

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 286319

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 30-015-47424
4. Property Code 329325	5. Property Name Lightfoot 19 State Com	6. Well No. 224H

7. Surface Location

UL - Lot A	Section 19	Township 19S	Range 28E	Lot Idn A	Feet From 390	N/S Line N	Feet From 100	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot D	Section 19	Township 19S	Range 28E	Lot Idn 1	Feet From 390	N/S Line N	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 3516
16. Multiple N	17. Proposed Depth 12041	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	12041	1400	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 224H
OGRID No. 24010	Operator Name V-F PETROLEUM	Elevation 3516'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	19	19-S	28-E		390	NORTH	100	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	19	19-S	28-E		390	NORTH	100	WEST	EDDY

Dedicated Acres 163.01	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

GRID AZ.=268°44'58" HORIZ. DIST.=5106.6'	CORNER COORDINATES TABLE NAD 27 NME <table style="width: 100%;"> <tr><td>A - Y= 601320.1 N, X= 539203.0 E</td></tr> <tr><td>B - Y= 600004.7 N, X= 539199.4 E</td></tr> <tr><td>C - Y= 599885.1 N, X= 533893.2 E</td></tr> <tr><td>D - Y= 601204.5 N, X= 533899.7 E</td></tr> </table>	A - Y= 601320.1 N, X= 539203.0 E	B - Y= 600004.7 N, X= 539199.4 E	C - Y= 599885.1 N, X= 533893.2 E	D - Y= 601204.5 N, X= 533899.7 E	GEODETC COORDINATES NAD 27 NME SURFACE LOCATION Y= 600928.0 N X= 539101.8 E LAT.=32.651988° N LONG.=104.206289° W
A - Y= 601320.1 N, X= 539203.0 E						
B - Y= 600004.7 N, X= 539199.4 E						
C - Y= 599885.1 N, X= 533893.2 E						
D - Y= 601204.5 N, X= 533899.7 E						
GEODETC COORDINATES NAD 83 NME BOTTOM HOLE LOCATION Y= 600816.6 N X= 533997.8 E LAT.=32.651698° N LONG.=104.222873° W	CORNER COORDINATES TABLE NAD 83 NME <table style="width: 100%;"> <tr><td>A - Y= 601382.1 N, X= 580382.8 E</td></tr> <tr><td>B - Y= 600066.6 N, X= 580379.2 E</td></tr> <tr><td>C - Y= 599946.9 N, X= 575073.0 E</td></tr> <tr><td>D - Y= 601266.4 N, X= 575079.5 E</td></tr> </table>	A - Y= 601382.1 N, X= 580382.8 E	B - Y= 600066.6 N, X= 580379.2 E	C - Y= 599946.9 N, X= 575073.0 E	D - Y= 601266.4 N, X= 575079.5 E	GEODETC COORDINATES NAD 83 NME SURFACE LOCATION Y= 600989.9 N X= 580281.6 E LAT.=32.652105° N LONG.=104.206799° W
A - Y= 601382.1 N, X= 580382.8 E						
B - Y= 600066.6 N, X= 580379.2 E						
C - Y= 599946.9 N, X= 575073.0 E						
D - Y= 601266.4 N, X= 575079.5 E						

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 13, 2019

Date of Survey

Signature & Seal of Professional Surveyor:

Ronald J. Eidson

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

LSL JWSC W.O.: 19.11.0128

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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 #224H	30-015-47424	A-19-19S-28E	0390N 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 3500' 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. 19, 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 286319

PERMIT COMMENTS

Operator Name and Address: V-F PETROLEUM INC [24010] P.O. Box 1889 Midland, TX 79702		API Number: 30-015-47424
		Well: Lightfoot 19 State Com #224H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 286319

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: V-F PETROLEUM INC [24010] P.O. Box 1889 Midland, TX 79702	API Number: 30-015-47424
	Well: Lightfoot 19 State Com #224H

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
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	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	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
kpickford	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud
kpickford	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water

V-F PETROLUEM

Project: Eddy County, NM (NAD27) NMEZ Grid
 Site: Lightfoot 19 State Com
 Well: 224H
 Wellbore: Lateral
 Design: Plan #1

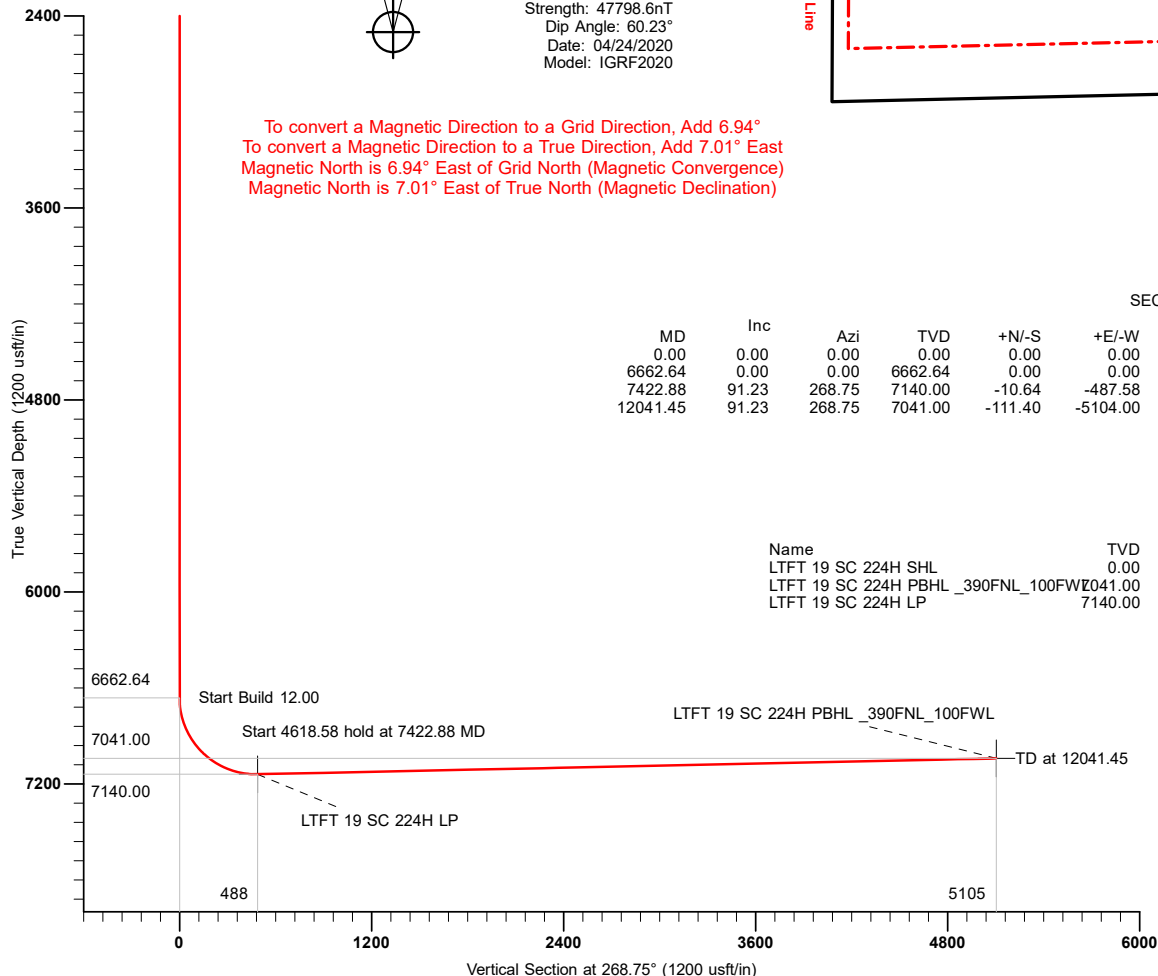
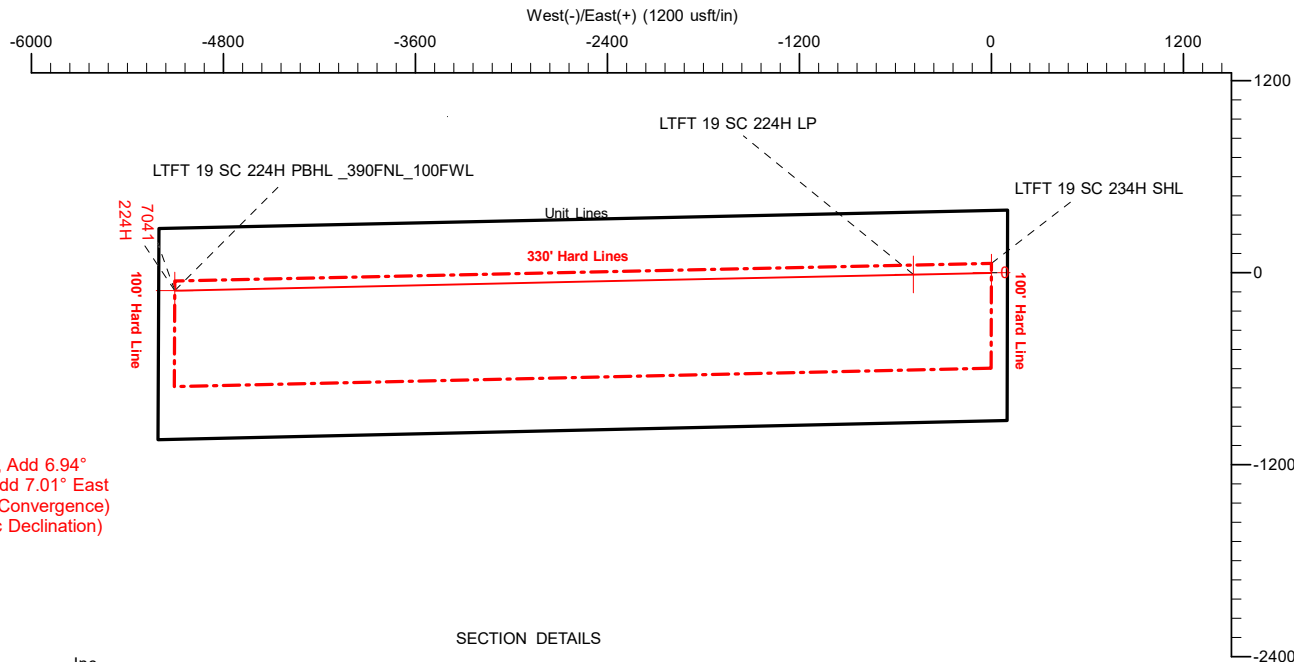
3516+20 @ 3536.00usft (Planning)
 NAD 1927 (NADCON CONUS)



Azimuths to Grid North
 True North: -0.07°
 Magnetic North: 6.94°

Magnetic Field
 Strength: 47798.6nT
 Dip Angle: 60.23°
 Date: 04/24/2020
 Model: IGRF2020

To convert a Magnetic Direction to a Grid Direction, Add 6.94°
 To convert a Magnetic Direction to a True Direction, Add 7.01° East
 Magnetic North is 6.94° East of Grid North (Magnetic Convergence)
 Magnetic North is 7.01° East of True North (Magnetic Declination)



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6662.64	0.00	0.00	6662.64	0.00	0.00	0.00	0.00	0.00
7422.88	91.23	268.75	7140.00	-10.64	-487.58	12.00	268.75	487.70
12041.45	91.23	268.75	7041.00	-111.40	-5104.00	0.00	0.00	5105.22

LTFT 19 SC 224H PBHL _390FNL_100FWL

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
LTFT 19 SC 224H SHL	0.00	0.00	0.00	600928.00	539101.80
LTFT 19 SC 224H PBHL _390FNL_100FWL	7140.00	-111.40	-5104.00	600816.60	533997.80
LTFT 19 SC 224H LP	7140.00	-10.64	-487.58	600917.36	538614.22

Planning Report

Database:	TP_EDM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Company:	V-F PETROLUEM	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Project:	Eddy County, NM (NAD27) NMEZ Grid	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	224H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project	Eddy County, NM (NAD27) NMEZ Grid		
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:	600,928.00 usft	Latitude:	32° 39' 7.158 N	
From:	Map	Easting:	539,101.80 usft	Longitude:	104° 12' 22.641 W	
Position Uncertainty:		0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.07 °

Well	224H - Slot LTFT 19 SC 224H SHL					
Well Position	+N/-S	0.00 usft	Northing:	600,928.00 usft	Latitude:	32° 39' 7.158 N
	+E/-W	0.00 usft	Easting:	539,101.80 usft	Longitude:	104° 12' 22.641 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,516.00 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	04/24/20	7.01	60.23	47,799

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	268.75

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,662.64	0.00	0.00	6,662.64	0.00	0.00	0.00	0.00	0.00	0.00	
7,422.88	91.23	268.75	7,140.00	-10.64	-487.58	12.00	12.00	0.00	268.75	
12,041.46	91.23	268.75	7,041.00	-111.40	-5,104.00	0.00	0.00	0.00	0.00	LTFT 19 SC 224H PB

Planning Report

Database:	TP_EDM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Company:	V-F PETROLUEM	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Project:	Eddy County, NM (NAD27) NMEZ Grid	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	224H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LTFT 19 SC 234H SHL - LTFT 19 SC 224H SHL									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	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
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00

Planning Report

Database:	TP_EDM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Company:	V-F PETROLUEM	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Project:	Eddy County, NM (NAD27) NMEZ Grid	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	224H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,662.64	0.00	0.00	6,662.64	0.00	0.00	0.00	0.00	0.00	0.00	
6,675.00	1.48	268.75	6,675.00	0.00	-0.16	0.16	12.00	12.00	0.00	
6,700.00	4.48	268.75	6,699.96	-0.03	-1.46	1.46	12.00	12.00	0.00	
6,725.00	7.48	268.75	6,724.82	-0.09	-4.07	4.07	12.00	12.00	0.00	
6,750.00	10.48	268.75	6,749.51	-0.17	-7.97	7.97	12.00	12.00	0.00	
6,775.00	13.48	268.75	6,773.97	-0.29	-13.16	13.16	12.00	12.00	0.00	
6,800.00	16.48	268.75	6,798.11	-0.43	-19.62	19.62	12.00	12.00	0.00	
6,825.00	19.48	268.75	6,821.89	-0.60	-27.33	27.34	12.00	12.00	0.00	
6,850.00	22.48	268.75	6,845.23	-0.79	-36.28	36.29	12.00	12.00	0.00	
6,875.00	25.48	268.75	6,868.07	-1.01	-46.44	46.45	12.00	12.00	0.00	
6,900.00	28.48	268.75	6,890.34	-1.26	-57.78	57.79	12.00	12.00	0.00	
6,925.00	31.48	268.75	6,912.00	-1.53	-70.27	70.28	12.00	12.00	0.00	
6,950.00	34.48	268.75	6,932.96	-1.83	-83.87	83.89	12.00	12.00	0.00	
6,975.00	37.48	268.75	6,953.19	-2.15	-98.56	98.58	12.00	12.00	0.00	
7,000.00	40.48	268.75	6,972.62	-2.49	-114.28	114.31	12.00	12.00	0.00	
7,025.00	43.48	268.75	6,991.20	-2.86	-130.99	131.03	12.00	12.00	0.00	
7,050.00	46.48	268.75	7,008.89	-3.24	-148.66	148.70	12.00	12.00	0.00	
7,075.00	49.48	268.75	7,025.62	-3.65	-167.23	167.27	12.00	12.00	0.00	
7,100.00	52.48	268.75	7,041.35	-4.07	-186.65	186.69	12.00	12.00	0.00	
7,125.00	55.48	268.75	7,056.05	-4.51	-206.86	206.91	12.00	12.00	0.00	
7,150.00	58.48	268.75	7,069.67	-4.97	-227.81	227.87	12.00	12.00	0.00	
7,175.00	61.48	268.75	7,082.18	-5.44	-249.45	249.51	12.00	12.00	0.00	
7,200.00	64.48	268.75	7,093.53	-5.93	-271.72	271.78	12.00	12.00	0.00	
7,225.00	67.48	268.75	7,103.71	-6.43	-294.55	294.62	12.00	12.00	0.00	
7,250.00	70.48	268.75	7,112.67	-6.94	-317.87	317.95	12.00	12.00	0.00	
7,275.00	73.48	268.75	7,120.40	-7.46	-341.64	341.72	12.00	12.00	0.00	
7,300.00	76.48	268.75	7,126.88	-7.98	-365.78	365.86	12.00	12.00	0.00	
7,325.00	79.48	268.75	7,132.09	-8.52	-390.22	390.31	12.00	12.00	0.00	
7,350.00	82.48	268.75	7,136.00	-9.06	-414.90	415.00	12.00	12.00	0.00	
7,375.00	85.48	268.75	7,138.62	-9.60	-439.76	439.86	12.00	12.00	0.00	
7,400.00	88.48	268.75	7,139.94	-10.14	-464.71	464.82	12.00	12.00	0.00	
7,422.87	91.23	268.75	7,140.00	-10.64	-487.58	487.70	12.00	12.00	0.00	
LTFT 19 SC 224H LP										
7,500.00	91.23	268.75	7,138.34	-12.32	-564.67	564.80	0.00	0.00	0.00	
7,600.00	91.23	268.75	7,136.20	-14.51	-664.62	664.78	0.00	0.00	0.00	
7,700.00	91.23	268.75	7,134.06	-16.69	-764.58	764.76	0.00	0.00	0.00	
7,800.00	91.23	268.75	7,131.91	-18.87	-864.53	864.74	0.00	0.00	0.00	
7,900.00	91.23	268.75	7,129.77	-21.05	-964.48	964.71	0.00	0.00	0.00	
8,000.00	91.23	268.75	7,127.63	-23.23	-1,064.44	1,064.69	0.00	0.00	0.00	

Planning Report

Database:	TP_EDM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Company:	V-F PETROLUEM	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Project:	Eddy County, NM (NAD27) NMEZ Grid	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	224H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,100.00	91.23	268.75	7,125.48	-25.41	-1,164.39	1,164.67	0.00	0.00	0.00	
8,200.00	91.23	268.75	7,123.34	-27.60	-1,264.34	1,264.64	0.00	0.00	0.00	
8,300.00	91.23	268.75	7,121.20	-29.78	-1,364.30	1,364.62	0.00	0.00	0.00	
8,400.00	91.23	268.75	7,119.05	-31.96	-1,464.25	1,464.60	0.00	0.00	0.00	
8,500.00	91.23	268.75	7,116.91	-34.14	-1,564.20	1,564.57	0.00	0.00	0.00	
8,600.00	91.23	268.75	7,114.77	-36.32	-1,664.16	1,664.55	0.00	0.00	0.00	
8,700.00	91.23	268.75	7,112.62	-38.50	-1,764.11	1,764.53	0.00	0.00	0.00	
8,800.00	91.23	268.75	7,110.48	-40.69	-1,864.06	1,864.51	0.00	0.00	0.00	
8,900.00	91.23	268.75	7,108.34	-42.87	-1,964.01	1,964.48	0.00	0.00	0.00	
9,000.00	91.23	268.75	7,106.19	-45.05	-2,063.97	2,064.46	0.00	0.00	0.00	
9,100.00	91.23	268.75	7,104.05	-47.23	-2,163.92	2,164.44	0.00	0.00	0.00	
9,200.00	91.23	268.75	7,101.91	-49.41	-2,263.87	2,264.41	0.00	0.00	0.00	
9,300.00	91.23	268.75	7,099.76	-51.59	-2,363.83	2,364.39	0.00	0.00	0.00	
9,400.00	91.23	268.75	7,097.62	-53.77	-2,463.78	2,464.37	0.00	0.00	0.00	
9,500.00	91.23	268.75	7,095.47	-55.96	-2,563.73	2,564.34	0.00	0.00	0.00	
9,600.00	91.23	268.75	7,093.33	-58.14	-2,663.69	2,664.32	0.00	0.00	0.00	
9,700.00	91.23	268.75	7,091.19	-60.32	-2,763.64	2,764.30	0.00	0.00	0.00	
9,800.00	91.23	268.75	7,089.04	-62.50	-2,863.59	2,864.28	0.00	0.00	0.00	
9,900.00	91.23	268.75	7,086.90	-64.68	-2,963.55	2,964.25	0.00	0.00	0.00	
10,000.00	91.23	268.75	7,084.76	-66.86	-3,063.50	3,064.23	0.00	0.00	0.00	
10,100.00	91.23	268.75	7,082.61	-69.05	-3,163.45	3,164.21	0.00	0.00	0.00	
10,200.00	91.23	268.75	7,080.47	-71.23	-3,263.41	3,264.18	0.00	0.00	0.00	
10,300.00	91.23	268.75	7,078.33	-73.41	-3,363.36	3,364.16	0.00	0.00	0.00	
10,400.00	91.23	268.75	7,076.18	-75.59	-3,463.31	3,464.14	0.00	0.00	0.00	
10,500.00	91.23	268.75	7,074.04	-77.77	-3,563.27	3,564.12	0.00	0.00	0.00	
10,600.00	91.23	268.75	7,071.90	-79.95	-3,663.22	3,664.09	0.00	0.00	0.00	
10,700.00	91.23	268.75	7,069.75	-82.14	-3,763.17	3,764.07	0.00	0.00	0.00	
10,800.00	91.23	268.75	7,067.61	-84.32	-3,863.13	3,864.05	0.00	0.00	0.00	
10,900.00	91.23	268.75	7,065.47	-86.50	-3,963.08	3,964.02	0.00	0.00	0.00	
11,000.00	91.23	268.75	7,063.32	-88.68	-4,063.03	4,064.00	0.00	0.00	0.00	
11,100.00	91.23	268.75	7,061.18	-90.86	-4,162.99	4,163.98	0.00	0.00	0.00	
11,200.00	91.23	268.75	7,059.04	-93.04	-4,262.94	4,263.95	0.00	0.00	0.00	
11,300.00	91.23	268.75	7,056.89	-95.22	-4,362.89	4,363.93	0.00	0.00	0.00	
11,400.00	91.23	268.75	7,054.75	-97.41	-4,462.85	4,463.91	0.00	0.00	0.00	
11,500.00	91.23	268.75	7,052.61	-99.59	-4,562.80	4,563.89	0.00	0.00	0.00	
11,600.00	91.23	268.75	7,050.46	-101.77	-4,662.75	4,663.86	0.00	0.00	0.00	
11,700.00	91.23	268.75	7,048.32	-103.95	-4,762.71	4,763.84	0.00	0.00	0.00	
11,800.00	91.23	268.75	7,046.18	-106.13	-4,862.66	4,863.82	0.00	0.00	0.00	
11,900.00	91.23	268.75	7,044.03	-108.31	-4,962.61	4,963.79	0.00	0.00	0.00	
12,000.00	91.23	268.75	7,041.89	-110.50	-5,062.56	5,063.77	0.00	0.00	0.00	
LTFT 19 SC 234H PBHL _330FNL_100FWL										
12,041.46	91.23	268.75	7,041.00	-111.40	-5,104.00	5,105.22	0.00	0.00	0.00	
LTFT 19 SC 224H PBHL _390FNL_100FWL										

Planning Report

Database:	TP_EDM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Company:	V-F PETROLUEM	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Project:	Eddy County, NM (NAD27) NMEZ Grid	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site:	Lightfoot 19 State Com	North Reference:	Grid
Well:	224H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

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
LTFT 19 SC 224H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	600,928.00	539,101.80	32° 39' 7.158 N	104° 12' 22.641 W
LTFT 19 SC 224H PBHL - plan hits target center - Point	0.00	0.00	7,041.00	-111.40	-5,104.00	600,816.60	533,997.80	32° 39' 6.112 N	104° 13' 22.342 W
LTFT 19 SC 224H LP - plan hits target center - Point	0.00	0.00	7,140.00	-10.64	-487.58	600,917.36	538,614.22	32° 39' 7.059 N	104° 12' 28.344 W

Anticollision Report

Company:	V-F PETROLUEM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Project:	Eddy County, NM (NAD27) NMEZ Grid	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Reference Site:	Lightfoot 19 State Com	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	224H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lateral	Database:	TP_EDM
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
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 ellipse separation of 300.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	04/24/20		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	12,040.78	Plan #1 (Lateral)	MWD	OWSG 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						
Lightfoot 19 State Com						
234H - Lateral - Plan #1	6,650.00	6,651.00	60.00	11.76	1.244	Level 2, CC
234H - Lateral - Plan #1	6,700.00	6,700.96	60.05	11.41	1.235	Level 2, ES
234H - Lateral - Plan #1	6,750.00	6,750.51	60.73	11.53	1.234	Level 2, SF

Offset Design		Lightfoot 19 State Com - 234H - Lateral - Plan #1											Offset Site Error:		0.00 usft
Survey Program:		0-MWD											Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	1.00	1.00	0.00	0.00	0.19	60.00	0.20	60.00						
50.00	50.00	51.00	51.00	0.12	0.16	0.19	60.00	0.20	60.00	59.79	0.21	281.952			
100.00	100.00	101.00	101.00	0.31	0.31	0.19	60.00	0.20	60.00	59.51	0.49	123.420			
150.00	150.00	151.00	151.00	0.63	0.64	0.19	60.00	0.20	60.00	58.99	1.01	59.419			
200.00	200.00	201.00	201.00	0.95	0.96	0.19	60.00	0.20	60.00	58.47	1.53	39.151			
250.00	250.00	251.00	251.00	1.21	1.21	0.19	60.00	0.20	60.00	58.03	1.97	30.507			
300.00	300.00	301.00	301.00	1.46	1.46	0.19	60.00	0.20	60.00	57.60	2.40	24.994			
350.00	350.00	351.00	351.00	1.68	1.68	0.19	60.00	0.20	60.00	57.20	2.80	21.447			
400.00	400.00	401.00	401.00	1.89	1.90	0.19	60.00	0.20	60.00	56.81	3.19	18.782			
450.00	450.00	451.00	451.00	2.10	2.10	0.19	60.00	0.20	60.00	56.42	3.58	16.774			
500.00	500.00	501.00	501.00	2.31	2.31	0.19	60.00	0.20	60.00	56.04	3.96	15.155			
550.00	550.00	551.00	551.00	2.50	2.51	0.19	60.00	0.20	60.00	55.67	4.33	13.844			
600.00	600.00	601.00	601.00	2.70	2.71	0.19	60.00	0.20	60.00	55.29	4.71	12.742			
650.00	650.00	651.00	651.00	2.89	2.90	0.19	60.00	0.20	60.00	54.92	5.08	11.813			
700.00	700.00	701.00	701.00	3.09	3.09	0.19	60.00	0.20	60.00	54.55	5.45	11.010			
750.00	750.00	751.00	751.00	3.28	3.28	0.19	60.00	0.20	60.00	54.18	5.82	10.314			
800.00	800.00	801.00	801.00	3.47	3.47	0.19	60.00	0.20	60.00	53.82	6.18	9.701			
850.00	850.00	851.00	851.00	3.66	3.66	0.19	60.00	0.20	60.00	53.45	6.55	9.160			
900.00	900.00	901.00	901.00	3.85	3.85	0.19	60.00	0.20	60.00	53.08	6.92	8.675			
950.00	950.00	951.00	951.00	4.03	4.04	0.19	60.00	0.20	60.00	52.72	7.28	8.241			
1,000.00	1,000.00	1,001.00	1,001.00	4.22	4.22	0.19	60.00	0.20	60.00	52.36	7.64	7.848			
1,050.00	1,050.00	1,051.00	1,051.00	4.40	4.41	0.19	60.00	0.20	60.00	51.99	8.01	7.492			
1,100.00	1,100.00	1,101.00	1,101.00	4.59	4.59	0.19	60.00	0.20	60.00	51.63	8.37	7.167			
1,150.00	1,150.00	1,151.00	1,151.00	4.77	4.78	0.19	60.00	0.20	60.00	51.27	8.73	6.870			

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

Anticollision Report

Company:	V-F PETROLUEM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Project:	Eddy County, NM (NAD27) NMEZ Grid	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Reference Site:	Lightfoot 19 State Com	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	224H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lateral	Database:	TP_EDM
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Lightfoot 19 State Com - 234H - Lateral - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,200.00	1,200.00	1,201.00	1,201.00	4.96	4.96	0.19	60.00	0.20	60.00	50.90	9.10	6.596		
1,250.00	1,250.00	1,251.00	1,251.00	5.14	5.15	0.19	60.00	0.20	60.00	50.54	9.46	6.343		
1,300.00	1,300.00	1,301.00	1,301.00	5.33	5.33	0.19	60.00	0.20	60.00	50.18	9.82	6.110		
1,350.00	1,350.00	1,351.00	1,351.00	5.51	5.51	0.19	60.00	0.20	60.00	49.82	10.18	5.893		
1,400.00	1,400.00	1,401.00	1,401.00	5.69	5.70	0.19	60.00	0.20	60.00	49.46	10.54	5.691		
1,450.00	1,450.00	1,451.00	1,451.00	5.88	5.88	0.19	60.00	0.20	60.00	49.10	10.90	5.502		
1,500.00	1,500.00	1,501.00	1,501.00	6.06	6.06	0.19	60.00	0.20	60.00	48.73	11.27	5.326		
1,550.00	1,550.00	1,551.00	1,551.00	6.24	6.24	0.19	60.00	0.20	60.00	48.37	11.63	5.161		
1,600.00	1,600.00	1,601.00	1,601.00	6.42	6.43	0.19	60.00	0.20	60.00	48.01	11.99	5.005		
1,650.00	1,650.00	1,651.00	1,651.00	6.61	6.61	0.19	60.00	0.20	60.00	47.65	12.35	4.859		
1,700.00	1,700.00	1,701.00	1,701.00	6.79	6.79	0.19	60.00	0.20	60.00	47.29	12.71	4.721		
1,750.00	1,750.00	1,751.00	1,751.00	6.97	6.97	0.19	60.00	0.20	60.00	46.93	13.07	4.591		
1,800.00	1,800.00	1,801.00	1,801.00	7.15	7.15	0.19	60.00	0.20	60.00	46.57	13.43	4.468		
1,850.00	1,850.00	1,851.00	1,851.00	7.33	7.34	0.19	60.00	0.20	60.00	46.21	13.79	4.351		
1,900.00	1,900.00	1,901.00	1,901.00	7.51	7.52	0.19	60.00	0.20	60.00	45.85	14.15	4.241		
1,950.00	1,950.00	1,951.00	1,951.00	7.69	7.70	0.19	60.00	0.20	60.00	45.49	14.51	4.135		
2,000.00	2,000.00	2,001.00	2,001.00	7.88	7.88	0.19	60.00	0.20	60.00	45.13	14.87	4.035		
2,050.00	2,050.00	2,051.00	2,051.00	8.06	8.06	0.19	60.00	0.20	60.00	44.77	15.23	3.940		
2,100.00	2,100.00	2,101.00	2,101.00	8.24	8.24	0.19	60.00	0.20	60.00	44.41	15.59	3.849		
2,150.00	2,150.00	2,151.00	2,151.00	8.42	8.42	0.19	60.00	0.20	60.00	44.05	15.95	3.762		
2,200.00	2,200.00	2,201.00	2,201.00	8.60	8.60	0.19	60.00	0.20	60.00	43.69	16.31	3.679		
2,250.00	2,250.00	2,251.00	2,251.00	8.78	8.78	0.19	60.00	0.20	60.00	43.33	16.67	3.600		
2,300.00	2,300.00	2,301.00	2,301.00	8.96	8.97	0.19	60.00	0.20	60.00	42.97	17.03	3.524		
2,350.00	2,350.00	2,351.00	2,351.00	9.14	9.15	0.19	60.00	0.20	60.00	42.61	17.39	3.451		
2,400.00	2,400.00	2,401.00	2,401.00	9.32	9.33	0.19	60.00	0.20	60.00	42.25	17.75	3.381		
2,450.00	2,450.00	2,451.00	2,451.00	9.50	9.51	0.19	60.00	0.20	60.00	41.89	18.11	3.314		
2,500.00	2,500.00	2,501.00	2,501.00	9.68	9.69	0.19	60.00	0.20	60.00	41.54	18.46	3.249		
2,550.00	2,550.00	2,551.00	2,551.00	9.87	9.87	0.19	60.00	0.20	60.00	41.18	18.82	3.187		
2,600.00	2,600.00	2,601.00	2,601.00	10.05	10.05	0.19	60.00	0.20	60.00	40.82	19.18	3.128		
2,650.00	2,650.00	2,651.00	2,651.00	10.23	10.23	0.19	60.00	0.20	60.00	40.46	19.54	3.070		
2,700.00	2,700.00	2,701.00	2,701.00	10.41	10.41	0.19	60.00	0.20	60.00	40.10	19.90	3.015		
2,750.00	2,750.00	2,751.00	2,751.00	10.59	10.59	0.19	60.00	0.20	60.00	39.74	20.26	2.961		
2,800.00	2,800.00	2,801.00	2,801.00	10.77	10.77	0.19	60.00	0.20	60.00	39.38	20.62	2.910		
2,850.00	2,850.00	2,851.00	2,851.00	10.95	10.95	0.19	60.00	0.20	60.00	39.02	20.98	2.860		
2,900.00	2,900.00	2,901.00	2,901.00	11.13	11.13	0.19	60.00	0.20	60.00	38.66	21.34	2.812		
2,950.00	2,950.00	2,951.00	2,951.00	11.31	11.31	0.19	60.00	0.20	60.00	38.30	21.70	2.765		
3,000.00	3,000.00	3,001.00	3,001.00	11.49	11.49	0.19	60.00	0.20	60.00	37.94	22.06	2.720		
3,050.00	3,050.00	3,051.00	3,051.00	11.67	11.67	0.19	60.00	0.20	60.00	37.58	22.42	2.677		
3,100.00	3,100.00	3,101.00	3,101.00	11.85	11.85	0.19	60.00	0.20	60.00	37.22	22.78	2.634		
3,150.00	3,150.00	3,151.00	3,151.00	12.03	12.03	0.19	60.00	0.20	60.00	36.87	23.13	2.594		
3,200.00	3,200.00	3,201.00	3,201.00	12.21	12.21	0.19	60.00	0.20	60.00	36.51	23.49	2.554		
3,250.00	3,250.00	3,251.00	3,251.00	12.39	12.39	0.19	60.00	0.20	60.00	36.15	23.85	2.515		
3,300.00	3,300.00	3,301.00	3,301.00	12.57	12.57	0.19	60.00	0.20	60.00	35.79	24.21	2.478		
3,350.00	3,350.00	3,351.00	3,351.00	12.75	12.75	0.19	60.00	0.20	60.00	35.43	24.57	2.442		
3,400.00	3,400.00	3,401.00	3,401.00	12.93	12.93	0.19	60.00	0.20	60.00	35.07	24.93	2.407		
3,450.00	3,450.00	3,451.00	3,451.00	13.11	13.11	0.19	60.00	0.20	60.00	34.71	25.29	2.373		
3,500.00	3,500.00	3,501.00	3,501.00	13.29	13.29	0.19	60.00	0.20	60.00	34.35	25.65	2.339		
3,550.00	3,550.00	3,551.00	3,551.00	13.47	13.47	0.19	60.00	0.20	60.00	33.99	26.01	2.307		
3,600.00	3,600.00	3,601.00	3,601.00	13.65	13.65	0.19	60.00	0.20	60.00	33.63	26.37	2.276		
3,650.00	3,650.00	3,651.00	3,651.00	13.83	13.83	0.19	60.00	0.20	60.00	33.28	26.72	2.245		
3,700.00	3,700.00	3,701.00	3,701.00	14.01	14.01	0.19	60.00	0.20	60.00	32.92	27.08	2.215		
3,750.00	3,750.00	3,751.00	3,751.00	14.19	14.19	0.19	60.00	0.20	60.00	32.56	27.44	2.186		

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

Anticollision Report

Company:	V-F PETROLUEM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Project:	Eddy County, NM (NAD27) NMEZ Grid	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Reference Site:	Lightfoot 19 State Com	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	224H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lateral	Database:	TP_EDM
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Lightfoot 19 State Com - 234H - Lateral - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,800.00	3,800.00	3,801.00	3,801.00	14.37	14.37	0.19	60.00	0.20	60.00	32.20	27.80	2.158		
3,850.00	3,850.00	3,851.00	3,851.00	14.55	14.55	0.19	60.00	0.20	60.00	31.84	28.16	2.131		
3,900.00	3,900.00	3,901.00	3,901.00	14.73	14.73	0.19	60.00	0.20	60.00	31.48	28.52	2.104		
3,950.00	3,950.00	3,951.00	3,951.00	14.91	14.91	0.19	60.00	0.20	60.00	31.12	28.88	2.078		
4,000.00	4,000.00	4,001.00	4,001.00	15.09	15.09	0.19	60.00	0.20	60.00	30.76	29.24	2.052		
4,050.00	4,050.00	4,051.00	4,051.00	15.27	15.27	0.19	60.00	0.20	60.00	30.41	29.60	2.027		
4,100.00	4,100.00	4,101.00	4,101.00	15.45	15.45	0.19	60.00	0.20	60.00	30.05	29.95	2.003		
4,150.00	4,150.00	4,151.00	4,151.00	15.63	15.63	0.19	60.00	0.20	60.00	29.69	30.31	1.979		
4,200.00	4,200.00	4,201.00	4,201.00	15.81	15.81	0.19	60.00	0.20	60.00	29.33	30.67	1.956		
4,250.00	4,250.00	4,251.00	4,251.00	15.99	15.99	0.19	60.00	0.20	60.00	28.97	31.03	1.934		
4,300.00	4,300.00	4,301.00	4,301.00	16.17	16.17	0.19	60.00	0.20	60.00	28.61	31.39	1.911		
4,350.00	4,350.00	4,351.00	4,351.00	16.34	16.35	0.19	60.00	0.20	60.00	28.25	31.75	1.890		
4,400.00	4,400.00	4,401.00	4,401.00	16.52	16.53	0.19	60.00	0.20	60.00	27.89	32.11	1.869		
4,450.00	4,450.00	4,451.00	4,451.00	16.70	16.71	0.19	60.00	0.20	60.00	27.53	32.47	1.848		
4,500.00	4,500.00	4,501.00	4,501.00	16.88	16.89	0.19	60.00	0.20	60.00	27.18	32.82	1.828		
4,550.00	4,550.00	4,551.00	4,551.00	17.06	17.07	0.19	60.00	0.20	60.00	26.82	33.18	1.808		
4,600.00	4,600.00	4,601.00	4,601.00	17.24	17.25	0.19	60.00	0.20	60.00	26.46	33.54	1.789		
4,650.00	4,650.00	4,651.00	4,651.00	17.42	17.43	0.19	60.00	0.20	60.00	26.10	33.90	1.770		
4,700.00	4,700.00	4,701.00	4,701.00	17.60	17.61	0.19	60.00	0.20	60.00	25.74	34.26	1.751		
4,750.00	4,750.00	4,751.00	4,751.00	17.78	17.79	0.19	60.00	0.20	60.00	25.38	34.62	1.733		
4,800.00	4,800.00	4,801.00	4,801.00	17.96	17.97	0.19	60.00	0.20	60.00	25.02	34.98	1.715		
4,850.00	4,850.00	4,851.00	4,851.00	18.14	18.14	0.19	60.00	0.20	60.00	24.66	35.34	1.698		
4,900.00	4,900.00	4,901.00	4,901.00	18.32	18.32	0.19	60.00	0.20	60.00	24.31	35.69	1.681		
4,950.00	4,950.00	4,951.00	4,951.00	18.50	18.50	0.19	60.00	0.20	60.00	23.95	36.05	1.664		
5,000.00	5,000.00	5,001.00	5,001.00	18.68	18.68	0.19	60.00	0.20	60.00	23.59	36.41	1.648		
5,050.00	5,050.00	5,051.00	5,051.00	18.86	18.86	0.19	60.00	0.20	60.00	23.23	36.77	1.632		
5,100.00	5,100.00	5,101.00	5,101.00	19.04	19.04	0.19	60.00	0.20	60.00	22.87	37.13	1.616		
5,150.00	5,150.00	5,151.00	5,151.00	19.22	19.22	0.19	60.00	0.20	60.00	22.51	37.49	1.601		
5,200.00	5,200.00	5,201.00	5,201.00	19.40	19.40	0.19	60.00	0.20	60.00	22.15	37.85	1.585		
5,250.00	5,250.00	5,251.00	5,251.00	19.58	19.58	0.19	60.00	0.20	60.00	21.80	38.21	1.570		
5,300.00	5,300.00	5,301.00	5,301.00	19.76	19.76	0.19	60.00	0.20	60.00	21.44	38.56	1.556		
5,350.00	5,350.00	5,351.00	5,351.00	19.94	19.94	0.19	60.00	0.20	60.00	21.08	38.92	1.542		
5,400.00	5,400.00	5,401.00	5,401.00	20.12	20.12	0.19	60.00	0.20	60.00	20.72	39.28	1.527		
5,450.00	5,450.00	5,451.00	5,451.00	20.30	20.30	0.19	60.00	0.20	60.00	20.36	39.64	1.514		
5,500.00	5,500.00	5,501.00	5,501.00	20.48	20.48	0.19	60.00	0.20	60.00	20.00	40.00	1.500		
5,550.00	5,550.00	5,551.00	5,551.00	20.66	20.66	0.19	60.00	0.20	60.00	19.64	40.36	1.487 Level 3		
5,600.00	5,600.00	5,601.00	5,601.00	20.83	20.84	0.19	60.00	0.20	60.00	19.28	40.72	1.474 Level 3		
5,650.00	5,650.00	5,651.00	5,651.00	21.01	21.02	0.19	60.00	0.20	60.00	18.93	41.07	1.461 Level 3		
5,700.00	5,700.00	5,701.00	5,701.00	21.19	21.20	0.19	60.00	0.20	60.00	18.57	41.43	1.448 Level 3		
5,750.00	5,750.00	5,751.00	5,751.00	21.37	21.38	0.19	60.00	0.20	60.00	18.21	41.79	1.436 Level 3		
5,800.00	5,800.00	5,801.00	5,801.00	21.55	21.56	0.19	60.00	0.20	60.00	17.85	42.15	1.423 Level 3		
5,850.00	5,850.00	5,851.00	5,851.00	21.73	21.74	0.19	60.00	0.20	60.00	17.49	42.51	1.411 Level 3		
5,900.00	5,900.00	5,901.00	5,901.00	21.91	21.92	0.19	60.00	0.20	60.00	17.13	42.87	1.400 Level 3		
5,950.00	5,950.00	5,951.00	5,951.00	22.09	22.09	0.19	60.00	0.20	60.00	16.77	43.23	1.388 Level 3		
6,000.00	6,000.00	6,001.00	6,001.00	22.27	22.27	0.19	60.00	0.20	60.00	16.42	43.59	1.377 Level 3		
6,050.00	6,050.00	6,051.00	6,051.00	22.45	22.45	0.19	60.00	0.20	60.00	16.06	43.94	1.365 Level 3		
6,100.00	6,100.00	6,101.00	6,101.00	22.63	22.63	0.19	60.00	0.20	60.00	15.70	44.30	1.354 Level 3		
6,150.00	6,150.00	6,151.00	6,151.00	22.81	22.81	0.19	60.00	0.20	60.00	15.34	44.66	1.343 Level 3		
6,200.00	6,200.00	6,201.00	6,201.00	22.99	22.99	0.19	60.00	0.20	60.00	14.98	45.02	1.333 Level 3		
6,250.00	6,250.00	6,251.00	6,251.00	23.17	23.17	0.19	60.00	0.20	60.00	14.62	45.38	1.322 Level 3		
6,300.00	6,300.00	6,301.00	6,301.00	23.35	23.35	0.19	60.00	0.20	60.00	14.26	45.74	1.312 Level 3		
6,350.00	6,350.00	6,351.00	6,351.00	23.53	23.53	0.19	60.00	0.20	60.00	13.90	46.10	1.302 Level 3		

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

Anticollision Report

Company:	V-F PETROLUEM	Local Co-ordinate Reference:	Well 224H - Slot LTFT 19 SC 224H SHL
Project:	Eddy County, NM (NAD27) NMEZ Grid	TVD Reference:	3516+20 @ 3536.00usft (Planning)
Reference Site:	Lightfoot 19 State Com	MD Reference:	3516+20 @ 3536.00usft (Planning)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	224H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lateral	Database:	TP_EDM
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Lightfoot 19 State Com - 234H - Lateral - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
6,400.00	6,400.00	6,401.00	6,401.00	23.71	23.71	0.19	60.00	0.20	60.00	13.55	46.45	1.292	Level 3	
6,450.00	6,450.00	6,451.00	6,451.00	23.89	23.89	0.19	60.00	0.20	60.00	13.19	46.81	1.282	Level 3	
6,500.00	6,500.00	6,501.00	6,501.00	24.07	24.07	0.19	60.00	0.20	60.00	12.83	47.17	1.272	Level 3	
6,550.00	6,550.00	6,551.00	6,551.00	24.24	24.25	0.19	60.00	0.20	60.00	12.47	47.53	1.262	Level 3	
6,600.00	6,600.00	6,601.00	6,601.00	24.42	24.43	0.19	60.00	0.20	60.00	12.11	47.89	1.253	Level 3	
6,650.00	6,650.00	6,651.00	6,651.00	24.60	24.61	0.19	60.00	0.20	60.00	11.76	48.24	1.244	Level 2, CC	
6,650.03	6,650.03	6,651.03	6,651.03	24.60	24.61	0.19	60.00	0.20	60.00	11.76	48.25	1.244	Level 2	
6,700.00	6,699.96	6,700.96	6,700.96	24.77	24.79	92.83	60.00	0.20	60.05	11.41	48.64	1.235	Level 2, ES	
6,750.00	6,749.51	6,750.51	6,750.51	24.95	24.96	98.83	60.00	0.20	60.73	11.53	49.19	1.234	Level 2, SF	
6,800.00	6,798.11	6,799.11	6,799.11	25.13	25.14	108.67	60.00	0.20	63.59	13.74	49.85	1.276	Level 3	
6,850.00	6,845.23	6,846.23	6,846.23	25.30	25.31	120.21	60.00	0.20	70.90	20.42	50.48	1.405	Level 3	
6,900.00	6,890.34	6,891.34	6,891.34	25.47	25.47	130.99	60.00	0.20	84.35	33.42	50.93	1.656		
6,950.00	6,932.96	6,933.96	6,933.96	25.63	25.62	139.57	60.00	0.20	104.36	53.15	51.22	2.038		
7,000.00	6,972.62	6,973.62	6,973.62	25.78	25.77	145.75	60.00	0.20	130.43	79.02	51.41	2.537		
7,050.00	7,008.89	7,009.89	7,009.89	25.94	25.90	149.89	60.00	0.20	161.74	110.19	51.55	3.137		
7,100.00	7,041.35	7,042.35	7,042.35	26.10	26.01	152.38	60.00	0.20	197.53	145.85	51.68	3.822		
7,150.00	7,069.67	7,070.67	7,070.67	26.28	26.11	153.42	60.00	0.20	237.09	185.30	51.79	4.578		
7,200.00	7,093.53	7,094.53	7,094.53	26.49	26.20	153.00	60.00	0.20	279.80	227.92	51.88	5.393		
7,250.00	7,112.67	7,113.67	7,113.67	26.74	26.27	150.66	60.00	0.20	325.04	273.09	51.95	6.257		
7,300.00	7,126.88	7,127.88	7,127.88	27.05	26.32	145.06	60.00	0.20	372.24	320.25	51.99	7.160		
7,350.00	7,136.00	7,137.00	7,137.00	27.40	26.35	132.25	60.00	0.20	420.81	368.80	52.01	8.091		
7,400.00	7,139.94	7,140.94	7,140.94	27.80	26.37	101.63	60.00	0.20	470.18	418.17	52.01	9.041		
7,450.00	7,139.42	7,140.42	7,140.42	28.25	26.36	79.55	60.00	0.20	519.80	467.81	51.99	9.999		
7,500.00	7,138.34	7,139.34	7,139.34	28.73	26.36	78.56	60.00	0.20	569.48	517.51	51.97	10.958		
7,550.00	7,137.27	7,138.27	7,138.27	29.29	26.36	77.58	60.00	0.20	619.21	567.26	51.95	11.919		
7,600.00	7,136.20	7,137.20	7,137.20	29.85	26.35	76.61	60.00	0.20	668.98	617.05	51.94	12.881		
7,650.00	7,135.13	7,136.13	7,136.13	30.49	26.35	75.64	60.00	0.20	718.79	666.86	51.93	13.843		
7,700.00	7,134.06	7,135.06	7,135.06	31.13	26.34	74.69	60.00	0.20	768.61	716.70	51.92	14.805		
7,750.00	7,132.99	7,133.99	7,133.99	31.84	26.34	73.74	60.00	0.20	818.46	766.55	51.91	15.768		
7,800.00	7,131.91	7,132.91	7,132.91	32.54	26.34	72.80	60.00	0.20	868.32	816.42	51.90	16.731		
7,850.00	7,130.84	7,131.84	7,131.84	33.31	26.33	71.87	60.00	0.20	918.19	866.30	51.89	17.694		
7,900.00	7,129.77	7,130.77	7,130.77	34.08	26.33	70.95	60.00	0.20	968.08	916.19	51.89	18.658		

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