

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

Form C-101
August 1, 2011

Permit 286321

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address V-F PETROLEUM INC P.O. Box 1889 Midland, TX 79702		2. OGRID Number 24010
		3. API Number 30-015-47425
4. Property Code 329325	5. Property Name Lightfoot 19 State Com	6. Well No. 231H

7. Surface Location

UL - Lot P	Section 19	Township 19S	Range 28E	Lot Idn P	Feet From 1173	N/S Line S	Feet From 100	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot M	Section 19	Township 19S	Range 28E	Lot Idn 4	Feet From 665	N/S Line S	Feet From 100	E/W Line W	County Eddy
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9. Pool Information

WINCHESTER; BONE SPRING, WEST	97569
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3502
16. Multiple N	17. Proposed Depth 13451	18. Formation Bone Spring	19. Contractor	20. Spud Date 11/1/2020
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	450	450	0
Int1	12.25	9.625	40	3500	825	0
Prod	8.75	5.5	17	13451	1600	2700

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	1500	TBD
Double Ram	3000	3000	TBD

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.	OIL CONSERVATION DIVISION	
Signature:		
Printed Name: Electronically filed by Pam O'Neil	Approved By: Kurt Simmons	
Title: Regulatory Manager	Title: Petroleum Specialist - A	
Email Address: pamo@vfpetroleum.com	Approved Date: 11/18/2020	Expiration Date: 11/18/2022
Date: 9/8/2020	Phone: 432-683-3344	Conditions of Approval Attached

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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-	Pool Code 97569	Pool Name WINCHESTER; BONE SPRING, WEST
Property Code	Property Name LIGHTFOOT 19 STATE COM	Well Number 231H
OGRID No. 24010	Operator Name V-F PETROLEUM	Elevation 3502'

Surface Location

UL or lot No. P	Section 19	Township 19-S	Range 28-E	Lot Idn	Feet from the 1173	North/South line SOUTH	Feet from the 100	East/West line EAST	County EDDY
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Bottom Hole Location If Different From Surface

UL or lot No. 4	Section 19	Township 19-S	Range 28-E	Lot Idn	Feet from the 665	North/South line SOUTH	Feet from the 100	East/West line WEST	County EDDY
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Dedicated Acres 163.11	Joint or Infill	Consolidation Code C	Order No.
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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

1 GEODETIC COORDINATES NAD 27 NME BOTTOM HOLE LOCATION Y= 596594.4 N X= 533976.6 E LAT.=32.640092° N LONG.=104.222956° W	CORNER COORDINATES TABLE NAD 27 NME A - Y= 597373.7 N, X= 539192.3 E B - Y= 596058.2 N, X= 539188.8 E C - Y= 595926.8 N, X= 533873.3 E D - Y= 597246.2 N, X= 533880.0 E	GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y= 597228.9 N X= 539091.9 E LAT.=32.641820° N LONG.=104.206336° W
2 GEODETIC COORDINATES NAD 83 NME BOTTOM HOLE LOCATION Y= 596656.2 N X= 575156.5 E LAT.=32.640043° N LONG.=104.223466° W	CORNER COORDINATES TABLE NAD 83 NME A - Y= 597435.6 N, X= 580372.2 E B - Y= 596120.1 N, X= 580368.7 E C - Y= 595988.6 N, X= 575053.2 E D - Y= 597308.0 N, X= 575059.8 E	GEODETIC COORDINATES NAD 83 NME SURFACE LOCATION Y= 597290.8 N X= 580271.8 E LAT.=32.641937° N LONG.=104.206845° W
3 (Empty section for additional data)		
4 GRID AZ.=262°55'41" HORIZ. DIST.=5155.8' 		

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.

9-8-20

Signature

Date

Brian Wood

Printed Name

brian@permitswest.com

E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

FEBRUARY 12, 2019

Date of Survey

Signature & Seal of Professional Surveyor:

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

LSL

JWSC W.O.: 19.11.0129

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GAS CAPTURE PLAN

Date: 11/18/2020

☒ Original

Operator & OGRID No.: [24010] V-F PETROLEUM INC

☐ Amended - Reason for
Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple 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	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Lightfoot 19 State Com #231H	30-015-47425	P-19-19S-28E	1173S 0100E	1500	Flared	

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 dedicated to GPM GAS CORP and will be connected to GPM GAS CORP High/Low Pressure gathering system located in Eddy County, New Mexico. It will require 700' of pipeline to connect the facility to High/Low Pressure gathering system. V-F PETROLEUM INC provides (periodically) to GPM GAS CORP a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, V-F PETROLEUM INC and GPM GAS CORP have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at GPM GAS CORP Processing Plant located in Sec. 20, Twn. 19S, Rng. 28E, 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 GPM GAS CORP system at that time. Based on current information, it is V-F PETROLEUM INC'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

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Form APD Comments

Permit 286321

PERMIT COMMENTS

Operator Name and Address: V-F PETROLEUM INC [24010] P.O. Box 1889 Midland, TX 79702		API Number: 30-015-47425
		Well: Lightfoot 19 State Com #231H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 286321

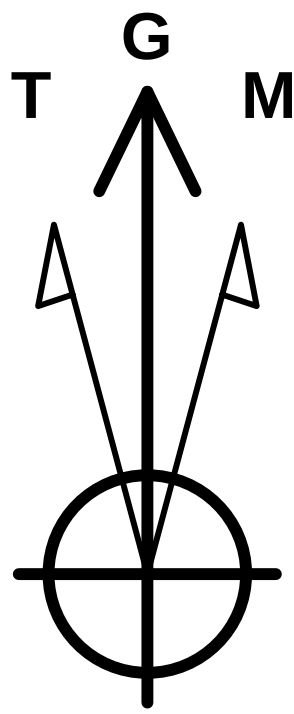
PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: V-F PETROLEUM INC [24010] P.O. Box 1889 Midland, TX 79702	API Number: 30-015-47425
	Well: Lightfoot 19 State Com #231H

OCD Reviewer	Condition
ksimmons	Will require a directional survey with the C-104
ksimmons	Cement is required to circulate on both surface and intermediate1 strings of casing
ksimmons	Operator must notify other operators in same quarter-quarter section prior to commencing both drilling and completing operations.
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	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.
kpickford	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water
kpickford	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud
kpickford	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days

V-F Petroleum, Inc.

Company: V-F Petroleum Inc.
Field: Eddy County, NM
Location: Lightfoot 19 State Com
Well: 231H
OH
Plan: Plan 1



Azimuths to Grid North
True North: -0.07°
Magnetic North: 6.91°

Magnetic Field
Strength: 47762.1nT
Dip Angle: 60.21°
Date: 8/18/2020
Model: WMM2020

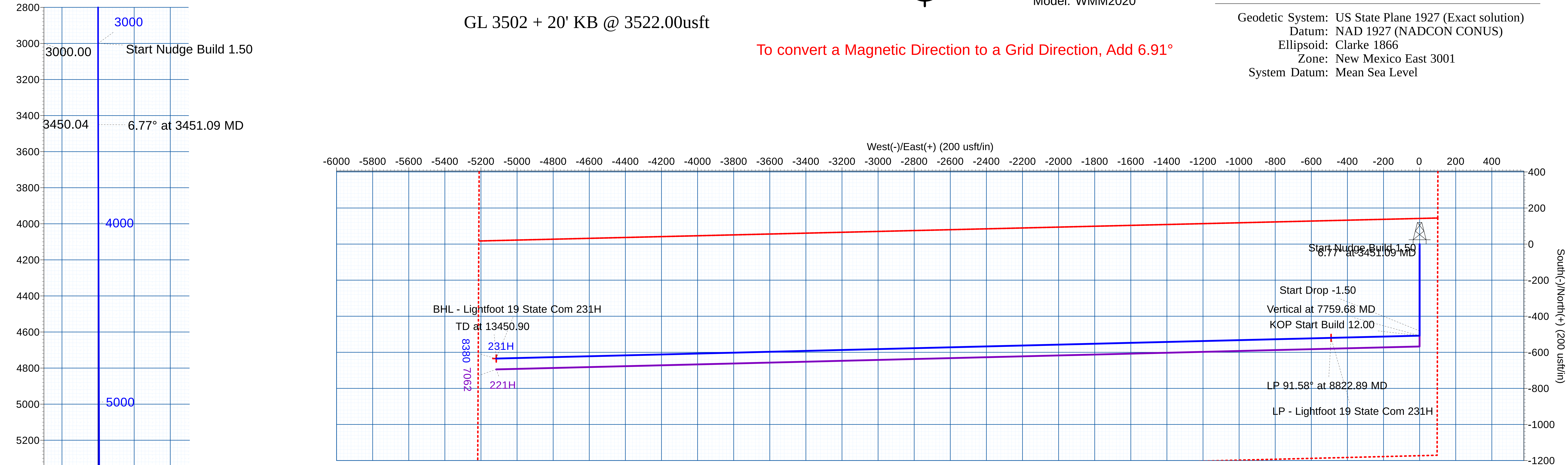


PROJECT DETAILS: Eddy County, NM

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

GL 3502 + 20' KB @ 3522.00usft

To convert a Magnetic Direction to a Grid Direction, Add 6.91°



WELL DETAILS: 231H

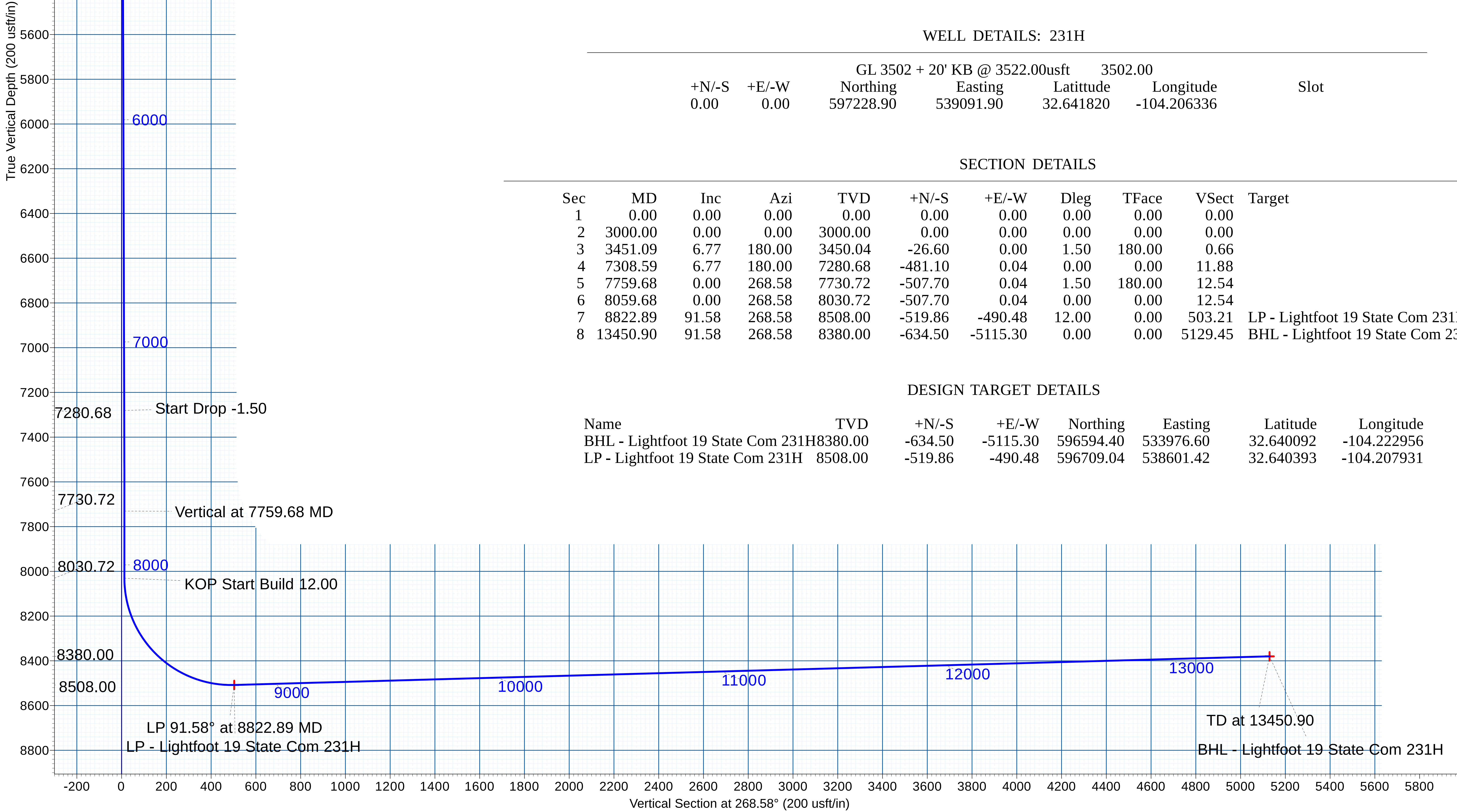
		GL 3502 + 20' KB @ 3522.00usft		3502.00		
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	597228.90	539091.90	32.641820	-104.206336	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	
3	3451.09	6.77	180.00	3450.04	-26.60	0.00	1.50	180.00	0.66	
4	7308.59	6.77	180.00	7280.68	-481.10	0.04	0.00	0.00	11.88	
5	7759.68	0.00	268.58	7730.72	-507.70	0.04	1.50	180.00	12.54	
6	8059.68	0.00	268.58	8030.72	-507.70	0.04	0.00	0.00	12.54	
7	8822.89	91.58	268.58	8508.00	-519.86	-490.48	12.00	0.00	503.21	LP - Lightfoot 19 State Com 231H
8	13450.90	91.58	268.58	8380.00	-634.50	-5115.30	0.00	0.00	5129.45	BHL - Lightfoot 19 State Com 231H

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL - Lightfoot 19 State Com 231H	8380.00	-634.50	-5115.30	596594.40	533976.60	32.640092	-104.222956
LP - Lightfoot 19 State Com 231H	8508.00	-519.86	-490.48	596709.04	538601.42	32.640393	-104.207931



Legacy Directional

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well 231H
Company:	V-F Petroleum Inc.	TVD Reference:	GL 3502 + 20' KB @ 3522.00usft
Project:	Eddy County, NM	MD Reference:	GL 3502 + 20' KB @ 3522.00usft
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	231H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1		

Project	Eddy County, NM		
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	Lightfoot 19 State Com					
Site Position:		Northing:	597,168.90 usft	Latitude:	32.641656	
From:	Map	Easting:	539,091.70 usft	Longitude:	-104.206337	
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.07 °

Well	231H					
Well Position	+N/-S	60.00 usft	Northing:	597,228.90 usft	Latitude:	32.641820
	+E/-W	0.20 usft	Easting:	539,091.90 usft	Longitude:	-104.206336
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,502.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2020	8/18/2020	6.98	60.21	47,762.05439048

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	268.58

Plan Survey Tool Program	Date	8/18/2020			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	13,450.90 Plan 1 (OH)	MWD+IGRF+FDIR		
			OWSG MWD + IGRF or WMM		

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	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,451.09	6.77	180.00	3,450.04	-26.60	0.00	1.50	1.50	0.00	180.00	
7,308.59	6.77	180.00	7,280.68	-481.10	0.04	0.00	0.00	0.00	0.00	
7,759.68	0.00	268.58	7,730.72	-507.70	0.04	1.50	-1.50	0.00	180.00	
8,059.68	0.00	268.58	8,030.72	-507.70	0.04	0.00	0.00	0.00	0.00	
8,822.89	91.58	268.58	8,508.00	-519.86	-490.48	12.00	12.00	0.00	0.00	LP - Lightfoot 19 State
13,450.90	91.58	268.58	8,380.00	-634.50	-5,115.30	0.00	0.00	0.00	0.00	BHL - Lightfoot 19 State

Legacy Directional

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well 231H
Company:	V-F Petroleum Inc.	TVD Reference:	GL 3502 + 20' KB @ 3522.00usft
Project:	Eddy County, NM	MD Reference:	GL 3502 + 20' KB @ 3522.00usft
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	231H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
Start Nudge Build 1.50										
3,100.00	1.50	180.00	3,099.99	-1.31	0.00	0.03	1.50	1.50	0.00	
3,200.00	3.00	180.00	3,199.91	-5.23	0.00	0.13	1.50	1.50	0.00	
3,300.00	4.50	180.00	3,299.69	-11.77	0.00	0.29	1.50	1.50	0.00	
3,400.00	6.00	180.00	3,399.27	-20.92	0.00	0.52	1.50	1.50	0.00	
3,451.09	6.77	180.00	3,450.04	-26.60	0.00	0.66	1.50	1.50	0.00	
6.77° at 3451.09 MD										
3,500.00	6.77	180.00	3,498.61	-32.37	0.00	0.80	0.00	0.00	0.00	
3,600.00	6.77	180.00	3,597.92	-44.15	0.00	1.09	0.00	0.00	0.00	
3,700.00	6.77	180.00	3,697.22	-55.93	0.00	1.38	0.00	0.00	0.00	
3,800.00	6.77	180.00	3,796.52	-67.71	0.01	1.67	0.00	0.00	0.00	
3,900.00	6.77	180.00	3,895.83	-79.50	0.01	1.96	0.00	0.00	0.00	
4,000.00	6.77	180.00	3,995.13	-91.28	0.01	2.25	0.00	0.00	0.00	
4,100.00	6.77	180.00	4,094.43	-103.06	0.01	2.55	0.00	0.00	0.00	
4,200.00	6.77	180.00	4,193.74	-114.84	0.01	2.84	0.00	0.00	0.00	
4,300.00	6.77	180.00	4,293.04	-126.62	0.01	3.13	0.00	0.00	0.00	
4,400.00	6.77	180.00	4,392.34	-138.41	0.01	3.42	0.00	0.00	0.00	
4,500.00	6.77	180.00	4,491.65	-150.19	0.01	3.71	0.00	0.00	0.00	
4,600.00	6.77	180.00	4,590.95	-161.97	0.01	4.00	0.00	0.00	0.00	
4,700.00	6.77	180.00	4,690.25	-173.75	0.01	4.29	0.00	0.00	0.00	
4,800.00	6.77	180.00	4,789.56	-185.53	0.01	4.58	0.00	0.00	0.00	
4,900.00	6.77	180.00	4,888.86	-197.32	0.02	4.87	0.00	0.00	0.00	
5,000.00	6.77	180.00	4,988.16	-209.10	0.02	5.17	0.00	0.00	0.00	
5,100.00	6.77	180.00	5,087.47	-220.88	0.02	5.46	0.00	0.00	0.00	
5,200.00	6.77	180.00	5,186.77	-232.66	0.02	5.75	0.00	0.00	0.00	
5,300.00	6.77	180.00	5,286.07	-244.44	0.02	6.04	0.00	0.00	0.00	
5,400.00	6.77	180.00	5,385.38	-256.23	0.02	6.33	0.00	0.00	0.00	
5,500.00	6.77	180.00	5,484.68	-268.01	0.02	6.62	0.00	0.00	0.00	
5,600.00	6.77	180.00	5,583.99	-279.79	0.02	6.91	0.00	0.00	0.00	
5,700.00	6.77	180.00	5,683.29	-291.57	0.02	7.20	0.00	0.00	0.00	
5,800.00	6.77	180.00	5,782.59	-303.35	0.02	7.49	0.00	0.00	0.00	
5,900.00	6.77	180.00	5,881.90	-315.14	0.02	7.78	0.00	0.00	0.00	
6,000.00	6.77	180.00	5,981.20	-326.92	0.03	8.08	0.00	0.00	0.00	
6,100.00	6.77	180.00	6,080.50	-338.70	0.03	8.37	0.00	0.00	0.00	
6,200.00	6.77	180.00	6,179.81	-350.48	0.03	8.66	0.00	0.00	0.00	
6,300.00	6.77	180.00	6,279.11	-362.26	0.03	8.95	0.00	0.00	0.00	
6,400.00	6.77	180.00	6,378.41	-374.05	0.03	9.24	0.00	0.00	0.00	
6,500.00	6.77	180.00	6,477.72	-385.83	0.03	9.53	0.00	0.00	0.00	
6,600.00	6.77	180.00	6,577.02	-397.61	0.03	9.82	0.00	0.00	0.00	
6,700.00	6.77	180.00	6,676.32	-409.39	0.03	10.11	0.00	0.00	0.00	
6,800.00	6.77	180.00	6,775.63	-421.17	0.03	10.40	0.00	0.00	0.00	
6,900.00	6.77	180.00	6,874.93	-432.96	0.03	10.70	0.00	0.00	0.00	
7,000.00	6.77	180.00	6,974.23	-444.74	0.03	10.99	0.00	0.00	0.00	
7,100.00	6.77	180.00	7,073.54	-456.52	0.04	11.28	0.00	0.00	0.00	
7,200.00	6.77	180.00	7,172.84	-468.30	0.04	11.57	0.00	0.00	0.00	
7,300.00	6.77	180.00	7,272.14	-480.08	0.04	11.86	0.00	0.00	0.00	
7,308.59	6.77	180.00	7,280.68	-481.10	0.04	11.88	0.00	0.00	0.00	
Start Drop -1.50										
7,400.00	5.40	180.00	7,371.57	-490.78	0.04	12.12	1.50	-1.50	0.00	
7,500.00	3.90	180.00	7,471.24	-498.88	0.04	12.32	1.50	-1.50	0.00	
7,600.00	2.40	180.00	7,571.08	-504.36	0.04	12.46	1.50	-1.50	0.00	
7,700.00	0.90	180.00	7,671.04	-507.23	0.04	12.53	1.50	-1.50	0.00	

Legacy Directional

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well 231H
Company:	V-F Petroleum Inc.	TVD Reference:	GL 3502 + 20' KB @ 3522.00usft
Project:	Eddy County, NM	MD Reference:	GL 3502 + 20' KB @ 3522.00usft
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	231H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)
7,759.68	0.00	0.00	7,730.72	-507.70	0.04	12.54	1.50	-1.50	0.00
Vertical at 7759.68 MD									
7,800.00	0.00	0.00	7,771.04	-507.70	0.04	12.54	0.00	0.00	0.00
7,900.00	0.00	0.00	7,871.04	-507.70	0.04	12.54	0.00	0.00	0.00
8,000.00	0.00	0.00	7,971.04	-507.70	0.04	12.54	0.00	0.00	0.00
8,059.68	0.00	0.00	8,030.72	-507.70	0.04	12.54	0.00	0.00	0.00
KOP Start Build 12.00									
8,100.00	4.84	268.58	8,070.99	-507.74	-1.66	14.24	12.00	12.00	0.00
8,200.00	16.84	268.58	8,169.03	-508.21	-20.42	33.01	12.00	12.00	0.00
8,300.00	28.84	268.58	8,261.02	-509.17	-59.16	71.75	12.00	12.00	0.00
8,400.00	40.84	268.58	8,342.94	-510.58	-116.16	128.78	12.00	12.00	0.00
8,500.00	52.84	268.58	8,411.23	-512.39	-188.95	201.59	12.00	12.00	0.00
8,600.00	64.84	268.58	8,462.88	-514.50	-274.33	287.00	12.00	12.00	0.00
8,700.00	76.84	268.58	8,495.64	-516.84	-368.59	381.29	12.00	12.00	0.00
8,800.00	88.84	268.58	8,508.08	-519.29	-467.60	480.33	12.00	12.00	0.00
8,822.89	91.58	268.58	8,508.00	-519.86	-490.48	503.21	12.00	12.00	0.00
LP 91.58° at 8822.89 MD - LP - Lightfoot 19 State Com 231H									
8,900.00	91.58	268.58	8,505.87	-521.77	-567.54	580.29	0.00	0.00	0.00
9,000.00	91.58	268.58	8,503.10	-524.25	-667.47	680.26	0.00	0.00	0.00
9,100.00	91.58	268.58	8,500.34	-526.72	-767.40	780.22	0.00	0.00	0.00
9,200.00	91.58	268.58	8,497.57	-529.20	-867.33	880.18	0.00	0.00	0.00
9,300.00	91.58	268.58	8,494.80	-531.68	-967.26	980.14	0.00	0.00	0.00
9,400.00	91.58	268.58	8,492.04	-534.16	-1,067.19	1,080.10	0.00	0.00	0.00
9,500.00	91.58	268.58	8,489.27	-536.63	-1,167.12	1,180.06	0.00	0.00	0.00
9,600.00	91.58	268.58	8,486.51	-539.11	-1,267.06	1,280.03	0.00	0.00	0.00
9,700.00	91.58	268.58	8,483.74	-541.59	-1,366.99	1,379.99	0.00	0.00	0.00
9,800.00	91.58	268.58	8,480.98	-544.06	-1,466.92	1,479.95	0.00	0.00	0.00
9,900.00	91.58	268.58	8,478.21	-546.54	-1,566.85	1,579.91	0.00	0.00	0.00
10,000.00	91.58	268.58	8,475.44	-549.02	-1,666.78	1,679.87	0.00	0.00	0.00
10,100.00	91.58	268.58	8,472.68	-551.50	-1,766.71	1,779.84	0.00	0.00	0.00
10,200.00	91.58	268.58	8,469.91	-553.97	-1,866.64	1,879.80	0.00	0.00	0.00
10,300.00	91.58	268.58	8,467.15	-556.45	-1,966.57	1,979.76	0.00	0.00	0.00
10,400.00	91.58	268.58	8,464.38	-558.93	-2,066.50	2,079.72	0.00	0.00	0.00
10,500.00	91.58	268.58	8,461.62	-561.40	-2,166.44	2,179.68	0.00	0.00	0.00
10,600.00	91.58	268.58	8,458.85	-563.88	-2,266.37	2,279.64	0.00	0.00	0.00
10,700.00	91.58	268.58	8,456.08	-566.36	-2,366.30	2,379.61	0.00	0.00	0.00
10,800.00	91.58	268.58	8,453.32	-568.83	-2,466.23	2,479.57	0.00	0.00	0.00
10,900.00	91.58	268.58	8,450.55	-571.31	-2,566.16	2,579.53	0.00	0.00	0.00
11,000.00	91.58	268.58	8,447.79	-573.79	-2,666.09	2,679.49	0.00	0.00	0.00
11,100.00	91.58	268.58	8,445.02	-576.27	-2,766.02	2,779.45	0.00	0.00	0.00
11,200.00	91.58	268.58	8,442.25	-578.74	-2,865.95	2,879.41	0.00	0.00	0.00
11,300.00	91.58	268.58	8,439.49	-581.22	-2,965.88	2,979.38	0.00	0.00	0.00
11,400.00	91.58	268.58	8,436.72	-583.70	-3,065.81	3,079.34	0.00	0.00	0.00
11,500.00	91.58	268.58	8,433.96	-586.17	-3,165.75	3,179.30	0.00	0.00	0.00
11,600.00	91.58	268.58	8,431.19	-588.65	-3,265.68	3,279.26	0.00	0.00	0.00
11,700.00	91.58	268.58	8,428.43	-591.13	-3,365.61	3,379.22	0.00	0.00	0.00
11,800.00	91.58	268.58	8,425.66	-593.61	-3,465.54	3,479.18	0.00	0.00	0.00
11,900.00	91.58	268.58	8,422.89	-596.08	-3,565.47	3,579.15	0.00	0.00	0.00
12,000.00	91.58	268.58	8,420.13	-598.56	-3,665.40	3,679.11	0.00	0.00	0.00
12,100.00	91.58	268.58	8,417.36	-601.04	-3,765.33	3,779.07	0.00	0.00	0.00
12,200.00	91.58	268.58	8,414.60	-603.51	-3,865.26	3,879.03	0.00	0.00	0.00
12,300.00	91.58	268.58	8,411.83	-605.99	-3,965.19	3,978.99	0.00	0.00	0.00
12,400.00	91.58	268.58	8,409.07	-608.47	-4,065.13	4,078.96	0.00	0.00	0.00

Legacy Directional

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well 231H
Company:	V-F Petroleum Inc.	TVD Reference:	GL 3502 + 20' KB @ 3522.00usft
Project:	Eddy County, NM	MD Reference:	GL 3502 + 20' KB @ 3522.00usft
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	231H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)	
12,500.00	91.58	268.58	8,406.30	-610.95	-4,165.06	4,178.92	0.00	0.00	0.00	
12,600.00	91.58	268.58	8,403.53	-613.42	-4,264.99	4,278.88	0.00	0.00	0.00	
12,700.00	91.58	268.58	8,400.77	-615.90	-4,364.92	4,378.84	0.00	0.00	0.00	
12,800.00	91.58	268.58	8,398.00	-618.38	-4,464.85	4,478.80	0.00	0.00	0.00	
12,900.00	91.58	268.58	8,395.24	-620.85	-4,564.78	4,578.76	0.00	0.00	0.00	
13,000.00	91.58	268.58	8,392.47	-623.33	-4,664.71	4,678.73	0.00	0.00	0.00	
13,100.00	91.58	268.58	8,389.71	-625.81	-4,764.64	4,778.69	0.00	0.00	0.00	
13,200.00	91.58	268.58	8,386.94	-628.29	-4,864.57	4,878.65	0.00	0.00	0.00	
13,300.00	91.58	268.58	8,384.17	-630.76	-4,964.50	4,978.61	0.00	0.00	0.00	
13,400.00	91.58	268.58	8,381.41	-633.24	-5,064.44	5,078.57	0.00	0.00	0.00	
13,450.90	91.58	268.58	8,380.00	-634.50	-5,115.30	5,129.45	0.00	0.00	0.00	
TD at 13450.90 - BHL - Lightfoot 19 State Com 231H										

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 - Lightfoot 19 State	0.00	0.00	8,380.00	-634.50	-5,115.30	596,594.40	533,976.60	32.640092	-104.222956	
- plan hits target center										
- Point										
LP - Lightfoot 19 State C	0.00	0.00	8,508.00	-519.86	-490.48	596,709.04	538,601.42	32.640393	-104.207931	
- plan hits target center										
- Point										

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
3,000.00	3,000.00	0.00	0.00	Start Nudge Build 1.50	
3,451.09	3,450.04	-26.60	0.00	6.77° at 3451.09 MD	
7,308.59	7,280.68	-481.10	0.04	Start Drop -1.50	
7,759.68	7,730.72	-507.70	0.04	Vertical at 7759.68 MD	
8,059.68	8,030.72	-507.70	0.04	KOP Start Build 12.00	
8,822.89	8,508.00	-519.86	-490.48	LP 91.58° at 8822.89 MD	
13,450.90	8,380.00	-634.50	-5,115.30	TD at 13450.90	