

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 285739

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 30-015-47431
4. Property Code 321475	5. Property Name LOVING TOWNSITE 2021 WA	6. Well No. 002H

7. Surface Location

UL - Lot O	Section 20	Township 23S	Range 28E	Lot Idn O	Feet From 948	N/S Line S	Feet From 2499	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot N	Section 21	Township 23S	Range 28E	Lot Idn N	Feet From 660	N/S Line S	Feet From 2310	E/W Line W	County Eddy
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9. Pool Information

PURPLE SAGE;WOLFCAMP (GAS)	98220
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Additional Well Information

11. Work Type New Well	12. Well Type GAS	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3070
16. Multiple N	17. Proposed Depth 14711	18. Formation Wolfcamp	19. Contractor	20. Spud Date 9/15/2020
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	26	20	106.5	500	851	0
Int1	17.5	13.375	72	2700	1471	0
Int2	12.25	9.625	53.5	9300	644	1700
Prod	8.5	5.5	20	14711	1695	8300

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: Scott Cox	
Title:	Title: Petroleum Engineer Supervisor	
Email Address: kristing@kfoc.net	Approved Date: 9/24/2020	Expiration Date: 9/24/2022
Date: 9/9/2020	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 98220	³ Pool Name Purple Sage - Wolfcamp Gas Pool
⁴ Property Code	⁵ Property Name LOVING TOWNSITE 2021 WA	⁶ Well Number 2H
⁷ OGRID No. 12361	⁸ Operator Name KAISER-FRANCIS OIL COMPANY	⁹ Elevation 3070.2

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
O	20	23 S	28 E		948	SOUTH	2499	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	21	23 S	28 E		660	SOUTH	2310	WEST	EDDY

¹² Dedicated Acres 320	¹³ Joint or Infill -	¹⁴ Consolidation Code -	¹⁵ 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.

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: *Charlotte Van Valkenburg* Date: 5/24/18

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.

Date of Survey: MAY 16, 2018

Signature and Seal of Professional Surveyor: *Filimon F. Jaramillo*

Certificate Number: FILIMON F. JARAMILLO, PLS 12797

SURVEY NO. 6255

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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: 9/24/2020

☒ 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
LOVING TOWNSITE 2021 WA #002H	30-015-47431	O-20-23S-28E	0948S 2499E	1500	None	Plant is located in Sec. 35, Blk 57, T&P Survey, Reeves Co., TX

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 ETC FIELD SERVICES LLC and will be connected to ETC FIELD SERVICES LLC High/Low Pressure gathering system located in Eddy County, New Mexico. It will require 0' of pipeline to connect the facility to High/Low Pressure gathering system. KAISER-FRANCIS OIL CO provides (periodically) to ETC FIELD 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 ETC FIELD SERVICES LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at ETC FIELD SERVICES LLC Processing Plant located in Sec. 20, Twn. 23S, 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 ETC FIELD 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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Form APD Comments

Permit 285739

PERMIT COMMENTS

Operator Name and Address: KAISER-FRANCIS OIL CO [12361] P.O. Box 21468 Tulsa, OK 74121		API Number: 30-015-47431
		Well: LOVING TOWNSITE 2021 WA #002H

Created By	Comment	Comment Date
ksimmons	The special rule for Purple Sage Wolfcamp requires that the initial 320 acre spacing unit be contained within a government subdivision; it cannot be divided between two or more. Operator cannot split the 320 acre spacing unit 160 acres in one government subdivision. An NSP (non-standard pro-ration unit) will be required.	9/10/2020

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Santa Fe, NM 87505

Form APD Conditions

Permit 285739

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: KAISER-FRANCIS OIL CO [12361] P.O. Box 21468 Tulsa, OK 74121	API Number: 30-015-47431
	Well: LOVING TOWNSITE 2021 WA #002H

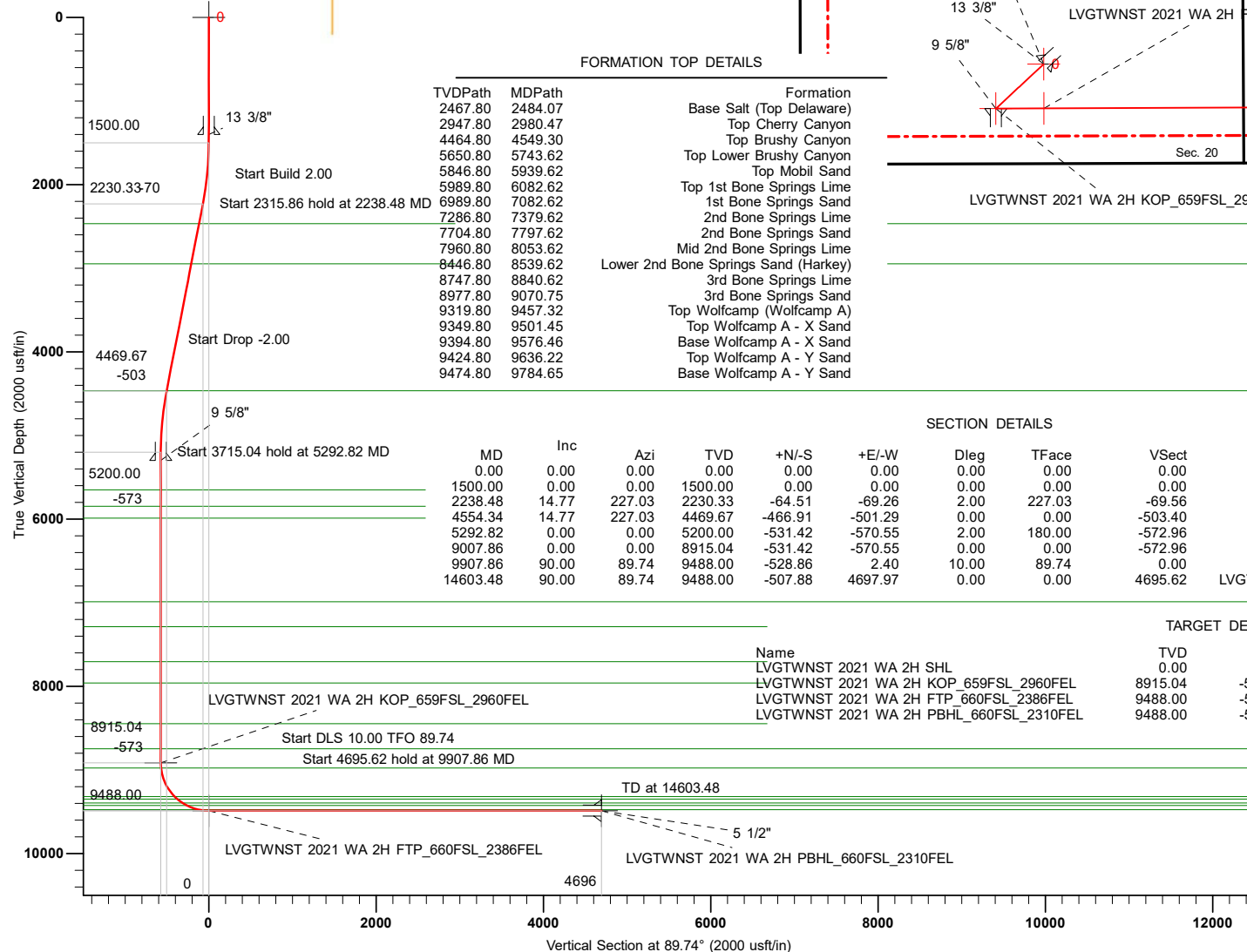
OCD Reviewer	Condition
ksimmons	Will require a directional survey with the C-104
ksimmons	Cement is required to circulate on both surface and intermediate1 strings of casing
ksimmons	Will require administrative order for non-standard spacing unit
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
kpickford	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
kpickford	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud

KAISER-FRANCIS OIL COMPANY

Project: Eddy County, NM (NMEZ) NAD83 Grid
Site: Loving Townsite 2021 WA
Well: WA 2H
Wellbore: Lateral
Design: Plan #1

3069.8 @ 3069.80usft (GLOnly)
North American Datum 1983

Kaiser-Francis Oil Company



To convert a Magnetic Direction to a Grid Direction, Add 6.77°
To convert a Magnetic Direction to a True Direction, Add 6.89° East
Magnetic North is 6.77° East of Grid North (Magnetic Convergence)
Magnetic North is 6.89° East of True North (Magnetic Declination)



Azimuths to Grid North
True North: -0.12°
Magnetic North: 6.77°

Magnetic Field
Strength: 47561.3nT
Dip Angle: 59.90°
Date: 08/25/2020
Model: IGRF2020

Kaiser-Francis Oil Company

KAISER-FRANCIS OIL COMPANY

Eddy County, NM (NMEZ) NAD83 Grid
Loving Townsite 2021 WA
WA 2H - Slot 2H
Lateral

Plan: Plan #1

Survey Report Landscape

25 August, 2020





Survey Report Landscape

Kaiser-Francis Oil Company

Company:	KAISER-FRANCIS OIL COMPANY	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Project:	Eddy County, NM (NMEZ) NAD83 Grid	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Well:	WA 2H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	SBDIR_EDM

Project	Eddy 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	Loving Townsite 2021 WA		
Site Position:		Northing:	468,065.09 usft
From:	Map	Easting:	610,770.59 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32.2865850°N
		Longitude:	104.1086456°W
		Grid Convergence:	0.12 °

Well		WA 2H - Slot 2H				
Well Position	+N/-S	0.00 usft	Northing:	468,065.00 usft	Latitude:	32.2865849°N
	+E/-W	0.00 usft	Easting:	610,750.58 usft	Longitude:	104.1087103°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,069.80 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	08/25/20	6.89	59.90	47,561.34719509

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	89.74

Survey Tool Program	Date	08/25/20		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	14,603.42	Plan #1 (Lateral)		



Survey Report Landscape

Kaiser-Francis Oil Company

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Project:	Eddy County, NM (NMEZ) NAD83 Grid	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Well:	WA 2H	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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
LVGTWNST 2021 WA 2H SHL										
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
13 3/8"										
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58
1,600.00	2.00	227.03	1,599.98	-1.19	-1.28	1.75	227.03	2.00	468,063.81	610,749.30
1,700.00	4.00	227.03	1,699.84	-4.76	-5.11	6.98	227.03	2.00	468,060.24	610,745.47
1,800.00	6.00	227.03	1,799.45	-10.70	-11.48	15.69	227.03	2.00	468,054.30	610,739.10
1,900.00	8.00	227.03	1,898.70	-19.00	-20.40	27.88	227.03	2.00	468,046.00	610,730.18
2,000.00	10.00	227.03	1,997.47	-29.66	-31.85	43.52	227.03	2.00	468,035.34	610,718.73
2,100.00	12.00	227.03	2,095.62	-42.67	-45.81	62.60	227.03	2.00	468,022.33	610,704.77
2,200.00	14.00	227.03	2,193.06	-58.00	-62.27	85.10	227.03	2.00	468,007.00	610,688.31
2,238.48	14.77	227.03	2,230.33	-64.51	-69.26	94.66	227.03	2.00	468,000.49	610,681.32
2,300.00	14.77	227.03	2,289.82	-75.20	-80.74	110.34	227.03	0.00	467,989.80	610,669.84



Survey Report Landscape

Kaiser-Francis Oil Company

Company:	KAISER-FRANCIS OIL COMPANY	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Project:	Eddy County, NM (NMEZ) NAD83 Grid	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
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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)
2,400.00	14.77	227.03	2,386.51	-92.58	-99.40	135.83	227.03	0.00	467,972.42	610,651.18
2,484.07	14.77	227.03	2,467.80	-107.19	-115.08	157.26	227.03	0.00	467,957.81	610,635.50
Base Salt (Top Delaware)										
2,500.00	14.77	227.03	2,483.21	-109.95	-118.05	161.33	227.03	0.00	467,955.05	610,632.53
2,600.00	14.77	227.03	2,579.90	-127.33	-136.71	186.82	227.03	0.00	467,937.67	610,613.87
2,700.00	14.77	227.03	2,676.60	-144.71	-155.36	212.31	227.03	0.00	467,920.29	610,595.22
2,800.00	14.77	227.03	2,773.30	-162.08	-174.02	237.81	227.03	0.00	467,902.92	610,576.56
2,900.00	14.77	227.03	2,869.99	-179.46	-192.67	263.30	227.03	0.00	467,885.54	610,557.91
2,980.47	14.77	227.03	2,947.80	-193.44	-207.68	283.81	227.03	0.00	467,871.56	610,542.90
Top Cherry Canyon										
3,000.00	14.77	227.03	2,966.69	-196.83	-211.33	288.79	227.03	0.00	467,868.17	610,539.25
3,100.00	14.77	227.03	3,063.38	-214.21	-229.98	314.29	227.03	0.00	467,850.79	610,520.60
3,200.00	14.77	227.03	3,160.08	-231.58	-248.63	339.78	227.03	0.00	467,833.42	610,501.95
3,300.00	14.77	227.03	3,256.77	-248.96	-267.29	365.27	227.03	0.00	467,816.04	610,483.29
3,400.00	14.77	227.03	3,353.47	-266.33	-285.94	390.77	227.03	0.00	467,798.67	610,464.64
3,500.00	14.77	227.03	3,450.17	-283.71	-304.60	416.26	227.03	0.00	467,781.29	610,445.98
3,600.00	14.77	227.03	3,546.86	-301.08	-323.25	441.75	227.03	0.00	467,763.92	610,427.33
3,700.00	14.77	227.03	3,643.56	-318.46	-341.91	467.25	227.03	0.00	467,746.54	610,408.67
3,800.00	14.77	227.03	3,740.25	-335.84	-360.56	492.74	227.03	0.00	467,729.16	610,390.02
3,900.00	14.77	227.03	3,836.95	-353.21	-379.22	518.23	227.03	0.00	467,711.79	610,371.36
4,000.00	14.77	227.03	3,933.65	-370.59	-397.87	543.73	227.03	0.00	467,694.41	610,352.71
4,100.00	14.77	227.03	4,030.34	-387.96	-416.53	569.22	227.03	0.00	467,677.04	610,334.05
4,200.00	14.77	227.03	4,127.04	-405.34	-435.18	594.71	227.03	0.00	467,659.66	610,315.40
4,300.00	14.77	227.03	4,223.73	-422.71	-453.84	620.21	227.03	0.00	467,642.29	610,296.74
4,400.00	14.77	227.03	4,320.43	-440.09	-472.49	645.70	227.03	0.00	467,624.91	610,278.09
4,500.00	14.77	227.03	4,417.13	-457.46	-491.15	671.19	227.03	0.00	467,607.54	610,259.43
4,549.30	14.77	227.03	4,464.80	-466.03	-500.35	683.76	227.03	0.00	467,598.97	610,250.23
Top Brushy Canyon										



Survey Report Landscape

Kaiser-Francis Oil Company

Company:	KAISER-FRANCIS OIL COMPANY	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Project:	Eddy County, NM (NMEZ) NAD83 Grid	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Well:	WA 2H	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)
4,554.34	14.77	227.03	4,469.67	-466.91	-501.29	685.05	227.03	0.00	467,598.09	610,249.29
4,600.00	13.86	227.03	4,513.91	-474.60	-509.54	696.33	227.03	2.00	467,590.40	610,241.04
4,700.00	11.86	227.03	4,611.40	-489.76	-525.83	718.58	227.03	2.00	467,575.24	610,224.75
4,800.00	9.86	227.03	4,709.61	-502.60	-539.61	737.42	227.03	2.00	467,562.40	610,210.97
4,900.00	7.86	227.03	4,808.41	-513.09	-550.87	752.81	227.03	2.00	467,551.91	610,199.71
5,000.00	5.86	227.03	4,907.69	-521.23	-559.61	764.75	227.03	2.00	467,543.77	610,190.97
5,100.00	3.86	227.03	5,007.32	-527.00	-565.80	773.21	227.03	2.00	467,538.00	610,184.78
5,200.00	1.86	227.03	5,107.19	-530.40	-569.45	778.20	227.03	2.00	467,534.60	610,181.13
5,292.82	0.00	0.00	5,200.00	-531.42	-570.55	779.70	227.03	2.00	467,533.58	610,180.03
5,300.00	0.00	0.00	5,207.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
5,392.82	0.00	0.00	5,300.00	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
9 5/8"										
5,400.00	0.00	0.00	5,307.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
5,500.00	0.00	0.00	5,407.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
5,600.00	0.00	0.00	5,507.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
5,700.00	0.00	0.00	5,607.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
5,743.62	0.00	0.00	5,650.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
Top Lower Brushy Canyon										
5,800.00	0.00	0.00	5,707.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
5,900.00	0.00	0.00	5,807.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
5,939.62	0.00	0.00	5,846.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
Top Mobil Sand										
6,000.00	0.00	0.00	5,907.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,082.62	0.00	0.00	5,989.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
Top 1st Bone Springs Lime										
6,100.00	0.00	0.00	6,007.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,200.00	0.00	0.00	6,107.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,300.00	0.00	0.00	6,207.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03



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Well:	WA 2H	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)
6,400.00	0.00	0.00	6,307.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,500.00	0.00	0.00	6,407.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,600.00	0.00	0.00	6,507.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,700.00	0.00	0.00	6,607.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,800.00	0.00	0.00	6,707.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
6,900.00	0.00	0.00	6,807.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,000.00	0.00	0.00	6,907.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,082.62	0.00	0.00	6,989.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
1st Bone Springs Sand										
7,100.00	0.00	0.00	7,007.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,200.00	0.00	0.00	7,107.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,300.00	0.00	0.00	7,207.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,379.62	0.00	0.00	7,286.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
2nd Bone Springs Lime										
7,400.00	0.00	0.00	7,307.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,500.00	0.00	0.00	7,407.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,600.00	0.00	0.00	7,507.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,700.00	0.00	0.00	7,607.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,797.62	0.00	0.00	7,704.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
2nd Bone Springs Sand										
7,800.00	0.00	0.00	7,707.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
7,900.00	0.00	0.00	7,807.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,000.00	0.00	0.00	7,907.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,053.62	0.00	0.00	7,960.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
Mid 2nd Bone Springs Lime										
8,100.00	0.00	0.00	8,007.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,200.00	0.00	0.00	8,107.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03



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Well:	WA 2H	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)
8,300.00	0.00	0.00	8,207.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,400.00	0.00	0.00	8,307.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,500.00	0.00	0.00	8,407.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,539.62	0.00	0.00	8,446.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
Lower 2nd Bone Springs Sand (Harkey)										
8,600.00	0.00	0.00	8,507.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,700.00	0.00	0.00	8,607.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,800.00	0.00	0.00	8,707.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
8,840.62	0.00	0.00	8,747.80	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
3rd Bone Springs Lime										
8,900.00	0.00	0.00	8,807.18	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
9,007.86	0.00	0.00	8,915.04	-531.42	-570.55	779.70	227.03	0.00	467,533.58	610,180.03
LVGTWNST 2021 WA 2H KOP_659FSL_2960FEL										
9,050.00	4.21	89.74	8,957.14	-531.41	-569.00	778.56	226.96	10.00	467,533.59	610,181.58
9,070.75	6.29	89.74	8,977.80	-531.40	-567.10	777.17	226.86	10.00	467,533.60	610,183.48
3rd Bone Springs Sand										
9,100.00	9.21	89.74	9,006.78	-531.39	-563.16	774.29	226.66	10.00	467,533.61	610,187.42
9,150.00	14.21	89.74	9,055.72	-531.34	-553.01	766.91	226.14	10.00	467,533.66	610,197.57
9,200.00	19.21	89.74	9,103.60	-531.28	-538.63	756.56	225.39	10.00	467,533.72	610,211.95
9,250.00	24.21	89.74	9,150.03	-531.19	-520.14	743.45	224.40	10.00	467,533.81	610,230.44
9,300.00	29.21	89.74	9,194.68	-531.09	-497.67	727.83	223.14	10.00	467,533.91	610,252.91
9,350.00	34.21	89.74	9,237.20	-530.98	-471.40	710.04	221.60	10.00	467,534.02	610,279.18
9,400.00	39.21	89.74	9,277.27	-530.84	-441.52	690.46	219.75	10.00	467,534.16	610,309.06
9,450.00	44.21	89.74	9,314.59	-530.69	-408.26	669.56	217.57	10.00	467,534.31	610,342.32
9,457.32	44.95	89.74	9,319.80	-530.67	-403.12	666.42	217.22	10.00	467,534.33	610,347.46
Top Wolfcamp (Wolfcamp A)										
9,500.00	49.21	89.74	9,348.86	-530.53	-371.87	647.88	215.03	10.00	467,534.47	610,378.71



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Well:	WA 2H	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)
9,501.45	49.36	89.74	9,349.80	-530.53	-370.78	647.25	214.95	10.00	467,534.47	610,379.80
Top Wolfcamp A - X Sand										
9,550.00	54.21	89.74	9,379.83	-530.36	-332.64	626.04	212.10	10.00	467,534.64	610,417.94
9,576.46	56.86	89.74	9,394.80	-530.26	-310.82	614.64	210.38	10.00	467,534.74	610,439.76
Base Wolfcamp A - X Sand										
9,600.00	59.21	89.74	9,407.26	-530.17	-290.85	604.71	208.75	10.00	467,534.83	610,459.73
9,636.22	62.84	89.74	9,424.80	-530.03	-259.18	590.00	206.06	10.00	467,534.97	610,491.40
Top Wolfcamp A - Y Sand										
9,650.00	64.21	89.74	9,430.94	-529.97	-246.84	584.64	204.97	10.00	467,535.03	610,503.74
9,700.00	69.21	89.74	9,450.70	-529.77	-200.93	566.59	200.77	10.00	467,535.23	610,549.65
9,750.00	74.21	89.74	9,466.39	-529.56	-153.47	551.35	196.16	10.00	467,535.44	610,597.11
9,784.65	77.68	89.74	9,474.80	-529.41	-119.86	542.81	192.76	10.00	467,535.59	610,630.72
Base Wolfcamp A - Y Sand										
9,800.00	79.21	89.74	9,477.87	-529.34	-104.82	539.62	191.20	10.00	467,535.66	610,645.76
9,850.00	84.21	89.74	9,485.08	-529.12	-55.36	532.01	185.97	10.00	467,535.88	610,695.22
9,900.00	89.21	89.74	9,487.94	-528.90	-5.46	528.92	180.59	10.00	467,536.10	610,745.12
9,907.86	90.00	89.74	9,488.00	-528.86	2.40	528.87	179.74	10.00	467,536.14	610,752.98
LVGTWNST 2021 WA 2H FTP_660FSL_2386FEL										
10,000.00	90.00	89.74	9,488.00	-528.45	94.54	536.84	169.86	0.00	467,536.55	610,845.12
10,100.00	90.00	89.74	9,488.00	-528.00	194.54	562.70	159.77	0.00	467,537.00	610,945.12
10,200.00	90.00	89.74	9,488.00	-527.55	294.54	604.21	150.83	0.00	467,537.45	611,045.12
10,300.00	90.00	89.74	9,488.00	-527.11	394.54	658.41	143.19	0.00	467,537.89	611,145.12
10,400.00	90.00	89.74	9,488.00	-526.66	494.54	722.45	136.80	0.00	467,538.34	611,245.12
10,500.00	90.00	89.74	9,488.00	-526.21	594.53	793.96	131.51	0.00	467,538.79	611,345.11
10,600.00	90.00	89.74	9,488.00	-525.77	694.53	871.10	127.13	0.00	467,539.23	611,445.11
10,700.00	90.00	89.74	9,488.00	-525.32	794.53	952.49	123.47	0.00	467,539.68	611,545.11
10,800.00	90.00	89.74	9,488.00	-524.87	894.53	1,037.15	120.40	0.00	467,540.13	611,645.11
10,900.00	90.00	89.74	9,488.00	-524.43	994.53	1,124.33	117.80	0.00	467,540.57	611,745.11



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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)
11,000.00	90.00	89.74	9,488.00	-523.98	1,094.53	1,213.49	115.58	0.00	467,541.02	611,845.11
11,100.00	90.00	89.74	9,488.00	-523.53	1,194.53	1,304.22	113.67	0.00	467,541.47	611,945.11
11,200.00	90.00	89.74	9,488.00	-523.09	1,294.53	1,396.22	112.00	0.00	467,541.91	612,045.11
11,300.00	90.00	89.74	9,488.00	-522.64	1,394.53	1,489.25	110.54	0.00	467,542.36	612,145.11
11,400.00	90.00	89.74	9,488.00	-522.19	1,494.53	1,583.13	109.26	0.00	467,542.81	612,245.11
11,500.00	90.00	89.74	9,488.00	-521.75	1,594.52	1,677.72	108.12	0.00	467,543.25	612,345.10
11,600.00	90.00	89.74	9,488.00	-521.30	1,694.52	1,772.90	107.10	0.00	467,543.70	612,445.10
11,700.00	90.00	89.74	9,488.00	-520.85	1,794.52	1,868.58	106.19	0.00	467,544.15	612,545.10
11,800.00	90.00	89.74	9,488.00	-520.41	1,894.52	1,964.70	105.36	0.00	467,544.59	612,645.10
11,900.00	90.00	89.74	9,488.00	-519.96	1,994.52	2,061.18	104.61	0.00	467,545.04	612,745.10
12,000.00	90.00	89.74	9,488.00	-519.51	2,094.52	2,157.99	103.93	0.00	467,545.49	612,845.10
12,100.00	90.00	89.74	9,488.00	-519.07	2,194.52	2,255.07	103.31	0.00	467,545.93	612,945.10
12,200.00	90.00	89.74	9,488.00	-518.62	2,294.52	2,352.40	102.74	0.00	467,546.38	613,045.10
12,300.00	90.00	89.74	9,488.00	-518.17	2,394.52	2,449.94	102.21	0.00	467,546.83	613,145.10
12,400.00	90.00	89.74	9,488.00	-517.73	2,494.52	2,547.68	101.73	0.00	467,547.27	613,245.10
12,500.00	90.00	89.74	9,488.00	-517.28	2,594.51	2,645.58	101.28	0.00	467,547.72	613,345.09
12,600.00	90.00	89.74	9,488.00	-516.83	2,694.51	2,743.63	100.86	0.00	467,548.17	613,445.09
12,700.00	90.00	89.74	9,488.00	-516.38	2,794.51	2,841.82	100.47	0.00	467,548.62	613,545.09
12,800.00	90.00	89.74	9,488.00	-515.94	2,894.51	2,940.13	100.11	0.00	467,549.06	613,645.09
12,900.00	90.00	89.74	9,488.00	-515.49	2,994.51	3,038.56	99.77	0.00	467,549.51	613,745.09
13,000.00	90.00	89.74	9,488.00	-515.04	3,094.51	3,137.08	99.45	0.00	467,549.96	613,845.09
13,100.00	90.00	89.74	9,488.00	-514.60	3,194.51	3,235.69	99.15	0.00	467,550.40	613,945.09
13,200.00	90.00	89.74	9,488.00	-514.15	3,294.51	3,334.39	98.87	0.00	467,550.85	614,045.09
13,300.00	90.00	89.74	9,488.00	-513.70	3,394.51	3,433.16	98.61	0.00	467,551.30	614,145.09
13,400.00	90.00	89.74	9,488.00	-513.26	3,494.51	3,532.00	98.36	0.00	467,551.74	614,245.09
13,500.00	90.00	89.74	9,488.00	-512.81	3,594.50	3,630.90	98.12	0.00	467,552.19	614,345.08
13,600.00	90.00	89.74	9,488.00	-512.36	3,694.50	3,729.86	97.90	0.00	467,552.64	614,445.08



Survey Report Landscape

Kaiser-Francis Oil Company

Company:	KAISER-FRANCIS OIL COMPANY	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Project:	Eddy County, NM (NMEZ) NAD83 Grid	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Well:	WA 2H	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)	
13,700.00	90.00	89.74	9,488.00	-511.92	3,794.50	3,828.88	97.68	0.00	467,553.08	614,545.08	
13,800.00	90.00	89.74	9,488.00	-511.47	3,894.50	3,927.94	97.48	0.00	467,553.53	614,645.08	
13,900.00	90.00	89.74	9,488.00	-511.02	3,994.50	4,027.06	97.29	0.00	467,553.98	614,745.08	
14,000.00	90.00	89.74	9,488.00	-510.58	4,094.50	4,126.21	97.11	0.00	467,554.42	614,845.08	
14,100.00	90.00	89.74	9,488.00	-510.13	4,194.50	4,225.41	96.93	0.00	467,554.87	614,945.08	
14,200.00	90.00	89.74	9,488.00	-509.68	4,294.50	4,324.64	96.77	0.00	467,555.32	615,045.08	
14,300.00	90.00	89.74	9,488.00	-509.24	4,394.50	4,423.90	96.61	0.00	467,555.76	615,145.08	
14,400.00	90.00	89.74	9,488.00	-508.79	4,494.50	4,523.20	96.46	0.00	467,556.21	615,245.08	
14,500.00	90.00	89.74	9,488.00	-508.34	4,594.49	4,622.53	96.31	0.00	467,556.66	615,345.07	
14,603.48	90.00	89.74	9,488.00	-507.88	4,697.97	4,725.34	96.17	0.00	467,557.12	615,448.55	
LVGTWNST 2021 WA 2H PBHL_660FSL_2310FEL											

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
14,603.48	9,488.00	5 1/2"	5.50	6.00	
5,392.82	5,300.00	9 5/8"	9.62	12.25	
1,400.00	1,400.00	13 3/8"	13.37	17.50	



Survey Report Landscape

Kaiser-Francis Oil Company

Company:	KAISER-FRANCIS OIL COMPANY	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Project:	Eddy County, NM (NMEZ) NAD83 Grid	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Well:	WA 2H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	SBDIR_EDM

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
8,840.62	8,747.80	3rd Bone Springs Lime				
5,939.62	5,846.80	Top Mobil Sand				
7,379.62	7,286.80	2nd Bone Springs Lime				
9,636.22	9,424.80	Top Wolfcamp A - Y Sand				
2,980.47	2,947.80	Top Cherry Canyon		0.00		
2,484.07	2,467.80	Base Salt (Top Delaware)		0.00		
9,070.75	8,977.80	3rd Bone Springs Sand				
7,082.62	6,989.80	1st Bone Springs Sand				
9,576.46	9,394.80	Base Wolfcamp A - X Sand				
6,082.62	5,989.80	Top 1st Bone Springs Lime				
5,743.62	5,650.80	Top Lower Brushy Canyon				
8,053.62	7,960.80	Mid 2nd Bone Springs Lime				
9,457.32	9,319.80	Top Wolfcamp (Wolfcamp A)				
9,501.45	9,349.80	Top Wolfcamp A - X Sand				
7,797.62	7,704.80	2nd Bone Springs Sand				
9,784.65	9,474.80	Base Wolfcamp A - Y Sand				
4,549.30	4,464.80	Top Brushy Canyon				
8,539.62	8,446.80	Lower 2nd Bone Springs Sand (Harkey)				

Checked By: _____ Approved By: _____ Date: _____

Kaiser-Francis Oil Company

KAISER-FRANCIS OIL COMPANY

Eddy County, NM (NMEZ) NAD83 Grid

Loving Townsite 2021 WA

WA 2H - Slot 2H

Lateral

Plan: Plan #1

Standard Planning Report

25 August, 2020





Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Project:	Eddy County, NM (NMEZ) NAD83 Grid	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	North Reference:	Grid
Well:	WA 2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1		

Project	Eddy 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	Loving Townsite 2021 WA					
Site Position:		Northing:	468,065.09 usft	Latitude:	32.2865850°N	
From:	Map	Easting:	610,770.59 usft	Longitude:	104.1086455°W	
Position Uncertainty:		0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.12 °

Well	WA 2H - Slot 2H					
Well Position	+N/-S	-0.09 usft	Northing:	468,065.00 usft	Latitude:	32.2865849°N
	+E/-W	-20.01 usft	Easting:	610,750.58 usft	Longitude:	104.1087103°W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,069.80 usft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	08/25/20	6.89	59.90	47,561.34719510

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	89.74

Plan Survey Tool Program	Date	08/25/20		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	14,603.42	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	
2,238.48	14.77	227.03	2,230.33	-64.51	-69.26	2.00	2.00	0.00	227.03	
4,554.34	14.77	227.03	4,469.67	-466.91	-501.29	0.00	0.00	0.00	0.00	
5,292.82	0.00	0.00	5,200.00	-531.42	-570.55	2.00	-2.00	0.00	180.00	
9,007.86	0.00	0.00	8,915.04	-531.42	-570.55	0.00	0.00	0.00	0.00	
9,907.86	90.00	89.74	9,488.00	-528.86	2.40	10.00	10.00	9.97	89.74	
14,603.48	90.00	89.74	9,488.00	-507.88	4,697.97	0.00	0.00	0.00	0.00	LVGTWNST 2021 WA



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Project:	Eddy County, NM (NMEZ) NAD83 Grid	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	North Reference:	Grid
Well:	WA 2H	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
LVGTWNST 2021 WA 2H 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
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	227.03	1,599.98	-1.19	-1.28	-1.28	2.00	2.00	0.00
1,700.00	4.00	227.03	1,699.84	-4.76	-5.11	-5.13	2.00	2.00	0.00
1,800.00	6.00	227.03	1,799.45	-10.70	-11.48	-11.53	2.00	2.00	0.00
1,900.00	8.00	227.03	1,898.70	-19.00	-20.40	-20.49	2.00	2.00	0.00
2,000.00	10.00	227.03	1,997.47	-29.66	-31.85	-31.98	2.00	2.00	0.00
2,100.00	12.00	227.03	2,095.62	-42.67	-45.81	-46.00	2.00	2.00	0.00
2,200.00	14.00	227.03	2,193.06	-58.00	-62.27	-62.53	2.00	2.00	0.00
2,238.48	14.77	227.03	2,230.33	-64.51	-69.26	-69.56	2.00	2.00	0.00
2,300.00	14.77	227.03	2,289.82	-75.20	-80.74	-81.08	0.00	0.00	0.00
2,400.00	14.77	227.03	2,386.51	-92.58	-99.40	-99.82	0.00	0.00	0.00
2,484.07	14.77	227.03	2,467.80	-107.19	-115.08	-115.56	0.00	0.00	0.00
Base Salt (Top Delaware)									
2,500.00	14.77	227.03	2,483.21	-109.95	-118.05	-118.55	0.00	0.00	0.00
2,600.00	14.77	227.03	2,579.90	-127.33	-136.71	-137.28	0.00	0.00	0.00
2,700.00	14.77	227.03	2,676.60	-144.71	-155.36	-156.02	0.00	0.00	0.00
2,800.00	14.77	227.03	2,773.30	-162.08	-174.02	-174.75	0.00	0.00	0.00
2,900.00	14.77	227.03	2,869.99	-179.46	-192.67	-193.48	0.00	0.00	0.00
2,980.47	14.77	227.03	2,947.80	-193.44	-207.68	-208.56	0.00	0.00	0.00
Top Cherry Canyon									
3,000.00	14.77	227.03	2,966.69	-196.83	-211.33	-212.22	0.00	0.00	0.00
3,100.00	14.77	227.03	3,063.38	-214.21	-229.98	-230.95	0.00	0.00	0.00
3,200.00	14.77	227.03	3,160.08	-231.58	-248.63	-249.68	0.00	0.00	0.00
3,300.00	14.77	227.03	3,256.77	-248.96	-267.29	-268.42	0.00	0.00	0.00
3,400.00	14.77	227.03	3,353.47	-266.33	-285.94	-287.15	0.00	0.00	0.00
3,500.00	14.77	227.03	3,450.17	-283.71	-304.60	-305.88	0.00	0.00	0.00
3,600.00	14.77	227.03	3,546.86	-301.08	-323.25	-324.62	0.00	0.00	0.00
3,700.00	14.77	227.03	3,643.56	-318.46	-341.91	-343.35	0.00	0.00	0.00
3,800.00	14.77	227.03	3,740.25	-335.84	-360.56	-362.08	0.00	0.00	0.00
3,900.00	14.77	227.03	3,836.95	-353.21	-379.22	-380.82	0.00	0.00	0.00
4,000.00	14.77	227.03	3,933.65	-370.59	-397.87	-399.55	0.00	0.00	0.00
4,100.00	14.77	227.03	4,030.34	-387.96	-416.53	-418.28	0.00	0.00	0.00
4,200.00	14.77	227.03	4,127.04	-405.34	-435.18	-437.02	0.00	0.00	0.00
4,300.00	14.77	227.03	4,223.73	-422.71	-453.84	-455.75	0.00	0.00	0.00
4,400.00	14.77	227.03	4,320.43	-440.09	-472.49	-474.48	0.00	0.00	0.00
4,500.00	14.77	227.03	4,417.13	-457.46	-491.15	-493.22	0.00	0.00	0.00
4,549.30	14.77	227.03	4,464.80	-466.03	-500.35	-502.45	0.00	0.00	0.00



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Project:	Eddy County, NM (NMEZ) NAD83 Grid	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	North Reference:	Grid
Well:	WA 2H	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)
Top Brushy Canyon									
4,554.34	14.77	227.03	4,469.67	-466.91	-501.29	-503.40	0.00	0.00	0.00
4,600.00	13.86	227.03	4,513.91	-474.60	-509.54	-511.69	2.00	-2.00	0.00
4,700.00	11.86	227.03	4,611.40	-489.76	-525.83	-528.04	2.00	-2.00	0.00
4,800.00	9.86	227.03	4,709.61	-502.60	-539.61	-541.88	2.00	-2.00	0.00
4,900.00	7.86	227.03	4,808.41	-513.09	-550.87	-553.20	2.00	-2.00	0.00
5,000.00	5.86	227.03	4,907.69	-521.23	-559.61	-561.97	2.00	-2.00	0.00
5,100.00	3.86	227.03	5,007.32	-527.00	-565.80	-568.19	2.00	-2.00	0.00
5,200.00	1.86	227.03	5,107.19	-530.40	-569.45	-571.85	2.00	-2.00	0.00
5,292.82	0.00	0.00	5,200.00	-531.42	-570.55	-572.96	2.00	-2.00	0.00
5,300.00	0.00	0.00	5,207.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
5,392.82	0.00	0.00	5,300.00	-531.42	-570.55	-572.96	0.00	0.00	0.00
9 5/8"									
5,400.00	0.00	0.00	5,307.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
5,500.00	0.00	0.00	5,407.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
5,600.00	0.00	0.00	5,507.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
5,700.00	0.00	0.00	5,607.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
5,743.62	0.00	0.00	5,650.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
Top Lower Brushy Canyon									
5,800.00	0.00	0.00	5,707.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
5,900.00	0.00	0.00	5,807.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
5,939.62	0.00	0.00	5,846.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
Top Mobil Sand									
6,000.00	0.00	0.00	5,907.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,082.62	0.00	0.00	5,989.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
Top 1st Bone Springs Lime									
6,100.00	0.00	0.00	6,007.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,200.00	0.00	0.00	6,107.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,300.00	0.00	0.00	6,207.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,400.00	0.00	0.00	6,307.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,500.00	0.00	0.00	6,407.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,600.00	0.00	0.00	6,507.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,700.00	0.00	0.00	6,607.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,800.00	0.00	0.00	6,707.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
6,900.00	0.00	0.00	6,807.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,000.00	0.00	0.00	6,907.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,082.62	0.00	0.00	6,989.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
1st Bone Springs Sand									
7,100.00	0.00	0.00	7,007.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,200.00	0.00	0.00	7,107.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,300.00	0.00	0.00	7,207.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,379.62	0.00	0.00	7,286.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
2nd Bone Springs Lime									
7,400.00	0.00	0.00	7,307.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,500.00	0.00	0.00	7,407.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,600.00	0.00	0.00	7,507.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,700.00	0.00	0.00	7,607.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,797.62	0.00	0.00	7,704.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
2nd Bone Springs Sand									
7,800.00	0.00	0.00	7,707.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
7,900.00	0.00	0.00	7,807.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,000.00	0.00	0.00	7,907.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,053.62	0.00	0.00	7,960.80	-531.42	-570.55	-572.96	0.00	0.00	0.00



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Project:	Eddy County, NM (NMEZ) NAD83 Grid	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	North Reference:	Grid
Well:	WA 2H	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)
Mid 2nd Bone Springs Lime									
8,100.00	0.00	0.00	8,007.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,200.00	0.00	0.00	8,107.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,300.00	0.00	0.00	8,207.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,400.00	0.00	0.00	8,307.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,500.00	0.00	0.00	8,407.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,539.62	0.00	0.00	8,446.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
Lower 2nd Bone Springs Sand (Harkey)									
8,600.00	0.00	0.00	8,507.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,700.00	0.00	0.00	8,607.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,800.00	0.00	0.00	8,707.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
8,840.62	0.00	0.00	8,747.80	-531.42	-570.55	-572.96	0.00	0.00	0.00
3rd Bone Springs Lime									
8,900.00	0.00	0.00	8,807.18	-531.42	-570.55	-572.96	0.00	0.00	0.00
9,007.86	0.00	0.00	8,915.04	-531.42	-570.55	-572.96	0.00	0.00	0.00
LVGTWNST 2021 WA 2H KOP_659FSL_2960FEL									
9,050.00	4.21	89.74	8,957.14	-531.41	-569.00	-571.41	10.00	10.00	0.00
9,070.75	6.29	89.74	8,977.80	-531.40	-567.10	-569.51	10.00	10.00	0.00
3rd Bone Springs Sand									
9,100.00	9.21	89.74	9,006.78	-531.39	-563.16	-565.56	10.00	10.00	0.00
9,150.00	14.21	89.74	9,055.72	-531.34	-553.01	-555.42	10.00	10.00	0.00
9,200.00	19.21	89.74	9,103.60	-531.28	-538.63	-541.04	10.00	10.00	0.00
9,250.00	24.21	89.74	9,150.03	-531.19	-520.14	-522.55	10.00	10.00	0.00
9,300.00	29.21	89.74	9,194.68	-531.09	-497.67	-500.08	10.00	10.00	0.00
9,350.00	34.21	89.74	9,237.20	-530.98	-471.40	-473.80	10.00	10.00	0.00
9,400.00	39.21	89.74	9,277.27	-530.84	-441.52	-443.92	10.00	10.00	0.00
9,450.00	44.21	89.74	9,314.59	-530.69	-408.26	-410.66	10.00	10.00	0.00
9,457.32	44.95	89.74	9,319.80	-530.67	-403.12	-405.52	10.00	10.00	0.00
Top Wolfcamp (Wolfcamp A)									
9,500.00	49.21	89.74	9,348.86	-530.53	-371.87	-374.28	10.00	10.00	0.00
9,501.45	49.36	89.74	9,349.80	-530.53	-370.78	-373.18	10.00	10.00	0.00
Top Wolfcamp A - X Sand									
9,550.00	54.21	89.74	9,379.83	-530.36	-332.64	-335.04	10.00	10.00	0.00
9,576.46	56.86	89.74	9,394.80	-530.26	-310.82	-313.22	10.00	10.00	0.00
Base Wolfcamp A - X Sand									
9,600.00	59.21	89.74	9,407.26	-530.17	-290.85	-293.26	10.00	10.00	0.00
9,636.22	62.84	89.74	9,424.80	-530.03	-259.18	-261.58	10.00	10.00	0.00
Top Wolfcamp A - Y Sand									
9,650.00	64.21	89.74	9,430.94	-529.97	-246.84	-249.24	10.00	10.00	0.00
9,700.00	69.21	89.74	9,450.70	-529.77	-200.93	-203.33	10.00	10.00	0.00
9,750.00	74.21	89.74	9,466.39	-529.56	-153.47	-155.87	10.00	10.00	0.00
9,784.65	77.68	89.74	9,474.80	-529.41	-119.86	-122.26	10.00	10.00	0.00
Base Wolfcamp A - Y Sand									
9,800.00	79.21	89.74	9,477.87	-529.34	-104.82	-107.22	10.00	10.00	0.00
9,850.00	84.21	89.74	9,485.08	-529.12	-55.36	-57.76	10.00	10.00	0.00
9,900.00	89.21	89.74	9,487.94	-528.90	-5.46	-7.86	10.00	10.00	0.00
9,907.86	90.00	89.74	9,488.00	-528.86	2.40	0.00	10.00	10.00	0.00
LVGTWNST 2021 WA 2H FTP_660FSL_2386FEL									
10,000.00	90.00	89.74	9,488.00	-528.45	94.54	92.14	0.00	0.00	0.00
10,100.00	90.00	89.74	9,488.00	-528.00	194.54	192.14	0.00	0.00	0.00
10,200.00	90.00	89.74	9,488.00	-527.55	294.54	292.14	0.00	0.00	0.00
10,300.00	90.00	89.74	9,488.00	-527.11	394.54	392.14	0.00	0.00	0.00



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Project:	Eddy County, NM (NMEZ) NAD83 Grid	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	North Reference:	Grid
Well:	WA 2H	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)	
10,400.00	90.00	89.74	9,488.00	-526.66	494.54	492.14	0.00	0.00	0.00	
10,500.00	90.00	89.74	9,488.00	-526.21	594.53	592.14	0.00	0.00	0.00	
10,600.00	90.00	89.74	9,488.00	-525.77	694.53	692.14	0.00	0.00	0.00	
10,700.00	90.00	89.74	9,488.00	-525.32	794.53	792.14	0.00	0.00	0.00	
10,800.00	90.00	89.74	9,488.00	-524.87	894.53	892.14	0.00	0.00	0.00	
10,900.00	90.00	89.74	9,488.00	-524.43	994.53	992.14	0.00	0.00	0.00	
11,000.00	90.00	89.74	9,488.00	-523.98	1,094.53	1,092.14	0.00	0.00	0.00	
11,100.00	90.00	89.74	9,488.00	-523.53	1,194.53	1,192.14	0.00	0.00	0.00	
11,200.00	90.00	89.74	9,488.00	-523.09	1,294.53	1,292.14	0.00	0.00	0.00	
11,300.00	90.00	89.74	9,488.00	-522.64	1,394.53	1,392.14	0.00	0.00	0.00	
11,400.00	90.00	89.74	9,488.00	-522.19	1,494.53	1,492.14	0.00	0.00	0.00	
11,500.00	90.00	89.74	9,488.00	-521.75	1,594.52	1,592.14	0.00	0.00	0.00	
11,600.00	90.00	89.74	9,488.00	-521.30	1,694.52	1,692.14	0.00	0.00	0.00	
11,700.00	90.00	89.74	9,488.00	-520.85	1,794.52	1,792.14	0.00	0.00	0.00	
11,800.00	90.00	89.74	9,488.00	-520.41	1,894.52	1,892.14	0.00	0.00	0.00	
11,900.00	90.00	89.74	9,488.00	-519.96	1,994.52	1,992.14	0.00	0.00	0.00	
12,000.00	90.00	89.74	9,488.00	-519.51	2,094.52	2,092.14	0.00	0.00	0.00	
12,100.00	90.00	89.74	9,488.00	-519.07	2,194.52	2,192.14	0.00	0.00	0.00	
12,200.00	90.00	89.74	9,488.00	-518.62	2,294.52	2,292.14	0.00	0.00	0.00	
12,300.00	90.00	89.74	9,488.00	-518.17	2,394.52	2,392.14	0.00	0.00	0.00	
12,400.00	90.00	89.74	9,488.00	-517.73	2,494.52	2,492.14	0.00	0.00	0.00	
12,500.00	90.00	89.74	9,488.00	-517.28	2,594.52	2,592.14	0.00	0.00	0.00	
12,600.00	90.00	89.74	9,488.00	-516.83	2,694.51	2,692.14	0.00	0.00	0.00	
12,700.00	90.00	89.74	9,488.00	-516.38	2,794.51	2,792.14	0.00	0.00	0.00	
12,800.00	90.00	89.74	9,488.00	-515.94	2,894.51	2,892.14	0.00	0.00	0.00	
12,900.00	90.00	89.74	9,488.00	-515.49	2,994.51	2,992.14	0.00	0.00	0.00	
13,000.00	90.00	89.74	9,488.00	-515.04	3,094.51	3,092.14	0.00	0.00	0.00	
13,100.00	90.00	89.74	9,488.00	-514.60	3,194.51	3,192.14	0.00	0.00	0.00	
13,200.00	90.00	89.74	9,488.00	-514.15	3,294.51	3,292.14	0.00	0.00	0.00	
13,300.00	90.00	89.74	9,488.00	-513.70	3,394.51	3,392.14	0.00	0.00	0.00	
13,400.00	90.00	89.74	9,488.00	-513.26	3,494.51	3,492.14	0.00	0.00	0.00	
13,500.00	90.00	89.74	9,488.00	-512.81	3,594.51	3,592.14	0.00	0.00	0.00	
13,600.00	90.00	89.74	9,488.00	-512.36	3,694.50	3,692.14	0.00	0.00	0.00	
13,700.00	90.00	89.74	9,488.00	-511.92	3,794.50	3,792.14	0.00	0.00	0.00	
13,800.00	90.00	89.74	9,488.00	-511.47	3,894.50	3,892.14	0.00	0.00	0.00	
13,900.00	90.00	89.74	9,488.00	-511.02	3,994.50	3,992.14	0.00	0.00	0.00	
14,000.00	90.00	89.74	9,488.00	-510.58	4,094.50	4,092.14	0.00	0.00	0.00	
14,100.00	90.00	89.74	9,488.00	-510.13	4,194.50	4,192.14	0.00	0.00	0.00	
14,200.00	90.00	89.74	9,488.00	-509.68	4,294.50	4,292.14	0.00	0.00	0.00	
14,300.00	90.00	89.74	9,488.00	-509.24	4,394.50	4,392.14	0.00	0.00	0.00	
14,400.00	90.00	89.74	9,488.00	-508.79	4,494.50	4,492.14	0.00	0.00	0.00	
14,500.00	90.00	89.74	9,488.00	-508.34	4,594.50	4,592.14	0.00	0.00	0.00	
14,603.48	90.00	89.74	9,488.00	-507.88	4,697.97	4,695.62	0.00	0.00	0.00	
LVGTWNST 2021 WA 2H PBHL_660FSL_2310FEL										



Planning Report

Kaiser-Francis Oil Company

Database:	SBDIR_EDM	Local Co-ordinate Reference:	Well WA 2H - Slot 2H
Company:	KAISER-FRANCIS OIL COMPANY	TVD Reference:	3069.8 @ 3069.80usft (GLOnly)
Project:	Eddy County, NM (NMEZ) NAD83 Grid	MD Reference:	3069.8 @ 3069.80usft (GLOnly)
Site:	Loving Townsite 2021 WA	North Reference:	Grid
Well:	WA 2H	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
LVGTWNST 2021 WA 2I - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	468,065.00	610,750.58	32.2865849°N	104.1087103°W
LVGTWNST 2021 WA 2I - plan hits target center - Point	0.00	0.00	8,915.04	-531.42	-570.55	467,533.58	610,180.03	32.2851274°N	104.1105602°W
LVGTWNST 2021 WA 2I - plan hits target center - Point	0.00	0.00	9,488.00	-528.86	2.40	467,536.14	610,752.98	32.2851311°N	104.1087061°W
LVGTWNST 2021 WA 2I - plan hits target center - Point	0.00	0.01	9,488.00	-507.88	4,697.97	467,557.12	615,448.55	32.2851609°N	104.0935113°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	
5,392.82	5,300.00	9 5/8"	9.62	12.25	
14,603.48	9,488.00	5 1/2"	5.50	6.00	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,484.07	2,467.80	Base Salt (Top Delaware)		0.00		
2,980.47	2,947.80	Top Cherry Canyon		0.00		
4,549.30	4,464.80	Top Brushy Canyon				
5,743.62	5,650.80	Top Lower Brushy Canyon				
5,939.62	5,846.80	Top Mobil Sand				
6,082.62	5,989.80	Top 1st Bone Springs Lime				
7,082.62	6,989.80	1st Bone Springs Sand				
7,379.62	7,286.80	2nd Bone Springs Lime				
7,797.62	7,704.80	2nd Bone Springs Sand				
8,053.62	7,960.80	Mid 2nd Bone Springs Lime				
8,539.62	8,446.80	Lower 2nd Bone Springs Sand (Harkey)				
8,840.62	8,747.80	3rd Bone Springs Lime				
9,070.75	8,977.80	3rd Bone Springs Sand				
9,457.32	9,319.80	Top Wolfcamp (Wolfcamp A)				
9,501.45	9,349.80	Top Wolfcamp A - X Sand				
9,576.46	9,394.80	Base Wolfcamp A - X Sand				
9,636.22	9,424.80	Top Wolfcamp A - Y Sand				
9,784.65	9,474.80	Base Wolfcamp A - Y Sand				