72	1,265.60	1,229.51	36.09	35.067	
8,250.00	7,969.99	7,721.00	7,636.57	22.00	19.21	-117.90	34.42	-629.72	1,288.33	1,252.27	36.06	35.729	
8,300.00	7,971.09	7,709.61	7,625.91	22.46	19.18	-119.77	38.24	-628.49	1,311.86	1,275.45	36.41	36.025	
8,350.00	7,972.18	7,702.84	7,619.53	22.95	19.16	-121.64	40.39	-627.74	1,336.78	1,299.93	36.85	36.274	
8,400.00	7,973.27	7,690.00	7,607.36	23.46	19.12	-123.38	44.22	-626.28	1,363.05	1,325.82	37.23	36.614	
8,450.00	7,974.36	7,690.00	7,607.36	24.00	19.12	-125.17	44.22	-626.28	1,390.48	1,352.71	37.77	36.813	
8,500.00	7,975.45	7,690.00	7,607.36	24.55	19.12	-126.88	44.22	-626.28	1,419.15	1,380.83	38.32	37.037	
8,550.00	7,976.54	7,690.00	7,607.36	25.14	19.12	-128.51	44.22	-626.28	1,448.98	1,410.08	38.90	37.247	
8,600.00	7,977.63	7,678.55	7,596.43	25.73	19.09	-130.01	47.39	-625.00	1,479.75	1,440.38	39.37	37.588	
8,650.00	7,978.72	7,674.86	7,592.90	26.36	19.08	-131.49	48.37	-624.61	1,511.58	1,471.63	39.95	37.841	
8,700.00	7,979.81	7,671.33	7,589.52	26.99	19.07	-132.91	49.29	-624.24	1,544.34	1,503.81	40.52	38.109	

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

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design														Offset Site Error:
Sec 5 T25S R 28E - Colt State Com 2H - Wellbore #1 - Wellbore #1														0.00 usft
Survey Program: 100-MWD														Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,750.00	7,980.90	7,659.00	7,577.63	27.65	19.03	-134.23		52.34	-623.00	1,578.07	1,537.04	41.03	38.460	
8,800.00	7,981.99	7,659.00	7,577.63	28.31	19.03	-135.55		52.34	-623.00	1,612.48	1,570.81	41.68	38.691	
8,850.00	7,983.08	7,659.00	7,577.63	28.99	19.03	-136.80		52.34	-623.00	1,647.69	1,605.35	42.35	38.911	
8,900.00	7,984.17	7,659.00	7,577.63	29.68	19.03	-138.00		52.34	-623.00	1,683.66	1,640.64	43.02	39.141	
8,950.00	7,985.27	7,659.00	7,577.63	30.39	19.03	-139.15		52.34	-623.00	1,720.32	1,676.61	43.71	39.361	
9,000.00	7,986.36	7,659.00	7,577.63	31.10	19.03	-140.25		52.34	-623.00	1,757.64	1,713.24	44.40	39.588	
9,050.00	7,987.45	7,646.50	7,565.53	31.83	19.00	-141.26		55.24	-621.83	1,795.46	1,750.51	44.95	39.942	
9,100.00	7,988.54	7,642.73	7,561.87	32.56	18.99	-142.26		56.09	-621.48	1,833.89	1,788.28	45.61	40.207	
9,150.00	7,989.63	7,639.06	7,558.31	33.31	18.98	-143.22		56.91	-621.16	1,872.86	1,826.57	46.29	40.462	
9,200.00	7,990.72	7,627.00	7,546.58	34.06	18.94	-144.11		59.51	-620.12	1,912.37	1,865.52	46.85	40.822	
9,250.00	7,991.81	7,627.00	7,546.58	34.82	18.94	-145.00		59.51	-620.12	1,952.25	1,904.67	47.58	41.030	
9,300.00	7,992.90	7,627.00	7,546.58	35.58	18.94	-145.84		59.51	-620.12	1,992.60	1,944.28	48.32	41.241	
9,350.00	7,993.99	7,627.00	7,546.58	36.36	18.94	-146.65		59.51	-620.12	2,033.37	1,984.31	49.06	41.445	
9,400.00	7,995.08	7,627.00	7,546.58	37.14	18.94	-147.43		59.51	-620.12	2,074.55	2,024.74	49.81	41.650	
9,450.00	7,996.17	7,627.00	7,546.58	37.93	18.94	-148.18		59.51	-620.12	2,116.10	2,065.54	50.57	41.848	
9,500.00	7,997.26	7,627.00	7,546.58	38.72	18.94	-148.89		59.51	-620.12	2,158.02	2,106.69	51.32	42.047	
9,550.00	7,998.35	7,627.00	7,546.58	39.51	18.94	-149.58		59.51	-620.12	2,200.27	2,148.18	52.09	42.240	
9,600.00	7,999.45	7,627.00	7,546.58	40.31	18.94	-150.24		59.51	-620.12	2,242.84	2,189.99	52.86	42.432	
9,650.00	8,000.54	7,627.00	7,546.58	41.12	18.94	-150.87		59.51	-620.12	2,285.71	2,232.08	53.63	42.619	
9,700.00	8,001.63	7,613.59	7,533.48	41.93	18.91	-151.48		62.17	-619.03	2,328.67	2,274.47	54.20	42.967	
9,750.00	8,002.72	7,612.06	7,531.98	42.75	18.91	-152.06		62.45	-618.91	2,372.04	2,317.09	54.95	43.166	
9,800.00	8,003.81	7,610.58	7,530.53	43.57	18.90	-152.63		62.72	-618.79	2,415.67	2,359.96	55.71	43.364	
9,850.00	8,004.90	7,609.15	7,529.13	44.39	18.90	-153.17		62.97	-618.68	2,459.54	2,403.07	56.47	43.556	
9,900.00	8,005.99	7,596.00	7,516.20	45.21	18.86	-153.70		65.15	-617.70	2,503.78	2,446.75	57.03	43.901	
9,950.00	8,007.08	7,596.00	7,516.20	46.04	18.86	-154.21		65.15	-617.70	2,548.05	2,490.24	57.82	44.069	
10,000.00	8,008.17	7,596.00	7,516.20	46.88	18.86	-154.70		65.15	-617.70	2,592.53	2,533.93	58.61	44.236	
10,050.00	8,009.26	7,596.00	7,516.20	47.71	18.86	-155.17		65.15	-617.70	2,637.21	2,577.81	59.40	44.397	
10,100.00	8,010.33	7,596.00	7,516.20	48.55	18.86	-155.62		65.15	-617.70	2,682.07	2,622.03	60.05	44.665	
10,150.00	8,010.81	7,596.00	7,516.20	49.39	18.86	-156.06		65.15	-617.70	2,727.01	2,666.91	60.10	45.373	
10,200.00	8,010.64	7,596.00	7,516.20	50.23	18.86	-156.49		65.15	-617.70	2,772.02	2,711.33	60.68	45.681	
10,250.00	8,010.45	7,596.00	7,516.20	51.08	18.86	-156.90		65.15	-617.70	2,817.18	2,755.71	61.47	45.830	
10,300.00	8,010.26	7,596.00	7,516.20	51.93	18.86	-157.30		65.15	-617.70	2,862.51	2,800.25	62.26	45.979	
10,350.00	8,010.06	7,596.00	7,516.20	52.78	18.86	-157.69		65.15	-617.70	2,907.99	2,844.94	63.05	46.123	
10,400.00	8,009.87	7,596.00	7,516.20	53.63	18.86	-158.06		65.15	-617.70	2,953.61	2,889.77	63.84	46.266	
10,450.00	8,009.68	7,596.00	7,516.20	54.48	18.86	-158.42		65.15	-617.70	2,999.38	2,934.74	64.63	46.406	
10,500.00	8,009.48	7,596.00	7,516.20	55.34	18.86	-158.77		65.15	-617.70	3,045.28	2,979.85	65.43	46.544	
10,550.00	8,009.29	7,596.00	7,516.20	56.20	18.86	-159.11		65.15	-617.70	3,091.30	3,025.07	66.23	46.678	
10,600.00	8,009.10	7,596.00	7,516.20	57.05	18.86	-159.44		65.15	-617.70	3,137.45	3,070.42	67.02	46.812	
10,650.00	8,008.90	7,596.00	7,516.20	57.92	18.86	-159.76		65.15	-617.70	3,183.71	3,115.89	67.82	46.941	
10,700.00	8,008.71	7,596.00	7,516.20	58.78	18.86	-160.07		65.15	-617.70	3,230.09	3,161.46	68.62	47.070	
10,750.00	8,008.52	7,596.00	7,516.20	59.64	18.86	-160.37		65.15	-617.70	3,276.57	3,207.14	69.43	47.195	
10,800.00	8,008.32	7,596.00	7,516.20	60.51	18.86	-160.67		65.15	-617.70	3,323.15	3,252.92	70.23	47.319	
10,850.00	8,008.13	7,596.00	7,516.20	61.38	18.86	-160.95		65.15	-617.70	3,369.83	3,298.80	71.03	47.439	
10,900.00	8,007.93	7,596.00	7,516.20	62.24	18.86	-161.23		65.15	-617.70	3,416.61	3,344.77	71.84	47.559	
10,950.00	8,007.74	7,596.00	7,516.20	63.11	18.86	-161.50		65.15	-617.70	3,463.47	3,390.83	72.65	47.675	
11,000.00	8,007.55	7,596.00	7,516.20	63.98	18.86	-161.76		65.15	-617.70	3,510.42	3,436.97	73.45	47.791	
11,050.00	8,007.35	7,596.00	7,516.20	64.86	18.86	-162.01		65.15	-617.70	3,557.46	3,483.20	74.26	47.903	
11,100.00	8,007.16	7,596.00	7,516.20	65.73	18.86	-162.26		65.15	-617.70	3,604.57	3,529.50	75.07	48.014	
11,150.00	8,006.97	7,596.00	7,516.20	66.60	18.86	-162.50		65.15	-617.70	3,651.76	3,575.88	75.88	48.123	
11,200.00	8,006.77	7,596.00	7,516.20	67.48	18.86	-162.73		65.15	-617.70	3,699.03	3,622.34	76.70	48.230	
11,250.00	8,006.58	7,596.00	7,516.20	68.36	18.86	-162.96		65.15	-617.70	3,746.37	3,668.86	77.51	48.335	
11,300.00	8,006.39	7,596.00	7,516.20	69.23	18.86	-163.19		65.15	-617.70	3,793.77	3,715.45	78.32	48.439	

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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#1.033114	Offset: TVD Reference:	Reference Datum

Offset Design													Offset Site Error: 0.00 usft	
Sec 5 T25S R 28E - Colt State Com 2H - Wellbore #1 - Wellbore #1													Offset Well Error: 0.00 usft	
Survey Program: 100-MWD														
Reference														
Offset														
Semi Major Axis														
Reference														
Offset														
Azimuth														
Offset Wellbore Centre														
Distance														
Between														
Between														
Minimum														
Separation														
Factor														
Warning														
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
11,350.00	8,006.19	7,581.51	7,501.87	70.11	18.83	-163.41	67.13	-616.77	3,840.95	3,762.17	78.77	48.759		
11,400.00	8,006.00	7,580.94	7,501.31	70.99	18.83	-163.62	67.20	-616.74	3,888.46	3,808.89	79.57	48.868		
11,450.00	8,005.81	7,580.38	7,500.75	71.87	18.83	-163.83	67.27	-616.70	3,936.03	3,855.66	80.37	48.975		
11,500.00	8,005.61	7,579.83	7,500.21	72.75	18.83	-164.03	67.33	-616.67	3,983.66	3,902.49	81.17	49.080		
11,550.00	8,005.42	7,579.29	7,499.67	73.63	18.82	-164.23	67.39	-616.65	4,031.35	3,949.38	81.97	49.183		
11,600.00	8,005.23	7,565.00	7,485.47	74.51	18.79	-164.42	68.81	-616.00	4,079.35	3,996.95	82.40	49.505		
11,650.00	8,005.03	7,565.00	7,485.47	75.40	18.79	-164.61	68.81	-616.00	4,127.13	4,043.91	83.21	49.597		
11,700.00	8,004.84	7,565.00	7,485.47	76.28	18.79	-164.79	68.81	-616.00	4,174.95	4,090.93	84.02	49.688		
11,750.00	8,004.64	7,565.00	7,485.47	77.17	18.79	-164.97	68.81	-616.00	4,222.83	4,137.99	84.84	49.777		
11,800.00	8,004.45	7,565.00	7,485.47	78.05	18.79	-165.15	68.81	-616.00	4,270.75	4,185.11	85.65	49.864		
11,850.00	8,004.26	7,565.00	7,485.47	78.94	18.79	-165.32	68.81	-616.00	4,318.73	4,232.27	86.46	49.950		
11,900.00	8,004.06	7,565.00	7,485.47	79.82	18.79	-165.49	68.81	-616.00	4,366.75	4,279.47	87.27	50.035		
11,950.00	8,003.87	7,565.00	7,485.47	80.71	18.79	-165.65	68.81	-616.00	4,414.81	4,326.72	88.09	50.118		
12,000.00	8,003.68	7,565.00	7,485.47	81.60	18.79	-165.81	68.81	-616.00	4,462.91	4,374.01	88.90	50.200		
12,050.00	8,003.48	7,565.00	7,485.47	82.49	18.79	-165.97	68.81	-616.00	4,511.06	4,421.34	89.72	50.281		
12,100.00	8,003.29	7,565.00	7,485.47	83.37	18.79	-166.12	68.81	-616.00	4,559.24	4,468.71	90.53	50.361		
12,150.00	8,003.10	7,565.00	7,485.47	84.26	18.79	-166.27	68.81	-616.00	4,607.47	4,516.12	91.35	50.439		
12,200.00	8,002.90	7,565.00	7,485.47	85.15	18.79	-166.42	68.81	-616.00	4,655.73	4,563.57	92.16	50.516		
12,250.00	8,002.71	7,565.00	7,485.47	86.04	18.79	-166.56	68.81	-616.00	4,704.03	4,611.05	92.98	50.592		
12,300.00	8,002.52	7,565.00	7,485.47	86.93	18.79	-166.70	68.81	-616.00	4,752.36	4,658.57	93.80	50.667		
12,350.00	8,002.32	7,565.00	7,485.47	87.82	18.79	-166.84	68.81	-616.00	4,800.73	4,706.12	94.61	50.740		
12,400.00	8,002.13	7,565.00	7,485.47	88.72	18.79	-166.98	68.81	-616.00	4,849.13	4,753.70	95.43	50.813		
12,450.00	8,001.94	7,565.00	7,485.47	89.61	18.79	-167.11	68.81	-616.00	4,897.56	4,801.31	96.25	50.884		
12,500.00	8,001.74	7,565.00	7,485.47	90.50	18.79	-167.24	68.81	-616.00	4,946.03	4,848.96	97.07	50.954		
12,550.00	8,001.55	7,565.00	7,485.47	91.39	18.79	-167.37	68.81	-616.00	4,994.52	4,896.63	97.89	51.023		
12,600.00	8,001.35	7,565.00	7,485.47	92.29	18.79	-167.49	68.81	-616.00	5,043.04	4,944.34	98.71	51.092		
12,650.00	8,001.16	7,565.00	7,485.47	93.18	18.79	-167.61	68.81	-616.00	5,091.60	4,992.07	99.53	51.159		
12,700.00	8,000.97	7,565.00	7,485.47	94.08	18.79	-167.73	68.81	-616.00	5,140.18	5,039.83	100.34	51.225		
12,750.00	8,000.77	7,565.00	7,485.47	94.97	18.79	-167.85	68.81	-616.00	5,188.78	5,087.62	101.16	51.290		
12,800.00	8,000.58	7,565.00	7,485.47	95.86	18.79	-167.97	68.81	-616.00	5,237.42	5,135.43	101.98	51.355		
12,850.00	8,000.39	7,565.00	7,485.47	96.76	18.79	-168.08	68.81	-616.00	5,286.08	5,183.27	102.81	51.418		
12,900.00	8,000.19	7,565.00	7,485.47	97.66	18.79	-168.19	68.81	-616.00	5,334.76	5,231.13	103.63	51.481		
12,949.91	8,000.00	7,565.00	7,485.47	98.55	18.79	-168.30	68.81	-616.00	5,383.38	5,278.93	104.45	51.542		

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



Anticollision Report



Company:	Legend Natural Gas IV LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design: Sec 5 T25S R 28E - Colt State Com 3H - Wellbore #1 - Plan#1 033114												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-90.19	-0.10	-29.90	29.90				
50.00	50.00	50.00	50.00	0.03	0.04	-90.19	-0.10	-29.90	29.90	29.83	0.07	425.689	
100.00	100.00	100.00	100.00	0.08	0.08	-90.19	-0.10	-29.90	29.90	29.73	0.17	177.370	
150.00	150.00	150.00	150.00	0.20	0.20	-90.19	-0.10	-29.90	29.90	29.51	0.39	76.016	
200.00	200.00	200.00	200.00	0.31	0.31	-90.19	-0.10	-29.90	29.90	29.28	0.62	48.374	
250.00	250.00	250.00	250.00	0.42	0.42	-90.19	-0.10	-29.90	29.90	29.06	0.84	35.474	
300.00	300.00	300.00	300.00	0.53	0.53	-90.19	-0.10	-29.90	29.90	28.83	1.07	28.006	
350.00	350.00	350.00	350.00	0.65	0.65	-90.19	-0.10	-29.90	29.90	28.61	1.29	23.135	
400.00	400.00	400.00	400.00	0.76	0.76	-90.19	-0.10	-29.90	29.90	28.38	1.52	19.708	
450.00	450.00	450.00	450.00	0.87	0.87	-90.19	-0.10	-29.90	29.90	28.16	1.74	17.165	
500.00	500.00	500.00	500.00	0.98	0.98	-90.19	-0.10	-29.90	29.90	27.93	1.97	15.203 CC	
550.00	550.00	550.00	550.00	1.09	1.10	-90.44	-0.10	-29.90	30.32	28.13	2.19	13.856	
600.00	599.98	599.98	599.98	1.20	1.21	-91.14	-0.10	-29.90	31.57	29.16	2.41	13.104	
650.00	649.93	649.93	649.93	1.31	1.32	-92.20	-0.10	-29.90	33.67	31.04	2.63	12.803	
700.00	699.84	699.84	699.84	1.42	1.43	-93.48	-0.10	-29.90	36.62	33.77	2.85	12.857	
750.00	749.70	749.70	749.70	1.53	1.54	-94.77	-0.10	-29.90	40.19	37.12	3.07	13.103	
800.00	799.57	799.57	799.57	1.65	1.66	-95.85	-0.10	-29.90	43.80	40.52	3.29	13.329	
850.00	849.43	849.43	849.43	1.76	1.77	-96.77	-0.10	-29.90	47.43	43.93	3.51	13.523	
900.00	899.29	899.29	899.29	1.88	1.88	-97.56	-0.10	-29.90	51.07	47.35	3.73	13.698	
950.00	949.15	949.15	949.15	2.01	1.99	-98.24	-0.10	-29.90	54.72	50.77	3.95	13.851	
1,000.00	999.02	999.02	999.02	2.13	2.10	-98.84	-0.10	-29.90	58.38	54.20	4.17	13.989	
1,050.00	1,048.88	1,048.88	1,048.88	2.25	2.22	-99.36	-0.10	-29.90	62.04	57.64	4.40	14.111	
1,100.00	1,098.74	1,098.74	1,098.74	2.37	2.33	-99.83	-0.10	-29.90	65.70	61.08	4.62	14.223	
1,150.00	1,148.60	1,148.60	1,148.60	2.50	2.44	-100.25	-0.10	-29.90	69.37	64.53	4.84	14.322	
1,200.00	1,198.47	1,198.47	1,198.47	2.62	2.55	-100.63	-0.10	-29.90	73.04	67.98	5.07	14.414	
1,250.00	1,248.33	1,249.96	1,249.96	2.75	2.66	-101.04	-0.10	-29.36	76.20	70.91	5.29	14.410	
1,300.00	1,298.19	1,301.62	1,301.59	2.87	2.77	-101.60	-0.10	-27.65	78.26	72.76	5.51	14.210	
1,350.00	1,348.06	1,353.35	1,353.23	3.00	2.88	-102.30	-0.10	-24.77	79.23	73.50	5.72	13.841	
1,400.00	1,397.92	1,405.08	1,404.80	3.13	2.99	-103.18	-0.10	-20.73	79.11	73.17	5.94	13.317	
1,450.00	1,447.78	1,456.76	1,456.23	3.25	3.10	-104.28	-0.10	-15.53	77.91	71.75	6.16	12.645	
1,500.00	1,497.64	1,508.35	1,507.42	3.38	3.22	-105.64	-0.10	-9.19	75.65	69.27	6.38	11.852	
1,550.00	1,547.51	1,559.79	1,558.32	3.51	3.34	-107.36	-0.10	-1.72	72.37	65.76	6.61	10.948	
1,600.00	1,597.37	1,611.04	1,608.84	3.63	3.47	-109.56	-0.10	6.86	68.09	61.25	6.84	9.955	
1,650.00	1,647.23	1,661.70	1,658.59	3.76	3.61	-112.41	-0.10	16.42	62.93	55.85	7.08	8.892	
1,700.00	1,697.09	1,711.30	1,707.24	3.89	3.76	-115.83	-0.10	28.08	57.65	50.34	7.32	7.879	
1,750.00	1,746.96	1,760.89	1,755.88	4.02	3.92	-119.90	-0.10	35.74	52.62	45.05	7.57	6.950	
1,800.00	1,796.82	1,810.49	1,804.53	4.15	4.07	-124.80	-0.10	45.40	47.90	40.06	7.84	6.109	
1,850.00	1,846.68	1,860.08	1,853.17	4.27	4.23	-130.69	-0.10	55.06	43.59	35.46	8.14	5.358	
1,900.00	1,896.55	1,909.88	1,901.82	4.40	4.40	-137.75	-0.10	64.72	39.84	31.38	8.46	4.708	
1,950.00	1,946.41	1,959.27	1,950.46	4.53	4.57	-146.07	-0.10	74.38	36.81	27.98	8.82	4.171	
2,000.00	1,996.27	2,008.87	1,999.11	4.66	4.74	-155.59	-0.10	84.04	34.69	25.47	9.21	3.765	
2,050.00	2,046.13	2,058.46	2,047.75	4.79	4.92	-165.96	-0.10	93.70	33.65	24.04	9.61	3.502	
2,068.92	2,065.00	2,077.23	2,066.16	4.84	4.98	-169.99	-0.10	97.35	33.56	23.81	9.75	3.441 ES	
2,100.00	2,096.00	2,108.06	2,096.40	4.92	5.09	-176.57	-0.10	103.36	33.79	23.81	9.98	3.386 SF	
2,150.00	2,145.86	2,157.65	2,145.04	5.05	5.27	-173.27	-0.10	113.02	35.11	24.81	10.30	3.408	
2,200.00	2,195.72	2,207.25	2,193.69	5.17	5.46	-164.11	-0.10	122.67	37.47	26.90	10.57	3.545	
2,250.00	2,245.58	2,256.84	2,242.33	5.30	5.64	-156.18	-0.10	132.33	40.69	29.89	10.80	3.768	
2,300.00	2,295.45	2,306.44	2,290.98	5.43	5.83	-149.51	-0.10	141.99	44.59	33.59	11.00	4.054	
2,350.00	2,345.31	2,356.03	2,339.62	5.56	6.02	-143.95	-0.10	151.65	49.01	37.82	11.19	4.378	
2,400.00	2,395.17	2,405.62	2,388.27	5.69	6.20	-139.34	-0.10	161.31	53.82	42.43	11.38	4.728	
2,450.00	2,445.04	2,455.22	2,436.91	5.82	6.39	-135.49	-0.10	170.97	58.92	47.34	11.58	5.090	
2,500.00	2,494.90	2,504.81	2,485.56	5.95	6.59	-132.25	-0.10	180.63	64.24	52.47	11.77	5.457	

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error: 0.00 usft	
Sec 5 T25S R 28E - Colt State Com 3H - Wellbore #1 - Plan#1 033114													Offset Well Error: 0.00 usft	
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
2,550.00	2,544.76	2,554.41	2,534.20	6.08	6.78	129.52	-0.10	190.29	69.74	57.76	11.97	5.824		
2,600.00	2,594.62	2,604.00	2,582.85	6.21	6.97	127.18	-0.10	199.95	75.37	63.19	12.18	6.188		
2,650.00	2,644.49	2,653.60	2,631.49	6.34	7.17	125.17	-0.10	209.61	81.10	68.71	12.39	6.546		
2,700.00	2,694.35	2,703.19	2,680.14	6.47	7.36	123.42	-0.10	219.27	86.93	74.32	12.60	6.897		
2,750.00	2,744.21	2,752.79	2,728.78	6.59	7.56	121.90	-0.10	228.93	92.82	80.00	12.82	7.239		
2,800.00	2,794.08	2,802.38	2,777.43	6.72	7.75	120.55	-0.10	238.59	98.77	85.73	13.04	7.573		
2,850.00	2,843.94	2,851.98	2,826.07	6.85	7.95	119.36	-0.10	248.25	104.77	91.50	13.27	7.897		
2,900.00	2,893.80	2,901.57	2,874.72	6.98	8.15	118.30	-0.10	257.91	110.81	97.31	13.49	8.213		
2,950.00	2,943.66	2,951.17	2,923.36	7.11	8.35	117.34	-0.10	267.57	116.88	103.16	13.72	8.519		
3,000.00	2,993.53	3,000.76	2,972.01	7.24	8.55	116.48	-0.10	277.23	122.98	109.03	13.95	8.816		
3,050.00	3,043.39	3,050.36	3,020.65	7.37	8.75	115.70	-0.10	286.89	129.10	114.92	14.18	9.104		
3,100.00	3,093.25	3,099.95	3,069.30	7.50	8.95	115.00	-0.10	296.55	135.24	120.83	14.41	9.383		
3,150.00	3,143.11	3,149.55	3,117.94	7.63	9.15	114.35	-0.10	306.21	141.41	126.76	14.65	9.654		
3,200.00	3,192.98	3,199.14	3,166.58	7.76	9.35	113.75	-0.10	315.87	147.59	132.70	14.88	9.917		
3,250.00	3,242.84	3,248.74	3,215.23	7.89	9.55	113.21	-0.10	325.53	153.78	138.66	15.12	10.172		
3,300.00	3,292.70	3,298.33	3,263.87	8.02	9.75	112.71	-0.10	335.19	159.99	144.63	15.36	10.419		
3,350.00	3,342.57	3,347.92	3,312.52	8.15	9.96	112.24	-0.10	344.85	166.20	150.61	15.59	10.659		
3,400.00	3,392.43	3,397.52	3,361.16	8.28	10.16	111.81	-0.10	354.51	172.43	156.60	15.83	10.891		
3,450.00	3,442.29	3,447.11	3,409.81	8.41	10.36	111.41	-0.10	364.17	178.67	162.60	16.07	11.117		
3,500.00	3,492.15	3,496.71	3,458.45	8.54	10.56	111.03	-0.10	373.83	184.91	168.60	16.31	11.337		
3,550.00	3,542.02	3,546.30	3,507.10	8.67	10.77	110.68	-0.10	383.49	191.16	174.61	16.55	11.550		
3,600.00	3,591.88	3,595.90	3,555.74	8.80	10.97	110.35	-0.10	393.15	197.42	180.63	16.79	11.757		
3,650.00	3,641.74	3,645.49	3,604.39	8.93	11.17	110.04	-0.10	402.81	203.68	186.65	17.03	11.958		
3,700.00	3,691.60	3,695.09	3,653.03	9.06	11.38	109.75	-0.10	412.47	209.95	192.68	17.28	12.154		
3,750.00	3,741.47	3,744.68	3,701.68	9.19	11.58	109.48	-0.10	422.13	216.23	198.71	17.52	12.344		
3,800.00	3,791.33	3,794.28	3,750.32	9.32	11.79	109.22	-0.10	431.79	222.51	204.75	17.76	12.529		
3,850.00	3,841.19	3,843.87	3,798.97	9.44	11.99	108.98	-0.10	441.45	228.79	210.79	18.00	12.709		
3,900.00	3,891.06	3,893.47	3,847.61	9.57	12.19	108.75	-0.10	451.11	235.07	216.83	18.25	12.884		
3,950.00	3,940.92	3,943.06	3,896.26	9.70	12.40	108.53	-0.10	460.77	241.36	222.87	18.49	13.054		
4,000.00	3,990.78	3,992.66	3,944.90	9.83	12.60	108.32	-0.10	470.43	247.66	228.92	18.73	13.220		
4,050.00	4,040.64	4,042.25	3,993.55	9.96	12.81	108.12	-0.10	480.09	253.95	234.98	18.98	13.382		
4,100.00	4,090.51	4,091.85	4,042.19	10.09	13.02	107.94	-0.10	489.75	260.25	241.03	19.22	13.540		
4,150.00	4,140.37	4,141.44	4,090.84	10.22	13.22	107.76	-0.10	499.41	266.55	247.09	19.47	13.693		
4,200.00	4,190.23	4,191.03	4,139.48	10.35	13.43	107.59	-0.10	509.07	272.86	253.15	19.71	13.843		
4,250.00	4,240.10	4,240.63	4,188.13	10.48	13.63	107.42	-0.10	518.73	279.16	259.21	19.96	13.989		
4,300.00	4,289.96	4,290.22	4,236.77	10.61	13.84	107.27	-0.10	528.39	285.47	265.27	20.20	14.132		
4,350.00	4,339.82	4,339.82	4,285.42	10.74	14.04	107.12	-0.10	538.05	291.78	271.34	20.45	14.271		
4,400.00	4,389.68	4,389.41	4,334.06	10.87	14.25	106.98	-0.10	547.71	298.09	277.40	20.69	14.406		
4,450.00	4,439.55	4,439.01	4,382.71	11.00	14.46	106.84	-0.10	557.37	304.41	283.47	20.94	14.539		
4,500.00	4,489.41	4,488.60	4,431.35	11.13	14.66	106.71	-0.10	567.03	310.72	289.54	21.18	14.668		
4,550.00	4,539.27	4,538.20	4,480.00	11.26	14.87	106.58	-0.10	576.69	317.04	295.61	21.43	14.795		
4,600.00	4,589.13	4,587.79	4,528.64	11.39	15.07	106.46	-0.10	586.35	323.36	301.68	21.68	14.918		
4,650.00	4,639.00	4,637.39	4,577.29	11.52	15.28	106.34	-0.10	596.01	329.68	307.76	21.92	15.039		
4,700.00	4,688.86	4,686.98	4,625.93	11.65	15.49	106.23	-0.10	605.67	336.00	313.83	22.17	15.157		
4,750.00	4,738.72	4,736.58	4,674.58	11.78	15.69	106.12	-0.10	615.33	342.32	319.91	22.41	15.272		
4,800.00	4,788.59	4,786.17	4,723.22	11.91	15.90	106.02	-0.10	624.99	348.64	325.98	22.66	15.385		
4,850.00	4,838.45	4,835.77	4,771.87	12.04	16.11	105.92	-0.10	634.65	354.97	332.06	22.91	15.495		
4,900.00	4,888.31	4,885.36	4,820.51	12.17	16.32	105.82	-0.10	644.31	361.29	338.14	23.16	15.603		
4,950.00	4,938.17	4,934.96	4,869.16	12.30	16.52	105.73	-0.10	653.97	367.62	344.22	23.40	15.709		
5,000.00	4,988.04	4,984.55	4,917.80	12.43	16.73	105.64	-0.10	663.63	373.95	350.30	23.65	15.812		
5,050.00	5,037.90	5,034.15	4,966.45	12.56	16.94	105.55	-0.10	673.29	380.27	356.38	23.90	15.913		
5,100.00	5,087.76	5,083.74	5,015.09	12.69	17.14	105.47	-0.10	682.95	386.60	362.46	24.14	16.013		

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Anticollision Report



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Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
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Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design												Offset Site Error:	0.00 usft
Sec 5 T25S R 28E - Coll State Com 3H - Wellbore #1 - Plan#1 033114												Offset Well Error:	0.00 usft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,150.00	5,137.62	5,133.33	5,063.73	12.82	17.35	105.39	-0.10	692.61	392.93	368.54	24.39	16.110	
5,200.00	5,187.49	5,182.93	5,112.38	12.95	17.56	105.31	-0.10	702.27	399.26	374.62	24.64	16.205	
5,250.00	5,237.35	5,232.52	5,161.02	13.08	17.77	105.23	-0.10	711.93	405.59	380.71	24.89	16.298	
5,300.00	5,287.21	5,282.12	5,209.67	13.21	17.97	105.16	-0.10	721.59	411.93	386.79	25.13	16.389	
5,350.00	5,337.08	5,331.71	5,258.31	13.34	18.18	105.08	-0.10	731.25	418.26	392.88	25.38	16.479	
5,400.00	5,386.94	5,381.31	5,306.96	13.47	18.39	105.01	-0.10	740.91	424.59	398.96	25.63	16.567	
5,450.00	5,436.80	5,430.90	5,355.60	13.60	18.60	104.95	-0.10	750.57	430.93	405.05	25.88	16.653	
5,500.00	5,486.66	5,480.50	5,404.25	13.73	18.80	104.88	-0.10	760.23	437.26	411.13	26.13	16.737	
5,550.00	5,536.53	5,530.09	5,452.89	13.86	19.01	104.82	-0.10	769.89	443.59	417.22	26.37	16.820	
5,600.00	5,586.39	5,579.69	5,501.54	13.99	19.22	104.75	-0.10	779.55	449.93	423.31	26.62	16.901	
5,650.00	5,636.25	5,629.28	5,550.18	14.12	19.43	104.69	-0.10	789.21	456.27	429.40	26.87	16.981	
5,700.00	5,686.12	5,678.88	5,598.83	14.25	19.63	104.63	-0.10	798.87	462.60	435.48	27.12	17.059	
5,750.00	5,735.98	5,728.47	5,647.47	14.38	19.84	104.58	-0.10	808.52	468.94	441.57	27.37	17.136	
5,800.00	5,785.84	5,778.07	5,696.12	14.51	20.05	104.52	-0.10	818.18	475.28	447.66	27.61	17.211	
5,850.00	5,835.70	5,827.66	5,744.76	14.64	20.26	104.47	-0.10	827.84	481.61	453.75	27.86	17.285	
5,900.00	5,885.57	5,877.26	5,793.41	14.77	20.47	104.41	-0.10	837.50	487.95	459.84	28.11	17.358	
5,950.00	5,935.43	5,926.85	5,842.05	14.90	20.67	104.36	-0.10	847.16	494.29	465.93	28.36	17.430	
6,000.00	5,985.29	5,976.44	5,890.70	15.03	20.88	104.31	-0.10	856.82	500.63	472.02	28.61	17.500	
6,050.00	6,035.15	6,026.04	5,939.34	15.16	21.09	104.26	-0.10	866.48	506.97	478.11	28.86	17.569	
6,100.00	6,085.02	6,075.63	5,987.99	15.29	21.30	104.22	-0.10	876.14	513.31	484.20	29.10	17.636	
6,150.00	6,134.88	6,125.23	6,036.63	15.42	21.51	104.17	-0.10	885.80	519.65	490.29	29.35	17.703	
6,200.00	6,184.74	6,174.82	6,085.28	15.55	21.71	104.12	-0.10	895.46	525.99	496.38	29.60	17.769	
6,250.00	6,234.61	6,224.42	6,133.92	15.68	21.92	104.08	-0.10	905.12	532.33	502.48	29.85	17.833	
6,300.00	6,284.47	6,274.01	6,182.57	15.81	22.13	104.04	-0.10	914.78	538.67	508.57	30.10	17.896	
6,350.00	6,334.33	6,323.61	6,231.21	15.94	22.34	103.99	-0.10	924.44	545.01	514.66	30.35	17.958	
6,400.00	6,384.19	6,373.20	6,279.86	16.07	22.55	103.95	-0.10	934.10	551.35	520.75	30.60	18.020	
6,450.00	6,434.06	6,422.80	6,328.50	16.20	22.76	103.91	-0.10	943.76	557.69	526.85	30.85	18.080	
6,500.00	6,483.92	6,472.39	6,377.15	16.33	22.96	103.87	-0.10	953.42	564.03	532.94	31.10	18.139	
6,550.00	6,533.78	6,521.99	6,425.79	16.46	23.17	103.83	-0.10	963.08	570.38	539.03	31.34	18.197	
6,600.00	6,583.64	6,571.58	6,474.44	16.59	23.38	103.80	-0.10	972.74	576.72	545.13	31.59	18.254	
6,650.00	6,633.51	6,621.18	6,523.08	16.72	23.59	103.76	-0.10	982.40	583.06	551.22	31.84	18.311	
6,700.00	6,683.37	6,670.77	6,571.73	16.85	23.80	103.72	-0.10	992.06	589.40	557.31	32.09	18.366	
6,750.00	6,733.23	6,720.37	6,620.37	16.98	24.01	103.69	-0.10	1,001.72	595.75	563.41	32.34	18.421	
6,800.00	6,783.10	6,769.96	6,669.02	17.11	24.21	103.65	-0.10	1,011.38	602.09	569.50	32.59	18.475	
6,850.00	6,832.96	6,819.56	6,717.66	17.24	24.42	103.62	-0.10	1,021.04	608.43	575.60	32.84	18.528	
6,900.00	6,882.82	6,869.15	6,766.31	17.37	24.63	103.59	-0.10	1,030.70	614.78	581.69	33.09	18.580	
6,950.00	6,932.68	6,918.74	6,814.95	17.50	24.84	103.55	-0.10	1,040.36	621.12	587.78	33.34	18.631	
7,000.00	6,982.55	6,970.83	6,866.04	17.63	25.05	103.51	-0.10	1,050.02	627.45	593.86	33.59	18.679	
7,050.00	7,032.41	7,034.05	6,928.23	17.76	25.26	103.44	-0.10	1,061.86	633.06	599.21	33.85	18.700	
7,100.00	7,082.27	7,097.55	6,990.93	17.89	25.45	103.40	-0.10	1,071.90	637.61	603.49	34.11	18.692	
7,150.00	7,132.14	7,161.27	7,054.05	18.01	25.61	103.39	-0.10	1,080.58	641.13	606.78	34.35	18.663	
7,200.00	7,182.04	7,225.12	7,117.49	18.12	25.77	103.38	-0.10	1,087.86	644.04	609.47	34.57	18.629	
7,250.00	7,231.98	7,289.08	7,181.18	18.21	25.91	103.37	-0.10	1,093.74	646.44	611.67	34.77	18.593	
7,300.00	7,281.95	7,353.13	7,245.07	18.30	26.02	103.36	-0.10	1,098.20	648.31	613.35	34.95	18.549	
7,350.00	7,331.94	7,417.24	7,309.11	18.38	26.13	103.35	-0.10	1,101.23	649.65	614.52	35.12	18.496	
7,400.00	7,381.94	7,481.40	7,373.25	18.46	26.22	103.34	-0.10	1,102.83	650.46	615.17	35.29	18.434	
7,450.00	7,431.94	7,540.10	7,431.94	18.55	26.29	103.34	-0.10	1,103.10	650.65	615.18	35.47	18.344	
7,500.00	7,481.94	7,590.10	7,481.94	18.64	26.35	103.34	-0.10	1,103.10	650.65	615.00	35.65	18.251	
7,550.00	7,531.89	7,635.39	7,527.23	18.73	26.41	103.50	-0.32	1,103.10	651.09	615.31	35.78	18.197	
7,600.00	7,581.42	7,675.00	7,566.73	18.84	26.46	104.31	-3.18	1,103.10	653.54	617.65	35.89	18.209	
7,650.00	7,629.97	7,706.32	7,597.71	18.96	26.50	105.70	-7.75	1,103.10	658.42	622.45	35.97	18.306	
7,700.00	7,677.02	7,736.53	7,627.24	19.09	26.53	107.62	-14.07	1,103.10	666.13	630.12	36.01	18.497	

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well: Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T2SS R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:
Sec 5 T2SS R 28E - Colt State Com 3H - Wellbore #1 - Plan#1 033114													0.00 usft
Survey Program: 0-MWD													Offset Well Error:
													0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,750.00	7,722.05	7,762.16	7,851.94	19.23	26.57	109.93	-20.89	1,103.10	677.09	641.07	36.02	18.799	
7,800.00	7,764.56	7,783.01	7,871.74	19.39	26.59	112.51	-27.41	1,103.11	691.57	655.57	36.01	19.207	
7,850.00	7,804.10	7,800.00	7,887.66	19.56	26.62	115.27	-33.36	1,103.11	709.73	673.69	36.04	19.695	
7,900.00	7,840.22	7,811.10	7,897.94	19.76	26.63	118.07	-37.55	1,103.11	731.47	695.30	36.17	20.222	
7,950.00	7,872.53	7,819.12	7,905.30	19.97	26.64	120.90	-40.72	1,103.11	756.54	720.08	36.47	20.746	
8,000.00	7,900.69	7,825.00	7,910.67	20.22	26.65	123.73	-43.13	1,103.11	784.55	747.63	36.92	21.251	
8,050.00	7,924.37	7,825.00	7,910.67	20.50	26.65	126.40	-43.13	1,103.11	814.99	777.51	37.48	21.744	
8,100.00	7,943.32	7,825.00	7,910.67	20.82	26.65	129.01	-43.13	1,103.11	847.33	809.32	38.01	22.293	
8,150.00	7,957.34	7,825.00	7,910.67	21.18	26.65	131.54	-43.13	1,103.11	881.01	842.64	38.38	22.957	
8,200.00	7,966.26	7,816.37	7,902.78	21.58	26.64	133.77	-39.62	1,103.11	915.46	877.03	38.43	23.823	
8,250.00	7,969.99	7,809.76	7,866.70	22.00	26.63	135.92	-37.03	1,103.11	950.19	911.98	38.21	24.867	
8,300.00	7,971.09	7,800.00	7,887.66	22.46	26.62	137.88	-33.36	1,103.11	985.50	946.95	38.55	25.566	
8,350.00	7,972.18	7,800.00	7,887.66	22.95	26.62	139.84	-33.36	1,103.11	1,021.91	982.87	39.04	26.173	
8,400.00	7,973.27	7,790.03	7,878.35	23.46	26.60	141.52	-29.80	1,103.11	1,058.31	1,019.90	39.41	26.880	
8,450.00	7,974.36	7,784.35	7,873.01	24.00	26.60	143.15	-27.86	1,103.11	1,097.64	1,057.77	39.87	27.533	
8,500.00	7,975.45	7,775.00	7,864.17	24.55	26.58	144.62	-24.80	1,103.10	1,136.82	1,096.55	40.27	28.232	
8,550.00	7,976.54	7,775.00	7,864.17	25.14	26.58	146.09	-24.80	1,103.10	1,176.71	1,135.88	40.84	28.814	
8,600.00	7,977.63	7,775.00	7,864.17	25.73	26.58	147.44	-24.80	1,103.10	1,217.36	1,175.95	41.41	29.399	
8,650.00	7,978.72	7,765.11	7,854.76	26.36	26.57	148.63	-21.76	1,103.10	1,258.54	1,216.69	41.85	30.070	
8,700.00	7,979.81	7,761.01	7,850.85	26.99	26.56	149.79	-20.56	1,103.10	1,300.34	1,257.96	42.39	30.678	
8,750.00	7,980.90	7,750.00	7,840.27	27.65	26.55	150.83	-17.49	1,103.10	1,342.73	1,299.91	42.82	31.355	
8,800.00	7,981.99	7,750.00	7,840.27	28.31	26.55	151.87	-17.49	1,103.10	1,385.48	1,342.03	43.45	31.890	
8,850.00	7,983.08	7,750.00	7,840.27	28.99	26.55	152.85	-17.49	1,103.10	1,428.69	1,384.60	44.09	32.404	
8,900.00	7,984.17	7,750.00	7,840.27	29.68	26.55	153.76	-17.49	1,103.10	1,472.34	1,427.61	44.73	32.913	
8,950.00	7,985.27	7,750.00	7,840.27	30.39	26.55	154.62	-17.49	1,103.10	1,516.38	1,470.98	45.40	33.402	
9,000.00	7,986.36	7,750.00	7,840.27	31.10	26.55	155.43	-17.49	1,103.10	1,560.78	1,514.71	46.06	33.884	
9,050.00	7,987.45	7,738.02	7,828.68	31.83	26.54	156.14	-14.43	1,103.10	1,605.32	1,558.81	46.51	34.516	
9,100.00	7,988.54	7,735.37	7,826.11	32.56	26.53	156.85	-13.79	1,103.10	1,650.26	1,603.13	47.13	35.012	
9,150.00	7,989.63	7,725.00	7,816.02	33.31	26.52	157.50	-11.44	1,103.10	1,695.55	1,647.94	47.61	35.613	
9,200.00	7,990.72	7,725.00	7,816.02	34.06	26.52	158.14	-11.44	1,103.10	1,740.96	1,692.67	48.30	36.047	
9,250.00	7,991.81	7,725.00	7,816.02	34.82	26.52	158.76	-11.44	1,103.10	1,786.62	1,737.63	49.00	36.464	
9,300.00	7,992.90	7,725.00	7,816.02	35.58	26.52	159.33	-11.44	1,103.10	1,832.51	1,782.81	49.70	36.874	
9,350.00	7,993.99	7,725.00	7,816.02	36.36	26.52	159.88	-11.44	1,103.10	1,878.60	1,828.20	50.41	37.268	
9,400.00	7,995.08	7,725.00	7,816.02	37.14	26.52	160.41	-11.44	1,103.10	1,924.90	1,873.78	51.12	37.655	
9,450.00	7,996.17	7,725.00	7,816.02	37.93	26.52	160.90	-11.44	1,103.10	1,971.37	1,919.53	51.84	38.028	
9,500.00	7,997.26	7,725.00	7,816.02	38.72	26.52	161.38	-11.44	1,103.10	2,018.01	1,965.45	52.56	38.394	
9,550.00	7,998.35	7,725.00	7,816.02	39.51	26.52	161.83	-11.44	1,103.10	2,064.81	2,011.52	53.29	38.746	
9,600.00	7,999.45	7,714.62	7,805.86	40.31	26.51	162.24	-9.30	1,103.10	2,111.62	2,057.85	53.77	39.275	
9,650.00	8,000.54	7,712.99	7,804.26	41.12	26.50	162.65	-8.98	1,103.10	2,158.66	2,104.20	54.46	39.639	
9,700.00	8,001.63	7,711.41	7,802.71	41.93	26.50	163.04	-8.68	1,103.10	2,205.82	2,150.67	55.15	39.997	
9,750.00	8,002.72	7,700.00	7,791.48	42.75	26.49	163.40	-6.66	1,103.10	2,253.22	2,197.63	55.59	40.533	
9,800.00	8,003.81	7,700.00	7,791.48	43.57	26.49	163.76	-6.66	1,103.10	2,300.57	2,244.25	56.32	40.846	
9,850.00	8,004.90	7,700.00	7,791.48	44.39	26.49	164.11	-6.66	1,103.10	2,348.03	2,290.97	57.06	41.148	
9,900.00	8,005.99	7,700.00	7,791.48	45.21	26.49	164.44	-6.66	1,103.10	2,395.60	2,337.80	57.80	41.444	
9,950.00	8,007.08	7,700.00	7,791.48	46.04	26.49	164.76	-6.66	1,103.10	2,443.27	2,384.72	58.55	41.730	
10,000.00	8,008.17	7,700.00	7,791.48	46.88	26.49	165.07	-6.66	1,103.10	2,491.02	2,431.73	59.29	42.011	
10,050.00	8,009.26	7,700.00	7,791.48	47.71	26.49	165.36	-6.66	1,103.10	2,538.87	2,478.82	60.04	42.283	
10,100.00	8,010.33	7,700.00	7,791.48	48.55	26.49	165.65	-6.66	1,103.10	2,586.79	2,526.23	60.55	42.719	
10,150.00	8,010.81	7,700.00	7,791.48	49.39	26.49	165.92	-6.66	1,103.10	2,634.70	2,574.61	60.09	43.844	
10,200.00	8,010.64	7,700.00	7,791.48	50.23	26.49	166.18	-6.66	1,103.10	2,682.59	2,622.10	60.49	44.346	
10,250.00	8,010.45	7,700.00	7,791.48	51.08	26.49	166.44	-6.66	1,103.10	2,730.55	2,669.33	61.22	44.600	
10,300.00	8,010.26	7,700.00	7,791.48	51.93	26.49	166.68	-6.66	1,103.10	2,778.59	2,716.63	61.95	44.849	

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design												Offset Site Error:	0.00 usft
Sec 5 T25S R 28E - Colt State Com 3H - Wellbore #1 - Plan#1 033114												Offset Well Error:	0.00 usft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis		Distance		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	-E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,350.00	8,010.06	7,700.00	7,591.48	52.78	26.49	166.92	-6.66	1,103.10	2,826.69	2,764.00	62.69	45.091	
10,400.00	8,009.87	7,700.00	7,591.48	53.63	26.49	167.15	-6.66	1,103.10	2,874.86	2,811.43	63.42	45.329	
10,450.00	8,009.68	7,700.00	7,591.48	54.48	26.49	167.37	-6.66	1,103.10	2,923.08	2,858.92	64.16	45.560	
10,500.00	8,009.48	7,700.00	7,591.48	55.34	26.49	167.58	-6.66	1,103.10	2,971.37	2,906.47	64.90	45.786	
10,550.00	8,009.29	7,700.00	7,591.48	56.20	26.49	167.79	-6.66	1,103.10	3,019.71	2,954.08	65.64	46.006	
10,600.00	8,009.10	7,689.10	7,580.71	57.05	26.47	167.98	-4.99	1,103.10	3,067.97	3,001.97	66.00	46.482	
10,650.00	8,008.90	7,688.11	7,579.73	57.92	26.47	168.17	-4.85	1,103.10	3,116.39	3,049.68	66.71	46.718	
10,700.00	8,008.71	7,687.15	7,578.78	58.78	26.47	168.36	-4.71	1,103.10	3,164.85	3,097.44	67.41	46.949	
10,750.00	8,008.52	7,686.21	7,577.85	59.64	26.47	168.54	-4.58	1,103.10	3,213.37	3,145.25	68.12	47.175	
10,800.00	8,008.32	7,675.00	7,566.73	60.51	26.46	168.71	-3.18	1,103.10	3,262.05	3,193.60	68.45	47.657	
10,850.00	8,008.13	7,675.00	7,566.73	61.38	26.46	168.88	-3.18	1,103.10	3,310.62	3,241.44	69.19	47.851	
10,900.00	8,007.93	7,675.00	7,566.73	62.24	26.46	169.05	-3.18	1,103.10	3,359.24	3,289.32	69.92	48.043	
10,950.00	8,007.74	7,675.00	7,566.73	63.11	26.46	169.21	-3.18	1,103.10	3,407.89	3,337.23	70.66	48.229	
11,000.00	8,007.55	7,675.00	7,566.73	63.98	26.46	169.37	-3.18	1,103.10	3,456.59	3,385.19	71.40	48.412	
11,050.00	8,007.35	7,675.00	7,566.73	64.86	26.46	169.52	-3.18	1,103.10	3,505.32	3,433.18	72.14	48.591	
11,100.00	8,007.16	7,675.00	7,566.73	65.73	26.46	169.67	-3.18	1,103.10	3,554.09	3,481.21	72.88	48.766	
11,150.00	8,006.97	7,675.00	7,566.73	66.60	26.46	169.81	-3.18	1,103.10	3,602.89	3,529.27	73.62	48.937	
11,200.00	8,006.77	7,675.00	7,566.73	67.48	26.46	169.95	-3.18	1,103.10	3,651.72	3,577.36	74.37	49.105	
11,250.00	8,006.58	7,675.00	7,566.73	68.36	26.46	170.09	-3.18	1,103.10	3,700.59	3,625.48	75.11	49.270	
11,300.00	8,006.39	7,675.00	7,566.73	69.23	26.46	170.22	-3.18	1,103.10	3,749.48	3,673.63	75.85	49.431	
11,350.00	8,006.19	7,675.00	7,566.73	70.11	26.46	170.35	-3.18	1,103.10	3,798.40	3,721.81	76.60	49.589	
11,400.00	8,006.00	7,675.00	7,566.73	70.99	26.46	170.47	-3.18	1,103.10	3,847.36	3,770.01	77.34	49.744	
11,450.00	8,005.81	7,675.00	7,566.73	71.87	26.46	170.60	-3.18	1,103.10	3,896.33	3,818.24	78.09	49.895	
11,500.00	8,005.61	7,675.00	7,566.73	72.75	26.46	170.72	-3.18	1,103.10	3,945.34	3,866.50	78.84	50.044	
11,550.00	8,005.42	7,675.00	7,566.73	73.63	26.46	170.83	-3.18	1,103.10	3,994.36	3,914.78	79.58	50.190	
11,600.00	8,005.23	7,675.00	7,566.73	74.51	26.46	170.95	-3.18	1,103.10	4,043.42	3,963.08	80.33	50.334	
11,650.00	8,005.03	7,675.00	7,566.73	75.40	26.46	171.06	-3.18	1,103.10	4,092.49	4,011.41	81.08	50.474	
11,700.00	8,004.84	7,675.00	7,566.73	76.28	26.46	171.16	-3.18	1,103.10	4,141.59	4,059.76	81.83	50.612	
11,750.00	8,004.64	7,675.00	7,566.73	77.17	26.46	171.27	-3.18	1,103.10	4,190.71	4,108.12	82.58	50.747	
11,800.00	8,004.45	7,675.00	7,566.73	78.05	26.46	171.37	-3.18	1,103.10	4,239.84	4,156.51	83.33	50.880	
11,850.00	8,004.26	7,675.00	7,566.73	78.94	26.46	171.47	-3.18	1,103.10	4,289.00	4,204.92	84.08	51.010	
11,900.00	8,004.06	7,675.00	7,566.73	79.82	26.46	171.57	-3.18	1,103.10	4,338.18	4,253.35	84.83	51.138	
11,950.00	8,003.87	7,675.00	7,566.73	80.71	26.46	171.67	-3.18	1,103.10	4,387.38	4,301.79	85.59	51.263	
12,000.00	8,003.68	7,675.00	7,566.73	81.60	26.46	171.76	-3.18	1,103.10	4,436.59	4,350.25	86.34	51.387	
12,050.00	8,003.48	7,675.00	7,566.73	82.49	26.46	171.86	-3.18	1,103.10	4,485.82	4,398.73	87.09	51.508	
12,100.00	8,003.29	7,675.00	7,566.73	83.37	26.46	171.95	-3.18	1,103.10	4,535.07	4,447.23	87.84	51.627	
12,150.00	8,003.10	7,675.00	7,566.73	84.26	26.46	172.03	-3.18	1,103.10	4,584.34	4,495.74	88.60	51.744	
12,200.00	8,002.90	7,675.00	7,566.73	85.15	26.46	172.12	-3.18	1,103.10	4,633.62	4,544.27	89.35	51.859	
12,250.00	8,002.71	7,675.00	7,566.73	86.04	26.46	172.20	-3.18	1,103.10	4,682.91	4,592.81	90.11	51.971	
12,300.00	8,002.52	7,675.00	7,566.73	86.93	26.46	172.29	-3.18	1,103.10	4,732.22	4,641.36	90.86	52.082	
12,350.00	8,002.32	7,675.00	7,566.73	87.82	26.46	172.37	-3.18	1,103.10	4,781.55	4,689.93	91.62	52.191	
12,400.00	8,002.13	7,675.00	7,566.73	88.72	26.46	172.45	-3.18	1,103.10	4,830.89	4,738.52	92.37	52.299	
12,450.00	8,001.94	7,675.00	7,566.73	89.61	26.46	172.52	-3.18	1,103.10	4,880.24	4,787.11	93.13	52.404	
12,500.00	8,001.74	7,675.00	7,566.73	90.50	26.46	172.60	-3.18	1,103.10	4,929.61	4,835.72	93.88	52.508	
12,550.00	8,001.55	7,675.00	7,566.73	91.39	26.46	172.67	-3.18	1,103.10	4,978.98	4,884.34	94.64	52.610	
12,600.00	8,001.35	7,663.49	7,555.28	92.29	26.44	172.75	-2.01	1,103.10	5,028.22	4,933.43	94.80	53.042	
12,650.00	8,001.16	7,663.09	7,554.87	93.18	26.44	172.82	-1.98	1,103.10	5,077.61	4,982.09	95.53	53.153	
12,700.00	8,000.97	7,662.69	7,554.48	94.08	26.44	172.89	-1.94	1,103.10	5,127.02	5,030.76	96.26	53.263	
12,750.00	8,000.77	7,662.30	7,554.09	94.97	26.44	172.96	-1.91	1,103.10	5,176.43	5,079.44	96.99	53.370	
12,800.00	8,000.58	7,661.92	7,553.71	95.86	26.44	173.02	-1.87	1,103.10	5,225.86	5,128.13	97.72	53.476	
12,850.00	8,000.39	7,661.54	7,553.34	96.76	26.44	173.09	-1.84	1,103.10	5,275.29	5,176.84	98.45	53.581	
12,900.00	8,000.19	7,650.00	7,541.82	97.66	26.43	173.15	-1.00	1,103.10	5,324.88	5,226.30	98.58	54.018	

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design													Sec 5 T25S R 28E - Colt State Com 3H - Wellbore #1 - Plan#1.033114		Offset Site Error: 0.00 usft	
Survey Program: 0-MWD													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
12,949.91	8,000.00	7,650.00	7,541.82	98.55	26.43	173.22	-1.00	1,103.10	5,374.24	5,274.92	99.32	54.109				



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:
Sec 5 T25S R 28E - Full Choke Fed Com 6H - Wellbore #1 - Plan#1 033114													0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	89.81	0.10	30.10	30.10				
50.00	50.00	50.00	50.00	0.03	0.04	89.81	0.10	30.10	30.10	30.03	0.07	428.536	
100.00	100.00	100.00	100.00	0.08	0.08	89.81	0.10	30.10	30.10	29.93	0.17	178.557	
150.00	150.00	150.00	150.00	0.20	0.20	89.81	0.10	30.10	30.10	29.71	0.39	76.524	
200.00	200.00	200.00	200.00	0.31	0.31	89.81	0.10	30.10	30.10	29.48	0.62	48.697	
250.00	250.00	250.00	250.00	0.42	0.42	89.81	0.10	30.10	30.10	29.26	0.84	35.711	
300.00	300.00	300.00	300.00	0.53	0.53	89.81	0.10	30.10	30.10	29.03	1.07	28.193	
350.00	350.00	350.00	350.00	0.65	0.65	89.81	0.10	30.10	30.10	28.81	1.29	23.290	
400.00	400.00	400.00	400.00	0.76	0.76	89.81	0.10	30.10	30.10	28.58	1.52	19.840	
450.00	450.00	450.00	450.00	0.87	0.87	89.81	0.10	30.10	30.10	28.36	1.74	17.280	
500.00	500.00	500.00	500.00	0.98	0.98	89.81	0.10	30.10	30.10	28.13	1.97	15.305 CC	
550.00	550.00	549.48	549.48	1.09	1.09	89.98	0.14	30.53	30.11	27.93	2.18	13.807	
600.00	599.98	598.96	598.94	1.20	1.20	90.51	0.26	31.80	30.16	27.76	2.39	12.599	
650.00	649.93	648.44	648.38	1.31	1.30	91.37	0.47	33.93	30.24	27.63	2.60	11.614	
700.00	699.84	697.92	697.76	1.42	1.41	92.58	0.76	36.90	30.38	27.55	2.81	10.806 ES	
750.00	749.70	747.39	747.09	1.53	1.52	93.95	1.13	40.73	30.76	27.74	3.02	10.174	
800.00	799.57	796.84	796.31	1.65	1.63	95.02	1.58	45.39	32.00	28.77	3.24	9.884	
850.00	849.43	846.24	845.39	1.76	1.76	95.72	2.11	50.90	34.10	30.65	3.46	9.858	
900.00	899.29	895.55	894.29	1.88	1.89	96.08	2.73	57.24	37.05	33.37	3.68	10.065	
950.00	949.15	944.75	942.97	2.01	2.03	96.15	3.42	64.39	40.84	36.93	3.91	10.449	
1,000.00	999.02	993.81	991.37	2.13	2.18	95.99	4.19	72.36	45.47	41.33	4.14	10.994	
1,050.00	1,048.88	1,042.71	1,039.47	2.25	2.34	95.68	5.04	81.11	50.93	46.56	4.37	11.660	
1,100.00	1,098.74	1,091.40	1,087.21	2.37	2.51	95.28	5.96	90.65	57.22	52.62	4.60	12.442	
1,150.00	1,148.60	1,139.88	1,134.57	2.50	2.70	94.83	6.95	100.93	64.34	59.51	4.83	13.309	
1,200.00	1,198.47	1,188.11	1,181.51	2.62	2.89	94.36	8.02	111.96	72.29	67.22	5.07	14.259	
1,250.00	1,248.33	1,236.93	1,228.87	2.75	3.09	93.89	9.16	123.75	80.89	75.58	5.31	15.239	
1,300.00	1,298.19	1,286.17	1,276.63	2.87	3.31	93.50	10.32	135.69	89.54	84.00	5.55	16.141	
1,350.00	1,348.06	1,335.41	1,324.39	3.00	3.53	93.17	11.47	147.63	98.20	92.42	5.79	16.967	
1,400.00	1,397.92	1,384.65	1,372.15	3.13	3.75	92.90	12.63	159.58	106.86	100.84	6.03	17.731	
1,450.00	1,447.78	1,433.90	1,419.90	3.25	3.98	92.66	13.79	171.52	115.53	109.26	6.27	18.427	
1,500.00	1,497.64	1,483.14	1,467.66	3.38	4.21	92.46	14.94	183.46	124.19	117.68	6.51	19.075	
1,550.00	1,547.51	1,532.38	1,515.42	3.51	4.44	92.29	16.10	195.40	132.86	126.10	6.75	19.677	
1,600.00	1,597.37	1,581.62	1,563.18	3.63	4.67	92.14	17.25	207.34	141.52	134.53	7.00	20.229	
1,650.00	1,647.23	1,630.86	1,610.94	3.76	4.91	92.00	18.41	219.28	150.19	142.95	7.24	20.741	
1,700.00	1,697.09	1,680.11	1,658.69	3.89	5.15	91.88	19.56	231.22	158.86	151.37	7.49	21.219	
1,750.00	1,746.96	1,729.35	1,706.45	4.02	5.38	91.77	20.72	243.17	167.53	159.79	7.73	21.664	
1,800.00	1,796.82	1,778.59	1,754.21	4.15	5.62	91.68	21.87	255.11	176.20	168.22	7.98	22.081	
1,850.00	1,846.68	1,827.83	1,801.97	4.27	5.86	91.59	23.03	267.05	184.87	176.64	8.23	22.472	
1,900.00	1,896.55	1,877.07	1,849.73	4.40	6.10	91.51	24.19	278.99	193.54	185.06	8.47	22.838	
1,950.00	1,946.41	1,926.32	1,897.49	4.53	6.34	91.43	25.34	290.93	202.21	193.48	8.72	23.183	
2,000.00	1,996.27	1,975.56	1,945.24	4.66	6.59	91.37	26.50	302.87	210.88	201.91	8.97	23.507	
2,050.00	2,046.13	2,024.80	1,993.00	4.79	6.83	91.31	27.65	314.81	219.55	210.33	9.22	23.813	
2,100.00	2,096.00	2,074.04	2,040.76	4.92	7.07	91.25	28.81	326.76	228.22	218.75	9.47	24.103	
2,150.00	2,145.86	2,123.28	2,088.52	5.05	7.31	91.19	29.96	338.70	236.89	227.17	9.72	24.376	
2,200.00	2,195.72	2,172.53	2,136.28	5.17	7.56	91.15	31.12	350.64	245.56	235.59	9.97	24.636	
2,250.00	2,245.58	2,221.77	2,184.03	5.30	7.80	91.10	32.28	362.58	254.23	244.02	10.22	24.882	
2,300.00	2,295.45	2,271.01	2,231.79	5.43	8.05	91.06	33.43	374.52	262.90	252.44	10.47	25.115	
2,350.00	2,345.31	2,320.25	2,279.55	5.56	8.29	91.02	34.59	386.46	271.58	260.86	10.72	25.337	
2,400.00	2,395.17	2,369.49	2,327.31	5.69	8.53	90.98	35.74	398.40	280.25	269.28	10.97	25.549	
2,450.00	2,445.04	2,418.73	2,375.07	5.82	8.78	90.94	36.90	410.35	288.92	277.70	11.22	25.751	
2,500.00	2,494.90	2,467.98	2,422.82	5.95	9.03	90.91	38.05	422.29	297.59	286.12	11.47	25.943	
2,550.00	2,544.76	2,517.22	2,470.58	6.08	9.27	90.88	39.21	434.23	306.27	294.54	11.72	26.127	

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

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design														Offset Site Error:	0.00 usft
Sec 5 T25S R 28E - Full Choke Fed Com 6H - Wellbore #1 - Plan#1 033114														Offset Well Error:	0.00 usft
Survey Program: 0-MWD															
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
2,600.00	2,594.62	2,566.46	2,518.34	6.21	9.52	90.85	40.36	446.17	314.94	302.96	11.97	26.303			
2,650.00	2,644.49	2,615.70	2,566.10	6.34	9.76	90.82	41.52	458.11	323.61	311.39	12.23	26.471			
2,700.00	2,694.35	2,664.94	2,613.86	6.47	10.01	90.79	42.68	470.05	332.28	319.81	12.48	26.632			
2,750.00	2,744.21	2,714.19	2,661.61	6.59	10.25	90.77	43.83	481.99	340.96	328.23	12.73	26.787			
2,800.00	2,794.08	2,763.43	2,709.37	6.72	10.50	90.74	44.99	493.94	349.63	336.65	12.98	26.935			
2,850.00	2,843.94	2,812.67	2,757.13	6.85	10.75	90.72	46.14	505.88	358.30	345.07	13.23	27.077			
2,900.00	2,893.80	2,861.91	2,804.89	6.98	10.99	90.70	47.30	517.82	366.97	353.49	13.48	27.214			
2,950.00	2,943.66	2,911.15	2,852.65	7.11	11.24	90.68	48.45	529.76	375.65	361.91	13.74	27.346			
3,000.00	2,993.53	2,960.40	2,900.40	7.24	11.49	90.66	49.61	541.70	384.32	370.33	13.99	27.472			
3,050.00	3,043.39	3,009.64	2,948.16	7.37	11.74	90.64	50.77	553.64	392.99	378.75	14.24	27.595			
3,100.00	3,093.25	3,058.88	2,995.92	7.50	11.98	90.62	51.92	565.58	401.67	387.17	14.49	27.712			
3,150.00	3,143.11	3,108.12	3,043.68	7.63	12.23	90.60	53.08	577.53	410.34	395.58	14.75	27.825			
3,200.00	3,192.98	3,157.36	3,091.44	7.76	12.48	90.59	54.23	589.47	419.01	404.01	15.00	27.935			
3,250.00	3,242.84	3,206.60	3,139.19	7.89	12.72	90.57	55.39	601.41	427.68	412.43	15.25	28.041			
3,300.00	3,292.70	3,255.85	3,186.95	8.02	12.97	90.56	56.54	613.35	436.36	420.85	15.51	28.143			
3,350.00	3,342.57	3,305.09	3,234.71	8.15	13.22	90.54	57.70	625.29	445.03	429.27	15.76	28.241			
3,400.00	3,392.43	3,354.33	3,282.47	8.28	13.47	90.53	58.85	637.23	453.70	437.69	16.01	28.337			
3,450.00	3,442.29	3,403.57	3,330.23	8.41	13.71	90.51	60.01	649.17	462.38	446.11	16.26	28.429			
3,500.00	3,492.15	3,452.81	3,377.98	8.54	13.96	90.50	61.17	661.12	471.05	454.53	16.52	28.518			
3,550.00	3,542.02	3,502.06	3,425.74	8.67	14.21	90.49	62.32	673.06	479.72	462.95	16.77	28.605			
3,600.00	3,591.88	3,551.30	3,473.50	8.80	14.46	90.47	63.48	685.00	488.40	471.37	17.02	28.689			
3,650.00	3,641.74	3,600.54	3,521.26	8.93	14.71	90.46	64.63	696.94	497.07	479.79	17.28	28.770			
3,700.00	3,691.60	3,649.78	3,569.02	9.06	14.95	90.45	65.79	708.88	505.74	488.21	17.53	28.849			
3,750.00	3,741.47	3,699.02	3,616.78	9.19	15.20	90.44	66.94	720.82	514.42	496.63	17.78	28.926			
3,800.00	3,791.33	3,748.27	3,664.53	9.32	15.45	90.43	68.10	732.76	523.09	505.05	18.04	29.000			
3,850.00	3,841.19	3,797.51	3,712.29	9.44	15.70	90.42	69.26	744.71	531.76	513.47	18.29	29.073			
3,900.00	3,891.06	3,846.75	3,760.05	9.57	15.95	90.41	70.41	756.65	540.44	521.89	18.54	29.143			
3,950.00	3,940.92	3,895.99	3,807.81	9.70	16.19	90.40	71.57	768.59	549.11	530.31	18.80	29.211			
4,000.00	3,990.78	3,945.23	3,855.57	9.83	16.44	90.39	72.72	780.53	557.78	538.73	19.05	29.277			
4,050.00	4,040.64	3,994.48	3,903.32	9.96	16.69	90.38	73.88	792.47	566.46	547.15	19.31	29.342			
4,100.00	4,090.51	4,043.72	3,951.08	10.09	16.94	90.37	75.03	804.41	575.13	555.57	19.56	29.405			
4,150.00	4,140.37	4,092.96	3,998.84	10.22	17.19	90.36	76.19	816.35	583.80	563.99	19.81	29.466			
4,200.00	4,190.23	4,142.20	4,046.60	10.35	17.44	90.35	77.34	828.30	592.48	572.41	20.07	29.525			
4,250.00	4,240.10	4,191.44	4,094.36	10.48	17.68	90.35	78.50	840.24	601.15	580.83	20.32	29.584			
4,300.00	4,289.96	4,240.68	4,142.11	10.61	17.93	90.34	79.66	852.18	609.82	589.25	20.57	29.640			
4,350.00	4,339.82	4,289.93	4,189.87	10.74	18.18	90.33	80.81	864.12	618.50	597.67	20.83	29.695			
4,400.00	4,389.68	4,339.17	4,237.63	10.87	18.43	90.32	81.97	876.06	627.17	606.09	21.08	29.749			
4,450.00	4,439.55	4,388.41	4,285.39	11.00	18.68	90.32	83.12	888.00	635.84	614.51	21.34	29.801			
4,500.00	4,489.41	4,437.65	4,333.15	11.13	18.93	90.31	84.28	899.94	644.52	622.93	21.59	29.852			
4,550.00	4,539.27	4,486.89	4,380.90	11.26	19.17	90.30	85.43	911.89	653.19	631.35	21.84	29.902			
4,600.00	4,589.13	4,536.14	4,428.66	11.39	19.42	90.30	86.59	923.83	661.86	639.77	22.10	29.951			
4,650.00	4,639.00	4,585.38	4,476.42	11.52	19.67	90.29	87.75	935.77	670.54	648.19	22.35	29.999			
4,700.00	4,688.86	4,634.62	4,524.18	11.65	19.92	90.28	88.90	947.71	679.21	656.61	22.61	30.045			
4,750.00	4,738.72	4,683.86	4,571.94	11.78	20.17	90.28	90.06	959.65	687.89	665.02	22.86	30.091			
4,800.00	4,788.59	4,733.10	4,619.69	11.91	20.42	90.27	91.21	971.59	696.56	673.44	23.11	30.135			
4,850.00	4,838.45	4,782.35	4,667.45	12.04	20.67	90.27	92.37	983.53	705.23	681.86	23.37	30.178			
4,900.00	4,888.31	4,831.59	4,715.21	12.17	20.91	90.26	93.52	995.48	713.91	690.28	23.62	30.221			
4,950.00	4,938.17	4,880.83	4,762.97	12.30	21.16	90.25	94.68	1,007.42	722.58	698.70	23.88	30.262			
5,000.00	4,988.04	4,930.07	4,810.73	12.43	21.41	90.25	95.83	1,019.36	731.25	707.12	24.13	30.303			
5,050.00	5,037.90	4,979.31	4,858.48	12.56	21.66	90.24	96.99	1,031.30	739.93	715.54	24.39	30.342			
5,100.00	5,087.76	5,028.56	4,906.24	12.69	21.91	90.24	98.15	1,043.24	748.60	723.96	24.64	30.381			
5,150.00	5,137.62	5,077.80	4,954.00	12.82	22.16	90.23	99.30	1,055.18	757.27	732.38	24.89	30.419			

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

Anticollision Report

Company:	Legend Natural Gas IV: LP	Local Co-ordinate Reference:	Well: Full Choke Fed Com 5H
Project:	Eddy County: NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design: Sec 5 T25S R 28E - Full Choke Fed Com 6H - Wellbore #1 - Plan#1.033114														Offset Site Error:	0.00 usft
Survey Program: 0-MWD														Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,200.00	5,187.49	5,127.04	5,001.76	12.95	22.41	90.23	100.46	1,067.12	765.95	740.80	25.15	30.456			
5,250.00	5,237.35	5,176.28	5,049.52	13.08	22.66	90.22	101.61	1,079.07	774.62	749.22	25.40	30.493			
5,300.00	5,287.21	5,225.52	5,097.27	13.21	22.90	90.22	102.77	1,091.01	783.29	757.64	25.66	30.529			
5,350.00	5,337.08	5,274.76	5,145.03	13.34	23.15	90.21	103.92	1,102.95	791.97	766.06	25.91	30.564			
5,400.00	5,386.94	5,324.01	5,192.79	13.47	23.40	90.21	105.08	1,114.89	800.64	774.48	26.17	30.598			
5,450.00	5,436.80	5,373.25	5,240.55	13.60	23.65	90.21	106.24	1,126.83	809.32	782.89	26.42	30.631			
5,500.00	5,486.66	5,422.49	5,288.31	13.73	23.90	90.20	107.39	1,138.77	817.99	791.31	26.68	30.664			
5,550.00	5,536.53	5,471.73	5,336.07	13.86	24.15	90.20	108.55	1,150.71	826.66	799.73	26.93	30.697			
5,600.00	5,586.39	5,520.97	5,383.82	13.99	24.40	90.19	109.70	1,162.66	835.34	808.15	27.18	30.728			
5,650.00	5,636.25	5,570.22	5,431.58	14.12	24.65	90.19	110.86	1,174.60	844.01	816.57	27.44	30.759			
5,700.00	5,686.12	5,619.46	5,479.34	14.25	24.90	90.18	112.01	1,186.54	852.68	824.99	27.69	30.790			
5,750.00	5,735.98	5,668.70	5,527.10	14.38	25.14	90.18	113.17	1,198.48	861.36	833.41	27.95	30.820			
5,800.00	5,785.84	5,717.94	5,574.86	14.51	25.39	90.18	114.32	1,210.42	870.03	841.83	28.20	30.849			
5,850.00	5,835.70	5,767.18	5,622.61	14.64	25.64	90.17	115.48	1,222.36	878.70	850.25	28.46	30.878			
5,900.00	5,885.57	5,816.43	5,670.37	14.77	25.89	90.17	116.64	1,234.30	887.38	858.67	28.71	30.906			
5,950.00	5,935.43	5,865.67	5,718.13	14.90	26.14	90.17	117.79	1,246.25	896.05	867.09	28.97	30.934			
6,000.00	5,985.29	5,914.91	5,765.89	15.03	26.39	90.16	118.95	1,258.19	904.73	875.50	29.22	30.961			
6,050.00	6,035.15	5,964.15	5,813.65	15.16	26.64	90.16	120.10	1,270.13	913.40	883.92	29.48	30.988			
6,100.00	6,085.02	6,013.39	5,861.40	15.29	26.89	90.15	121.26	1,282.07	922.07	892.34	29.73	31.014			
6,150.00	6,134.88	6,062.64	5,909.16	15.42	27.14	90.15	122.41	1,294.01	930.75	900.76	29.99	31.040			
6,200.00	6,184.74	6,111.88	5,956.92	15.55	27.38	90.15	123.57	1,305.95	939.42	909.18	30.24	31.065			
6,250.00	6,234.61	6,161.12	6,004.68	15.68	27.63	90.15	124.73	1,317.89	948.09	917.60	30.50	31.090			
6,300.00	6,284.47	6,210.36	6,052.44	15.81	27.88	90.14	125.88	1,329.84	956.77	926.02	30.75	31.115			
6,350.00	6,334.33	6,259.60	6,100.19	15.94	28.13	90.14	127.04	1,341.78	965.44	934.44	31.00	31.139			
6,400.00	6,384.19	6,308.84	6,147.95	16.07	28.38	90.14	128.19	1,353.72	974.12	942.86	31.26	31.162			
6,450.00	6,434.06	6,358.09	6,195.71	16.20	28.63	90.13	129.35	1,365.66	982.79	951.27	31.51	31.185			
6,500.00	6,483.92	6,407.33	6,243.47	16.33	28.88	90.13	130.50	1,377.60	991.46	959.69	31.77	31.208			
6,550.00	6,533.78	6,456.57	6,291.23	16.46	29.13	90.13	131.66	1,389.54	1,000.14	968.11	32.02	31.231			
6,600.00	6,583.64	6,505.81	6,338.98	16.59	29.38	90.12	132.81	1,401.48	1,008.81	976.53	32.28	31.253			
6,650.00	6,633.51	6,555.05	6,386.74	16.72	29.63	90.12	133.97	1,413.43	1,017.48	984.95	32.53	31.275			
6,700.00	6,683.37	6,604.30	6,434.50	16.85	29.87	90.12	135.13	1,425.37	1,026.16	993.37	32.79	31.296			
6,750.00	6,733.23	6,653.54	6,482.26	16.98	30.12	90.12	136.28	1,437.31	1,034.83	1,001.79	33.04	31.317			
6,800.00	6,783.10	6,702.78	6,530.02	17.11	30.37	90.11	137.44	1,449.25	1,043.50	1,010.21	33.30	31.338			
6,850.00	6,832.96	6,752.02	6,577.77	17.24	30.62	90.11	138.59	1,461.19	1,052.18	1,018.62	33.55	31.358			
6,900.00	6,882.82	6,801.26	6,625.53	17.37	30.87	90.11	139.75	1,473.13	1,060.85	1,027.04	33.81	31.378			
6,950.00	6,932.68	6,850.51	6,673.29	17.50	31.12	90.11	140.90	1,485.07	1,069.53	1,035.46	34.06	31.398			
7,000.00	6,982.55	6,906.77	6,727.87	17.63	31.39	90.09	142.22	1,498.66	1,078.16	1,043.83	34.33	31.404			
7,050.00	7,032.41	6,965.94	6,805.04	17.76	31.69	90.06	143.93	1,516.30	1,085.84	1,051.20	34.63	31.352			
7,100.00	7,082.27	7,065.74	6,883.27	17.89	31.96	90.04	145.44	1,531.92	1,092.14	1,057.22	34.93	31.268			
7,150.00	7,132.14	7,146.03	6,962.40	18.01	32.20	90.03	146.75	1,545.45	1,097.13	1,061.93	35.20	31.171			
7,200.00	7,182.04	7,226.65	7,042.21	18.12	32.42	90.02	147.85	1,556.80	1,101.25	1,065.82	35.43	31.081			
7,250.00	7,231.98	7,307.54	7,122.57	18.21	32.61	90.01	148.73	1,565.95	1,104.60	1,068.96	35.64	30.994			
7,300.00	7,281.95	7,388.63	7,203.36	18.30	32.76	90.01	149.40	1,572.84	1,107.16	1,071.33	35.83	30.900			
7,350.00	7,331.94	7,469.88	7,284.48	18.38	32.89	90.00	149.84	1,577.46	1,108.94	1,072.93	36.01	30.799			
7,400.00	7,381.94	7,551.23	7,365.79	18.46	32.99	90.00	150.07	1,579.80	1,109.93	1,073.76	36.17	30.686			
7,450.00	7,431.94	7,617.38	7,431.94	18.55	33.06	89.99	150.10	1,580.10	1,110.10	1,073.74	36.36	30.532			
7,500.00	7,481.94	7,667.38	7,481.94	18.64	33.11	89.99	150.10	1,580.10	1,110.10	1,073.56	36.54	30.383			
7,517.40	7,499.33	7,684.77	7,499.33	18.67	33.13	90.01	150.10	1,580.10	1,110.10	1,073.50	36.60	30.328			
7,550.00	7,531.89	7,717.39	7,531.94	18.73	33.17	90.05	150.72	1,580.10	1,110.10	1,073.37	36.73	30.224			
7,600.00	7,581.42	7,767.53	7,581.79	18.84	33.23	90.13	155.89	1,580.10	1,110.10	1,073.16	36.95	30.047			
7,650.00	7,629.97	7,817.84	7,630.99	18.96	33.30	90.20	166.30	1,580.10	1,110.11	1,072.92	37.19	29.853			
7,700.00	7,677.02	7,868.32	7,678.97	19.09	33.37	90.27	181.89	1,580.10	1,110.11	1,072.66	37.45	29.640			

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



Anticollision Report



Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design: Sec 5 T25S R 28E - Full Choke Fed Com 6H - Wellbore #1 - Plan#1 033114													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
7,750.00	7,722.05	7,918.95	7,725.18	19.23	33.45	90.32	202.53	1,580.10	1,110.12	1,072.36	37.75	29.404	
7,800.00	7,764.56	7,969.74	7,769.08	19.39	33.54	90.36	228.02	1,580.10	1,110.12	1,072.03	38.09	29.143	
7,850.00	7,804.10	8,020.67	7,810.13	19.56	33.64	90.38	258.13	1,580.11	1,110.13	1,071.66	38.48	28.853	
7,900.00	7,840.22	8,071.74	7,847.84	19.76	33.74	90.39	292.53	1,580.11	1,110.14	1,071.23	38.91	28.530	
7,950.00	7,872.53	8,122.93	7,881.74	19.97	33.86	90.38	330.86	1,580.11	1,110.15	1,070.74	39.41	28.173	
8,000.00	7,900.69	8,174.24	7,911.40	20.22	33.99	90.35	372.69	1,580.11	1,110.15	1,070.19	39.96	27.780	
8,050.00	7,924.37	8,225.64	7,936.45	20.50	34.13	90.31	417.54	1,580.12	1,110.16	1,069.57	40.59	27.352	
8,100.00	7,943.32	8,277.12	7,956.56	20.82	34.30	90.25	464.91	1,580.12	1,110.16	1,068.88	41.28	26.894	
8,150.00	7,957.34	8,328.67	7,971.48	21.18	34.47	90.18	514.22	1,580.12	1,110.17	1,068.13	42.04	26.409	
8,200.00	7,966.26	8,380.26	7,980.99	21.58	34.67	90.10	564.90	1,580.12	1,110.17	1,067.31	42.86	25.905	
8,250.00	7,969.99	8,431.87	7,984.99	22.00	34.89	90.02	616.34	1,580.13	1,110.17	1,066.44	43.73	25.389	
8,300.00	7,971.09	8,481.88	7,986.13	22.46	35.13	90.02	666.34	1,580.13	1,110.16	1,065.50	44.66	24.858	
8,350.00	7,972.18	8,531.88	7,987.26	22.95	35.38	90.02	716.32	1,580.13	1,110.16	1,064.50	45.66	24.313	
8,400.00	7,973.27	8,581.88	7,988.40	23.46	35.65	90.02	766.31	1,580.14	1,110.16	1,063.48	46.68	23.782	
8,450.00	7,974.36	8,631.88	7,989.53	24.00	35.95	90.02	816.30	1,580.14	1,110.15	1,062.38	47.77	23.238	
8,500.00	7,975.45	8,681.88	7,990.67	24.55	36.27	90.02	866.28	1,580.14	1,110.15	1,061.26	48.89	22.709	
8,550.00	7,976.54	8,731.88	7,991.80	25.14	36.60	90.02	916.27	1,580.14	1,110.15	1,060.08	50.06	22.175	
8,600.00	7,977.63	8,781.88	7,992.93	25.73	36.96	90.02	966.26	1,580.15	1,110.14	1,058.89	51.26	21.658	
8,650.00	7,978.72	8,831.88	7,994.07	26.36	37.33	90.02	1,016.24	1,580.15	1,110.14	1,057.63	52.51	21.142	
8,700.00	7,979.81	8,881.88	7,995.20	26.99	37.73	90.02	1,066.23	1,580.15	1,110.14	1,056.36	53.77	20.645	
8,750.00	7,980.90	8,931.88	7,996.34	27.65	38.14	90.02	1,116.22	1,580.16	1,110.13	1,055.05	55.09	20.153	
8,800.00	7,981.99	8,981.88	7,997.47	28.31	38.58	90.02	1,166.21	1,580.16	1,110.13	1,053.72	56.41	19.679	
8,850.00	7,983.08	9,031.88	7,998.61	28.99	39.03	90.02	1,216.19	1,580.16	1,110.13	1,052.35	57.78	19.213	
8,900.00	7,984.17	9,081.88	7,999.74	29.68	39.50	90.02	1,266.18	1,580.16	1,110.12	1,050.97	59.16	18.766	
8,950.00	7,985.27	9,131.88	8,000.87	30.39	39.98	90.02	1,316.17	1,580.17	1,110.12	1,049.55	60.57	18.327	
9,000.00	7,986.36	9,181.88	8,002.01	31.10	40.48	90.02	1,366.15	1,580.17	1,110.12	1,048.12	62.00	17.906	
9,050.00	7,987.45	9,231.88	8,003.14	31.83	41.00	90.02	1,416.14	1,580.17	1,110.11	1,046.66	63.45	17.495	
9,100.00	7,988.54	9,281.88	8,004.28	32.56	41.53	90.02	1,466.13	1,580.18	1,110.11	1,045.19	64.92	17.100	
9,150.00	7,989.63	9,331.88	8,005.41	33.31	42.08	90.02	1,516.12	1,580.18	1,110.11	1,043.70	66.41	16.716	
9,200.00	7,990.72	9,381.88	8,006.55	34.06	42.64	90.02	1,566.10	1,580.18	1,110.10	1,042.19	67.91	16.347	
9,250.00	7,991.81	9,431.88	8,007.68	34.82	43.22	90.02	1,616.09	1,580.19	1,110.10	1,040.67	69.43	15.988	
9,300.00	7,992.90	9,481.88	8,008.82	35.58	43.81	90.02	1,666.08	1,580.19	1,110.10	1,039.13	70.96	15.643	
9,350.00	7,993.99	9,531.88	8,009.95	36.36	44.41	90.02	1,716.06	1,580.19	1,110.09	1,037.58	72.52	15.308	
9,400.00	7,995.08	9,581.88	8,011.08	37.14	45.02	90.02	1,766.05	1,580.19	1,110.09	1,036.02	74.07	14.987	
9,450.00	7,996.17	9,631.88	8,012.22	37.93	45.64	90.02	1,816.04	1,580.20	1,110.09	1,034.44	75.65	14.675	
9,500.00	7,997.26	9,681.88	8,013.35	38.72	46.28	90.02	1,866.03	1,580.20	1,110.08	1,032.86	77.23	14.374	
9,550.00	7,998.35	9,731.88	8,014.49	39.51	46.92	90.02	1,916.01	1,580.20	1,110.08	1,031.26	78.82	14.083	
9,600.00	7,999.45	9,781.91	8,015.62	40.31	47.58	90.02	1,966.02	1,580.21	1,110.08	1,029.65	80.42	13.803	
9,650.00	8,000.54	9,832.19	8,016.74	41.12	48.25	90.01	2,016.30	1,580.21	1,110.07	1,028.02	82.05	13.530	
9,700.00	8,001.63	9,882.26	8,016.19	41.93	48.92	90.00	2,066.37	1,580.21	1,110.05	1,026.37	83.67	13.266	
9,750.00	8,002.72	9,932.25	8,016.10	42.75	49.60	90.00	2,116.36	1,580.21	1,110.03	1,024.71	85.31	13.011	
9,800.00	8,003.81	9,982.23	8,016.00	43.57	50.29	90.00	2,166.34	1,580.22	1,110.01	1,023.05	86.96	12.765	
9,850.00	8,004.90	10,032.22	8,015.90	44.39	50.99	90.00	2,216.33	1,580.22	1,109.99	1,021.38	88.61	12.527	
9,900.00	8,005.99	10,082.20	8,015.81	45.21	51.70	90.00	2,266.31	1,580.22	1,109.98	1,019.71	90.27	12.297	
9,950.00	8,007.08	10,132.19	8,015.71	46.04	52.41	90.00	2,316.30	1,580.23	1,109.97	1,018.03	91.93	12.074	
10,000.00	8,008.17	10,182.18	8,015.62	46.88	53.13	90.00	2,366.29	1,580.23	1,109.95	1,016.35	93.60	11.858	
10,050.00	8,009.26	10,232.16	8,015.52	47.71	53.86	90.00	2,416.27	1,580.23	1,109.94	1,014.66	95.28	11.649	
10,100.00	8,010.33	10,282.15	8,015.43	48.55	54.59	90.00	2,466.26	1,580.23	1,109.93	1,012.97	96.96	11.447	
10,150.00	8,010.81	10,332.14	8,015.33	49.39	55.33	90.00	2,516.25	1,580.24	1,109.93	1,011.28	98.65	11.251	
10,200.00	8,010.64	10,382.14	8,015.24	50.23	56.07	90.00	2,566.25	1,580.24	1,109.92	1,009.59	100.33	11.063	
10,250.00	8,010.45	10,432.14	8,015.14	51.08	56.82	90.00	2,616.25	1,580.24	1,109.92	1,007.90	102.02	10.879	
10,300.00	8,010.26	10,482.14	8,015.05	51.93	57.57	90.00	2,666.25	1,580.25	1,109.92	1,006.20	103.72	10.701	

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

Anticollision Report

Company:	Legend Natural Gas IV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Offset Design: Sec 5 T25S R 28E - Full Choke Fed Com 6H - Wellbore #1 - Plan#1 033114													Offset Site Error: 0.00 usft	
Survey Program: 0-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
10,350.00	8,010.06	10,532.14	8,014.95	52.78	58.33	90.00	2,716.25	1,580.25	1,109.91	1,004.49	105.42	10.529		
10,400.00	8,009.87	10,582.14	8,014.86	53.63	59.10	90.00	2,766.25	1,580.25	1,109.91	1,002.79	107.12	10.381		
10,450.00	8,009.68	10,632.14	8,014.76	54.48	59.86	90.00	2,816.25	1,580.25	1,109.91	1,001.08	108.83	10.199		
10,500.00	8,009.48	10,682.14	8,014.67	55.34	60.64	90.00	2,866.25	1,580.26	1,109.90	999.36	110.54	10.041		
10,550.00	8,009.29	10,732.14	8,014.57	56.20	61.41	90.00	2,916.25	1,580.26	1,109.90	997.64	112.26	9.887		
10,600.00	8,009.10	10,782.14	8,014.48	57.05	62.19	90.00	2,966.25	1,580.26	1,109.90	995.92	113.97	9.738		
10,650.00	8,008.90	10,832.14	8,014.38	57.92	62.98	90.00	3,016.25	1,580.27	1,109.89	994.20	115.70	9.593		
10,700.00	8,008.71	10,882.14	8,014.28	58.78	63.77	90.00	3,066.25	1,580.27	1,109.89	992.47	117.42	9.452		
10,750.00	8,008.52	10,932.14	8,014.19	59.64	64.56	90.00	3,116.25	1,580.27	1,109.88	990.74	119.15	9.315		
10,800.00	8,008.32	10,982.14	8,014.09	60.51	65.36	90.00	3,166.25	1,580.28	1,109.88	989.00	120.88	9.182		
10,850.00	8,008.13	11,032.14	8,014.00	61.38	66.15	90.00	3,216.25	1,580.28	1,109.88	987.26	122.61	9.052		
10,900.00	8,007.93	11,082.14	8,013.90	62.24	66.96	90.00	3,266.25	1,580.28	1,109.87	985.53	124.35	8.925		
10,950.00	8,007.74	11,132.14	8,013.81	63.11	67.76	90.00	3,316.25	1,580.28	1,109.87	983.78	126.09	8.802		
11,000.00	8,007.55	11,182.14	8,013.71	63.98	68.57	90.00	3,366.25	1,580.29	1,109.87	982.04	127.83	8.682		
11,050.00	8,007.35	11,232.14	8,013.62	64.86	69.38	90.00	3,416.25	1,580.29	1,109.86	980.29	129.57	8.565		
11,100.00	8,007.16	11,282.14	8,013.52	65.73	70.19	90.00	3,466.25	1,580.29	1,109.86	978.54	131.32	8.452		
11,150.00	8,006.97	11,332.14	8,013.43	66.60	71.01	90.00	3,516.25	1,580.30	1,109.86	976.79	133.07	8.341		
11,200.00	8,006.77	11,382.14	8,013.33	67.48	71.82	90.00	3,566.25	1,580.30	1,109.85	975.04	134.82	8.232		
11,250.00	8,006.58	11,432.14	8,013.24	68.36	72.64	90.00	3,616.25	1,580.30	1,109.85	973.28	136.57	8.127		
11,300.00	8,006.39	11,482.14	8,013.14	69.23	73.47	90.00	3,666.25	1,580.30	1,109.85	971.52	138.32	8.024		
11,350.00	8,006.19	11,532.14	8,013.05	70.11	74.29	90.00	3,716.25	1,580.31	1,109.85	969.76	140.08	7.923		
11,400.00	8,006.00	11,582.14	8,012.95	70.99	75.12	90.00	3,766.25	1,580.31	1,109.84	968.00	141.84	7.825		
11,450.00	8,005.81	11,632.14	8,012.86	71.87	75.95	90.00	3,816.25	1,580.31	1,109.84	966.24	143.60	7.729		
11,500.00	8,005.61	11,682.14	8,012.76	72.75	76.78	90.00	3,866.25	1,580.32	1,109.84	964.48	145.36	7.635		
11,550.00	8,005.42	11,732.14	8,012.67	73.63	77.61	90.00	3,916.25	1,580.32	1,109.83	962.71	147.12	7.544		
11,600.00	8,005.23	11,782.14	8,012.57	74.51	78.45	90.00	3,966.25	1,580.32	1,109.83	960.94	148.88	7.454		
11,650.00	8,005.03	11,832.14	8,012.47	75.40	79.28	90.00	4,016.25	1,580.32	1,109.83	959.17	150.65	7.367		
11,700.00	8,004.84	11,882.14	8,012.38	76.28	80.12	90.00	4,066.25	1,580.33	1,109.82	957.40	152.42	7.281		
11,750.00	8,004.64	11,932.14	8,012.28	77.17	80.96	90.00	4,116.25	1,580.33	1,109.82	955.63	154.19	7.198		
11,800.00	8,004.45	11,982.14	8,012.19	78.05	81.81	90.00	4,166.25	1,580.33	1,109.82	953.86	155.96	7.116		
11,850.00	8,004.26	12,032.14	8,012.09	78.94	82.65	90.00	4,216.25	1,580.34	1,109.81	952.09	157.73	7.036		
11,900.00	8,004.06	12,082.14	8,012.00	79.82	83.49	90.00	4,266.25	1,580.34	1,109.81	950.31	159.50	6.958		
11,950.00	8,003.87	12,132.14	8,011.90	80.71	84.34	90.00	4,316.25	1,580.34	1,109.81	948.53	161.27	6.882		
12,000.00	8,003.68	12,182.14	8,011.81	81.60	85.19	90.00	4,366.25	1,580.34	1,109.80	946.76	163.05	6.807		
12,050.00	8,003.48	12,232.14	8,011.71	82.49	86.04	90.00	4,416.25	1,580.35	1,109.80	944.98	164.82	6.733		
12,100.00	8,003.29	12,282.14	8,011.62	83.37	86.89	90.00	4,466.25	1,580.35	1,109.80	943.20	166.60	6.661		
12,150.00	8,003.10	12,332.14	8,011.52	84.26	87.74	90.00	4,516.25	1,580.35	1,109.79	941.41	168.38	6.591		
12,200.00	8,002.90	12,382.14	8,011.43	85.15	88.59	90.00	4,566.25	1,580.36	1,109.79	939.63	170.16	6.522		
12,250.00	8,002.71	12,432.14	8,011.33	86.04	89.45	90.00	4,616.25	1,580.36	1,109.79	937.85	171.94	6.455		
12,300.00	8,002.52	12,482.14	8,011.24	86.93	90.30	90.00	4,666.25	1,580.36	1,109.78	936.07	173.72	6.388		
12,350.00	8,002.32	12,532.14	8,011.14	87.82	91.16	90.00	4,716.25	1,580.37	1,109.78	934.28	175.50	6.323		
12,400.00	8,002.13	12,582.14	8,011.05	88.72	92.02	90.00	4,766.25	1,580.37	1,109.78	932.49	177.28	6.260		
12,450.00	8,001.94	12,632.14	8,010.95	89.61	92.88	90.00	4,816.25	1,580.37	1,109.78	930.71	179.07	6.198		
12,500.00	8,001.74	12,682.14	8,010.85	90.50	93.74	90.00	4,866.25	1,580.37	1,109.77	928.92	180.85	6.136		
12,550.00	8,001.55	12,732.14	8,010.76	91.39	94.60	90.00	4,916.25	1,580.38	1,109.77	927.13	182.64	6.076		
12,600.00	8,001.35	12,782.14	8,010.66	92.29	95.46	90.00	4,966.25	1,580.38	1,109.77	925.34	184.42	6.017		
12,650.00	8,001.16	12,832.14	8,010.57	93.18	96.32	90.00	5,016.24	1,580.38	1,109.76	923.55	186.21	5.960		
12,700.00	8,000.97	12,882.14	8,010.47	94.08	97.19	90.00	5,066.24	1,580.39	1,109.76	921.76	188.00	5.903		
12,750.00	8,000.77	12,932.14	8,010.38	94.97	98.05	90.00	5,116.24	1,580.39	1,109.76	919.97	189.79	5.847		
12,800.00	8,000.58	12,982.14	8,010.28	95.86	98.92	90.00	5,166.24	1,580.39	1,109.75	918.18	191.58	5.793		
12,850.00	8,000.39	13,032.14	8,010.19	96.76	99.78	90.00	5,216.24	1,580.39	1,109.75	916.38	193.37	5.739		
12,900.00	8,000.19	13,082.14	8,010.09	97.66	100.65	90.00	5,266.24	1,580.40	1,109.75	914.59	195.16	5.686		

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 Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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#1.033114	Offset TVD Reference:	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference: Offset Semi Major Axis Distance														
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
12,938.82	8,000.04	13,120.96	8,010.02	98.35	101.33	90.00	5,305.06	1,580.40	1,109.75	913.20	196.55	5.646		
12,949.91	8,000.00	13,130.49	8,010.00	98.55	101.49	90.08	5,314.60	1,580.40	1,109.75	912.83	196.92	5.636 SF		

Company:	Legend Natural Gas JV, LP	Local Co-ordinate Reference:	Well Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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 033114	Offset TVD Reference:	Reference Datum

Reference Depths are relative to WELL @ 3061.00usft (TBD)

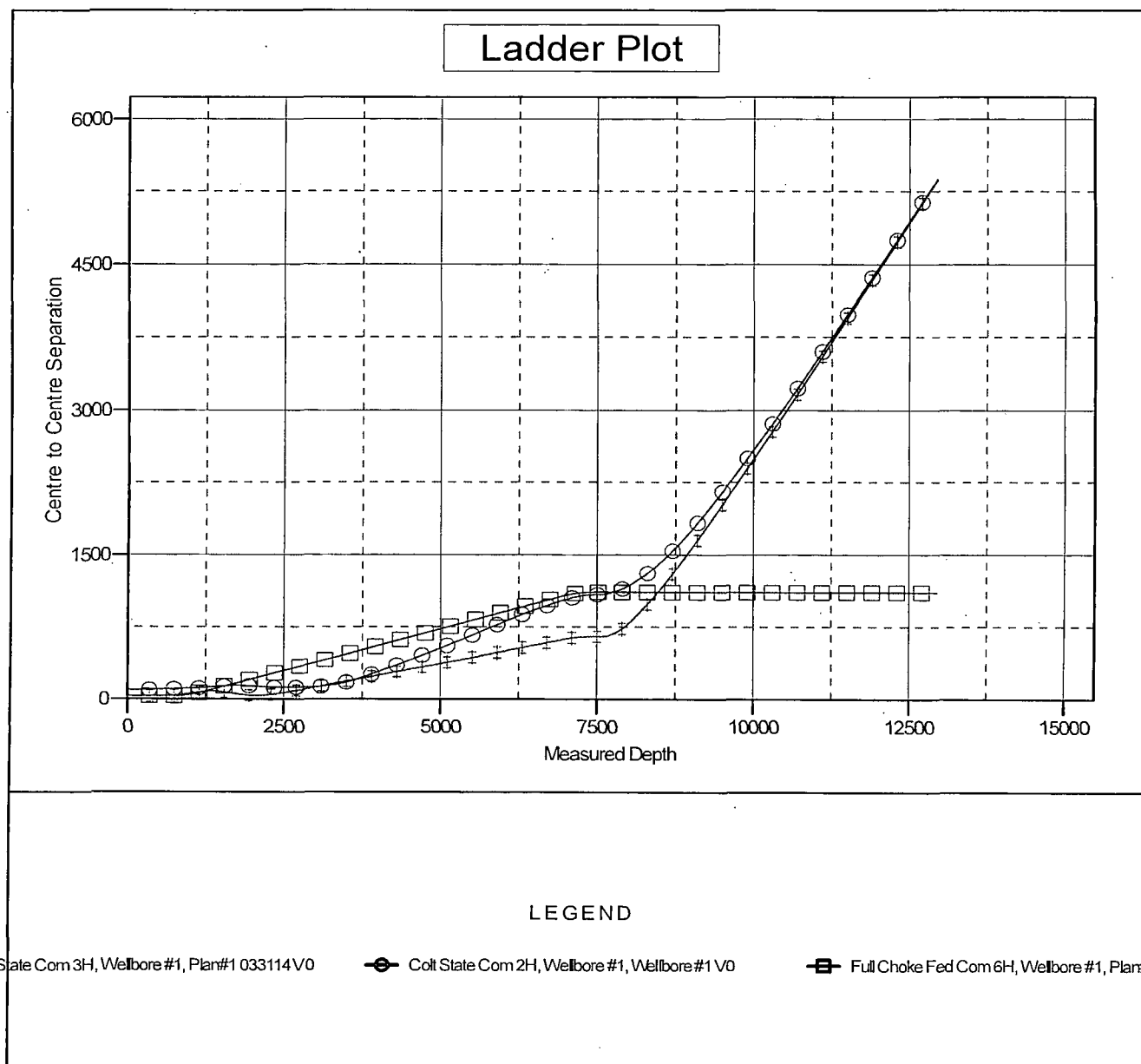
Offset Depths are relative to Offset Datum

Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: Full Choke Fed Com 5H

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 Full Choke Fed Com 5H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3061.00usft (TBD)
Reference Site:	Sec 5 T25S R 28E	MD Reference:	WELL @ 3061.00usft (TBD)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Full Choke Fed Com 5H	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#1.033114	Offset TVD Reference:	Reference Datum

Reference Depths are relative to WELL @ 3061.00usft (TBD)

Offset Depths are relative to Offset Datum

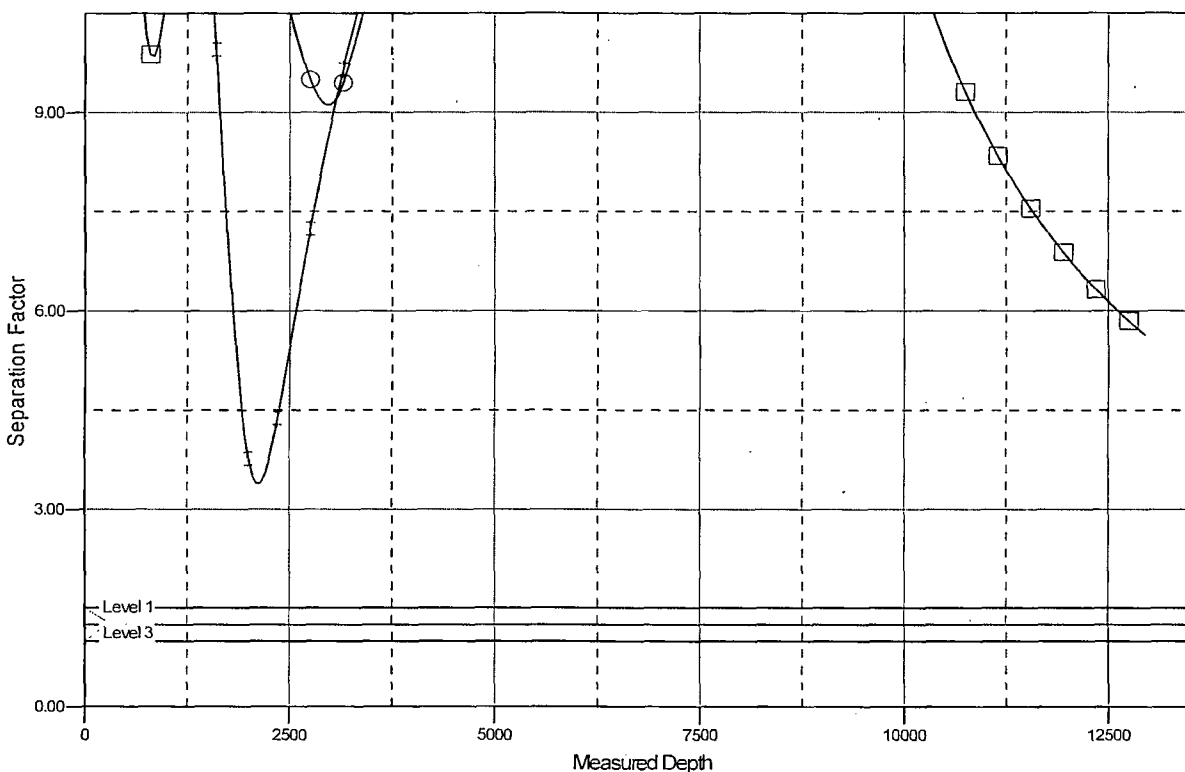
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: Full Choke Fed Com 5H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.12°

Separation Factor Plot



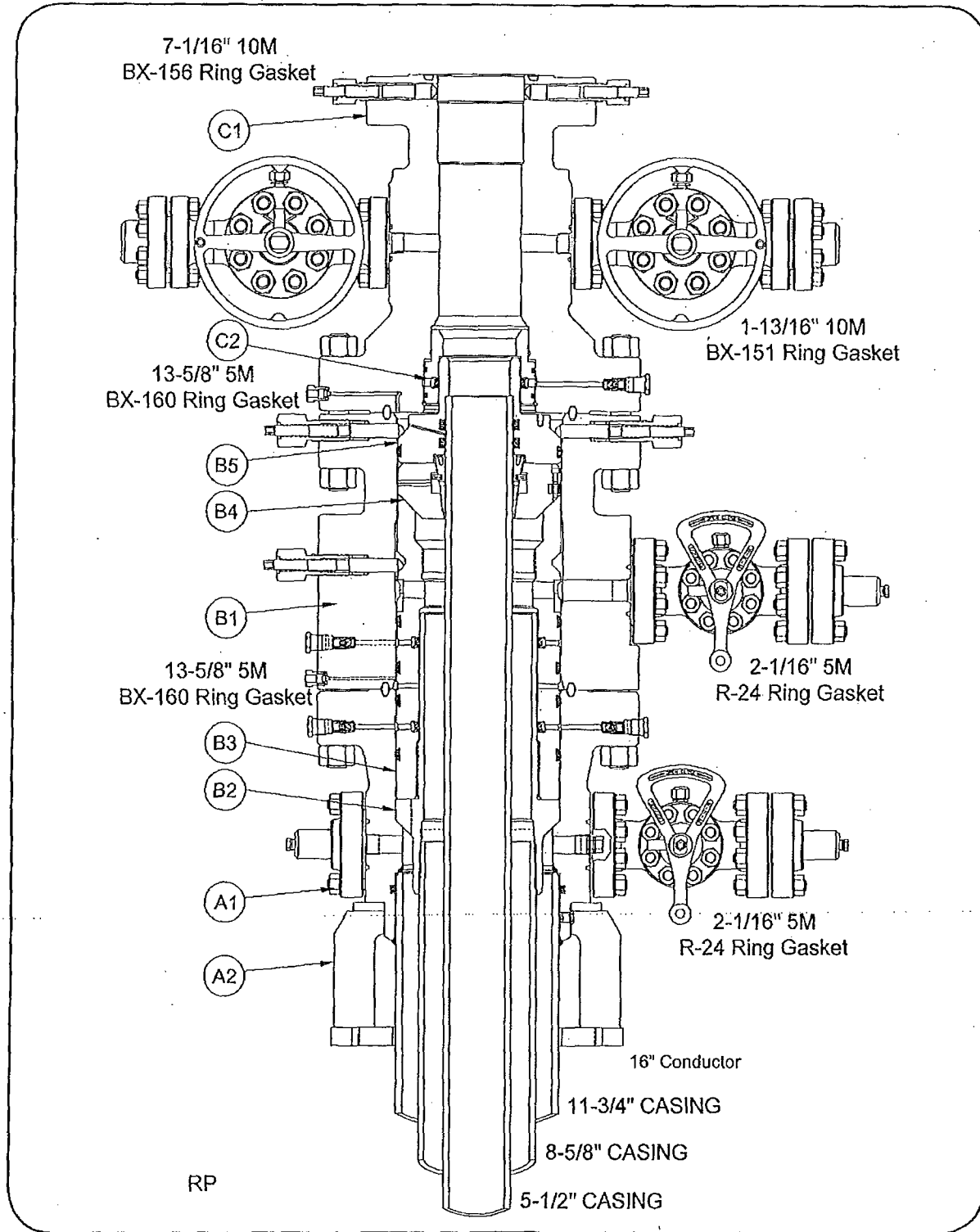
LEGEND

State Com 3H, Wellbore #1, Plan#1.033114 V0

Colt State Com 2H, Wellbore #1, Wellbore #1 V0

Full Choke Fed Com 6H, Wellbore #1, Plan#1.033114 V0

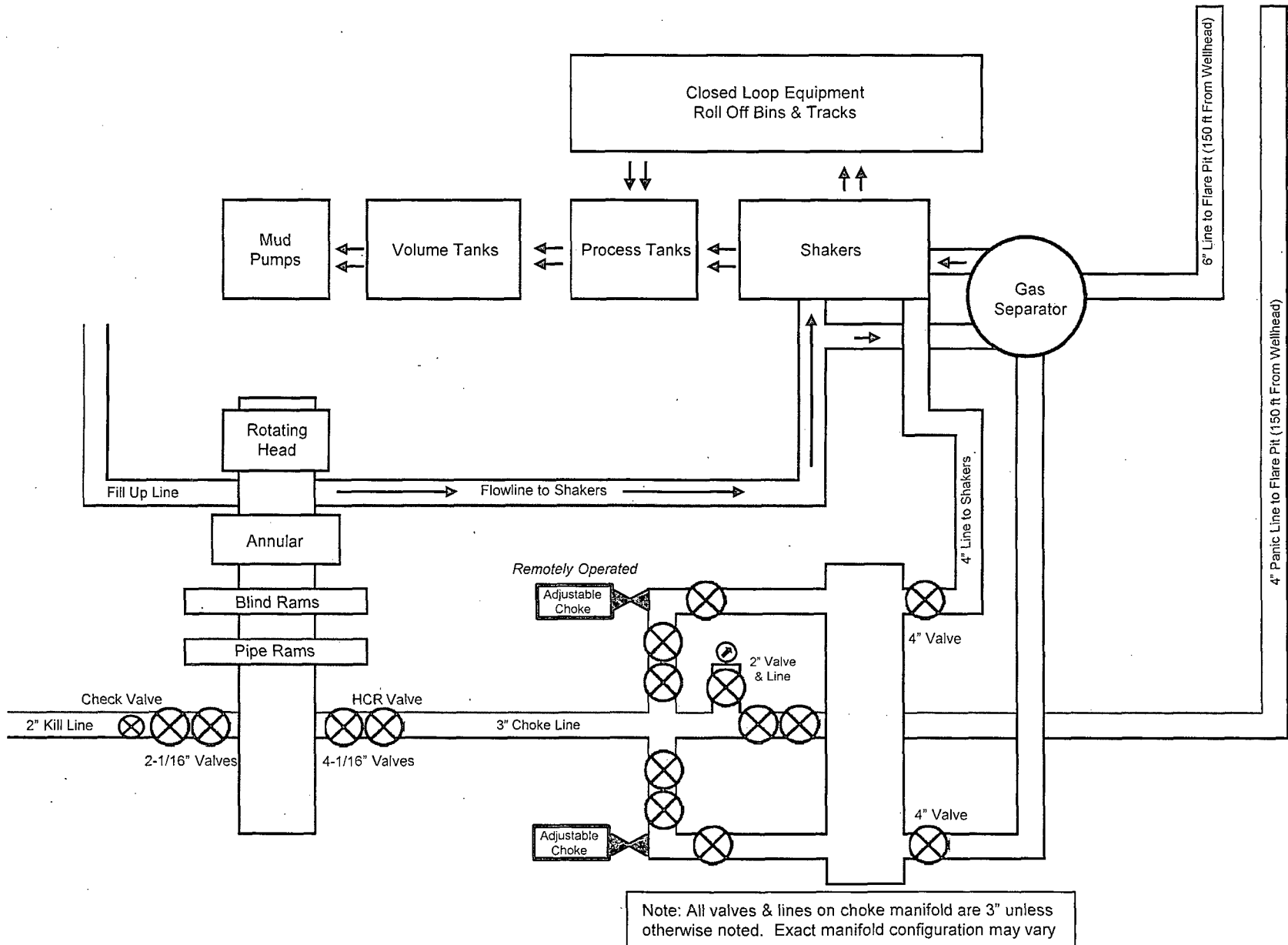
System Drawing



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



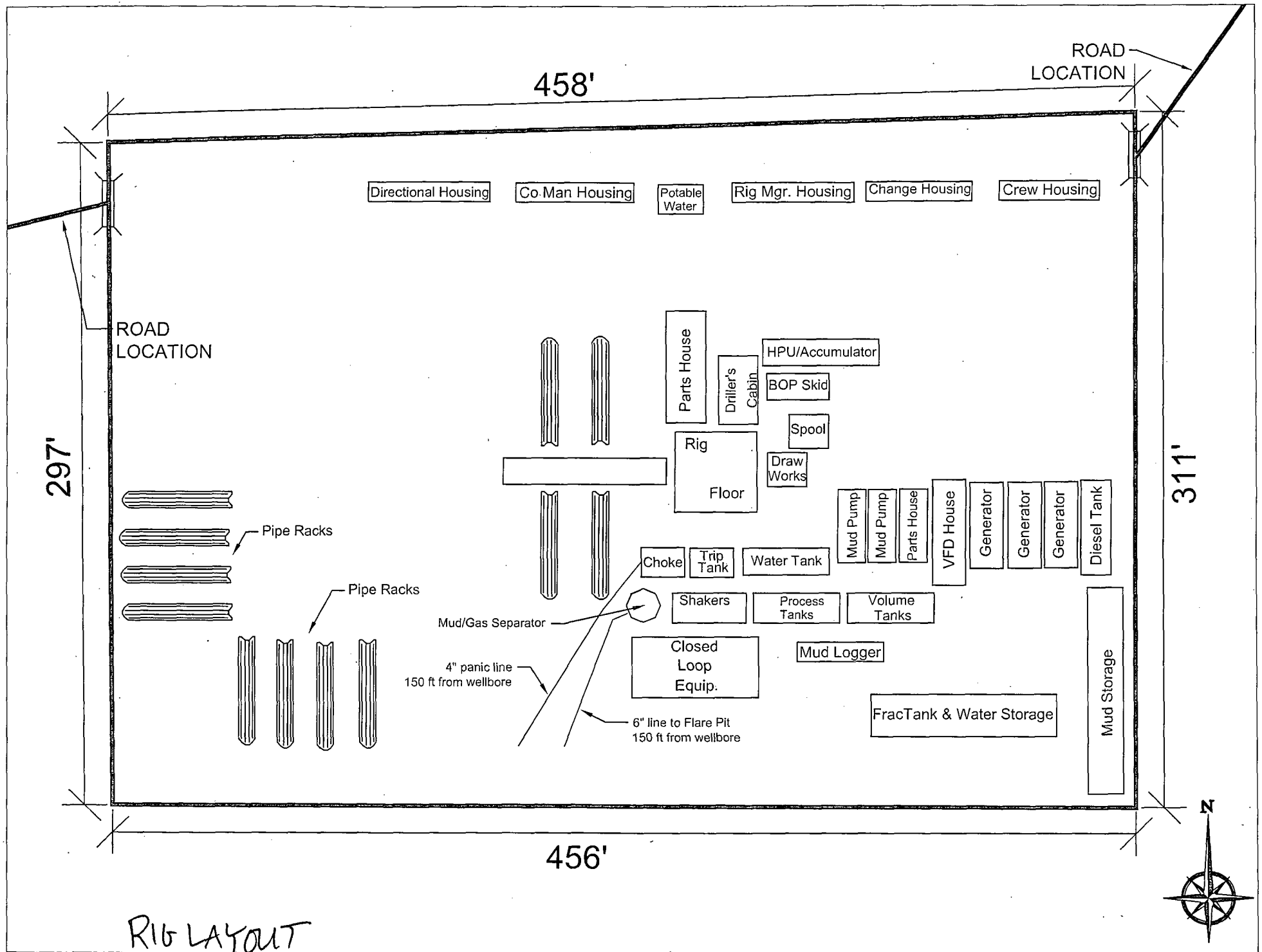
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



Notes Regarding Blowout Preventors

Legend Natural Gas, III LP Full Choke Federal Com 5H

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

**Full Choke Federal Com 5H
SHL: 290 FNL & 1030 FWL
BHL: 330 FNL & 1510 FWL
SHL: Section 5, T-24S, R-28E
BHL: Section 32, 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:

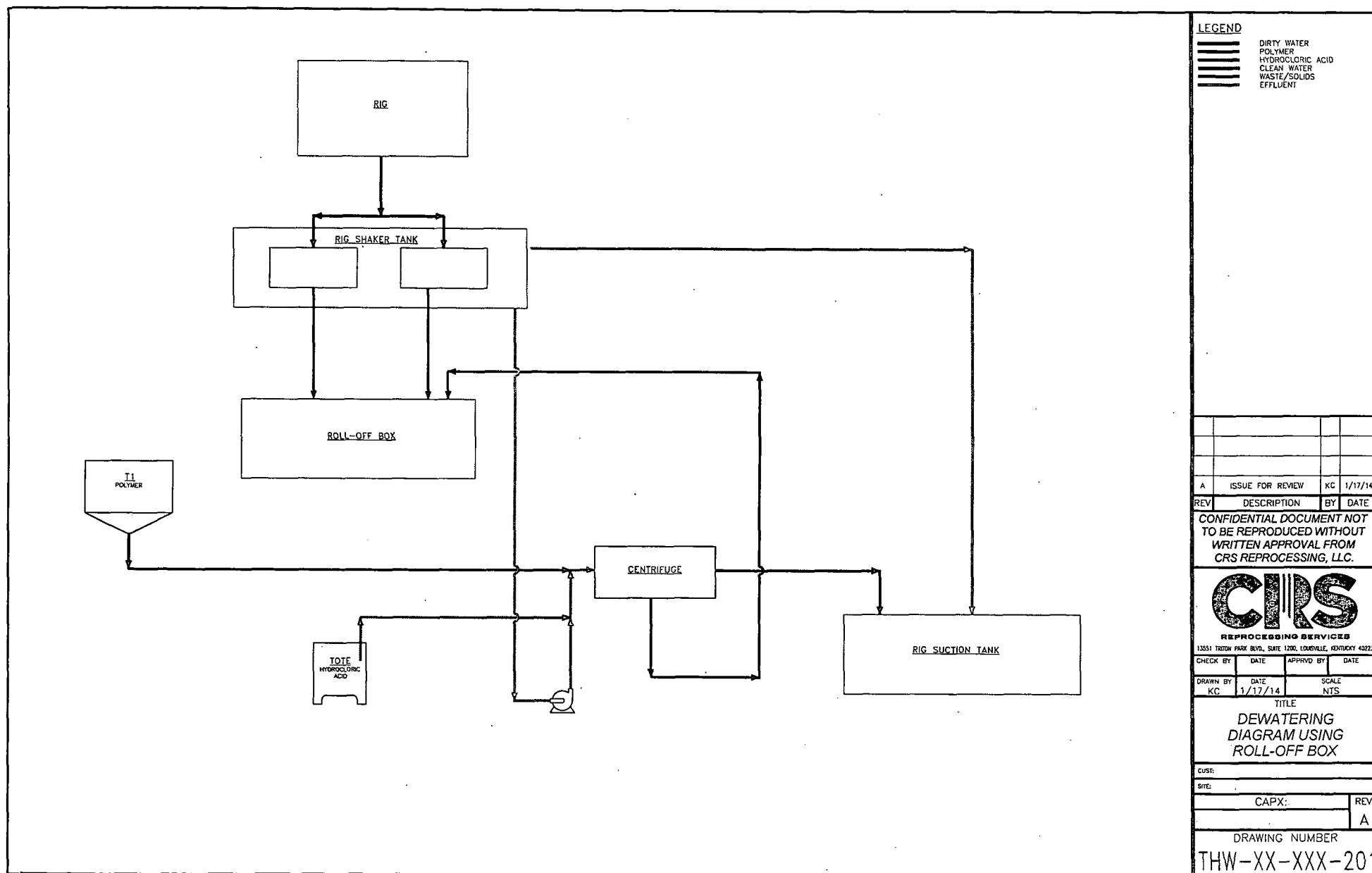
- 2- Shale Shakers
- 1- 5500 Centrifuge
- 3-Roll Off Bins w/ Tracks
- 1-Rig steel pits (1,000 bbl capacity)
- 2-500 bbl Frac Tanks

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
 HYDROCHLORIC ACID
 CLEAN WATER
 WASTE/SOLIDS
 EFFLUENT

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

CONFIDENTIAL DOCUMENT NOT
 TO BE REPRODUCED WITHOUT
 WRITTEN APPROVAL FROM
 CRS REPROCESSING, LLC.



CHECK BY	DATE	APPROV BY	DATE
KC	1/17/14		

TITLE
 DEWATERING
 DIAGRAM USING
 ROLL-OFF BOX

CUST:	
SITE:	
CAPX:	REV A
DRAWING NUMBER	
THW-XX-XXX-201	

Legend Natural Gas III, LP

777 Main Street

Suite 900

Fort Worth, TX 76102

Legal's:

FULL CHOKE FEDERAL COM WELL 5H

Eddy County NM

Lat 32.165718°N

Long 104.114898°W

H₂S

"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 any 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 (SO₂). 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 SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air = 1	10ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	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 H₂S 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 H₂S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H₂S 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. H₂S detection and monitoring equipment:

- A. Portable H₂S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H₂S levels of 20 PPM are reached. These units are usually capable of detecting SO₂, 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. Blowout 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 H₂S 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
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Company Drilling Consultants:

Name:	Number:
Name:	Number:

EHS Coordinator 24hr. Emergency Contact

Name:	Jody Fontenot	jfontenot@LNG2.com	Number:	(940)-210-0430
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Drilling Manager

Name:	David Dunn	ddunn@LNG2.com	Number:	(817)944-1023
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Drilling Superintendent

Name:	Scott Zacharie	szacharie@LNG2.com	Number:	(214)906-8365
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Drilling Company

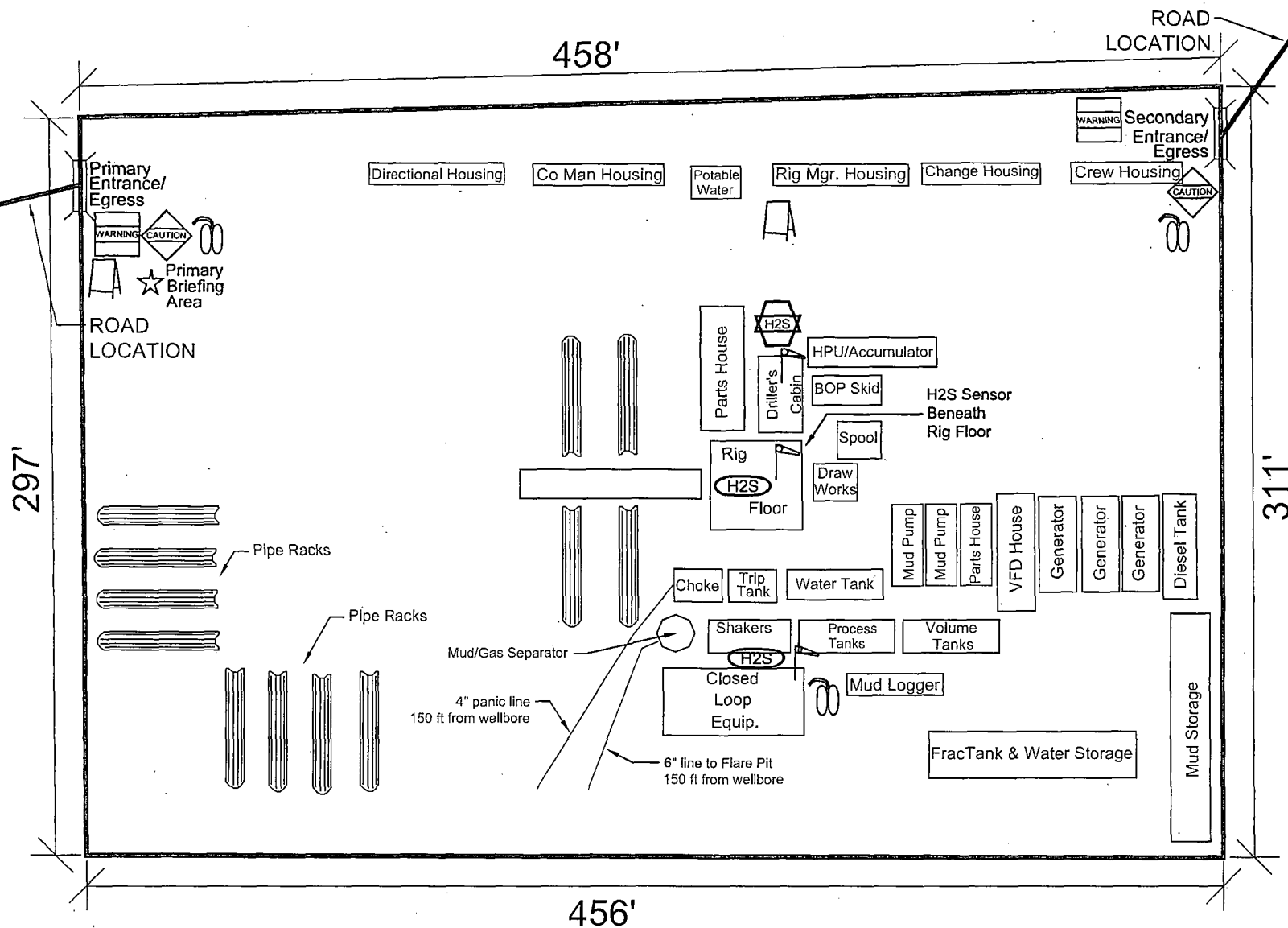
Name:	Number:
Name:	Number:

Tool Pusher:

Name:	Number:
Name:	Number:

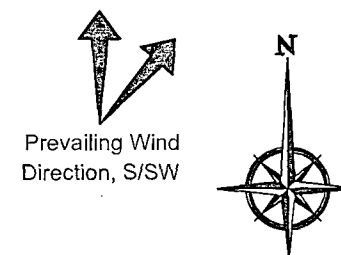
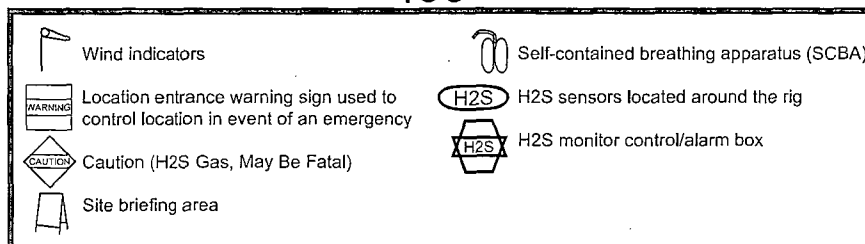
Safety Consultants

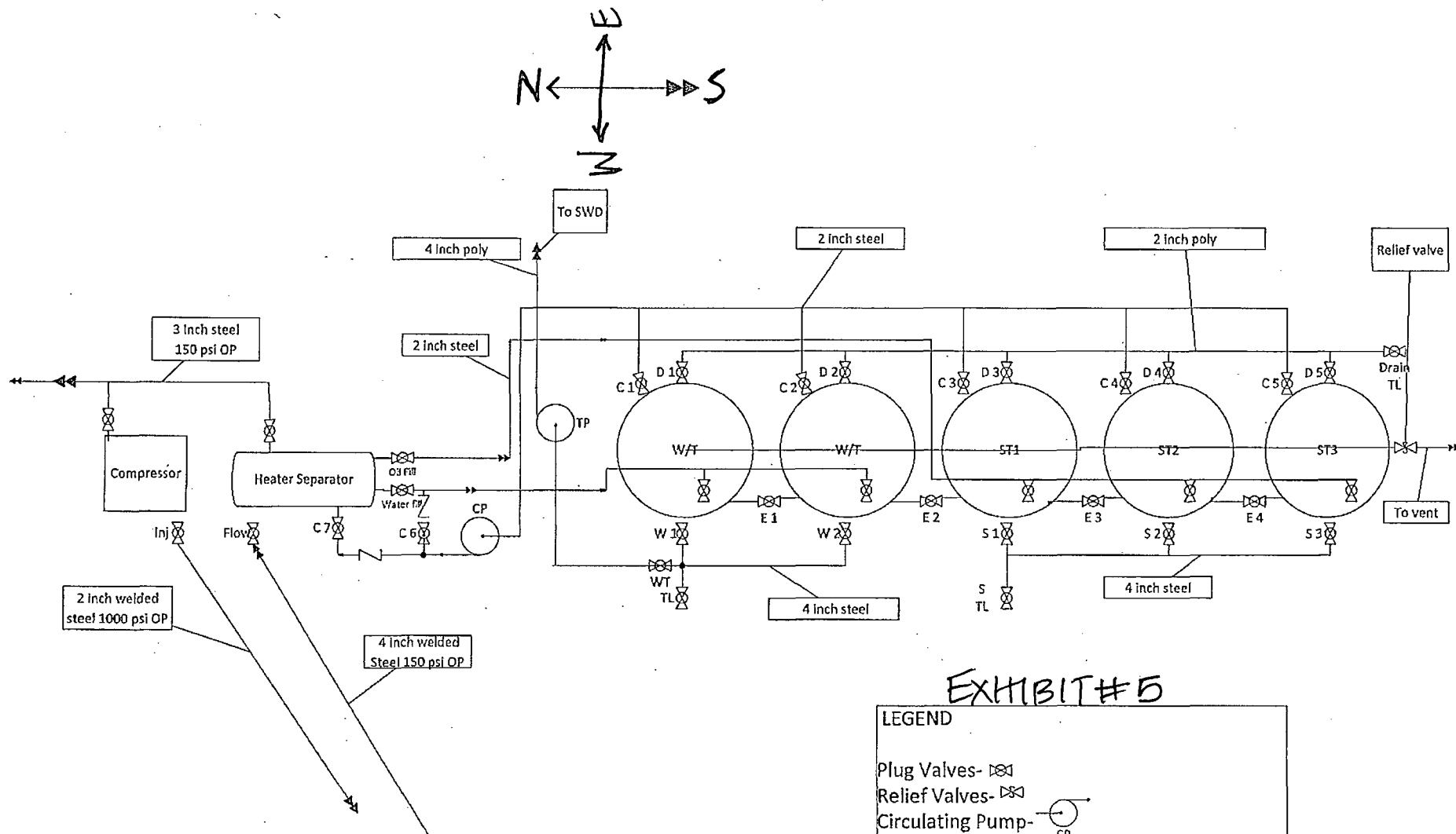
Cliff Strasner	Cell	(432) 894-9789
Craig Strasner	Cell	(432) 894-0341



LEGEND NATURAL GAS Rig Location Layout Safety Equipment Location

Location Dimensions:
~457 ft x ~304 ft





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

Full Choke Federal Com 5H
SHL: 290 FNL & 1030 FWL
BHL: 330 FNL & 1510 FWL
SHL: Section 5, T-25S, R-28E
BHL: Section 32, 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 and CO. RD. 720 (Black River) Turn West and go approximately 2.7 miles; turn left at CO. RD. 774 (Road Runner) and go Southwest approximately 3.5 miles; turn left and go east approximately 1.15 miles; turn right at intersection and go south approximately 0.45 miles; road veers left and goes Southeast approximately 0.3 miles; turn right at "T" and go east approximately 900 feet; turn right and go south approximately 300 feet; turn left and go east approximately 600 feet to the west side of the Colt State Com 3H well pad. The Full Choke Federal Com 5H well is 30 feet east of the existing Colt State Com 3H well.

2. Planned Access Road:

Legend Natural Gas III, LP will be using existing caliche road to access the Full Choke Federal Com 5H well. Width of the road is 14' wide with a crown design. The maximum width 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 #3)

Wells within a mile radius of proposed surface-hole location include:

- Eagle 4 State 1
- Scared Hawk State Com 1
- Eagle 4 State Com 2H
- Nermal 4 State 1H
- Pooky 4 State 1H
- Kayro 4 State Com 1H
- Odie 4 State 1H
- Winchester 5 State 1
- Colt State 1
- Colt State Com 2H
- Black Lake 5 OB State Com 1H
- Black Lake 5 PA State Com 1H
- Colt State SWD 4
- Colt State Com 3H (Legend; Proposed)
- Oxy Full Recovery 1
- Full Recovery 1C
- Salt Draw 28 Federal 1
- Mossberg Federal 1
- Mossberg Federal 1Y
- Pardue Farms 29 SWD 1
- Second Chance Federal Com 1
- EKG Fee 1
- Pardue Farms 29 2
- EKG Fee 2
- Pardue Farms 29 3
- Second Chance Federal Com 2L
- EKG SWD 1 (Legend, Proposed)
- Pardue 29 Federal Com 4H (Legend, Proposed)
- Pardue 29 Federal Com 5H (Legend, Proposed)
- Pardue 29 Federal Com 6H (Legend, Proposed)
- Pardue 29 Federal Com 7H (Legend, Proposed)
- Pardue 29 Federal Com 8H (Legend, Proposed)
- Goodnight Federal 1
- Goodnight Federal 2
- Dakota 30 Federal 1
- Buckshot State Com 1
- Ruger 31 State 1E
- Buckshot State Com 2H

- Buckshot State Com 3H
- Buckshot State Com 4H (Legend, Proposed)
- Buckshot State Com 5H (Legend, Proposed)
- Buckshot State Com 6H (Legend, Proposed)
- Full Choke Com 1
- Horseshoe Lake State Com 1I
- Full Choke Com 2H
- Full Choke Com 3H
- Full Choke Federal Com 4H (Legend, Proposed)
- Full Choke Federal Com 5H (Legend, Proposed)
- Full Choke Federal Com 6H (Legend, Proposed)
- Lakeview Federal Com 1
- Really Scary Federal 1
- Really Scary Federal Com 3H
- Spanky Federal Com 1
- Really Scary Federal 2E
- Really Scary Federal 5H
- Really Scary Federal Com 2H
- Really Scary Federal 4H
- Really Scary Federal Com 6H (COG, Proposed)
- Red Bluff State 1
- Punch State Com 1C
- Gurkha BKG State Com 1
- Stogey BLG State Com 1H

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#4 & #5**)
- b. Full Choke Federal Com 5H pad will consist of a 150' 3" sales line tying into the 3" steel Crestwood Midstream, LP pipeline on the NE corner of the pad; and 1-4" poly waterline on surface with an operating PSI of 120 or less.
- 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 will be conducted with BLM representative, Indra Dahal on **April 24, 2014** on an existing pad location for NM State well, Colt State Com 2H.

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 owner is the New Mexico State Land Office, 310 Old Santa Fe Trail, Santa Fe, NM 87501. A Business Lease for the use of the surface has been applied for with the State Land Office. A copy of the Multi-Point Surface Use and Operations Plan has been mailed to New Mexico State Land Office.

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. This pad location is designated for existing state well Colt State Com 2H and proposed well, Full Choke Federal Com 5H and proposed well, Full Choke Federal Com 6H.
- d. This well is 183' to the Quarter/Quarter line and will require a NSL application to be filed with the New Mexico OCD in Santa Fe.

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



15021 Katy Freeway
Suite 200
Houston, TX 77094
(281) 644-5900
Fax: (281) 644-5901

777 Main Street
Suite 900
Fort Worth, TX 76102
(817) 872-7800
Fax: (817) 872-7898

April 3, 2014
Bureau of Land Management
Carlsbad Field Office
620 E. Green St.
Carlsbad, NM 88220

Re: Legend Natural Gas III, LP
Fort-Worth Office

Attached is the APD packet for the Full Choke Federal Com 5H well for Legend Natural Gas III, LP, located in Section 5; T 25S, R 28E and Section 32; T 24s, R 28E, Eddy County, New Mexico. This well is located on an existing pad which has been designated for state well, Colt State Com 2H. Onsite Inspection will be completed on April 24, 2014. Surface agreement is in place with the New Mexico State Land Office and notification has been sent to them.

Contents in the packet include:

- Form 3160-3
- Verification of notification to the surface owner
- C-102
- Exhibits
- Drilling and Operations Plan
- Directional Plan
- BOP & Choke Manifold Schematics
- Closed Loop Schematic
- Rig Layout
- Multi-Bowl Wellhead Schematic
- H2S Contingency Plan
- Multi-Point Surface Use plan
- Operator Certification

If you have any questions, or if you need any more information please contact me at 817-872-7822 or jelrod@lng2.com

Sincerely,

Jennifer Mosley Elrod
Sr. Regulatory Compliance Analyst
Legend Natural Gas
Office: (817)872-7822
Fax: (817)872-7898

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Legend Natural Gass, III L.P.
LEASE NO.:	NMNM-102909
WELL NAME & NO.:	Full Choke Federal Com 5H
SURFACE HOLE FOOTAGE:	0290' FNL & 1030' FWL
BOTTOM HOLE FOOTAGE	0330' FNL & 1510' FWL Sec. 32, T. 24 S., R 28 E.
LOCATION:	Section 05, T. 25 S., R 28 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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Cave/Karst
 - Communitization Agreement
- ☐ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
 - Cement Requirments
 - Medium Cave/Karst
 - Logging Requirements
 - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
 - Well Structures & Facilities
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

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 entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

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, situate valves 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 valves, 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

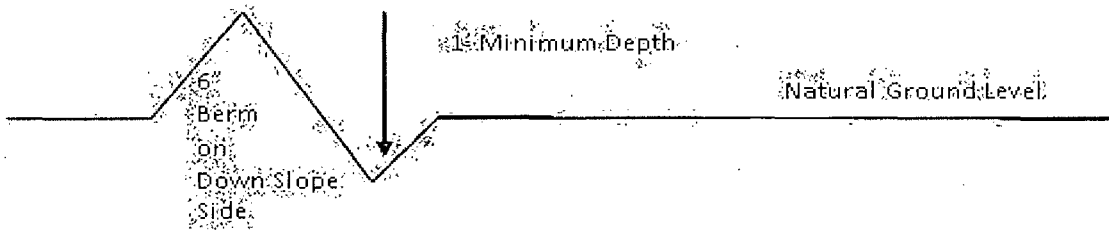
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out sloping 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:

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

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.

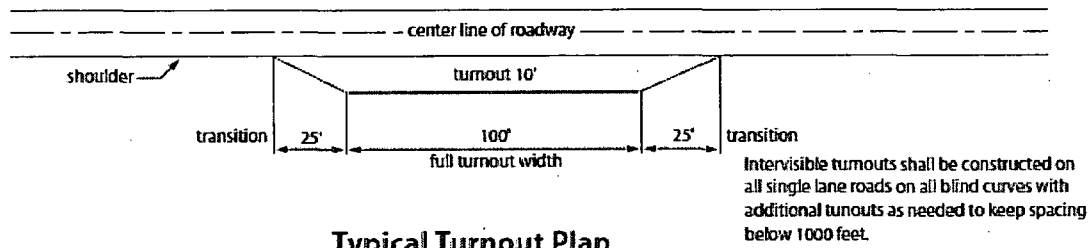
Public Access

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

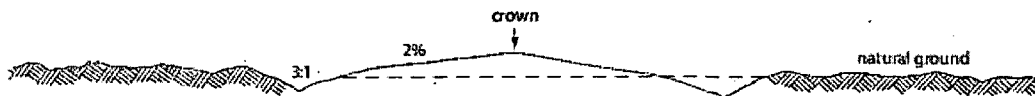
Construction Steps

1. Salvage topsoil
2. Construct road

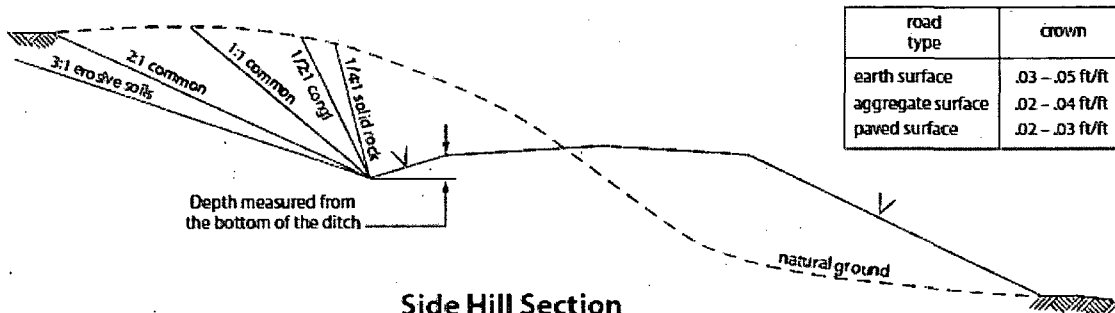
3. Redistribute topsoil
4. Revegetate slopes



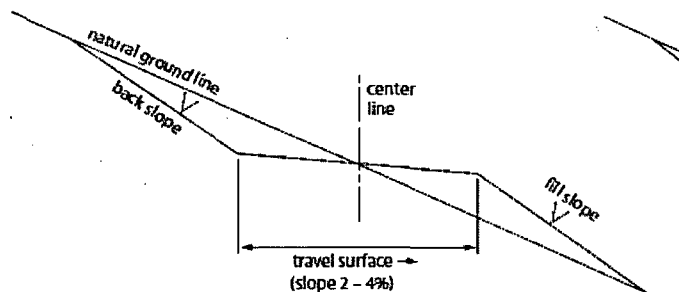
Typical Turnout Plan



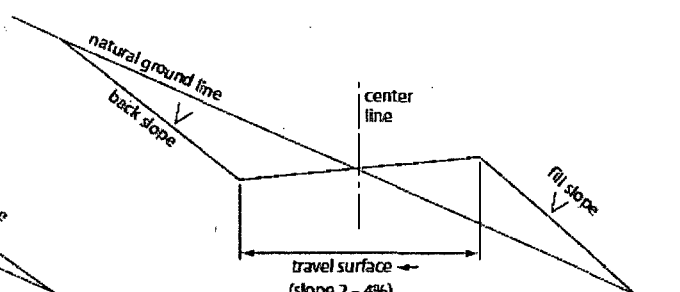
Level Ground Section



Side Hill Section



Typical Outsloped Section



Typical Insloped Section

Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. 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. Operator has stated that they will have monitoring equipment in place prior to drilling out of the surface shoe. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**
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 or are Non-API. 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.

Medium Cave/Karst

Possibility of water flows in the Salado and Castile.

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

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, which shall be set at approximately **2450** feet (in the basal anhydrite of the Castile formation or the Lamar Limestone), 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).**
 - b. **The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.**
 - c. **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.**
 - d. **The results of the test shall be reported to the appropriate BLM office.**

- e. 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.**
- f. 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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VIII. 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).

IX. 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:

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

*Pounds of pure live seed:

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