Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM014847

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

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

8. Lease Name and Well No.
PRINCE FEDERAL 19B
002H

2. Name of Operator
LONGFELLOW ENERGY LP

9. API Well No.
30 015 48308

3a. Address
, ,

3b. Phone No. *(include area code)*

10. Field and Pool, or Exploratory
EMPIRE/GLORIETA YESO

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SENE / 2344 FNL / 1303 FEL / LAT 32.8221284 / LONG -104.1256693
At proposed prod. zone SENE / 2278 FNL / 20 FEL / LAT 32.8210492 / LONG -104.1056745

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 24/T17S/R28E/NMP

14. Distance in miles and direction from nearest town or post office*
8 miles

12. County or Parish
EDDY

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
307 feet

16. No of acres in lease

17. Spacing Unit dedicated to this well
147.28

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

19. Proposed Depth
4600 feet / 9774 feet

20. BLM/BIA Bond No. in file
FED:

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3693 feet

22. Approximate date work will start*
12/01/2020

23. Estimated duration
60 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

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 requested by the BLM.

25. Signature
(Electronic Submission)

Name *(Printed/Typed)*
BRIAN WOOD / Ph: (672) 590-9933

Date
10/22/2020

Title
President

Approved by *(Signature)*
(Electronic Submission)

Name *(Printed/Typed)*
Cody Layton / Ph: (575) 234-5959

Date
05/05/2021

Title
Assistant Field Manager Lands & Minerals

Office
Carlsbad Field Office

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

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.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 05/05/2021

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Approval Date: 05/05/2021

Additional Operator Remarks

Location of Well

0. SHL: SENE / 2344 FNL / 1303 FEL / TWSP: 17S / RANGE: 28E / SECTION: 24 / LAT: 32.8221284 / LONG: -104.1256693 (TVD: 0 feet, MD: 0 feet)

PPP: NESE / 2575 FSL / 468 FEL / TWSP: 17S / RANGE: 28E / SECTION: 24 / LAT: 32.8211399 / LONG: -104.1229517 (TVD: 4086 feet, MD: 4198 feet)

BHL: SENE / 2278 FNL / 20 FEL / TWSP: 17S / RANGE: 29E / SECTION: 19 / LAT: 32.8210492 / LONG: -104.1056745 (TVD: 4600 feet, MD: 9774 feet)

BLM Point of Contact

Name: Deborah Ham

Title: Legal Landlaw Examiner

Phone: (575) 234-5965

Email: dham@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015- 48308	96210	EMPIRE; GLORIETA-YESO

[4] Property Code	[5] Property Name	[6] Well Number
330799	PRINCE FEDERAL 19B	002H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372210	LONGFELLOW ENERGY, LP	3692.7

[10] Surface Location

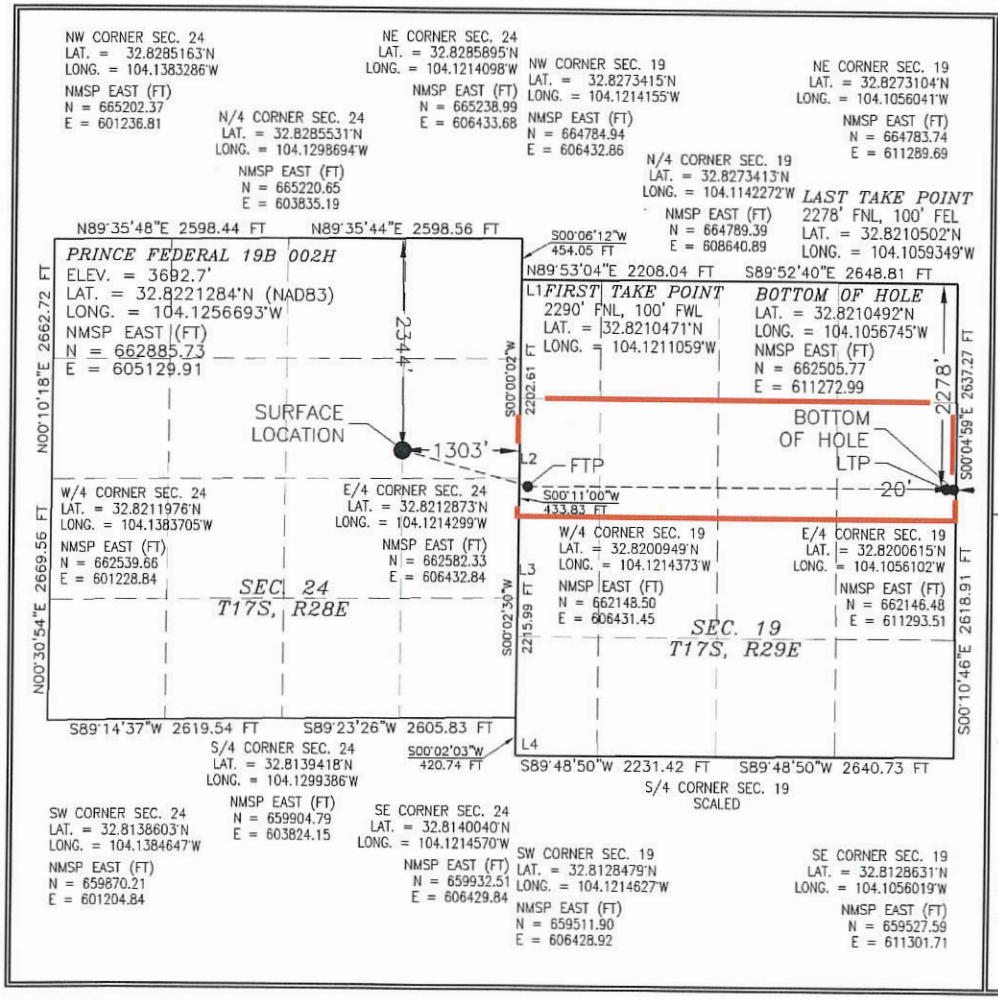
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	24	17 S	28 E		2344	NORTH	1303	EAST	EDDY

[11] 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
H	19	17 S	29 E		2278	NORTH	20	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
147.28			

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.



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

10-15-20

Signature Date

BRIAN WOOD

Printed Name

brian@permitswest.com

E-mail Address

505 466-8120

[18] 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.

SEPTEMBER 3, 2020

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: FIDEL MON F. JARAMILLO 12797 NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR NO. 8436

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original to Appropriate District Office

GAS CAPTURE PLAN

Date: 10-15-20
X Original
□ Amended - Reason for Amendment:

Operator & OGRID No.: Longfellow Energy, LP (372210)

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name & Number	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flare or Vent	Comments
Prince Federal 19B 001H	30-015-	G-24-17s-28e	2319' FNL & 1303' FEL	225	<30 days	flare until well clean, then connect
Prince Federal 19B 002H	30-015-	G-24-17s-28e	2344' FNL & 1303' FEL	225	<30 days	flare until well clean, then connect

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is not yet dedicated, but will be connected to a 3rd party gathering system located in Eddy County, New Mexico. Gas will most likely be piped ≈2640' north to Longfellow's AID State 2 (O-13-17s-28e) which is connected with DCP Operating Company, LP (36785). Operator will provide (periodically) to Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Operator and Gas Transporter have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at an unknown Processing Plant located in Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

AFMSS
U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report
05/06/2021

APD ID: 10400063513
Submission Date: 10/22/2020
Operator Name: LONGFELLOW ENERGY LP
Well Name: PRINCE FEDERAL 19B
Well Number: 002H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
913155	QUATERNARY	3693	0	0	OTHER : Caliche	USEABLE WATER	N
913156	TOP SALT	3218	475	475	SALT	NONE	N
913157	BOTTOM SALT	3043	650	651	SALT	NONE	N
913158	YATES	2933	760	765	DOLOMITE	NATURAL GAS, OIL	N
913159	QUEEN	2133	1560	1590	SANDSTONE	NATURAL GAS, OIL	N
913160	SAN ANDRES	1436	2257	2310	DOLOMITE	NATURAL GAS, OIL	N
913161	GLORIETA	22	3671	3770	DOLOMITE	NATURAL GAS, OIL	N
913162	YESO	-41	3734	3835	DOLOMITE, OTHER : Paddock	NATURAL GAS, OIL	N
913212	YESO	-393	4086	4198	DOLOMITE, OTHER : Blinebry	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M
Rating Depth: 5000

Equipment: A 3000-psi BOP stack (rated to 5000) consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD.
Requesting Variance? YES

Variance request: Variance is requested to use a flex-hose. Test certificate for a typical hose is attached, Certificate for the hose in use will be available on the rig before drilling starts.
Testing Procedure: BOP/BOPE will be tested by an independent service company to 250-psi low and 3000-psi high per Onshore Order 2 requirements. The system may be upgraded to a higher pressure, but still tested as described above. If the system is upgraded, then all the installed components will be functional and tested. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOPE will include a speed head, Kelly cock and floor safety valve (inside BOP), and choke lines and choke manifold. BOP and choke diagrams are attached.
Choke Diagram Attachment:

Prince19B_2H_Choke_20201015131407.pdf

Operator Name: LONGFELLOW ENERGY LP

Well Name: PRINCE FEDERAL 19B **Well Number:** 002H

Prince19B_2H_Choke_20201015131407.pdf

BOP Diagram Attachment:

Prince19B_2H_BOP_20201015131411.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	12.25	9.625	NEW	API	N	0	1250	0	1230	3693	2463	1250	J-55	36	LT&C	1.125	1.125	DRY	1.8	DRY	1.8
2	PRODUCTION	8.75	7.0	NEW	API	N	0	4150	0	4038	3717	-345	4150	L-80	32	BUTT	1.125	1.125	DRY	1.8	DRY	1.8
3	PRODUCTION	8.75	5.5	NEW	API	Y	4150	9774	4038	4600	-345	-907	5624	L-80	20	BUTT	1.125	1.125	DRY	1.8	DRY	1.8

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Prince19B_2H_Casing_Design_Assumptions_20201015131236.pdf

Operator Name: LONGFELLOW ENERGY LP

Well Name: PRINCE FEDERAL 19B **Well Number:** 002H

Casing Attachments

Casing ID: 2 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Prince19B_2H_Casing_Design_Assumptions_20201015131325.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Prince19B_2H_Casing_Design_Assumptions_20201015131258.pdf

Casing Design Assumptions and Worksheet(s):

Prince19B_2H_Casing_Design_Assumptions_20201015131306.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1250	400	1.65	12.8	660	100	35/65 Poz C	None
SURFACE	Tail		0	1250	164	1.34	14.8	219	100	Class C	None
PRODUCTION	Lead		1050	4150	290	1.65	12.6	478	50	35/65 Poz C	None
PRODUCTION	Tail		4150	9774	1610	1.33	14.8	2141	50	Class C	None

Operator Name: LONGFELLOW ENERGY LP

Well Name: PRINCE FEDERAL 19B **Well Number:** 002H

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well.

Describe the mud monitoring system utilized: An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1250	OTHER : Fresh water gel	8.4	9						1	
1250	4150	OTHER : Fresh water/cut brine	8.3	9.2							
4150	9774	OTHER : Cut brine	8.6	9.2							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.

No electric logs are planned at this time.

List of open and cased hole logs run in the well:

MUD LOG/GEOLOGICAL LITHOLOGY LOG,

Coring operation description for the well:

No core or drill stem test is planned.

Operator Name: LONGFELLOW ENERGY LP

Well Name: PRINCE FEDERAL 19B **Well Number:** 002H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1991 **Anticipated Surface Pressure:** 979

Anticipated Bottom Hole Temperature(F): 110

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Prince19B_2H_H2S_Plan_20201015131559.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Prince19B_2H_Horizontal_Plan_20201015131612.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Prince19B_2H_Drill_Plan_20201015131618.pdf
CoFlex_Certs_20201015131624.pdf
Prince19B_2H_Speedhead_Specs_20201015131630.pdf

Other Variance attachment:

LONGFELLOW ENERGY, LP

Longfellow Energy

Prince-Federal 19B-002H
Eddy Co NM
Northing: 662885.73
Easting: 605129.91
Plan 1

Scientific Drilling

Azimuths to Grid North
True North: -0.11°
Magnetic North: 7.02°

Magnetic Field
Strength: 47854.5nT
Dip Angle: 60.47°
Date: 9/25/2020
Model: HDGM_FILE

WELL DETAILS Prince-Federal 19B-002H
3693.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	662885.73	605129.91	32.822128	-104.125669

PROJECT DETAILS: Eddy Co NM

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	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	
779.84	14.40	113.38	774.81	-23.80	55.04	3.00	113.38	56.40	
4301.58	14.40	113.38	4185.98	-371.26	858.68	0.00	0.00	879.96	
4693.43	60.00	89.87	4491.03	-391.33	1085.96	12.00	-28.18	1108.05	
4783.43	60.00	89.87	4536.03	-391.15	1163.90	0.00	0.00	1185.83	
5033.43	90.00	89.87	4600.00	-390.60	1402.64	12.00	0.00	1424.07	FTP PF 19B-002H
9693.89	90.00	89.87	4600.00	-379.78	6063.09	0.00	0.00	6074.97	LTP PF 19B-002H
9773.91	90.00	89.87	4600.00	-379.59	6143.10	0.00	0.00	6154.82	BH PF 19B-002H

SITE DETAILS: Sec 24/19-17S-29E

SH of Prince-Fed 19A-001H
Site Center: 999 FNL 1280 FEL Sec 24

Site Centre Northing: 664230.89
Easting: 605153.34

Positional Uncertainity: 0.00
Convergence: 0.11
Local North: Grid

DESIGN TARGET DETAILS

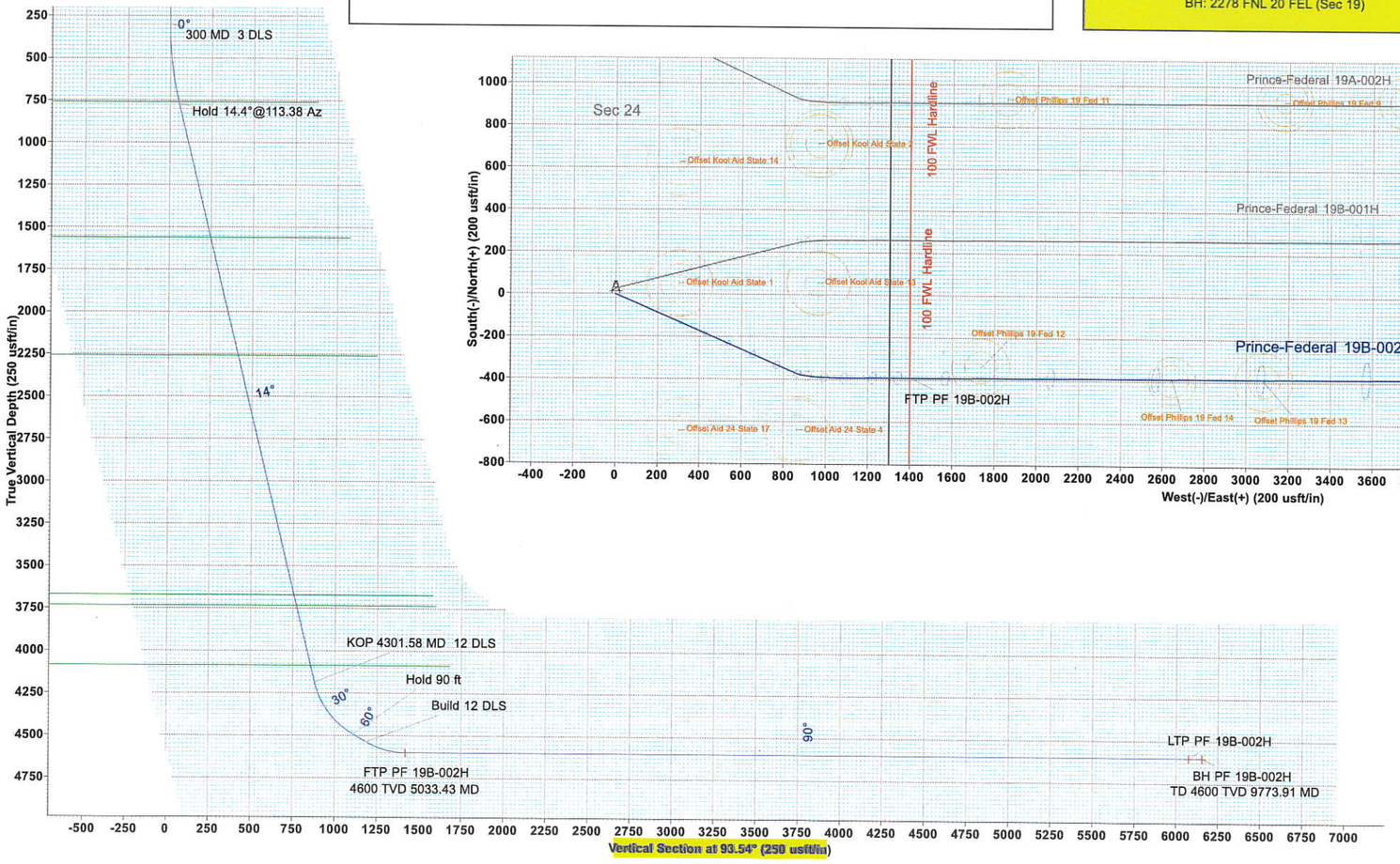
Name	TVD	+N/-S	+E/-W	Northing	Easting
FTP PF 19B-002H	4600.00	-390.60	1402.64	662495.13	606532.55
LTP PF 19B-002H	4600.00	-379.78	6063.09	662505.95	611193.00
BH PF 19B-002H	4600.00	-379.96	6143.08	662505.77	611272.99

WELLBORE DETAILS: OH Wellbore

Section24/19-17S-28E/29E

SHL: 2344 FNL 1303 FEL (Sec24)
BH: 2278 FNL 20 FEL (Sec 19)

3693 GL + 12 KB @ 3705.00usft
Gr: 3693.00



LONGFELLOW ENERGY, LP

Scientific Drilling, Intl
Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Prince-Federal 19B-002H
Company:	Longfellow Energy	**TVD Reference:**	3693 GL + 12 KB @ 3705.00usft
Project:	Eddy Co NM	**MD Reference:**	3693 GL + 12 KB @ 3705.00usft
Site:	Sec 24/19-17S-29E	**North Reference:**	Grid
Well:	Prince-Federal 19B-002H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH Wellbore		
Design:	Plan 1		

Project	Eddy Co NM, Eddy County, New Mexico		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 24/19-17S-29E, SH of Prince-Fed 19A-001H				
Site Position:		**Northing:**	664,230.89 usft	**Latitude:**	32.825826
From:	Map	**Easting:**	605,153.34 usft	**Longitude:**	-104.125585
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.11 °

Well	Prince-Federal 19B-002H, Yeso, Blinberry				
Well Position	**+N/-S** -1,345.16 usft	**Northing:**	662,885.73 usft	**Latitude:**	32.822128
	+E/-W -23.43 usft	**Easting:**	605,129.91 usft	**Longitude:**	-104.125670
Position Uncertainty	0.00 usft	**Wellhead Elevation:**	3,705.00 usft	**Ground Level:**	3,693.00 usft

Wellbore	OH Wellbore			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM_FILE	9/25/2020	7.13	60.47	47,854.50000000

Design	Plan 1				
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	93.54	

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
779.84	14.40	113.38	774.81	-23.80	55.04	3.00	3.00	0.00	113.38	
4,301.58	14.40	113.38	4,185.98	-371.26	858.68	0.00	0.00	0.00	0.00	
4,693.43	60.00	89.87	4,491.03	-391.33	1,085.96	12.00	11.64	-6.00	-28.18	
4,783.43	60.00	89.87	4,536.03	-391.15	1,163.90	0.00	0.00	0.00	0.00	
5,033.43	90.00	89.87	4,600.00	-390.60	1,402.64	12.00	12.00	0.00	0.00	FTP PF 19B-002H
9,693.89	90.00	89.87	4,600.00	-379.78	6,063.09	0.00	0.00	0.00	0.00	LTP PF 19B-002H
9,773.91	90.00	89.87	4,600.00	-379.59	6,143.10	0.00	0.00	0.00	0.00	BH PF 19B-002H

LONGFELLOW ENERGY, LP

Scientific Drilling, Intl

Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Prince-Federal 19B-002H
Company:	Longfellow Energy	**TVD Reference:**	3693 GL + 12 KB @ 3705.00usft
Project:	Eddy Co NM	**MD Reference:**	3693 GL + 12 KB @ 3705.00usft
Site:	Sec 24/19-17S-29E	**North Reference:**	Grid
Well:	Prince-Federal 19B-002H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH Wellbore		
Design:	Plan 1		

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
300 MD 3 DLS									
400.00	3.00	113.38	399.95	-1.04	2.40	2.46	3.00	3.00	0.00
500.00	6.00	113.38	499.63	-4.15	9.60	9.84	3.00	3.00	0.00
600.00	9.00	113.38	598.77	-9.33	21.58	22.12	3.00	3.00	0.00
700.00	12.00	113.38	697.08	-16.56	38.31	39.26	3.00	3.00	0.00
764.57	13.94	113.38	760.00	-22.31	51.61	52.89	3.00	3.00	0.00
Yates									
779.84	14.40	113.38	774.81	-23.80	55.04	56.40	3.00	3.00	0.00
Hold 14.4°@113.38 Az									
800.00	14.40	113.38	794.33	-25.79	59.64	61.12	0.00	0.00	0.00
900.00	14.40	113.38	891.20	-35.65	82.46	84.50	0.00	0.00	0.00
1,000.00	14.40	113.38	988.06	-45.52	105.28	107.89	0.00	0.00	0.00
1,100.00	14.40	113.38	1,084.92	-55.38	128.10	131.27	0.00	0.00	0.00
1,200.00	14.40	113.38	1,181.78	-65.25	150.92	154.66	0.00	0.00	0.00
1,300.00	14.40	113.38	1,278.64	-75.12	173.74	178.04	0.00	0.00	0.00
1,400.00	14.40	113.38	1,375.50	-84.98	196.55	201.43	0.00	0.00	0.00
1,500.00	14.40	113.38	1,472.36	-94.85	219.37	224.81	0.00	0.00	0.00
1,590.48	14.40	113.38	1,560.00	-103.78	240.02	245.97	0.00	0.00	0.00
Queen									
1,600.00	14.40	113.38	1,569.22	-104.71	242.19	248.20	0.00	0.00	0.00
1,700.00	14.40	113.38	1,666.08	-114.58	265.01	271.58	0.00	0.00	0.00
1,800.00	14.40	113.38	1,762.94	-124.45	287.83	294.97	0.00	0.00	0.00
1,900.00	14.40	113.38	1,859.80	-134.31	310.65	318.35	0.00	0.00	0.00
2,000.00	14.40	113.38	1,956.66	-144.18	333.47	341.74	0.00	0.00	0.00
2,100.00	14.40	113.38	2,053.52	-154.04	356.29	365.12	0.00	0.00	0.00
2,200.00	14.40	113.38	2,150.38	-163.91	379.11	388.51	0.00	0.00	0.00
2,300.00	14.40	113.38	2,247.24	-173.78	401.93	411.89	0.00	0.00	0.00
2,310.08	14.40	113.38	2,257.00	-174.77	404.23	414.25	0.00	0.00	0.00
San Andres									
2,400.00	14.40	113.38	2,344.10	-183.64	424.75	435.27	0.00	0.00	0.00
2,500.00	14.40	113.38	2,440.96	-193.51	447.57	458.66	0.00	0.00	0.00
2,600.00	14.40	113.38	2,537.82	-203.38	470.39	482.04	0.00	0.00	0.00
2,700.00	14.40	113.38	2,634.68	-213.24	493.21	505.43	0.00	0.00	0.00
2,800.00	14.40	113.38	2,731.54	-223.11	516.03	528.81	0.00	0.00	0.00
2,900.00	14.40	113.38	2,828.40	-232.97	538.84	552.20	0.00	0.00	0.00
3,000.00	14.40	113.38	2,925.26	-242.84	561.66	575.58	0.00	0.00	0.00
3,100.00	14.40	113.38	3,022.12	-252.71	584.48	598.97	0.00	0.00	0.00
3,200.00	14.40	113.38	3,118.98	-262.57	607.30	622.35	0.00	0.00	0.00
3,300.00	14.40	113.38	3,215.84	-272.44	630.12	645.74	0.00	0.00	0.00
3,400.00	14.40	113.38	3,312.71	-282.30	652.94	669.12	0.00	0.00	0.00
3,500.00	14.40	113.38	3,409.57	-292.17	675.76	692.51	0.00	0.00	0.00
3,600.00	14.40	113.38	3,506.43	-302.04	698.58	715.89	0.00	0.00	0.00
3,700.00	14.40	113.38	3,603.29	-311.90	721.40	739.28	0.00	0.00	0.00
3,769.91	14.40	113.38	3,671.00	-318.80	737.35	755.63	0.00	0.00	0.00
Glorietta									
3,800.00	14.40	113.38	3,700.15	-321.77	744.22	762.66	0.00	0.00	0.00
3,834.95	14.40	113.38	3,734.00	-325.22	752.19	770.84	0.00	0.00	0.00
Paddock									
3,900.00	14.40	113.38	3,797.01	-331.63	767.04	786.05	0.00	0.00	0.00

LONGFELLOW ENERGY, LP

Scientific Drilling, Intl

Planning Report

Database:	Midland	Local Co-ordinate Reference:	Well Prince-Federal 19B-002H
Company:	Longfellow Energy	TVD Reference:	3693 GL + 12 KB @ 3705.00usft
Project:	Eddy Co NM	MD Reference:	3693 GL + 12 KB @ 3705.00usft
Site:	Sec 24/19-17S-29E	North Reference:	Grid
Well:	Prince-Federal 19B-002H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH Wellbore		
Design:	Plan 1		

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)
4,000.00	14.40	113.38	3,893.87	-341.50	789.86	809.43	0.00	0.00	0.00
4,100.00	14.40	113.38	3,990.73	-351.37	812.68	832.82	0.00	0.00	0.00
4,198.36	14.40	113.38	4,086.00	-361.07	835.12	855.82	0.00	0.00	0.00
Blinberry									
4,200.00	14.40	113.38	4,087.59	-361.23	835.50	856.20	0.00	0.00	0.00
4,300.00	14.40	113.38	4,184.45	-371.10	858.32	879.59	0.00	0.00	0.00
4,301.58	14.40	113.38	4,185.98	-371.26	858.68	879.96	0.00	0.00	0.00
KOP 4301.58 MD 12 DLS									
4,400.00	25.41	100.36	4,278.42	-379.94	890.79	912.55	12.00	11.19	-13.23
4,500.00	37.09	94.95	4,363.78	-386.43	942.13	964.18	12.00	11.68	-5.41
4,600.00	48.91	91.87	4,436.80	-390.27	1,010.08	1,032.24	12.00	11.82	-3.08
4,693.43	60.00	89.87	4,491.03	-391.33	1,085.96	1,108.05	12.00	11.87	-2.15
Hold 90 ft									
4,700.00	60.00	89.87	4,494.32	-391.32	1,091.65	1,113.73	0.00	0.00	0.00
4,783.43	60.00	89.87	4,536.03	-391.15	1,163.90	1,185.83	0.00	0.00	0.00
Build 12 DLS									
4,800.00	61.99	89.87	4,544.07	-391.12	1,178.40	1,200.29	12.00	12.00	0.00
4,900.00	73.99	89.87	4,581.48	-390.90	1,270.94	1,292.64	12.00	12.00	0.00
5,000.00	85.99	89.87	4,598.83	-390.67	1,369.23	1,390.74	12.00	12.00	0.00
5,033.43	90.00	89.87	4,600.00	-390.60	1,402.64	1,424.07	12.00	12.00	0.00
4600 TVD 5033.43 MD - FTP PF 19B-002H									
5,100.00	90.00	89.87	4,600.00	-390.44	1,469.21	1,490.51	0.00	0.00	0.00
5,200.00	90.00	89.87	4,600.00	-390.21	1,569.21	1,590.30	0.00	0.00	0.00
5,300.00	90.00	89.87	4,600.00	-389.98	1,669.21	1,690.10	0.00	0.00	0.00
5,400.00	90.00	89.87	4,600.00	-389.75	1,769.21	1,789.89	0.00	0.00	0.00
5,500.00	90.00	89.87	4,600.00	-389.51	1,869.21	1,889.69	0.00	0.00	0.00
5,600.00	90.00	89.87	4,600.00	-389.28	1,969.20	1,989.48	0.00	0.00	0.00
5,700.00	90.00	89.87	4,600.00	-389.05	2,069.20	2,089.28	0.00	0.00	0.00
5,800.00	90.00	89.87	4,600.00	-388.82	2,169.20	2,189.07	0.00	0.00	0.00
5,900.00	90.00	89.87	4,600.00	-388.58	2,269.20	2,288.86	0.00	0.00	0.00
6,000.00	90.00	89.87	4,600.00	-388.35	2,369.20	2,388.66	0.00	0.00	0.00
6,100.00	90.00	89.87	4,600.00	-388.12	2,469.20	2,488.45	0.00	0.00	0.00
6,200.00	90.00	89.87	4,600.00	-387.89	2,569.20	2,588.25	0.00	0.00	0.00
6,300.00	90.00	89.87	4,600.00	-387.66	2,669.20	2,688.04	0.00	0.00	0.00
6,400.00	90.00	89.87	4,600.00	-387.42	2,769.20	2,787.84	0.00	0.00	0.00
6,500.00	90.00	89.87	4,600.00	-387.19	2,869.20	2,887.63	0.00	0.00	0.00
6,600.00	90.00	89.87	4,600.00	-386.96	2,969.20	2,987.43	0.00	0.00	0.00
6,700.00	90.00	89.87	4,600.00	-386.73	3,069.20	3,087.22	0.00	0.00	0.00
6,800.00	90.00	89.87	4,600.00	-386.50	3,169.20	3,187.02	0.00	0.00	0.00
6,900.00	90.00	89.87	4,600.00	-386.26	3,269.20	3,286.81	0.00	0.00	0.00
7,000.00	90.00	89.87	4,600.00	-386.03	3,369.20	3,386.61	0.00	0.00	0.00
7,100.00	90.00	89.87	4,600.00	-385.80	3,469.20	3,486.40	0.00	0.00	0.00
7,200.00	90.00	89.87	4,600.00	-385.57	3,569.20	3,586.20	0.00	0.00	0.00
7,300.00	90.00	89.87	4,600.00	-385.34	3,669.20	3,685.99	0.00	0.00	0.00
7,400.00	90.00	89.87	4,600.00	-385.10	3,769.20	3,785.78	0.00	0.00	0.00
7,500.00	90.00	89.87	4,600.00	-384.87	3,869.20	3,885.58	0.00	0.00	0.00
7,600.00	90.00	89.87	4,600.00	-384.64	3,969.20	3,985.37	0.00	0.00	0.00
7,700.00	90.00	89.87	4,600.00	-384.41	4,069.20	4,085.17	0.00	0.00	0.00
7,800.00	90.00	89.87	4,600.00	-384.17	4,169.20	4,184.96	0.00	0.00	0.00
7,900.00	90.00	89.87	4,600.00	-383.94	4,269.20	4,284.76	0.00	0.00	0.00
8,000.00	90.00	89.87	4,600.00	-383.71	4,369.20	4,384.55	0.00	0.00	0.00
8,100.00	90.00	89.87	4,600.00	-383.48	4,469.20	4,484.35	0.00	0.00	0.00
8,200.00	90.00	89.87	4,600.00	-383.25	4,569.20	4,584.14	0.00	0.00	0.00
8,300.00	90.00	89.87	4,600.00	-383.01	4,669.20	4,683.94	0.00	0.00	0.00

LONGFELLOW ENERGY, LP

Scientific Drilling, Intl

Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Prince-Federal 19B-002H
Company:	Longfellow Energy	**TVD Reference:**	3693 GL + 12 KB @ 3705.00usft
Project:	Eddy Co NM	**MD Reference:**	3693 GL + 12 KB @ 3705.00usft
Site:	Sec 24/19-17S-29E	**North Reference:**	Grid
Well:	Prince-Federal 19B-002H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH Wellbore		
Design:	Plan 1		

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)
8,400.00	90.00	89.87	4,600.00	-382.78	4,769.20	4,783.73	0.00	0.00	0.00
8,500.00	90.00	89.87	4,600.00	-382.55	4,869.20	4,883.53	0.00	0.00	0.00
8,600.00	90.00	89.87	4,600.00	-382.32	4,969.20	4,983.32	0.00	0.00	0.00
8,700.00	90.00	89.87	4,600.00	-382.09	5,069.20	5,083.12	0.00	0.00	0.00
8,800.00	90.00	89.87	4,600.00	-381.85	5,169.20	5,182.91	0.00	0.00	0.00
8,900.00	90.00	89.87	4,600.00	-381.62	5,269.20	5,282.70	0.00	0.00	0.00
9,000.00	90.00	89.87	4,600.00	-381.39	5,369.20	5,382.50	0.00	0.00	0.00
9,100.00	90.00	89.87	4,600.00	-381.16	5,469.20	5,482.29	0.00	0.00	0.00
9,200.00	90.00	89.87	4,600.00	-380.93	5,569.20	5,582.09	0.00	0.00	0.00
9,300.00	90.00	89.87	4,600.00	-380.69	5,669.19	5,681.88	0.00	0.00	0.00
9,400.00	90.00	89.87	4,600.00	-380.46	5,769.19	5,781.68	0.00	0.00	0.00
9,500.00	90.00	89.87	4,600.00	-380.23	5,869.19	5,881.47	0.00	0.00	0.00
9,600.00	90.00	89.87	4,600.00	-380.00	5,969.19	5,981.27	0.00	0.00	0.00
9,693.89	90.00	89.87	4,600.00	-379.78	6,063.09	6,074.97	0.00	0.00	0.00
LTP PF 19B-002H									
9,700.00	90.00	89.87	4,600.00	-379.76	6,069.19	6,081.06	0.00	0.00	0.00
9,773.89	90.00	89.87	4,600.00	-379.59	6,143.08	6,154.80	0.00	0.00	0.00
BH PF 19B-002H									
9,773.91	90.00	89.87	4,600.00	-379.59	6,143.10	6,154.82	0.00	0.00	0.00
TD 4600 TVD 9773.91 MD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP PF 19B-002H - plan hits target center - Point	0.00	0.00	4,600.00	-390.60	1,402.64	662,495.14	606,532.55	32.821047	-104.121106
LTP PF 19B-002H - plan hits target center - Point	0.00	0.00	4,600.00	-379.78	6,063.09	662,505.96	611,193.00	32.821050	-104.105935
BH PF 19B-002H - plan misses target center by 0.37usft at 9773.89usft MD (4600.00 TVD, -379.59 N, 6143.08 E) - Point	0.00	0.00	4,600.00	-379.96	6,143.08	662,505.77	611,272.99	32.821049	-104.105675

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
764.57	760.00	Yates		0.00	
1,590.48	1,560.00	Queen		0.00	
2,310.08	2,257.00	San Andres		0.00	
3,769.91	3,671.00	Glorietta		0.00	
3,834.95	3,734.00	Paddock		0.00	
4,198.36	4,086.00	Blinberry		0.00	

LONGFELLOW ENERGY, LP

Scientific Drilling, Intl
Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Prince-Federal 19B-002H
Company:	Longfellow Energy	**TVD Reference:**	3693 GL + 12 KB @ 3705.00usft
Project:	Eddy Co NM	**MD Reference:**	3693 GL + 12 KB @ 3705.00usft
Site:	Sec 24/19-17S-29E	**North Reference:**	Grid
Well:	Prince-Federal 19B-002H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH Wellbore		
Design:	Plan 1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
300.00	300.00	0.00	0.00	300 MD 3 DLS
779.84	774.81	-23.80	55.04	Hold 14.4°@113.38 Az
4,301.58	4,185.98	-371.26	858.68	KOP 4301.58 MD 12 DLS
4,693.43	4,491.03	-391.33	1,085.96	Hold 90 ft
4,783.43	4,536.03	-391.15	1,163.90	Build 12 DLS
5,033.43	4,600.00	-390.60	1,402.64	4600 TVD 5033.43 MD
9,773.91	4,600.00	-379.59	6,143.10	TD 4600 TVD 9773.91 MD

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	LONGFELLOW ENERGY LP
LEASE NO.:	NMNM014847
LOCATION:	Section 24, T.17 S., R.28 E., NMP
COUNTY:	Eddy County, New Mexico

WELL NAME & NO.:	PRINCE FEDERAL 19B 001H
SURFACE HOLE FOOTAGE:	2319'/N & 1303'/E
BOTTOM HOLE FOOTAGE	1627'/N & 20'/E

WELL NAME & NO.:	PRINCE FEDERAL 19B 002H
SURFACE HOLE FOOTAGE:	2344'/N & 1303'/E
BOTTOM HOLE FOOTAGE	2278'/N & 20'/E

COA

H2S	(•) Yes	( ) No	
Potash	(•) None	( ) Secretary	( ) R-111-P
Cave/Karst Potential	( ) Low	(•) Medium	( ) High
Cave/Karst Potential	( ) Critical		
Variance	( ) None	(•) Flex Hose	( ) Other
Wellhead	( ) Conventional	( ) Multibowl	(•) Both
Other	[ ] 4 String Area	[ ] Capitan Reef	[ ] WIPP
Other	[ ] Fluid Filled	[ ] Cement Squeeze	[ ] Pilot Hole
Special Requirements	[ ] Water Disposal	[x] COM	[ ] Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into a **Unknown** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

Casing Design:

1. The **9-5/8** inch surface casing shall be set at approximately **350** feet (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

Approval Date: 05/05/2021

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 will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

Option 1 (Single Stage):

- 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 or potash.**

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.
  Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

❖ In **Medium Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

 Approval Date: 05/05/2021

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2.

Option 1:

a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **3000 (3M)** psi.

Option 2:

1. 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 **3000 (3M)** 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. 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.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

Approval Date: 05/05/2021

GENERAL 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

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. 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.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. 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 are located, this does not include the dog house or stairway area.

3. 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.

A. CASING

1. 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.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. 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.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. 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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher 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.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    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. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    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.

5. 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. 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.

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

f. 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.

g. 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.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. 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.

NMK03082021

Approval Date: 05/05/2021

LONGFELLOW ENERGY, LP

H_2S Drilling Operations Plan

a. All personnel will be trained in H_2S working conditions as required by Onshore Order 6 before drilling out of the surface casing.

b. Two briefing areas will be established. Each will be ≥150' from the wellhead, perpendicular from one another, and easily entered and exited. See H_2S page 5 for more details.

c. H_2S Safety Equipment/Systems:

i. Well Control Equipment

- Flare line will be ≥150' from the wellhead and ignited by a pilot light.
- Beware of SO_2 created by flaring.
- Choke manifold will include a remotely operated choke.
- Mud gas separator

ii. Protective Equipment for Essential Personnel

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest – not on the belt.
- One self-contained breathing apparatus (SCBA) 30-minute rescue pack will be at each briefing area. Two 30-minute SCBA packs will be stored in the safety trailer.
- Four work/escape packs will be on the rig floor. Each pack will have a long enough hose to allow unimpaired work activity.
- Four emergency escape packs will be in the doghouse for emergency evacuation.
- Hand signals will be used when wearing protective breathing apparatus.
- Stokes litter or stretcher
- Two full OSHA compliant body harnesses
- A 100' long x 5/8" OSHA compliant rope
- One 20-pound ABC fire extinguisher

iii. H_2S Detection & Monitoring Equipment

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.

LONGFELLOW ENERGY, LP

- A stationary detector with 3 sensors will be in the doghouse.
- Sensors will be installed on the rig floor, bell nipple, and at the end of the flow line or where drilling fluids are discharged.
- Visual alarm will be triggered at 10 ppm.
- Audible alarm will be triggered at 10 ppm.
- Calibration will occur at least every 30 days. Gas sample tubes will be kept in the safety trailer.

iv. Visual Warning System

- Color-coded H_2S condition sign will be set at the entrance to the pad.
- Color-coded condition flag will be installed to indicate current H_2S conditions.
- Two wind socks will be installed that will be visible from all sides.

v. Mud Program

- A water based mud with a pH of $\geq$10 will be maintained to control corrosion, H_2S gas returns to the surface, and minimize sulfide stress cracking and embrittlement.
- Drilling mud containing H_2S gas will be degassed at an optimum location for the rig configuration.
- This gas will be piped into the flare system.
- Enough mud additives will be on location to scavenge and/or neutralize H_2S where formation pressures are unknown.

vi. Metallurgy

- All equipment that has the potential to be exposed to H_2S will be suitable for H_2S service.
- Equipment that will meet the metallurgical standards include the drill string, casing, wellhead, BOP assembly, casing head & spool, rotating head, kill lines, choke, choke manifold & lines, valves, mud-gas separators, DST tools, test units, tubing, flanges, and other related equipment (elastomer packings and seals).

vii. Communication from well site

- Cell phones and/or two-way radios will be used to communicate from the well site.

d. A remote-controlled choke, mud-gas separator, and a rotating head will be installed before drilling or testing any formation expected to contain H_2S.

LONGFELLOW ENERGY, LP

Company Personnel to be Notified

James Follis	Office: (972) 590-9905
	Mobile: (405) 306-6169

Local & County Agencies

Loco Hills Fire Department	911 or (575) 628-5450
Eddy County Sheriff (Carlsbad)	911 or (575) 887-7551
Eddy County Sheriff sub-office (Artesia)	911 or (575) 746-9888
Eddy County Emergency Management (Carlsbad)	(575) 887-9511
Artesia General Hospital	(575) 748-3333
Eddy County North Road Department (Artesia)	(575) 746-9540

State Agencies

NM State Police (Artesia)	(575) 748-9718
NM Oil Conservation (Artesia)	(575) 748-1283
NM Oil Conservation (Santa Fe)	(505) 476-3440
NM Dept. of Transportation (Roswell)	(575) 637-7201

Federal Agencies

BLM Carlsbad Field Office	(575) 234-5972
National Response Center	(800) 424-8802
US EPA Region 6 (Dallas)	(800) 887-6063
	(214) 665-6444

Residents within 2 miles (none)

LONGFELLOW ENERGY, LP

Air Evacuation

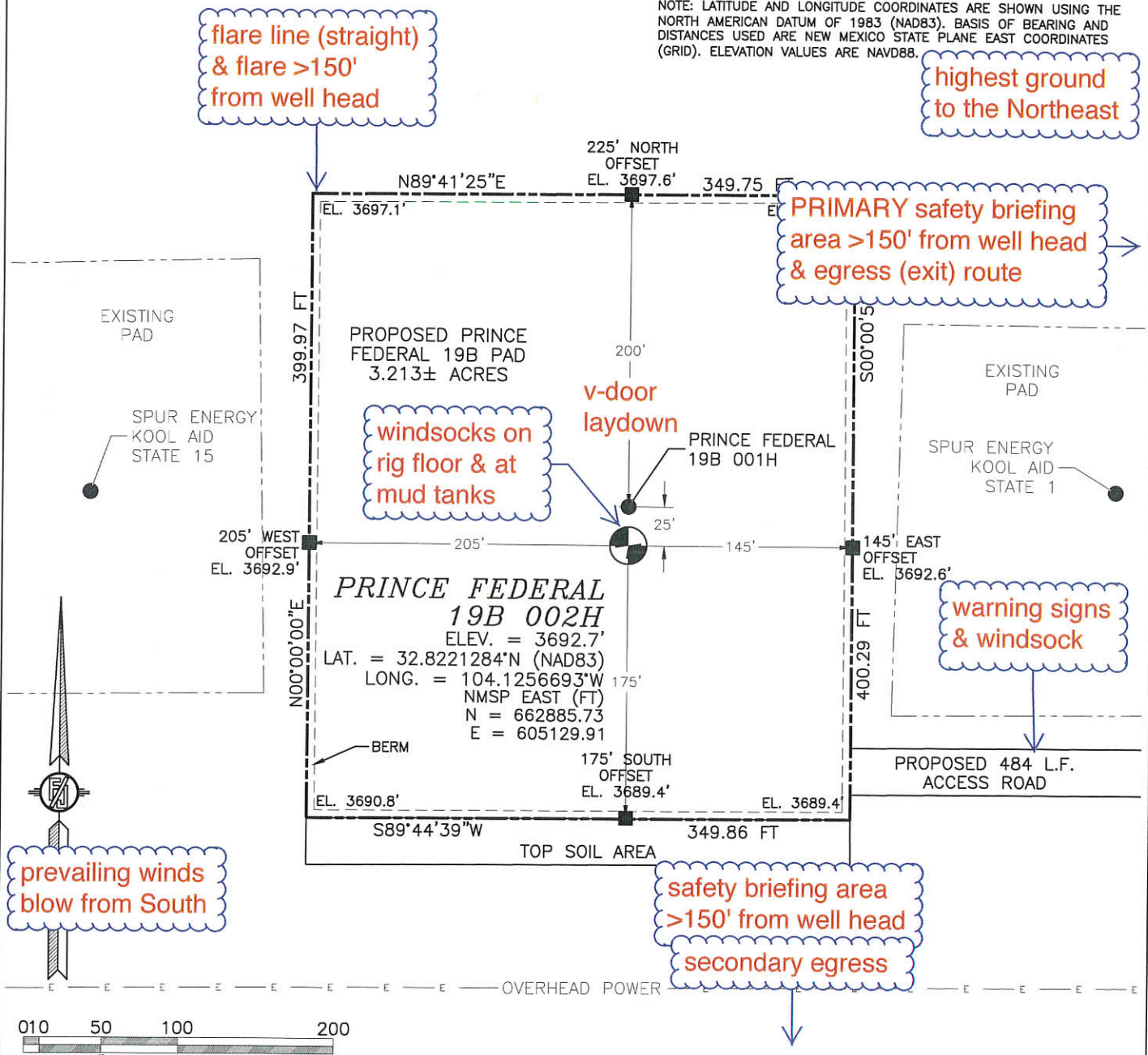
Med Flight Air Ambulance (Albuquerque)	(800) 842-4431
Lifeguard (Albuquerque)	(888) 866-7256

Veterinarian

Artesia Animal Clinic	(575) 748=2042

SECTION 24, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES (GRID). ELEVATION VALUES ARE NAVD88.



010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF HWY 360 & HWY 82, GO EAST ON HWY 82 APPROX. 3.1 MILES TO A LEASE ROAD ON LEFT (NORTH), TURN LEFT (NORTH) ON LEASE ROAD GO NORTH 0.3 MILES, ROAD TURNS RIGHT (NORTHEAST) GO NORTHEAST APPROX. 0.31 MILES, ROAD TURNS LEFT (NORTHWEST) GO NORTHWEST APPROX. 0.81 MILES, TURN LEFT (SOUTH) GO SOUTH APPROX. 0.2 MILES TO SECOND LEASE ROAD, TURN RIGHT (WEST) GO WEST 0.1 MILES TO A ROAD SURVEY, FOLLOW ROAD SURVEY WEST APPROX. 484' TO THE SOUTHEAST PAD CORNER FOR THIS LOCATION.

I, FILIMON F. JARAMILLO, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT THIS PLAT WAS PREPARED AND RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

FILIMON F. JARAMILLO, NMPS 12797

LONGFELLOW ENERGY, LP

PRINCE FEDERAL 19B 002H

LOCATED 2344 FT. FROM THE NORTH LINE AND 1303 FT. FROM THE EAST LINE OF SECTION 24, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 3, 2020

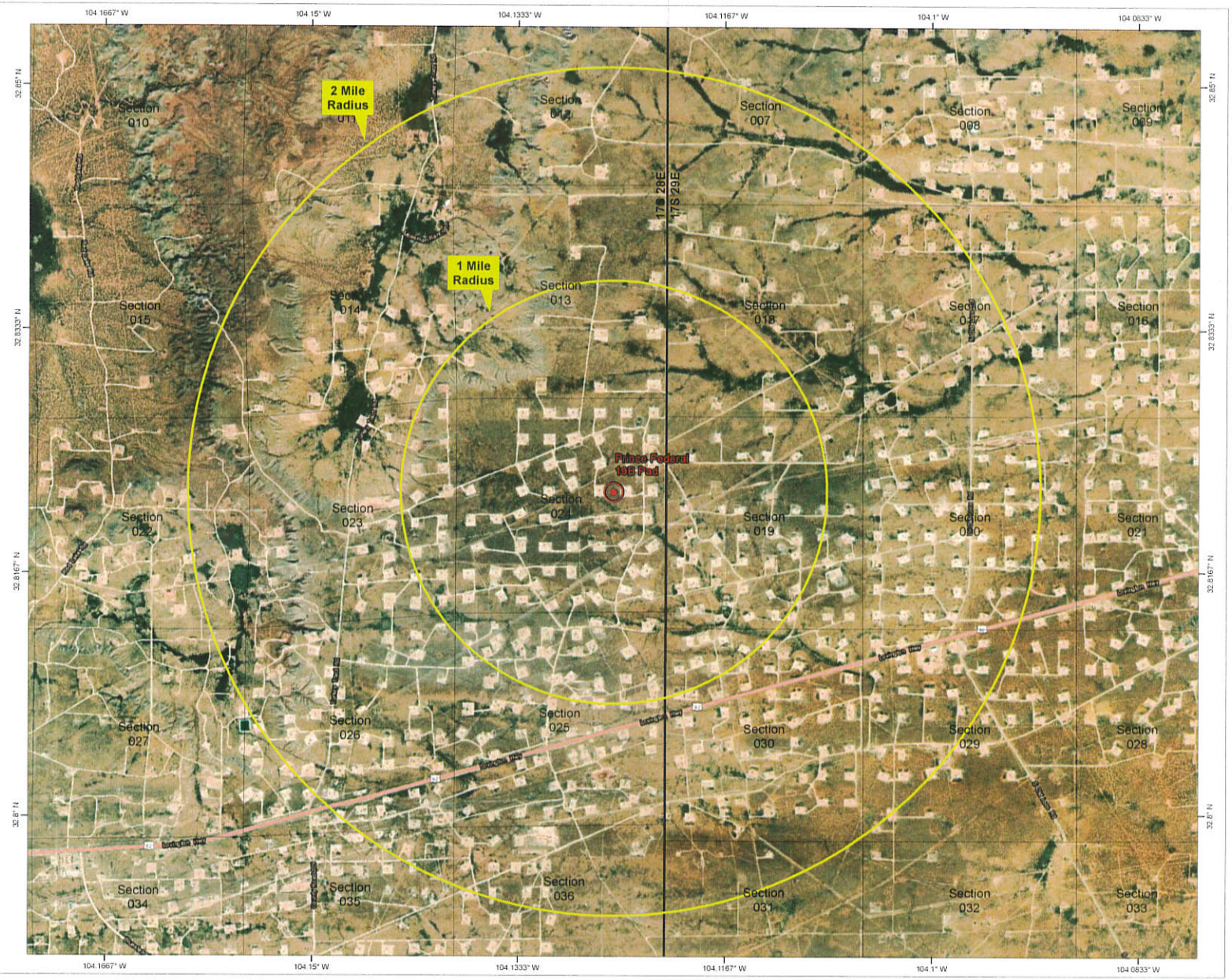
SURVEY NO. 8436

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

Longfellow Energy, L.P.

Prince Federal 19B Pad
H_2S Contingency Plan:
Radius Map

Section 24, Township 17S, Range 28E
Eddy County, New Mexico



Well Pad Location

1:27,000

0 0.25 0.5 1

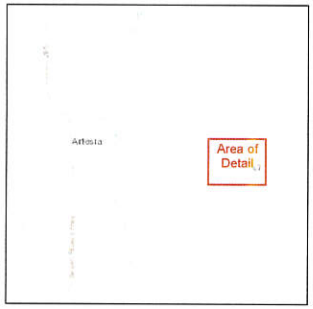
Miles

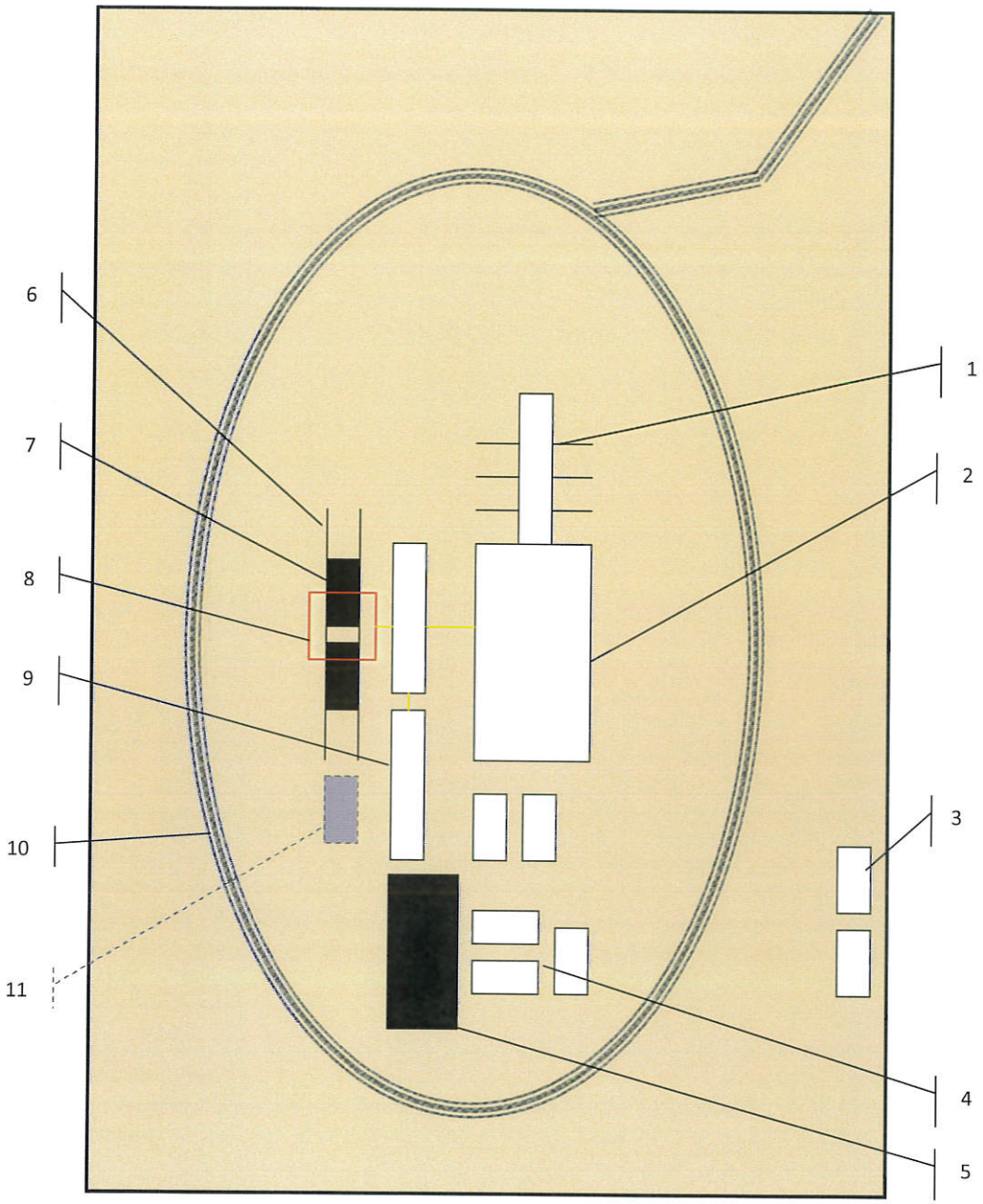
N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST

Prepared by Permits West, Inc., October 13, 2020
for Longfellow Energy, L.P.





Schematic Closed Loop Drilling Rig*

1. Pipe Rack
2. Drill Rig
3. House Trailers/ Offices
4. Generator/Fuel/Storage
5. Overflow-Frac Tank
6. Skids
7. Roll Offs
8. Hopper or Centrifuge
9. Mud Tanks
10. Loop Drive
11. Generator (only for use with centrifuge)

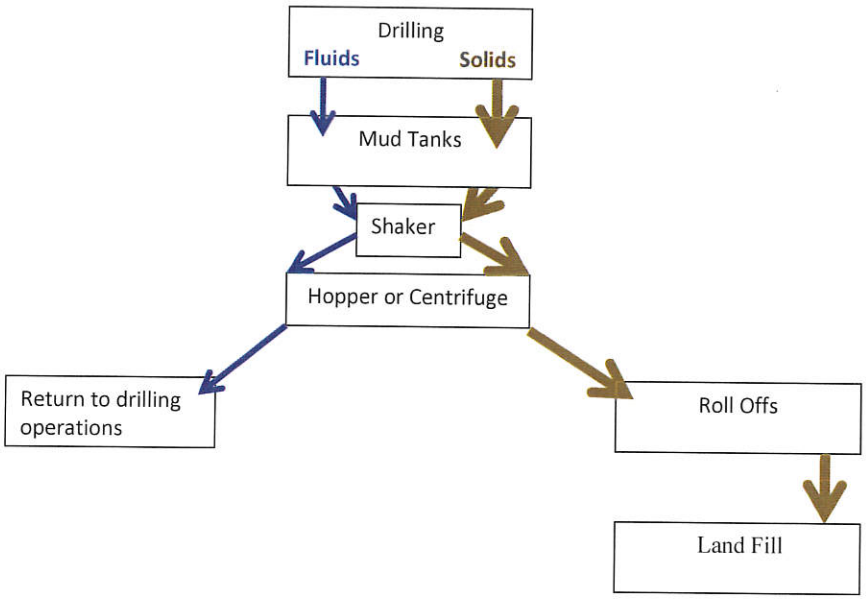
*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available

Above: Centrifugal Closed Loop System

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

Closed Loop Drilling System: Mud tanks to right (1)
Hopper in air to settle out solids (2)
Water return pipe (3)
Shaker between hopper and mud tanks (4)
Roll offs on skids (5)

Flow Chart for Drilling Fluids and Solids



Photos Courtesy of Gandy Corporation Oil Field Service

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 27235

COMMENTS

Operator:	OGRID:	Action Number:	Action Type:
LONGFELLOW ENERGY, LP 8115 Preston Road Suite 800 Dallas, TX75225	372210	27235	FORM 3160-3

Created By	Comment	Comment Date
kpickford	KP GEO Review 5/11/2021	05/11/2021

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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 27235

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
LONGFELLOW ENERGY, LP 8115 Preston Road Suite 800 Dallas, TX75225	372210	27235	FORM 3160-3

OCD Reviewer	Condition
kpickford	Notify OCD 24 hours prior to casing & cement
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system