

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 286733

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

1. Operator Name and Address KAISER-FRANCIS OIL CO P.O. Box 21468 Tulsa, OK 74121		2. OGRID Number 12361
		3. API Number 30-025-47733
4. Property Code 316706	5. Property Name BELL LAKE UNIT SOUTH	6. Well No. 228H

7. Surface Location

UL - Lot J	Section 6	Township 24S	Range 34E	Lot Idn J	Feet From 2141	N/S Line S	Feet From 2464	E/W Line E	County Lea
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8. Proposed Bottom Hole Location

UL - Lot B	Section 31	Township 23S	Range 34E	Lot Idn B	Feet From 100	N/S Line N	Feet From 1950	E/W Line E	County Lea
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9. Pool Information

BELL LAKE;BONE SPRING, SOUTH	98264
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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 3606
16. Multiple N	17. Proposed Depth 18945	18. Formation Bone Spring	19. Contractor	20. Spud Date 9/30/2020
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	1400	260	0
Int1	12.25	9.625	40	5300	1450	0
Prod	7.875	5.5	20	18945	450	4000

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	10000	5000	Cameron

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 Kristin L Gray	Approved By: Paul F Kautz	
Title:	Title: Geologist	
Email Address: kristing@kfoc.net	Approved Date: 9/25/2020	Expiration Date: 9/25/2022
Date: 9/17/2020	Phone: 918-491-4209	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, 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
	98264	Bell Lake; Bone Spring, South
⁴ Property Code	⁵ Property Name	⁶ Well Number
316706	BELL LAKE UNIT SOUTH	228H
⁷ OGRID No.	⁸ Operator Name	⁹ Elevation
12361	KAISER-FRANCIS OIL CO.	3606.1

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
J	6	24 S	34 E	J	2141	SOUTH	2464	EAST	LEA

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
B	31	23 S	34 E	B	100	NORTH	1950	EAST	LEA

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
480.00		-	-

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. Signature: <i>Charlotte Van Valkenburg</i> Date: 9/17/2020 Printed Name: Charlotte Van Valkenburg E-mail Address: Charlotv@kfoc.net	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. AUGUST 24, 2020 Date of Survey Signature and Seal of Professional Surveyor: <i>William F. Jaramila</i> Certificate Number: 12797 NO. 6956
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Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

GAS CAPTURE PLAN

Date: 9/25/2020

☒ Original

Operator & OGRID No.: [12361] KAISER-FRANCIS OIL CO

☐ 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
BELL LAKE UNIT SOUTH #228H	30-025-47733	J-6-24S-34E	2141S 2464E	2000	None	

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 TARGA MIDSTREAM SERVICES LLC and will be connected to TARGA MIDSTREAM SERVICES LLC High/Low Pressure gathering system located in Lea County, New Mexico. It will require 11000' of pipeline to connect the facility to High/Low Pressure gathering system. KAISER-FRANCIS OIL CO provides (periodically) to TARGA MIDSTREAM SERVICES LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, KAISER-FRANCIS OIL CO and TARGA MIDSTREAM SERVICES LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at TARGA MIDSTREAM SERVICES LLC Processing Plant located in Sec. 36, Twn. 19S, Rng. 36E, Lea 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 TARGA MIDSTREAM SERVICES LLC system at that time. Based on current information, it is KAISER-FRANCIS OIL CO'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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Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form APD Comments

Permit 286733

PERMIT COMMENTS

Operator Name and Address: KAISER-FRANCIS OIL CO [12361] P.O. Box 21468 Tulsa, OK 74121		API Number: 30-025-47733
		Well: BELL LAKE UNIT SOUTH #228H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 286733

PERMIT CONDITIONS OF APPROVAL

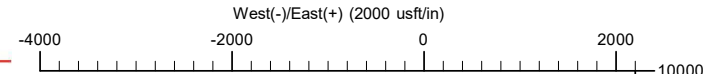
Operator Name and Address: KAISER-FRANCIS OIL CO [12361] P.O. Box 21468 Tulsa, OK 74121	API Number: 30-025-47733
	Well: BELL LAKE UNIT SOUTH #228H

OCD Reviewer	Condition
pkautz	Will require a directional survey with the C-104
pkautz	1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --
pkautz	If cement does not circulate to surface, must run temperature survey or other log to determine top of cement
pkautz	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water
pkautz	1)- 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 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104
pkautz	It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required.
pkautz	Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.

KAISER-FRANCIS OIL COMPANY

Project: Lea County, NM (NMEZ) NAD83 Grid 3605.9 @ 3605.90usft (GLOnly)
 Site: Bell Lake Unit South 227H,228H,327H,428H North American Datum 1983
 Well: BLUS 228H
 Wellbore: Lateral
 Design: Plan #1

Kaiser-Francis Oil Company



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	
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
1949.07	8.98	87.16	1947.24	1.74	35.08	2.00	87.16	1.42	
4789.43	8.98	87.16	4752.76	23.71	477.96	0.00	0.00	19.29	
5238.50	0.00	0.00	5200.00	25.45	513.04	2.00	180.00	20.71	
10325.54	0.00	0.00	10287.04	25.45	513.04	0.00	0.00	20.71	BLUS 228H KOP_2162FSL_1950FEL
11225.54	90.00	359.47	10860.00	598.39	507.70	10.00	359.47	593.66	
18945.34	90.00	359.47	10860.00	8317.85	435.72	0.00	0.00	8313.46	BLUS 228H PBHL_100FNL_1950FEL

FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
1353.00	1353.00	Rustler
1733.00	1733.26	Salado
2036.00	2038.94	Top of Salt
5022.00	5060.39	Base of Salt
5222.00	5260.50	Lamar
5319.00	5357.50	Bell Canyon
6169.00	6207.50	cherry Canyon
7617.00	7655.50	Brushy Canyon
8767.00	8805.50	Bone Spring
8939.00	8977.50	Avalon
9909.00	9947.50	1st Bone Spring
10477.00	10519.16	2nd Bone Spring
10860.00	11225.54	Target



Azimuths to Grid North
 True North: -0.44°
 Magnetic North: 6.17°

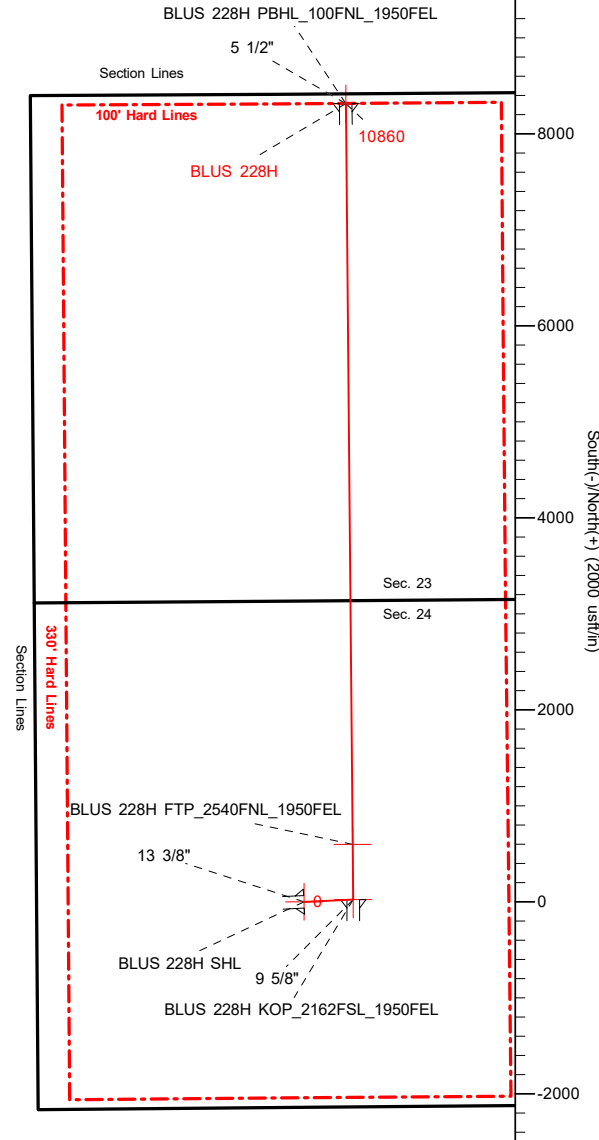
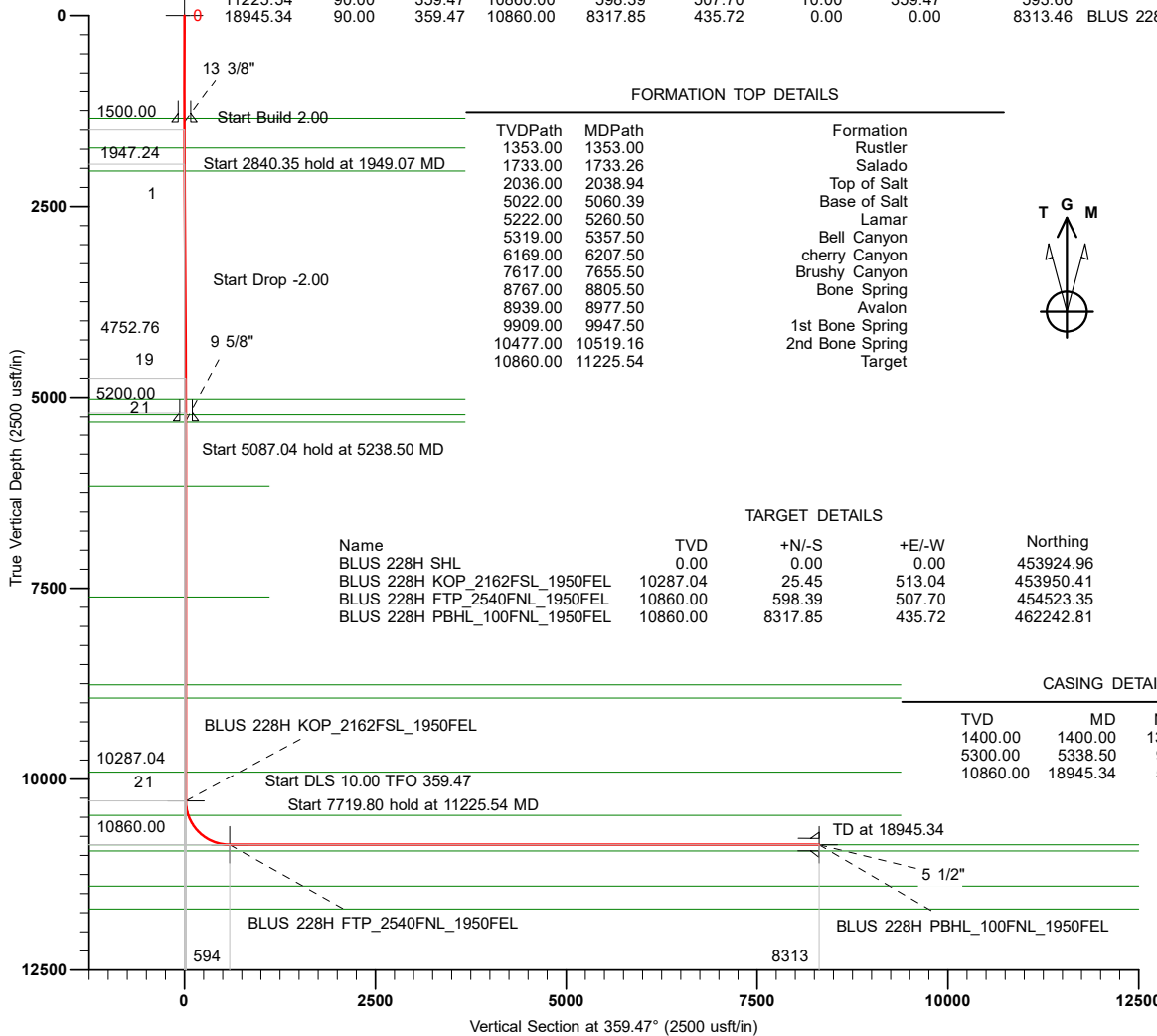
Magnetic Field
 Strength: 47595.1nT
 Dip Angle: 59.96°
 Date: 08/27/2020
 Model: IGRF2020

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
BLUS 228H SHL	0.00	0.00	0.00	453924.96	796343.82
BLUS 228H KOP_2162FSL_1950FEL	10287.04	25.45	513.04	453950.41	796856.86
BLUS 228H FTP_2540FNL_1950FEL	10860.00	598.39	507.70	454523.35	796851.52
BLUS 228H PBHL_100FNL_1950FEL	10860.00	8317.85	435.72	462242.81	796779.54

CASING DETAILS

TVD	MD	Name	Size
1400.00	1400.00	13 3/8"	13.37
5300.00	5338.50	9 5/8"	9.62
10860.00	18945.34	5 1/2"	5.50



To convert a Magnetic Direction to a Grid Direction, Add 6.17°
 To convert a Magnetic Direction to a True Direction, Add 6.61° East
 Magnetic North is 6.17° East of Grid North (Magnetic Convergence)
 Magnetic North is 6.61° East of True North (Magnetic Declination)

Plan: Plan #1 (BLUS 228H/Lateral)
 Created By: Mekka Williams
 13:10, August 27 2020

SB DIRECTIONAL SERVICES
 5135 SW 29TH ST
 OKLAHOMA CITY, OK 73179



Kaiser-Francis Oil Company

KAISER-FRANCIS OIL COMPANY

Lea County, NM (NMEZ) NAD83 Grid

Bell Lake Unit South 227H,228H,327H,428H

BLUS 228H - Slot 228H

Lateral

Plan: Plan #1

Survey Report Landscape

27 August, 2020





Survey Report Landscape

Kaiser-Francis Oil Company

Company:	KAISER-FRANCIS OIL COMPANY	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Project:	Lea County, NM (NMEZ) NAD83 Grid	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Well:	BLUS 228H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	SBDIR_EDM

Project	Lea County, NM (NMEZ) NAD83 Grid		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Bell Lake Unit South 227H,228H,327H,428H		
Site Position:		Northing:	453,944.96 usft
From:	Map	Easting:	796,343.61 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32.2452781°N
		Longitude:	103.5085103°W
		Grid Convergence:	0.44 °

Well		BLUS 228H - Slot 228H				
Well Position	+N/-S	0.00 usft	Northing:	453,924.96 usft	Latitude:	32.2452231°N
	+E/-W	0.00 usft	Easting:	796,343.82 usft	Longitude:	103.5085101°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,605.90 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	08/27/20	6.61	59.96	47,595.12689250

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.47

Survey Tool Program	Date	08/27/20		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	18,945.34	Plan #1 (Lateral)		



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
BLUS 228H SHL										
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
1,353.00	0.00	0.00	1,353.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
Rustler										
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
13 3/8"										
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82
1,600.00	2.00	87.16	1,599.98	0.09	1.74	1.75	87.16	2.00	453,925.05	796,345.56
1,700.00	4.00	87.16	1,699.84	0.35	6.97	6.98	87.16	2.00	453,925.31	796,350.79
1,733.26	4.67	87.16	1,733.00	0.47	9.48	9.49	87.16	2.00	453,925.43	796,353.30
Salado										
1,800.00	6.00	87.16	1,799.45	0.78	15.67	15.69	87.16	2.00	453,925.74	796,359.49
1,900.00	8.00	87.16	1,898.70	1.38	27.85	27.88	87.16	2.00	453,926.34	796,371.67
1,949.07	8.98	87.16	1,947.24	1.74	35.08	35.13	87.16	2.00	453,926.70	796,378.90
2,000.00	8.98	87.16	1,997.54	2.13	43.02	43.08	87.16	0.00	453,927.09	796,386.84



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
2,038.94	8.98	87.16	2,036.00	2.44	49.09	49.15	87.16	0.00	453,927.40	796,392.91
Top of Salt										
2,100.00	8.98	87.16	2,096.31	2.91	58.62	58.69	87.16	0.00	453,927.87	796,402.44
2,200.00	8.98	87.16	2,195.09	3.68	74.21	74.30	87.16	0.00	453,928.64	796,418.03
2,300.00	8.98	87.16	2,293.86	4.46	89.80	89.91	87.16	0.00	453,929.42	796,433.62
2,400.00	8.98	87.16	2,392.63	5.23	105.39	105.52	87.16	0.00	453,930.19	796,449.21
2,500.00	8.98	87.16	2,491.41	6.00	120.98	121.13	87.16	0.00	453,930.96	796,464.80
2,600.00	8.98	87.16	2,590.18	6.78	136.58	136.75	87.16	0.00	453,931.74	796,480.40
2,700.00	8.98	87.16	2,688.96	7.55	152.17	152.36	87.16	0.00	453,932.51	796,495.99
2,800.00	8.98	87.16	2,787.73	8.32	167.76	167.97	87.16	0.00	453,933.28	796,511.58
2,900.00	8.98	87.16	2,886.50	9.10	183.35	183.58	87.16	0.00	453,934.06	796,527.17
3,000.00	8.98	87.16	2,985.28	9.87	198.95	199.19	87.16	0.00	453,934.83	796,542.77
3,100.00	8.98	87.16	3,084.05	10.64	214.54	214.80	87.16	0.00	453,935.60	796,558.36
3,200.00	8.98	87.16	3,182.83	11.42	230.13	230.41	87.16	0.00	453,936.38	796,573.95
3,300.00	8.98	87.16	3,281.60	12.19	245.72	246.03	87.16	0.00	453,937.15	796,589.54
3,400.00	8.98	87.16	3,380.37	12.97	261.32	261.64	87.16	0.00	453,937.93	796,605.14
3,500.00	8.98	87.16	3,479.15	13.74	276.91	277.25	87.16	0.00	453,938.70	796,620.73
3,600.00	8.98	87.16	3,577.92	14.51	292.50	292.86	87.16	0.00	453,939.47	796,636.32
3,700.00	8.98	87.16	3,676.69	15.29	308.09	308.47	87.16	0.00	453,940.25	796,651.91
3,800.00	8.98	87.16	3,775.47	16.06	323.69	324.08	87.16	0.00	453,941.02	796,667.51
3,900.00	8.98	87.16	3,874.24	16.83	339.28	339.69	87.16	0.00	453,941.79	796,683.10
4,000.00	8.98	87.16	3,973.02	17.61	354.87	355.31	87.16	0.00	453,942.57	796,698.69
4,100.00	8.98	87.16	4,071.79	18.38	370.46	370.92	87.16	0.00	453,943.34	796,714.28
4,200.00	8.98	87.16	4,170.56	19.15	386.05	386.53	87.16	0.00	453,944.11	796,729.87
4,300.00	8.98	87.16	4,269.34	19.93	401.65	402.14	87.16	0.00	453,944.89	796,745.47
4,400.00	8.98	87.16	4,368.11	20.70	417.24	417.75	87.16	0.00	453,945.66	796,761.06
4,500.00	8.98	87.16	4,466.89	21.48	432.83	433.36	87.16	0.00	453,946.44	796,776.65



Survey Report Landscape

Kaiser-Francis Oil Company

Company:	KAISER-FRANCIS OIL COMPANY	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Project:	Lea County, NM (NMEZ) NAD83 Grid	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Well:	BLUS 228H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
4,600.00	8.98	87.16	4,565.66	22.25	448.42	448.98	87.16	0.00	453,947.21	796,792.24
4,700.00	8.98	87.16	4,664.43	23.02	464.02	464.59	87.16	0.00	453,947.98	796,807.84
4,789.43	8.98	87.16	4,752.76	23.71	477.96	478.55	87.16	0.00	453,948.67	796,821.78
4,800.00	8.77	87.16	4,763.21	23.80	479.59	480.18	87.16	2.00	453,948.76	796,823.41
4,900.00	6.77	87.16	4,862.29	24.47	493.09	493.70	87.16	2.00	453,949.43	796,836.91
5,000.00	4.77	87.16	4,961.78	24.96	503.13	503.75	87.16	2.00	453,949.92	796,846.95
5,060.39	3.56	87.16	5,022.00	25.18	507.51	508.14	87.16	2.00	453,950.14	796,851.33
Base of Salt										
5,100.00	2.77	87.16	5,061.55	25.29	509.70	510.33	87.16	2.00	453,950.25	796,853.52
5,200.00	0.77	87.16	5,161.50	25.44	512.78	513.41	87.16	2.00	453,950.40	796,856.60
5,238.50	0.00	0.00	5,200.00	25.45	513.04	513.67	87.16	2.00	453,950.41	796,856.86
5,260.50	0.00	0.00	5,222.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
Lamar										
5,300.00	0.00	0.00	5,261.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
5,338.50	0.00	0.00	5,300.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9 5/8"										
5,357.50	0.00	0.00	5,319.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
Bell Canyon										
5,400.00	0.00	0.00	5,361.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
5,500.00	0.00	0.00	5,461.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
5,600.00	0.00	0.00	5,561.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
5,700.00	0.00	0.00	5,661.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
5,800.00	0.00	0.00	5,761.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
5,900.00	0.00	0.00	5,861.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,000.00	0.00	0.00	5,961.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,100.00	0.00	0.00	6,061.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,200.00	0.00	0.00	6,161.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
6,207.50	0.00	0.00	6,169.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
cherry Canyon										
6,300.00	0.00	0.00	6,261.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,400.00	0.00	0.00	6,361.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,500.00	0.00	0.00	6,461.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,600.00	0.00	0.00	6,561.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,700.00	0.00	0.00	6,661.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,800.00	0.00	0.00	6,761.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
6,900.00	0.00	0.00	6,861.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,000.00	0.00	0.00	6,961.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,100.00	0.00	0.00	7,061.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,200.00	0.00	0.00	7,161.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,300.00	0.00	0.00	7,261.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,400.00	0.00	0.00	7,361.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,500.00	0.00	0.00	7,461.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,600.00	0.00	0.00	7,561.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,655.50	0.00	0.00	7,617.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
Brushy Canyon										
7,700.00	0.00	0.00	7,661.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,800.00	0.00	0.00	7,761.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
7,900.00	0.00	0.00	7,861.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,000.00	0.00	0.00	7,961.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,100.00	0.00	0.00	8,061.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,200.00	0.00	0.00	8,161.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,300.00	0.00	0.00	8,261.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,400.00	0.00	0.00	8,361.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,500.00	0.00	0.00	8,461.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
8,600.00	0.00	0.00	8,561.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,700.00	0.00	0.00	8,661.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,800.00	0.00	0.00	8,761.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,805.50	0.00	0.00	8,767.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
Bone Spring										
8,900.00	0.00	0.00	8,861.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
8,977.50	0.00	0.00	8,939.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
Avalon										
9,000.00	0.00	0.00	8,961.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,100.00	0.00	0.00	9,061.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,200.00	0.00	0.00	9,161.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,300.00	0.00	0.00	9,261.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,400.00	0.00	0.00	9,361.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,500.00	0.00	0.00	9,461.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,600.00	0.00	0.00	9,561.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,700.00	0.00	0.00	9,661.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,800.00	0.00	0.00	9,761.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,900.00	0.00	0.00	9,861.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
9,947.50	0.00	0.00	9,909.00	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
1st Bone Spring										
10,000.00	0.00	0.00	9,961.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
10,100.00	0.00	0.00	10,061.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
10,200.00	0.00	0.00	10,161.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
10,300.00	0.00	0.00	10,261.50	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
10,325.54	0.00	0.00	10,287.04	25.45	513.04	513.67	87.16	0.00	453,950.41	796,856.86
BLUS 228H KOP_2162FSL_1950FEL										
10,350.00	2.45	359.47	10,311.49	25.98	513.04	513.69	87.10	10.00	453,950.94	796,856.86



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
10,400.00	7.45	359.47	10,361.29	30.29	513.00	513.89	86.62	10.00	453,955.25	796,856.82
10,450.00	12.45	359.47	10,410.52	38.92	512.92	514.39	85.66	10.00	453,963.88	796,856.74
10,500.00	17.45	359.47	10,458.82	51.81	512.80	515.41	84.23	10.00	453,976.77	796,856.62
10,519.16	19.36	359.47	10,477.00	57.86	512.74	515.99	83.56	10.00	453,982.82	796,856.56
2nd Bone Spring										
10,550.00	22.45	359.47	10,505.80	68.86	512.64	517.24	82.35	10.00	453,993.82	796,856.46
10,600.00	27.45	359.47	10,551.12	89.94	512.44	520.27	80.05	10.00	454,014.90	796,856.26
10,650.00	32.45	359.47	10,594.43	114.89	512.21	524.94	77.36	10.00	454,039.85	796,856.03
10,700.00	37.45	359.47	10,635.41	143.52	511.94	531.68	74.34	10.00	454,068.48	796,855.76
10,750.00	42.45	359.47	10,673.73	175.61	511.64	540.94	71.06	10.00	454,100.57	796,855.46
10,800.00	47.45	359.47	10,709.10	210.92	511.31	553.11	67.58	10.00	454,135.88	796,855.13
10,850.00	52.45	359.47	10,741.27	249.18	510.96	568.48	64.00	10.00	454,174.14	796,854.78
10,900.00	57.45	359.47	10,769.98	290.10	510.57	587.23	60.40	10.00	454,215.06	796,854.39
10,950.00	62.45	359.47	10,795.01	333.36	510.17	609.43	56.84	10.00	454,258.32	796,853.99
11,000.00	67.45	359.47	10,816.18	378.64	509.75	634.99	53.40	10.00	454,303.60	796,853.57
11,050.00	72.45	359.47	10,833.32	425.59	509.31	663.72	50.12	10.00	454,350.55	796,853.13
11,100.00	77.45	359.47	10,846.30	473.86	508.86	695.33	47.04	10.00	454,398.82	796,852.68
11,150.00	82.45	359.47	10,855.02	523.07	508.40	729.44	44.19	10.00	454,448.03	796,852.22
11,200.00	87.45	359.47	10,859.43	572.86	507.94	765.62	41.56	10.00	454,497.82	796,851.76
11,225.54	90.00	359.47	10,860.00	598.39	507.70	784.75	40.31	10.00	454,523.35	796,851.52
Target - BLUS 228H FTP_2540FNL_1950FEL										
11,300.00	90.00	359.47	10,860.00	672.85	507.01	842.48	37.00	0.00	454,597.81	796,850.83
11,400.00	90.00	359.47	10,860.00	772.84	506.07	923.79	33.22	0.00	454,697.80	796,849.89
11,500.00	90.00	359.47	10,860.00	872.84	505.14	1,008.47	30.06	0.00	454,797.80	796,848.96
11,600.00	90.00	359.47	10,860.00	972.83	504.21	1,095.73	27.40	0.00	454,897.79	796,848.03
11,700.00	90.00	359.47	10,860.00	1,072.83	503.28	1,185.01	25.13	0.00	454,997.79	796,847.10
11,800.00	90.00	359.47	10,860.00	1,172.82	502.34	1,275.88	23.19	0.00	455,097.78	796,846.16



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
11,900.00	90.00	359.47	10,860.00	1,272.82	501.41	1,368.02	21.50	0.00	455,197.78	796,845.23
12,000.00	90.00	359.47	10,860.00	1,372.82	500.48	1,461.20	20.03	0.00	455,297.78	796,844.30
12,100.00	90.00	359.47	10,860.00	1,472.81	499.55	1,555.22	18.74	0.00	455,397.77	796,843.37
12,200.00	90.00	359.47	10,860.00	1,572.81	498.61	1,649.95	17.59	0.00	455,497.77	796,842.43
12,300.00	90.00	359.47	10,860.00	1,672.80	497.68	1,745.27	16.57	0.00	455,597.76	796,841.50
12,400.00	90.00	359.47	10,860.00	1,772.80	496.75	1,841.08	15.65	0.00	455,697.76	796,840.57
12,500.00	90.00	359.47	10,860.00	1,872.79	495.82	1,937.31	14.83	0.00	455,797.75	796,839.64
12,600.00	90.00	359.47	10,860.00	1,972.79	494.88	2,033.91	14.08	0.00	455,897.75	796,838.70
12,700.00	90.00	359.47	10,860.00	2,072.78	493.95	2,130.83	13.40	0.00	455,997.74	796,837.77
12,800.00	90.00	359.47	10,860.00	2,172.78	493.02	2,228.01	12.78	0.00	456,097.74	796,836.84
12,900.00	90.00	359.47	10,860.00	2,272.78	492.09	2,325.44	12.22	0.00	456,197.74	796,835.91
13,000.00	90.00	359.47	10,860.00	2,372.77	491.15	2,423.07	11.69	0.00	456,297.73	796,834.97
13,100.00	90.00	359.47	10,860.00	2,472.77	490.22	2,520.89	11.21	0.00	456,397.73	796,834.04
13,200.00	90.00	359.47	10,860.00	2,572.76	489.29	2,618.88	10.77	0.00	456,497.72	796,833.11
13,300.00	90.00	359.47	10,860.00	2,672.76	488.36	2,717.01	10.35	0.00	456,597.72	796,832.18
13,400.00	90.00	359.47	10,860.00	2,772.75	487.43	2,815.27	9.97	0.00	456,697.71	796,831.25
13,500.00	90.00	359.47	10,860.00	2,872.75	486.49	2,913.65	9.61	0.00	456,797.71	796,830.31
13,600.00	90.00	359.47	10,860.00	2,972.75	485.56	3,012.14	9.28	0.00	456,897.71	796,829.38
13,700.00	90.00	359.47	10,860.00	3,072.74	484.63	3,110.72	8.96	0.00	456,997.70	796,828.45
13,800.00	90.00	359.47	10,860.00	3,172.74	483.70	3,209.40	8.67	0.00	457,097.70	796,827.52
13,900.00	90.00	359.47	10,860.00	3,272.73	482.76	3,308.15	8.39	0.00	457,197.69	796,826.58
14,000.00	90.00	359.47	10,860.00	3,372.73	481.83	3,406.97	8.13	0.00	457,297.69	796,825.65
14,100.00	90.00	359.47	10,860.00	3,472.72	480.90	3,505.86	7.88	0.00	457,397.68	796,824.72
14,200.00	90.00	359.47	10,860.00	3,572.72	479.97	3,604.81	7.65	0.00	457,497.68	796,823.79
14,300.00	90.00	359.47	10,860.00	3,672.72	479.03	3,703.82	7.43	0.00	457,597.68	796,822.85
14,400.00	90.00	359.47	10,860.00	3,772.71	478.10	3,802.88	7.22	0.00	457,697.67	796,821.92
14,500.00	90.00	359.47	10,860.00	3,872.71	477.17	3,901.99	7.02	0.00	457,797.67	796,820.99



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
14,600.00	90.00	359.47	10,860.00	3,972.70	476.24	4,001.15	6.84	0.00	457,897.66	796,820.06
14,700.00	90.00	359.47	10,860.00	4,072.70	475.30	4,100.34	6.66	0.00	457,997.66	796,819.12
14,800.00	90.00	359.47	10,860.00	4,172.69	474.37	4,199.57	6.49	0.00	458,097.65	796,818.19
14,900.00	90.00	359.47	10,860.00	4,272.69	473.44	4,298.84	6.32	0.00	458,197.65	796,817.26
15,000.00	90.00	359.47	10,860.00	4,372.68	472.51	4,398.14	6.17	0.00	458,297.64	796,816.33
15,100.00	90.00	359.47	10,860.00	4,472.68	471.57	4,497.47	6.02	0.00	458,397.64	796,815.39
15,200.00	90.00	359.47	10,860.00	4,572.68	470.64	4,596.83	5.88	0.00	458,497.64	796,814.46
15,300.00	90.00	359.47	10,860.00	4,672.67	469.71	4,696.22	5.74	0.00	458,597.63	796,813.53
15,400.00	90.00	359.47	10,860.00	4,772.67	468.78	4,795.63	5.61	0.00	458,697.63	796,812.60
15,500.00	90.00	359.47	10,860.00	4,872.66	467.84	4,895.07	5.48	0.00	458,797.62	796,811.66
15,600.00	90.00	359.47	10,860.00	4,972.66	466.91	4,994.53	5.36	0.00	458,897.62	796,810.73
15,700.00	90.00	359.47	10,860.00	5,072.65	465.98	5,094.01	5.25	0.00	458,997.61	796,809.80
15,800.00	90.00	359.47	10,860.00	5,172.65	465.05	5,193.51	5.14	0.00	459,097.61	796,808.87
15,900.00	90.00	359.47	10,860.00	5,272.65	464.11	5,293.03	5.03	0.00	459,197.61	796,807.93
16,000.00	90.00	359.47	10,860.00	5,372.64	463.18	5,392.57	4.93	0.00	459,297.60	796,807.00
16,100.00	90.00	359.47	10,860.00	5,472.64	462.25	5,492.12	4.83	0.00	459,397.60	796,806.07
16,200.00	90.00	359.47	10,860.00	5,572.63	461.32	5,591.69	4.73	0.00	459,497.59	796,805.14
16,300.00	90.00	359.47	10,860.00	5,672.63	460.39	5,691.28	4.64	0.00	459,597.59	796,804.21
16,400.00	90.00	359.47	10,860.00	5,772.62	459.45	5,790.88	4.55	0.00	459,697.58	796,803.27
16,500.00	90.00	359.47	10,860.00	5,872.62	458.52	5,890.49	4.46	0.00	459,797.58	796,802.34
16,600.00	90.00	359.47	10,860.00	5,972.62	457.59	5,990.12	4.38	0.00	459,897.58	796,801.41
16,700.00	90.00	359.47	10,860.00	6,072.61	456.66	6,089.76	4.30	0.00	459,997.57	796,800.48
16,800.00	90.00	359.47	10,860.00	6,172.61	455.72	6,189.41	4.22	0.00	460,097.57	796,799.54
16,900.00	90.00	359.47	10,860.00	6,272.60	454.79	6,289.07	4.15	0.00	460,197.56	796,798.61
17,000.00	90.00	359.47	10,860.00	6,372.60	453.86	6,388.74	4.07	0.00	460,297.56	796,797.68
17,100.00	90.00	359.47	10,860.00	6,472.59	452.93	6,488.42	4.00	0.00	460,397.55	796,796.75
17,200.00	90.00	359.47	10,860.00	6,572.59	451.99	6,588.11	3.93	0.00	460,497.55	796,795.81



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	DLeg (°/100ft)	Northing (usft)	Easting (usft)
17,300.00	90.00	359.47	10,860.00	6,672.58	451.06	6,687.81	3.87	0.00	460,597.54	796,794.88
17,400.00	90.00	359.47	10,860.00	6,772.58	450.13	6,787.52	3.80	0.00	460,697.54	796,793.95
17,500.00	90.00	359.47	10,860.00	6,872.58	449.20	6,887.24	3.74	0.00	460,797.54	796,793.02
17,600.00	90.00	359.47	10,860.00	6,972.57	448.26	6,986.97	3.68	0.00	460,897.53	796,792.08
17,700.00	90.00	359.47	10,860.00	7,072.57	447.33	7,086.70	3.62	0.00	460,997.53	796,791.15
17,800.00	90.00	359.47	10,860.00	7,172.56	446.40	7,186.44	3.56	0.00	461,097.52	796,790.22
17,900.00	90.00	359.47	10,860.00	7,272.56	445.47	7,286.19	3.51	0.00	461,197.52	796,789.29
18,000.00	90.00	359.47	10,860.00	7,372.55	444.53	7,385.94	3.45	0.00	461,297.51	796,788.35
18,100.00	90.00	359.47	10,860.00	7,472.55	443.60	7,485.71	3.40	0.00	461,397.51	796,787.42
18,200.00	90.00	359.47	10,860.00	7,572.55	442.67	7,585.47	3.35	0.00	461,497.51	796,786.49
18,300.00	90.00	359.47	10,860.00	7,672.54	441.74	7,685.25	3.30	0.00	461,597.50	796,785.56
18,400.00	90.00	359.47	10,860.00	7,772.54	440.80	7,785.03	3.25	0.00	461,697.50	796,784.62
18,500.00	90.00	359.47	10,860.00	7,872.53	439.87	7,884.81	3.20	0.00	461,797.49	796,783.69
18,600.00	90.00	359.47	10,860.00	7,972.53	438.94	7,984.60	3.15	0.00	461,897.49	796,782.76
18,700.00	90.00	359.47	10,860.00	8,072.52	438.01	8,084.40	3.11	0.00	461,997.48	796,781.83
18,800.00	90.00	359.47	10,860.00	8,172.52	437.08	8,184.20	3.06	0.00	462,097.48	796,780.90
18,900.00	90.00	359.47	10,860.00	8,272.52	436.14	8,284.00	3.02	0.00	462,197.48	796,779.96
18,945.34	90.00	359.47	10,860.00	8,317.85	435.72	8,329.25	3.00	0.00	462,242.81	796,779.54

BLUS 228H PBHL_100FNL_1950FEL

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,400.00	1,400.00	13 3/8"	13.37	17.50
5,338.50	5,300.00	9 5/8"	9.62	12.25
18,945.34	10,860.00	5 1/2"	5.50	6.00



Survey Report Landscape

Kaiser-Francis Oil Company

Company: KAISER-FRANCIS OIL COMPANY
Project: Lea County, NM (NMEZ) NAD83 Grid
Site: Bell Lake Unit South 227H,228H,327H,428H
Well: BLUS 228H
Wellbore: Lateral
Design: Plan #1

Local Co-ordinate Reference: Well BLUS 228H - Slot 228H
TVD Reference: 3605.9 @ 3605.90usft (GLOnly)
MD Reference: 3605.9 @ 3605.90usft (GLOnly)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: SBDIR_EDM

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,357.50	5,319.00	Bell Canyon			
8,805.50	8,767.00	Bone Spring			
9,947.50	9,909.00	1st Bone Spring			
2,038.94	2,036.00	Top of Salt			
7,655.50	7,617.00	Brushy Canyon			
5,260.50	5,222.00	Lamar			
1,733.26	1,733.00	Salado			
11,225.54	10,860.00	Target			
5,060.39	5,022.00	Base of Salt			
8,977.50	8,939.00	Avalon			
6,207.50	6,169.00	cherry Canyon			
1,353.00	1,353.00	Rustler			
10,519.16	10,477.00	2nd Bone Spring			

Checked By: _____ Approved By: _____ Date: _____

Kaiser-Francis Oil Company

KAISER-FRANCIS OIL COMPANY

Lea County, NM (NMEZ) NAD83 Grid

Bell Lake Unit South 227H,228H,327H,428H

BLUS 228H - Slot 228H

Lateral

Plan: Plan #1

Standard Planning Report

27 August, 2020





Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Project:	Lea County, NM (NMEZ) NAD83 Grid	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	North Reference:	Grid
Well:	BLUS 228H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project	Lea County, NM (NMEZ) NAD83 Grid		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Bell Lake Unit South 227H,228H,327H,428H		
Site Position:	Northing:	453,944.96 usft	Latitude: 32.2452781°N
From: Map	Easting:	796,343.61 usft	Longitude: 103.5085103°W
Position Uncertainty:	0.00 usft	Slot Radius: 13.20 in	Grid Convergence: 0.44 °

Well	BLUS 228H - Slot 228H		
Well Position	+N/-S	-20.00 usft	Northing: 453,924.96 usft
	+E/-W	0.21 usft	Easting: 796,343.82 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Latitude: 32.2452231°N
			Longitude: 103.5085101°W
			Ground Level: 3,605.90 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	08/27/20	6.61	59.96	47,595.12689250

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.47

Plan Survey Tool Program	Date	08/27/20		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,945.34	Plan #1 (Lateral)	

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	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,949.07	8.98	87.16	1,947.24	1.74	35.08	2.00	2.00	0.00	87.16	
4,789.43	8.98	87.16	4,752.76	23.71	477.96	0.00	0.00	0.00	0.00	
5,238.50	0.00	0.00	5,200.00	25.45	513.04	2.00	-2.00	0.00	180.00	
10,325.54	0.00	0.00	10,287.04	25.45	513.04	0.00	0.00	0.00	0.00	BLUS 228H KOP_216
11,225.54	90.00	359.47	10,860.00	598.39	507.70	10.00	10.00	-0.06	359.47	
18,945.34	90.00	359.47	10,860.00	8,317.85	435.72	0.00	0.00	0.00	0.00	BLUS 228H PBHL_10



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Project:	Lea County, NM (NMEZ) NAD83 Grid	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	North Reference:	Grid
Well:	BLUS 228H	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	
BLUS 228H 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	
1,353.00	0.00	0.00	1,353.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler										
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
13 3/8"										
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	2.00	87.16	1,599.98	0.09	1.74	0.07	2.00	2.00	0.00	
1,700.00	4.00	87.16	1,699.84	0.35	6.97	0.28	2.00	2.00	0.00	
1,733.26	4.67	87.16	1,733.00	0.47	9.48	0.38	2.00	2.00	0.00	
Salado										
1,800.00	6.00	87.16	1,799.45	0.78	15.67	0.63	2.00	2.00	0.00	
1,900.00	8.00	87.16	1,898.70	1.38	27.85	1.12	2.00	2.00	0.00	
1,949.07	8.98	87.16	1,947.24	1.74	35.08	1.42	2.00	2.00	0.00	
2,000.00	8.98	87.16	1,997.54	2.13	43.02	1.74	0.00	0.00	0.00	
2,038.94	8.98	87.16	2,036.00	2.44	49.09	1.98	0.00	0.00	0.00	
Top of Salt										
2,100.00	8.98	87.16	2,096.31	2.91	58.62	2.37	0.00	0.00	0.00	
2,200.00	8.98	87.16	2,195.09	3.68	74.21	3.00	0.00	0.00	0.00	
2,300.00	8.98	87.16	2,293.86	4.46	89.80	3.62	0.00	0.00	0.00	
2,400.00	8.98	87.16	2,392.63	5.23	105.39	4.25	0.00	0.00	0.00	
2,500.00	8.98	87.16	2,491.41	6.00	120.98	4.88	0.00	0.00	0.00	
2,600.00	8.98	87.16	2,590.18	6.78	136.58	5.51	0.00	0.00	0.00	
2,700.00	8.98	87.16	2,688.96	7.55	152.17	6.14	0.00	0.00	0.00	
2,800.00	8.98	87.16	2,787.73	8.32	167.76	6.77	0.00	0.00	0.00	
2,900.00	8.98	87.16	2,886.50	9.10	183.35	7.40	0.00	0.00	0.00	
3,000.00	8.98	87.16	2,985.28	9.87	198.95	8.03	0.00	0.00	0.00	
3,100.00	8.98	87.16	3,084.05	10.64	214.54	8.66	0.00	0.00	0.00	
3,200.00	8.98	87.16	3,182.83	11.42	230.13	9.29	0.00	0.00	0.00	
3,300.00	8.98	87.16	3,281.60	12.19	245.72	9.92	0.00	0.00	0.00	
3,400.00	8.98	87.16	3,380.37	12.97	261.32	10.55	0.00	0.00	0.00	
3,500.00	8.98	87.16	3,479.15	13.74	276.91	11.18	0.00	0.00	0.00	
3,600.00	8.98	87.16	3,577.92	14.51	292.50	11.81	0.00	0.00	0.00	
3,700.00	8.98	87.16	3,676.69	15.29	308.09	12.44	0.00	0.00	0.00	
3,800.00	8.98	87.16	3,775.47	16.06	323.69	13.07	0.00	0.00	0.00	
3,900.00	8.98	87.16	3,874.24	16.83	339.28	13.69	0.00	0.00	0.00	
4,000.00	8.98	87.16	3,973.02	17.61	354.87	14.32	0.00	0.00	0.00	
4,100.00	8.98	87.16	4,071.79	18.38	370.46	14.95	0.00	0.00	0.00	
4,200.00	8.98	87.16	4,170.56	19.15	386.05	15.58	0.00	0.00	0.00	
4,300.00	8.98	87.16	4,269.34	19.93	401.65	16.21	0.00	0.00	0.00	



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Project:	Lea County, NM (NMEZ) NAD83 Grid	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	North Reference:	Grid
Well:	BLUS 228H	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)
4,400.00	8.98	87.16	4,368.11	20.70	417.24	16.84	0.00	0.00	0.00
4,500.00	8.98	87.16	4,466.89	21.48	432.83	17.47	0.00	0.00	0.00
4,600.00	8.98	87.16	4,565.66	22.25	448.42	18.10	0.00	0.00	0.00
4,700.00	8.98	87.16	4,664.43	23.02	464.02	18.73	0.00	0.00	0.00
4,789.43	8.98	87.16	4,752.76	23.71	477.96	19.29	0.00	0.00	0.00
4,800.00	8.77	87.16	4,763.21	23.80	479.59	19.36	2.00	-2.00	0.00
4,900.00	6.77	87.16	4,862.29	24.47	493.09	19.90	2.00	-2.00	0.00
5,000.00	4.77	87.16	4,961.78	24.96	503.13	20.31	2.00	-2.00	0.00
5,060.39	3.56	87.16	5,022.00	25.18	507.51	20.48	2.00	-2.00	0.00
Base of Salt									
5,100.00	2.77	87.16	5,061.55	25.29	509.70	20.57	2.00	-2.00	0.00
5,200.00	0.77	87.16	5,161.50	25.44	512.78	20.70	2.00	-2.00	0.00
5,238.50	0.00	0.00	5,200.00	25.45	513.04	20.71	2.00	-2.00	0.00
5,260.50	0.00	0.00	5,222.00	25.45	513.04	20.71	0.00	0.00	0.00
Lamar									
5,300.00	0.00	0.00	5,261.50	25.45	513.04	20.71	0.00	0.00	0.00
5,338.50	0.00	0.00	5,300.00	25.45	513.04	20.71	0.00	0.00	0.00
9 5/8"									
5,357.50	0.00	0.00	5,319.00	25.45	513.04	20.71	0.00	0.00	0.00
Bell Canyon									
5,400.00	0.00	0.00	5,361.50	25.45	513.04	20.71	0.00	0.00	0.00
5,500.00	0.00	0.00	5,461.50	25.45	513.04	20.71	0.00	0.00	0.00
5,600.00	0.00	0.00	5,561.50	25.45	513.04	20.71	0.00	0.00	0.00
5,700.00	0.00	0.00	5,661.50	25.45	513.04	20.71	0.00	0.00	0.00
5,800.00	0.00	0.00	5,761.50	25.45	513.04	20.71	0.00	0.00	0.00
5,900.00	0.00	0.00	5,861.50	25.45	513.04	20.71	0.00	0.00	0.00
6,000.00	0.00	0.00	5,961.50	25.45	513.04	20.71	0.00	0.00	0.00
6,100.00	0.00	0.00	6,061.50	25.45	513.04	20.71	0.00	0.00	0.00
6,200.00	0.00	0.00	6,161.50	25.45	513.04	20.71	0.00	0.00	0.00
6,207.50	0.00	0.00	6,169.00	25.45	513.04	20.71	0.00	0.00	0.00
cherry Canyon									
6,300.00	0.00	0.00	6,261.50	25.45	513.04	20.71	0.00	0.00	0.00
6,400.00	0.00	0.00	6,361.50	25.45	513.04	20.71	0.00	0.00	0.00
6,500.00	0.00	0.00	6,461.50	25.45	513.04	20.71	0.00	0.00	0.00
6,600.00	0.00	0.00	6,561.50	25.45	513.04	20.71	0.00	0.00	0.00
6,700.00	0.00	0.00	6,661.50	25.45	513.04	20.71	0.00	0.00	0.00
6,800.00	0.00	0.00	6,761.50	25.45	513.04	20.71	0.00	0.00	0.00
6,900.00	0.00	0.00	6,861.50	25.45	513.04	20.71	0.00	0.00	0.00
7,000.00	0.00	0.00	6,961.50	25.45	513.04	20.71	0.00	0.00	0.00
7,100.00	0.00	0.00	7,061.50	25.45	513.04	20.71	0.00	0.00	0.00
7,200.00	0.00	0.00	7,161.50	25.45	513.04	20.71	0.00	0.00	0.00
7,300.00	0.00	0.00	7,261.50	25.45	513.04	20.71	0.00	0.00	0.00
7,400.00	0.00	0.00	7,361.50	25.45	513.04	20.71	0.00	0.00	0.00
7,500.00	0.00	0.00	7,461.50	25.45	513.04	20.71	0.00	0.00	0.00
7,600.00	0.00	0.00	7,561.50	25.45	513.04	20.71	0.00	0.00	0.00
7,655.50	0.00	0.00	7,617.00	25.45	513.04	20.71	0.00	0.00	0.00
Brushy Canyon									
7,700.00	0.00	0.00	7,661.50	25.45	513.04	20.71	0.00	0.00	0.00
7,800.00	0.00	0.00	7,761.50	25.45	513.04	20.71	0.00	0.00	0.00
7,900.00	0.00	0.00	7,861.50	25.45	513.04	20.71	0.00	0.00	0.00
8,000.00	0.00	0.00	7,961.50	25.45	513.04	20.71	0.00	0.00	0.00
8,100.00	0.00	0.00	8,061.50	25.45	513.04	20.71	0.00	0.00	0.00
8,200.00	0.00	0.00	8,161.50	25.45	513.04	20.71	0.00	0.00	0.00



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Project:	Lea County, NM (NMEZ) NAD83 Grid	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	North Reference:	Grid
Well:	BLUS 228H	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)	
8,300.00	0.00	0.00	8,261.50	25.45	513.04	20.71	0.00	0.00	0.00	
8,400.00	0.00	0.00	8,361.50	25.45	513.04	20.71	0.00	0.00	0.00	
8,500.00	0.00	0.00	8,461.50	25.45	513.04	20.71	0.00	0.00	0.00	
8,600.00	0.00	0.00	8,561.50	25.45	513.04	20.71	0.00	0.00	0.00	
8,700.00	0.00	0.00	8,661.50	25.45	513.04	20.71	0.00	0.00	0.00	
8,800.00	0.00	0.00	8,761.50	25.45	513.04	20.71	0.00	0.00	0.00	
8,805.50	0.00	0.00	8,767.00	25.45	513.04	20.71	0.00	0.00	0.00	
Bone Spring										
8,900.00	0.00	0.00	8,861.50	25.45	513.04	20.71	0.00	0.00	0.00	
8,977.50	0.00	0.00	8,939.00	25.45	513.04	20.71	0.00	0.00	0.00	
Avalon										
9,000.00	0.00	0.00	8,961.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,100.00	0.00	0.00	9,061.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,200.00	0.00	0.00	9,161.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,300.00	0.00	0.00	9,261.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,400.00	0.00	0.00	9,361.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,500.00	0.00	0.00	9,461.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,600.00	0.00	0.00	9,561.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,700.00	0.00	0.00	9,661.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,800.00	0.00	0.00	9,761.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,900.00	0.00	0.00	9,861.50	25.45	513.04	20.71	0.00	0.00	0.00	
9,947.50	0.00	0.00	9,909.00	25.45	513.04	20.71	0.00	0.00	0.00	
1st Bone Spring										
10,000.00	0.00	0.00	9,961.50	25.45	513.04	20.71	0.00	0.00	0.00	
10,100.00	0.00	0.00	10,061.50	25.45	513.04	20.71	0.00	0.00	0.00	
10,200.00	0.00	0.00	10,161.50	25.45	513.04	20.71	0.00	0.00	0.00	
10,300.00	0.00	0.00	10,261.50	25.45	513.04	20.71	0.00	0.00	0.00	
10,325.54	0.00	0.00	10,287.04	25.45	513.04	20.71	0.00	0.00	0.00	
BLUS 228H KOP_2162FSL_1950FEL										
10,350.00	2.45	359.47	10,311.49	25.98	513.04	21.23	10.00	10.00	0.00	
10,400.00	7.45	359.47	10,361.29	30.29	513.00	25.54	10.00	10.00	0.00	
10,450.00	12.45	359.47	10,410.52	38.92	512.92	34.17	10.00	10.00	0.00	
10,500.00	17.45	359.47	10,458.82	51.81	512.80	47.06	10.00	10.00	0.00	
10,519.16	19.36	359.47	10,477.00	57.86	512.74	53.11	10.00	10.00	0.00	
2nd Bone Spring										
10,550.00	22.45	359.47	10,505.80	68.86	512.64	64.12	10.00	10.00	0.00	
10,600.00	27.45	359.47	10,551.12	89.94	512.44	85.20	10.00	10.00	0.00	
10,650.00	32.45	359.47	10,594.43	114.89	512.21	110.15	10.00	10.00	0.00	
10,700.00	37.45	359.47	10,635.41	143.52	511.94	138.78	10.00	10.00	0.00	
10,750.00	42.45	359.47	10,673.73	175.61	511.64	170.87	10.00	10.00	0.00	
10,800.00	47.45	359.47	10,709.10	210.92	511.31	206.18	10.00	10.00	0.00	
10,850.00	52.45	359.47	10,741.27	249.18	510.96	244.44	10.00	10.00	0.00	
10,900.00	57.45	359.47	10,769.98	290.10	510.57	285.36	10.00	10.00	0.00	
10,950.00	62.45	359.47	10,795.01	333.36	510.17	328.63	10.00	10.00	0.00	
11,000.00	67.45	359.47	10,816.18	378.64	509.75	373.91	10.00	10.00	0.00	
11,050.00	72.45	359.47	10,833.32	425.59	509.31	420.86	10.00	10.00	0.00	
11,100.00	77.45	359.47	10,846.30	473.86	508.86	469.13	10.00	10.00	0.00	
11,150.00	82.45	359.47	10,855.02	523.07	508.40	518.35	10.00	10.00	0.00	
11,200.00	87.45	359.47	10,859.43	572.86	507.94	568.14	10.00	10.00	0.00	
11,225.54	90.00	359.47	10,860.00	598.39	507.70	593.67	10.00	10.00	0.00	
Target - BLUS 228H FTP_2540FNL_1950FEL										
11,300.00	90.00	359.47	10,860.00	672.85	507.01	668.13	0.00	0.00	0.00	
11,400.00	90.00	359.47	10,860.00	772.84	506.07	768.13	0.00	0.00	0.00	



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Project:	Lea County, NM (NMEZ) NAD83 Grid	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	North Reference:	Grid
Well:	BLUS 228H	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)
11,500.00	90.00	359.47	10,860.00	872.84	505.14	868.13	0.00	0.00	0.00
11,600.00	90.00	359.47	10,860.00	972.83	504.21	968.13	0.00	0.00	0.00
11,700.00	90.00	359.47	10,860.00	1,072.83	503.28	1,068.13	0.00	0.00	0.00
11,800.00	90.00	359.47	10,860.00	1,172.82	502.34	1,168.13	0.00	0.00	0.00
11,900.00	90.00	359.47	10,860.00	1,272.82	501.41	1,268.13	0.00	0.00	0.00
12,000.00	90.00	359.47	10,860.00	1,372.82	500.48	1,368.13	0.00	0.00	0.00
12,100.00	90.00	359.47	10,860.00	1,472.81	499.55	1,468.13	0.00	0.00	0.00
12,200.00	90.00	359.47	10,860.00	1,572.81	498.61	1,568.13	0.00	0.00	0.00
12,300.00	90.00	359.47	10,860.00	1,672.80	497.68	1,668.13	0.00	0.00	0.00
12,400.00	90.00	359.47	10,860.00	1,772.80	496.75	1,768.13	0.00	0.00	0.00
12,500.00	90.00	359.47	10,860.00	1,872.79	495.82	1,868.13	0.00	0.00	0.00
12,600.00	90.00	359.47	10,860.00	1,972.79	494.88	1,968.13	0.00	0.00	0.00
12,700.00	90.00	359.47	10,860.00	2,072.78	493.95	2,068.13	0.00	0.00	0.00
12,800.00	90.00	359.47	10,860.00	2,172.78	493.02	2,168.13	0.00	0.00	0.00
12,900.00	90.00	359.47	10,860.00	2,272.78	492.09	2,268.13	0.00	0.00	0.00
13,000.00	90.00	359.47	10,860.00	2,372.77	491.15	2,368.13	0.00	0.00	0.00
13,100.00	90.00	359.47	10,860.00	2,472.77	490.22	2,468.13	0.00	0.00	0.00
13,200.00	90.00	359.47	10,860.00	2,572.76	489.29	2,568.13	0.00	0.00	0.00
13,300.00	90.00	359.47	10,860.00	2,672.76	488.36	2,668.13	0.00	0.00	0.00
13,400.00	90.00	359.47	10,860.00	2,772.75	487.43	2,768.13	0.00	0.00	0.00
13,500.00	90.00	359.47	10,860.00	2,872.75	486.49	2,868.13	0.00	0.00	0.00
13,600.00	90.00	359.47	10,860.00	2,972.75	485.56	2,968.13	0.00	0.00	0.00
13,700.00	90.00	359.47	10,860.00	3,072.74	484.63	3,068.13	0.00	0.00	0.00
13,800.00	90.00	359.47	10,860.00	3,172.74	483.70	3,168.13	0.00	0.00	0.00
13,900.00	90.00	359.47	10,860.00	3,272.73	482.76	3,268.13	0.00	0.00	0.00
14,000.00	90.00	359.47	10,860.00	3,372.73	481.83	3,368.13	0.00	0.00	0.00
14,100.00	90.00	359.47	10,860.00	3,472.72	480.90	3,468.13	0.00	0.00	0.00
14,200.00	90.00	359.47	10,860.00	3,572.72	479.97	3,568.13	0.00	0.00	0.00
14,300.00	90.00	359.47	10,860.00	3,672.72	479.03	3,668.13	0.00	0.00	0.00
14,400.00	90.00	359.47	10,860.00	3,772.71	478.10	3,768.13	0.00	0.00	0.00
14,500.00	90.00	359.47	10,860.00	3,872.71	477.17	3,868.13	0.00	0.00	0.00
14,600.00	90.00	359.47	10,860.00	3,972.70	476.24	3,968.13	0.00	0.00	0.00
14,700.00	90.00	359.47	10,860.00	4,072.70	475.30	4,068.13	0.00	0.00	0.00
14,800.00	90.00	359.47	10,860.00	4,172.69	474.37	4,168.13	0.00	0.00	0.00
14,900.00	90.00	359.47	10,860.00	4,272.69	473.44	4,268.13	0.00	0.00	0.00
15,000.00	90.00	359.47	10,860.00	4,372.68	472.51	4,368.13	0.00	0.00	0.00
15,100.00	90.00	359.47	10,860.00	4,472.68	471.57	4,468.13	0.00	0.00	0.00
15,200.00	90.00	359.47	10,860.00	4,572.68	470.64	4,568.13	0.00	0.00	0.00
15,300.00	90.00	359.47	10,860.00	4,672.67	469.71	4,668.13	0.00	0.00	0.00
15,400.00	90.00	359.47	10,860.00	4,772.67	468.78	4,768.13	0.00	0.00	0.00
15,500.00	90.00	359.47	10,860.00	4,872.66	467.84	4,868.13	0.00	0.00	0.00
15,600.00	90.00	359.47	10,860.00	4,972.66	466.91	4,968.13	0.00	0.00	0.00
15,700.00	90.00	359.47	10,860.00	5,072.65	465.98	5,068.13	0.00	0.00	0.00
15,800.00	90.00	359.47	10,860.00	5,172.65	465.05	5,168.13	0.00	0.00	0.00
15,900.00	90.00	359.47	10,860.00	5,272.65	464.11	5,268.13	0.00	0.00	0.00
16,000.00	90.00	359.47	10,860.00	5,372.64	463.18	5,368.13	0.00	0.00	0.00
16,100.00	90.00	359.47	10,860.00	5,472.64	462.25	5,468.13	0.00	0.00	0.00
16,200.00	90.00	359.47	10,860.00	5,572.63	461.32	5,568.13	0.00	0.00	0.00
16,300.00	90.00	359.47	10,860.00	5,672.63	460.39	5,668.13	0.00	0.00	0.00
16,400.00	90.00	359.47	10,860.00	5,772.62	459.45	5,768.13	0.00	0.00	0.00
16,500.00	90.00	359.47	10,860.00	5,872.62	458.52	5,868.13	0.00	0.00	0.00
16,600.00	90.00	359.47	10,860.00	5,972.62	457.59	5,968.13	0.00	0.00	0.00
16,700.00	90.00	359.47	10,860.00	6,072.61	456.66	6,068.13	0.00	0.00	0.00
16,800.00	90.00	359.47	10,860.00	6,172.61	455.72	6,168.13	0.00	0.00	0.00



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Project:	Lea County, NM (NMEZ) NAD83 Grid	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	North Reference:	Grid
Well:	BLUS 228H	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)	
16,900.00	90.00	359.47	10,860.00	6,272.60	454.79	6,268.13	0.00	0.00	0.00	
17,000.00	90.00	359.47	10,860.00	6,372.60	453.86	6,368.13	0.00	0.00	0.00	
17,100.00	90.00	359.47	10,860.00	6,472.59	452.93	6,468.13	0.00	0.00	0.00	
17,200.00	90.00	359.47	10,860.00	6,572.59	451.99	6,568.13	0.00	0.00	0.00	
17,300.00	90.00	359.47	10,860.00	6,672.58	451.06	6,668.13	0.00	0.00	0.00	
17,400.00	90.00	359.47	10,860.00	6,772.58	450.13	6,768.13	0.00	0.00	0.00	
17,500.00	90.00	359.47	10,860.00	6,872.58	449.20	6,868.13	0.00	0.00	0.00	
17,600.00	90.00	359.47	10,860.00	6,972.57	448.26	6,968.13	0.00	0.00	0.00	
17,700.00	90.00	359.47	10,860.00	7,072.57	447.33	7,068.13	0.00	0.00	0.00	
17,800.00	90.00	359.47	10,860.00	7,172.56	446.40	7,168.13	0.00	0.00	0.00	
17,900.00	90.00	359.47	10,860.00	7,272.56	445.47	7,268.13	0.00	0.00	0.00	
18,000.00	90.00	359.47	10,860.00	7,372.55	444.53	7,368.13	0.00	0.00	0.00	
18,100.00	90.00	359.47	10,860.00	7,472.55	443.60	7,468.13	0.00	0.00	0.00	
18,200.00	90.00	359.47	10,860.00	7,572.55	442.67	7,568.13	0.00	0.00	0.00	
18,300.00	90.00	359.47	10,860.00	7,672.54	441.74	7,668.13	0.00	0.00	0.00	
18,400.00	90.00	359.47	10,860.00	7,772.54	440.80	7,768.13	0.00	0.00	0.00	
18,500.00	90.00	359.47	10,860.00	7,872.53	439.87	7,868.13	0.00	0.00	0.00	
18,600.00	90.00	359.47	10,860.00	7,972.53	438.94	7,968.13	0.00	0.00	0.00	
18,700.00	90.00	359.47	10,860.00	8,072.52	438.01	8,068.13	0.00	0.00	0.00	
18,800.00	90.00	359.47	10,860.00	8,172.52	437.08	8,168.13	0.00	0.00	0.00	
18,900.00	90.00	359.47	10,860.00	8,272.52	436.14	8,268.13	0.00	0.00	0.00	
18,945.34	90.00	359.47	10,860.00	8,317.85	435.72	8,313.46	0.00	0.00	0.00	
BLUS 228H PBHL_100FNL_1950FEL										

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
BLUS 228H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	453,924.96	796,343.82	32.2452231°N	103.5085101°W
BLUS 228H KOP_2162F - plan hits target center - Point	0.00	0.00	10,287.04	25.45	513.04	453,950.42	796,856.86	32.2452822°N	103.5068502°W
BLUS 228H FTP_2540F - plan hits target center - Point	0.00	0.00	10,860.00	598.39	507.70	454,523.35	796,851.52	32.2468571°N	103.5068532°W
BLUS 228H PBHL_100F - plan hits target center - Point	0.00	0.01	10,860.00	8,317.85	435.72	462,242.81	796,779.54	32.2680764°N	103.5068938°W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (in)	Hole Diameter (in)
1,400.00	1,400.00	13 3/8"		13.37	17.50
5,338.50	5,300.00	9 5/8"		9.62	12.25
18,945.34	10,860.00	5 1/2"		5.50	6.00



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well BLUS 228H - Slot 228H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3605.9 @ 3605.90usft (GLOnly)
Project:	Lea County, NM (NMEZ) NAD83 Grid	MD Reference:	3605.9 @ 3605.90usft (GLOnly)
Site:	Bell Lake Unit South 227H,228H,327H,428H	North Reference:	Grid
Well:	BLUS 228H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,353.00	1,353.00	Rustler				
1,733.26	1,733.00	Salado				
2,038.94	2,036.00	Top of Salt				
5,060.39	5,022.00	Base of Salt				
5,260.50	5,222.00	Lamar				
5,357.50	5,319.00	Bell Canyon				
6,207.50	6,169.00	cherry Canyon				
7,655.50	7,617.00	Brushy Canyon				
8,805.50	8,767.00	Bone Spring				
8,977.50	8,939.00	Avalon				
9,947.50	9,909.00	1st Bone Spring				
10,519.16	10,477.00	2nd Bone Spring				
11,225.54	10,860.00	Target				