

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-101
May 27, 2004

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

Submit to appropriate District Office

☐ AMENDED REPORT

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

¹ Operator Name and Address KAISER-FRANCIS OIL COMPANY, P.O. BOX 21468, TULSA, OK 74121-1468		² OGRID Number 012361
		³ API Number 30-025-36952
⁴ Property Code 5437	⁵ Property Name BELL LAKE UNIT	⁶ Well No. E21
⁹ Proposed Pool 1 South Bell Lake DELAWARE ✓		¹⁰ Proposed Pool 2

⁷ Surface Location									
UL or lot no. F	Section 6	Township 24S	Range 34E	Lot Idn	Feet from the 2310	North/South line NORTH	Feet from the 2310	East/West line WEST	County LEA

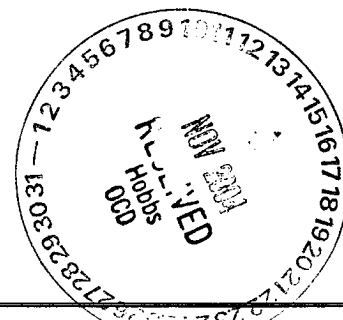
⁸ Proposed Bottom Hole Location If Different From Surface									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Additional Well Information				
¹¹ Work Type Code N	¹² Well Type Code O	¹³ Cable/Rotary R	¹⁴ Lease Type Code S ✓	¹⁵ Ground Level Elevation 3609'
¹⁶ Multiple NO	¹⁷ Proposed Depth 9000'	¹⁸ Formation BONE SPRING	¹⁹ Contractor GREYWOLF	²⁰ Spud Date DECEMBER 2004
Depth to Groundwater COULD NOT FIND		Distance from nearest fresh water well ± 3453'		Distance from nearest surface water NONE WITHIN 1 MILE
Pit: Liner: Synthetic <input checked="" type="checkbox"/> 12_mils thick Clay <input type="checkbox"/> Pit Volume: 42000 bbls Drilling Method: Closed-Loop System <input type="checkbox"/> Fresh Water <input checked="" type="checkbox"/> Brine <input checked="" type="checkbox"/> Diesel/Oil-based <input type="checkbox"/> Gas/Air <input type="checkbox"/>				

²¹ Proposed Casing and Cement Program					
Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
12 1/4"	8 5/8"	24#	1300'	540 SXS	SURFACE
7 7/8"	5 1/2"	17#	9000'	260 SXS	7200'
		DY TOOL	7200'	270 SXS	4650'

²² Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

SEE ATTACHED INFORMATION.



²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOC guidelines <input checked="" type="checkbox"/> a general permit <input type="checkbox"/> , or an (attached) alternative OCD-approved plan <input type="checkbox"/> .		OIL CONSERVATION DIVISION	
Printed name: DREW TYLER		Approved by:	
Title: ENGINEER		Title: PETROLEUM ENGINEER	
E-mail Address: DREW.T@KFOC.net		Approval Date: NOV 17 2004 Expiration Date:	
Date: 11/9/04	Phone: 918-491-4343	Conditions of Approval Attached <input type="checkbox"/>	

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 15, 2000
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

DISTRICT IV
2040 South Pacheco, Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-36952	Pool Code 97051	Pool Name SOUTH BELL LAKE DELAWARE
Property Code 5427	Property Name SOUTH BELL LAKE UNIT	Well Number 21
OGRID No. 12361	Operator Name KAISER-FRANCIS OIL COMPANY	Elevation 3609'

Surface Location

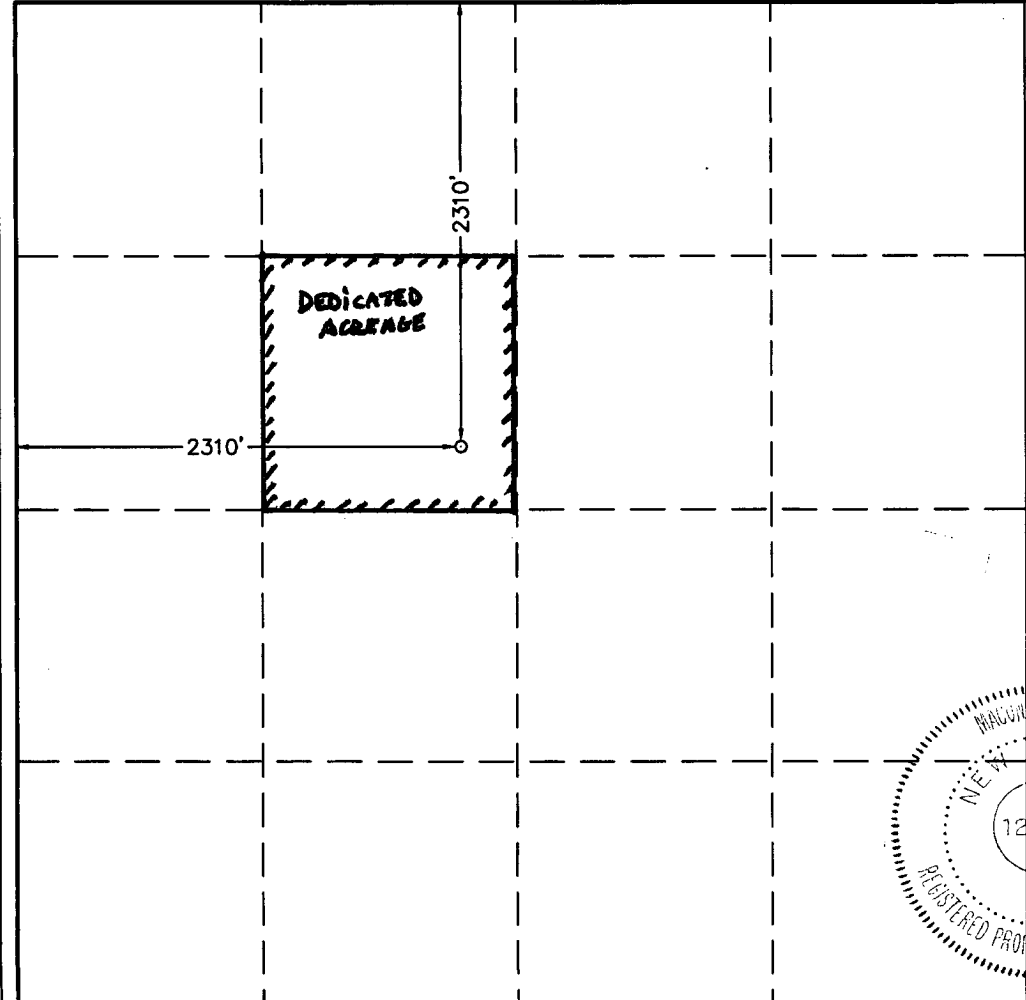
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	6	24 S	34 E		2310	NORTH	2310	WEST	LEA

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

Dedicated Acres 40	Joint or Infill	Consolidation Code	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

	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p>W. Newryler Signature</p> <p>DREW THUR Printed Name</p> <p>ENGINEER Title</p> <p>11/9/04 Date</p> <p>SURVEYOR CERTIFICATION</p> <p>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 upervison and that the same is true and orrect to the best of my belief.</p> <p>October 16, 2004 Date Surveyed</p> <p>LVA Signature & Seal of Professional Surveyor</p> <p>W.O. Num. 2004-0735 Certificate No. MACON McDONALD 12185</p>
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State of New Mexico
Energy Minerals and Natural Resources

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

Form C-144
June 1, 2004

For drilling and production facilities, submit to
appropriate NMOCD District Office.
For downstream facilities, submit to Santa Fe
office

Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes ☐ No ☐

Type of action: Registration of a pit or below-grade tank ☒ Closure of a pit or below-grade tank ☐

Operator: <u>KAISER-FRANCIS OIL COMPANY</u> Telephone: <u>918-494-0000</u> e-mail address: _____		
Address: <u>P.O. Box 21468, TULSA, OK. 74121-1468</u>		
Facility or well name: <u>BELL LAKE 6-21</u> API #: <u>30-025-36952</u> U/L or Qtr/Qtr <u>F</u> Sec <u>6</u> T <u>21S</u> R <u>34E</u>		
County: <u>LEA</u> Latitude _____ Longitude _____ NAD: 1927 <input type="checkbox"/> 1983 <input type="checkbox"/> Surface Owner Federal <input type="checkbox"/> State <input checked="" type="checkbox"/> Private <input type="checkbox"/> Indian <input type="checkbox"/>		
Pit Type: Drilling <input checked="" type="checkbox"/> Production <input type="checkbox"/> Disposal <input type="checkbox"/> Workover <input type="checkbox"/> Emergency <input type="checkbox"/> Lined <input checked="" type="checkbox"/> Unlined <input type="checkbox"/> Liner type: Synthetic <input checked="" type="checkbox"/> Thickness <u>12</u> mil Clay <input type="checkbox"/> Pit Volume <u>42060</u> bbl	Below-grade tank Volume: _____ bbl Type of fluid: _____ Construction material: _____ Double-walled, with leak detection? Yes <input type="checkbox"/> If not, explain why not: _____	
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.) <u>ASSUME LESS THAN 50'</u> <u>COULD NOT FIND ANY INFORMATION ON DEPTH</u>	Less than 50 feet 50 feet or more, but less than 100 feet 100 feet or more	(20 points) (10 points) <u>20</u> (0 points)
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes (No) <u>3453'</u>	(20 points) (0 points) <u>0</u>
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.) <u>NONE WITHIN 1 MILE</u>	Less than 200 feet 200 feet or more, but less than 1000 feet <u>1000 feet or more</u>	(20 points) (10 points) (0 points) <u>0</u>
Ranking Score (Total Points)		

If this is a pit closure: (1) attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if you are burying in place) onsite ☐ offsite ☐ If offsite, name of facility _____. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☐ Yes ☐ If yes, show depth below ground surface _____ ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments:

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.

Date: 11/9/04

Printed Name/Title: DREW TYLER / ENGINEER

Signature: Drew Tyler

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Approval:

Printed Name/Title: _____

ORIGINAL SIGNED BY

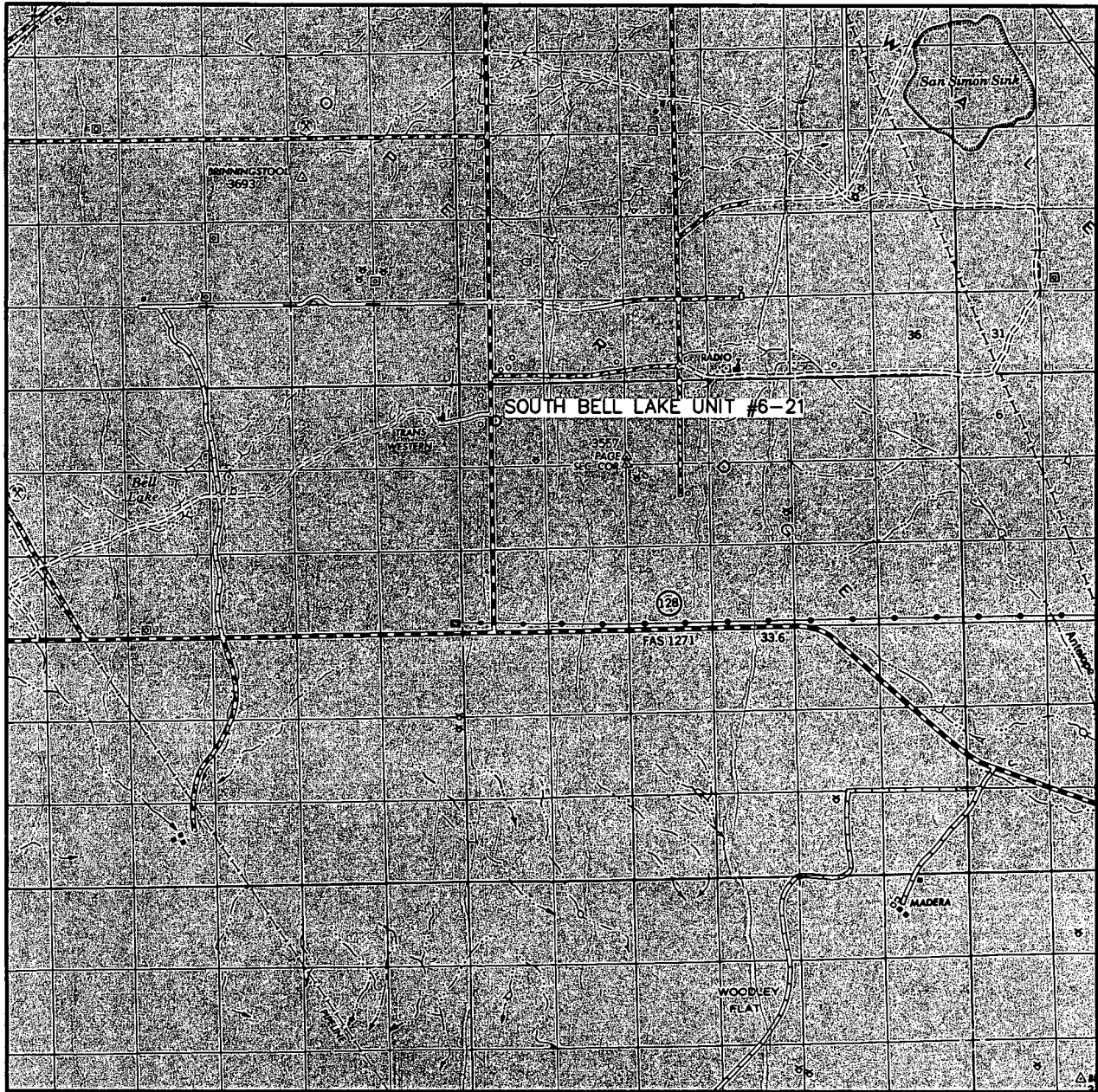
Signature: THOMAS E. KAUTZ

Date: _____

PETROLEUM ENGINEER

NOV 17 2004

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 6 TWP. 24-S RGE. 34-E

SURVEY N.M.P.M.

COUNTY LEA

DESCRIPTION 2310' FNL & 2310' FWL

ELEVATION 3609'

OPERATOR KAISER-FRANCIS OIL COMPANY

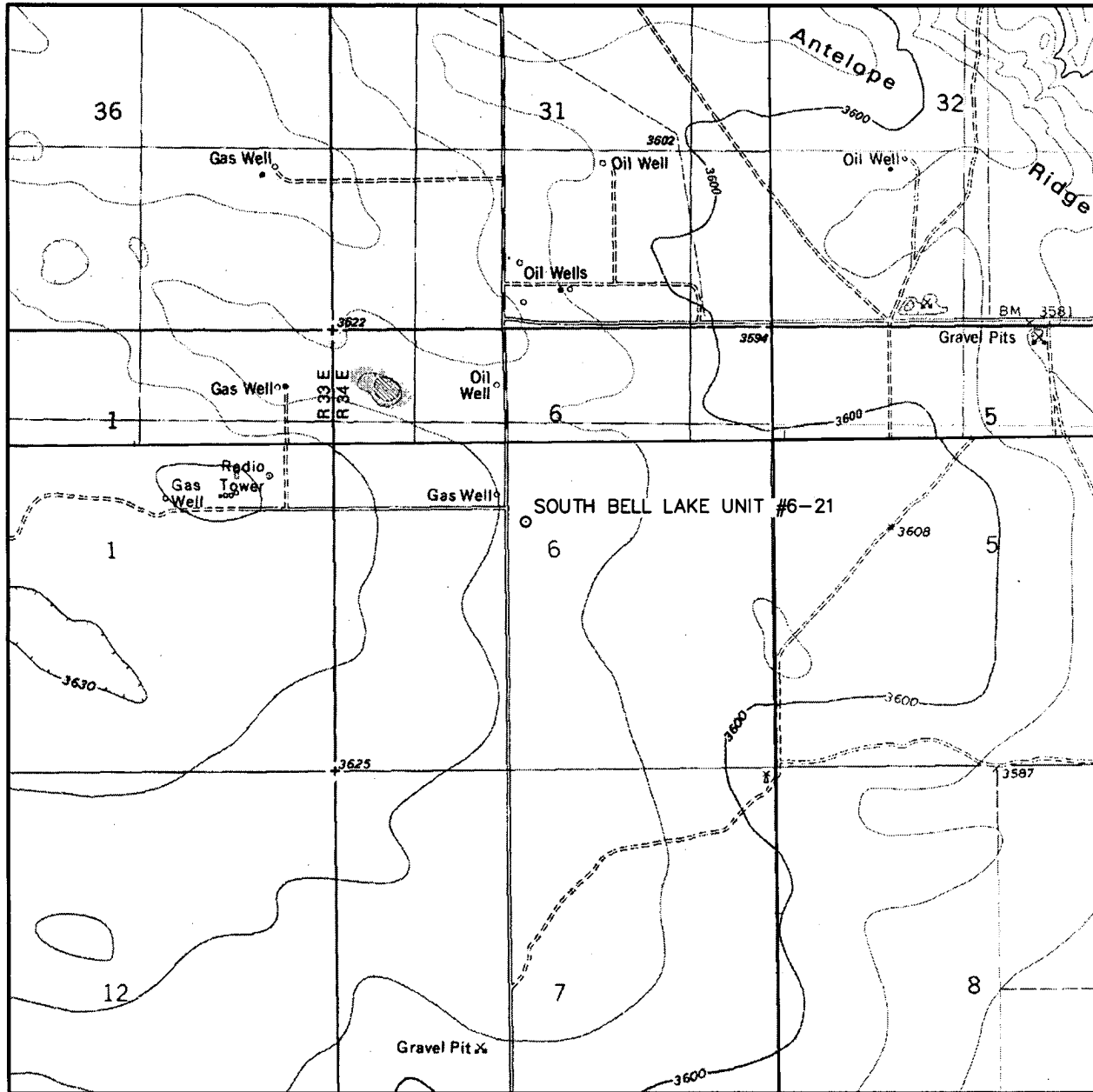
LEASE SOUTH BELL LAKE UNIT



**WEST
COMPANY**
of Midland, Inc.

110 W. LOUISIANA, STE. 110
MIDLAND TEXAS, 79701
(432) 687-0865 - (432) 687-0868 FAX

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
BELL LAKE - 10'

SEC. 6 TWP. 24-S RGE. 34-E

SURVEY N.M.P.M.

COUNTY LEA

DESCRIPTION 2310' FNL & 2310' FWL

ELEVATION 3609'

OPERATOR KAISER-FRANCIS OIL COMPANY

LEASE SOUTH BELL LAKE UNIT

U.S.G.S. TOPOGRAPHIC MAP
BELL LAKE, N.M.



**WEST
COMPANY**
of Midland, Inc.

110 W. LOUISIANA, STE. 110
MIDLAND TEXAS, 79701
(432) 687-0865 - (432) 687-0868 FAX

**Kaiser-Francis Oil Company
Drilling Procedure Summary**

South Bell Lake #6-21
6-24S-34E
Lea Co., NM.

DRILLING CONTRACTOR:

Grey Wolf – Rig 714 – See attached specifications.

ESTIMATED FORMATION TOPS:

Delaware	5145'
Bone Springs	8675'

CASING PROGRAM:

Hole Size	Casing	Depth	Cement	TOC
12 1/4"	8 5/8"	1300'	540 sxs	Surface
7 7/8"	5 1/2"	9000'	260 sxs	7200'
	DV Tool	7200'	270 sxs	4650'

Proposed cementing program attached. Will use Halliburton or equivalent.

MUD PROGRAM: (SUBJECT TO CHANGES PENDING ON HOLE CONDITIONS)

Depth	Mud Type	Weight
Please refer to attached mud program designed by Horizon Mud Company		

HYDROGEN SULFIDE CONTINGENCY PLAN:

This well/facility is not expected to have hydrogen sulfide in excess of 100 PPM.

BLOWOUT PREVENTION PROGRAM:

See attached.

Grey Wolf

RIG 714

CLASSIFICATION: Skytop Brewster N-46
Mechanical

DRILLING DEPTH CAPACITY: 12,500'

POWER SYSTEM:

Two (2) Caterpillar D3408TA engines each with Allison TC-945 torque converters driving a Two (2) engine inline compound, and Two (2) Caterpillar D3406TA engines with 210 KW AC generators

DRAWWORKS:

Skytop Brewster N-46 with Parmac 342 hydromatic brake

MAST:

Dreco 133' x 21' base, 428,000# static hook load

DRILL LINE:

1-1/8" EIPS

SUBSTRUCTURE:

Dreco Slingshot 18' high, 428,000# rotary capacity with 300,000# setback capacity, 14' clear height from rotary beam to ground level

MUD PUMPS:

Two (2) Gardner Denver PZ-9 triplex pumps rated at 1,000 HP, driven by Caterpillar D398TA diesel engines

ROTARY:

Oilwell 27-1/2"

CROWN BLOCK:

Dreco six (6) sheave

TRAVELING BLOCK AND HOOK:

Gardner Denver 300 ton block with Web Wilson 250 ton block-hook combination

SWIVEL:

Oilwell PC-300, 300 ton

DRILL PIPE:

4-1/2" OD

DRILL COLLARS:

Various sizes and configurations available upon request.

KELLY:

5-1/4" Hex x 45'

ANNULAR PREVENTER:

Hydril GK 13-5/8" x 5,000 psi WP

RAM PREVENTERS:

Cameron 13-5/8" double x 5,000 psi WP

CHOKE MANIFOLD:

4-1/16" x 2-1/16" 5,000 psi WP dual choke

ACCUMULATOR SYSTEM:

Valvcon five (5) station, 130 gallon capacity with dual air pumps and one (1) electric pump

MUD TANK SYSTEM:

Two (2) tank 600 BBL total
Derrek Flowline shaker
Mud agitators
Sweco two (2) cone desander
Swaco eight (8) cone desilter

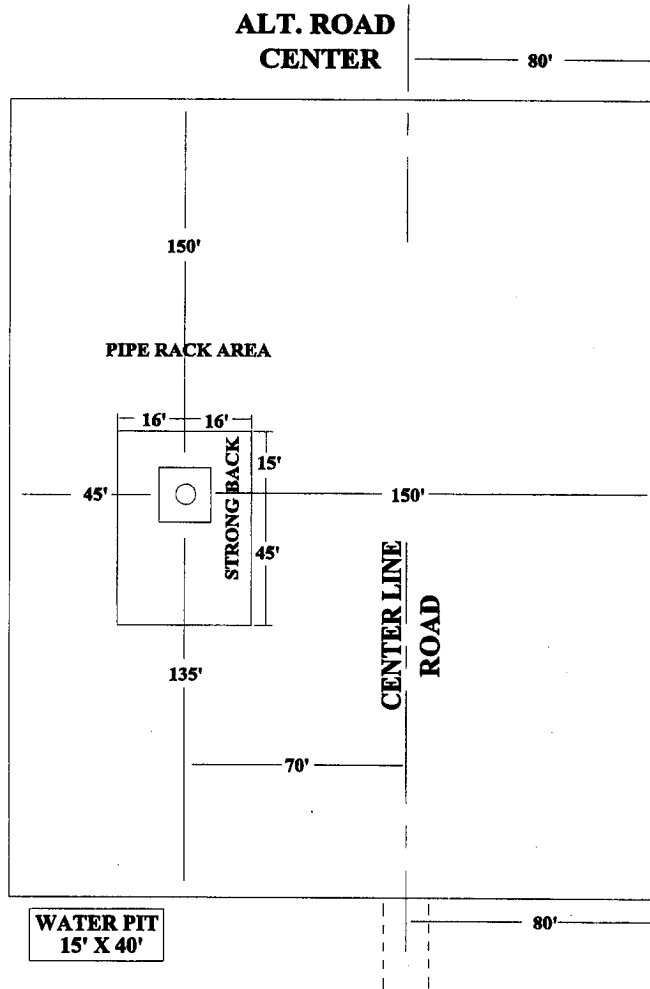
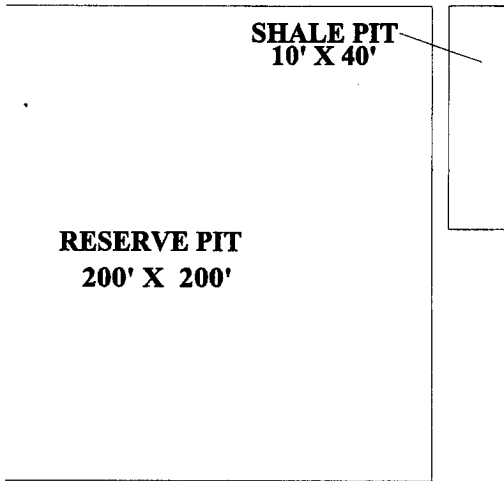
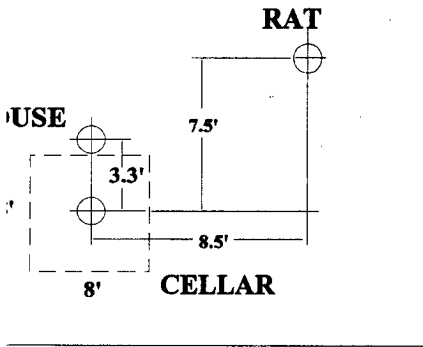
MUD MIXING PUMPS:

Two (2) 5 x 6 centrifugal pumps, each driven by 75 HP electric motors

AUXILIARY EQUIPMENT

Tool Pusher and crew quarters
One (1) 500 BBL water tank
One (1) 8,000 gal. fuel tank
Automatic driller
Kelly spinner
Pipe spinner
Two (2) air hoists
Electronic drilling recorder
0 - 7 degree drift indicator

IN LEFT



RIG 714

REV 05/28/04

Kaiser-Francis Oil Company

South Bell Lake 6-21

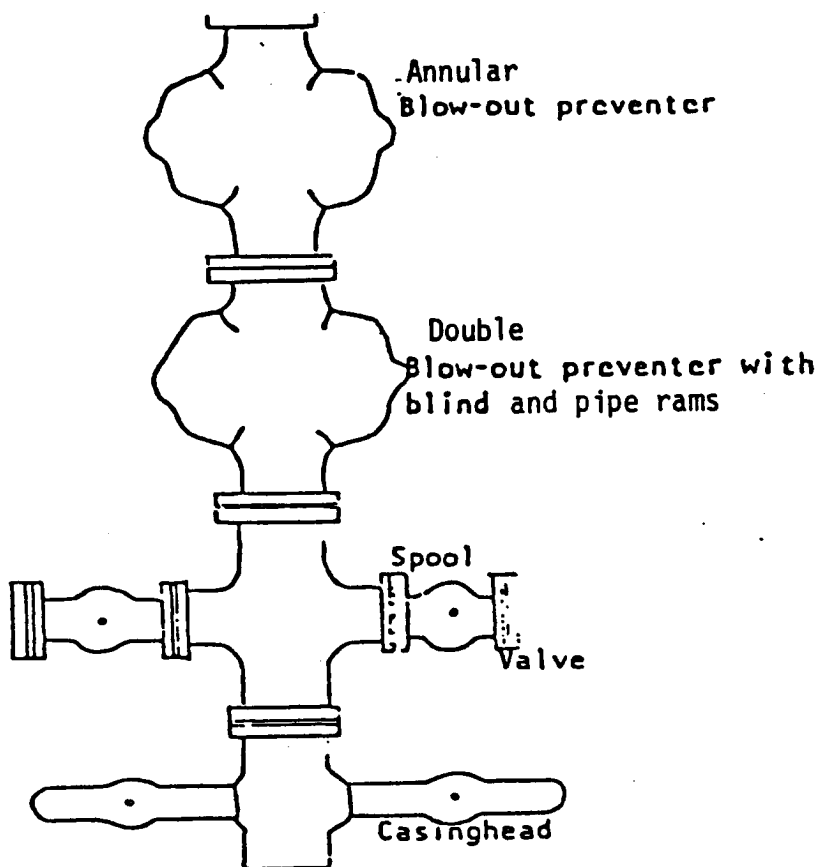
Sec 21-24S-34E

Lea County, NM

Blowout prevention equipment:

The drilling contractor for this project is Grey Wolf Drilling and the rig utilized will be Grey Wolf Rig #714. This rig is equipped with the following BOP Equipment:

- | | | |
|--------------------------|---|--|
| Annular Preventer | - | Hydril GK 13 5/8" x 5000 psi WP |
| Ram Preventer | - | Cameron 13 5/8" double x 5000 psi WP |
| Choke Manifold | - | 4 1/16" x 2 1/16" 5000 psi WP dual choke |
| Accumulator | - | Valvcon five station, 130 gal capacity
w/dual air pumps & one electric pump |



Standard 5000 psi WP BOP stack

**EXHIBIT A
KAISER-FRANCIS OIL COMPANY
BELL LAKE #6-21
LEA COUNTY, NM**

SUMMARY

Drilling, Casing, and Cementing Procedure

1. Drill 12 ¼" hole to 1300'. Run 8 5/8" 24# casing. Use guide shoe on bottom joints with a float insert 1 joint above the guide shoe. Run 1 centralizer per joint on the bottom three (3) joints. Cement to surface with 540 sxs cement.
2. Nipple up and install BOP's. Cement shall be allowed to stand 12 hours under pressure. After 18 hours, test casing to 600 psi for 30 minutes. Drill out cement. After drilling the plug and below the casing seat, test the casing shoe to 600 psi for 30 minutes.
3. Drill 7 7/8" hole to 9000'. Log well
4. Run 5 ½" 17# casing. Use guide shoe on bottom and a float collar 1 joint above the shoe. Use centralizers on every 3 rd joint over the bottom 500' and across any zones of interest as determined by log analysis. A DV Tool will be installed at 7200' for two stage cementing. Cement lower (first stage) using 260 sxs cement to bring cement to 7200'. Cement through DV tool (second stage) with 270 sxs to bring cement to 4650'. Cement weight and mix may vary depending on hole conditions encountered at the time the well is drilled and the casing is run. Proposed top of cement will be 4650' or as determined by log analysis.



November 10, 2004

PROGRAM PREPARED FOR:

Mr. Ted Jacobson
Kaiser-Francis Oil Company
P.O. Box 21468
Tulsa, Oklahoma 74121

WELL NAME AND LOCATION:

Belle Lake #621
Sec 6, T-24-S, R-34-E
Lea County, New Mexico

PROGRAM PREPARED BY:

We appreciate the opportunity to prepare and submit the following mud program for your upcoming well. In addition to the recommendations and information within this program, if we can further serve you in any way, please do not hesitate to call.

Sincerely,

Tony Farish,
President.



PROPOSED MUD PROGRAM

CASING DESIGN

8 5/8" Surface Casing at 1,300'
7 7/8" Open Hole to 8,900'

RECOMMENDED MUD PROPERTIES

<u>DEPTH</u>	<u>MUD WEIGHT</u>	<u>VISCOSITY</u>	<u>FLUID LOSS</u>
Spud	8.6- 8.7	32-34	No Control
700'	9.0- 9.3	32-34	No Control
1,300'	9.0- 9.3	32-34	No Control
Set 8 5/8" Surface Casing at 1,300'. Drill out with Brine Water.			
1,400'	10.0-10.1	28-29	No Control
3,000'	10.0-10.1	28-29	No Control
4,000'	10.0-10.1	28-29	No Control
5,000'	10.0-10.1	28-29	No Control
6,000'	10.0-10.1	28-29	No Control
7,500'	10.0-10.1	30-32	<12
8,000'	10.0-10.1	30-32	<12
8,900'	10.1-10.2	30-34	<12

RECOMMENDED MUD PROGRAM BY CASING INTERVAL

Surface Hole 0-1,300'

Spud with a Gel/Lime slurry mixing one Lime per ten Gel to achieve a 32-34 viscosity. After approximately 300', allow the native solids and constant additions of fresh water at the floline to maintain a 32-34 viscosity. It is important to maintain a stable viscosity while drilling the Red Bed section. This should be provide good hole conditions for running casing.



Open Hole 1,300'-8,900'

Drill out from under the surface casing with brine water, circulating through the reserve pit to allow maximum time for settling drilled-solids.

We recommend maintaining a 9.5-10.0 Ph with **Caustic**.

Utilize **Paper** to sweep the hole periodically while drilling this interval.

As drilling progresses past **4,000'**, lost circulation may occur. **Note:** Drilling with 10.0 ppg brine during this interval may cause losses to be more severe. Minor seepage can be controlled with additions of **Paper**. Should complete loss of returns occur while drilling, we recommend pulling a few stands off bottom to avoid differential sticking and spotting a 100 – 200 barrel pill containing fibrous-type **LCM**. Spot the pill from above at a reduced pump rate before returning to bottom to commence drilling.

Severe seepage in the **Bone Springs** may require alternative methods of combating losses, such as:

- ⇒ **Heavy bentonite pills**
- ⇒ **Diesel/Loloss pills**
- ⇒ **Drill-out pills spotted or squeezed**

Crooked hole is a problem in this area.

By **7,500'** or the top of the **Brushy Canyon**, we recommend mudding up through the working pits with a **Starch/DCS** system to achieve the following properties:

Mud Weight	10.1-10.2
Viscosity	30-32
Fluid Loss	<12

This should provide good samples for proper evaluation.

While using **Starch** for fluid loss control, it is important that the Ph of the fluid remain below 11.0 to avoid burning the **Starch**.

Lost circulation will be a possibility after mud-up. Follow the same procedure described earlier.



We recommend using **DCS Surfactant** as a mud additive to provide the following benefits:

- ⇒ minimize the usage of Mud Products
- ⇒ help drop solids providing a cleaner mud, lower mud weight and a thinner filter cake
- ⇒ improve clean-up of the pay zone when whole mud invasion occurs

Allow hole conditions to dictate the need for additional viscosity or hole sweeps prior to total depth.

This fluid, adjusted as shown in the "**Recommended Mud Properties**" section, or as hole conditions dictate, should provide good hole conditions for any testing, logging and casing operations.



ESTIMATED COST

Surface Hole 0-1,300'

(1 days)

Gel	20	
Lime	2	
Paper	15	\$ 246.00

Open Hole 1,300'-7,500'

(13 days)

Paper	60	
Caustic	50	1,728.80
Possible LCM		5,000.00

Mud-up at 7,500'

(1,100 barrels)

Starch	75	
DCS	6	1,626.80

Open Hole 7,500'-8,900'

(6 days)

Starch	150	
DCS	6	
XC-102	4	3,558.00
Possible LCM		5,000.00

20 days

Total Estimated Material 17,159.60

Tax 1,009.90

Drayage 2,000.00

Total Estimated Cost **\$ 20,169.50**

VARIABLES EFFECTING ESTIMATED COST

1. 6 days on mud, 20 days total
2. 1,100 barrels volume at mud-up
3. \$10,000.00 added for possible lost circulation
4. no additional viscosity at total depth
5. 15% discount on Gel, Salt Gel, 25% on all other products, *Barite currently priced by load



Kaiser-Francis Oil Co
P. O. Box 21468
Tulsa, Oklahoma 74121

Bell Lake Unit #6-21

Lea County, New Mexico
United States of America
S:6 T:24S R:34E

Cementing Recommendation

Prepared for: Drew Tyler
November 10, 2004
Version: 1

Submitted by:
Dick Mocksfield

Halliburton Energy Services
4000 N. Big Spring, Ste. 400
Midland, Texas 79705
+800.844.8451

HALLIBURTON

HALLIBURTON

*Halliburton appreciates the opportunity to present
this proposal and looks forward to being of service to you.*

Foreword

Halliburton Energy Services is pleased to have this opportunity to present this proposal for your consideration. We earnestly request the service work to be performed on this well.

These Service Coordinators can be reached in our Customer Service Center, at the following phone numbers :

432-682-4305 or 1-800-844-8451

CEMENTING:	Mike Pilgrim Basil Hacker Steve Luscombe Scott Kerby
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STIMULATION:	Mel Holt Larry Staples Larry Roberts
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LOGGING & PERFORATING:	Allen Avera
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COILED TUBING & NITROGEN:	David Brune
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TOOLS & TESTING, PROD. SVCS., TCP, COMPL. PRODUCTS:	Steve Engleman
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DRILL BITS, SECURITY DBS:	Bill Stark Mike McElreath
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PREPARED BY:	Larry Foster
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We look forward to working with you to provide the very best quality services available in the Permian Basin.

Dick Mocksfield, Technical Advisor

HALLIBURTON

Job Information

Surface Casing

Bell Lake Unit	#6-21
Open Hole Section	0 - 1300 ft (MD)
Inner Diameter	12.250 in
Job Excess	100 %
Surface Casing	0 - 1300 ft (MD)
Outer Diameter	8.625 in
Inner Diameter	8.097 in
Linear Weight	24 lbm/ft

Calculations

Cement : (1000.00 ft fill)	
$1000.00 \text{ ft} * 0.4127 \text{ ft}^3/\text{ft} * 100 \%$	= 825.45 ft ³
Total Lead Cement	= 825.45 ft ³
	= 147.02 bbl
Sacks of Cement	= 337 sks
Cement : (300.00 ft fill)	
$300.00 \text{ ft} * 0.4127 \text{ ft}^3/\text{ft} * 100 \%$	= 247.64 ft ³
Tail Cement	= 247.64 ft ³
	= 44.11 bbl
Shoe Joint Volume: (40.00 ft fill)	
$40.00 \text{ ft} * 0.3576 \text{ ft}^3/\text{ft}$	= 14.30 ft ³
	= 2.55 bbl
Tail plus shoe joint	= 261.94 ft ³
	= 46.65 bbl
Total Tail	= 195 sks

Job Recommendation

Surface Casing

Install floating equipment, run casing to bottom, and circulate minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Precede cement with 20 bbls
Fresh Water

Fluid Volume: 20 bbl

Fluid 2: Lead with 340 sks
Interfill "C" Cement

Fluid Weight 11.90 lbm/gal
Slurry Yield: 2.45 ft³/sk
Total Mixing Fluid: 14.12 Gal/sk
Top of Fluid: 0 ft
Calculated Fill: 1000 ft
Volume: 147.02 bbl
Calculated Sacks: 337.06 sks
Proposed Sacks: 340 sks

Fluid 3: Tail-in with 200 sks

Premium Plus Cement

94 lbm/sk Premium Plus Cement (Cement)
2 % Calcium Chloride (Accelerator)

Fluid Weight 14.80 lbm/gal
Slurry Yield: 1.34 ft³/sk
Total Mixing Fluid: 6.34 Gal/sk
Top of Fluid: 1000 ft
Calculated Fill: 300 ft
Volume: 46.65 bbl
Calculated Sacks: 195.04 sks
Proposed Sacks: 200 sks

HALLIBURTON

Job Information

Production Casing

Bell Lake Unit

#6-21

Surface Casing

0 - 1300 ft (MD)

Outer Diameter

8.625 in

Inner Diameter

8.097 in

Linear Weight

24 lbm/ft

Open Hole Section

1300 - 9000 ft (MD)

Inner Diameter

7.875 in

Job Excess

50 %

Production Casing

0 - 9000 ft (MD)

Outer Diameter

5.500 in

Inner Diameter

4.892 in

Linear Weight

17 lbm/ft

Multiple Stage Cementer

7200 ft (MD)

HALLIBURTON

Calculations

Production Casing

Stage 1

Cement : (1000.00 ft fill)

$$1000.00 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 50 \% = 259.88 \text{ ft}^3$$

$$\text{Total First Stage Lead Cement} = 259.88 \text{ ft}^3$$

$$= 46.29 \text{ bbl}$$

$$\text{Sacks of Cement} = 94 \text{ sks}$$

Cement : (800.00 ft fill)

$$800.00 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 50 \% = 207.91 \text{ ft}^3$$

$$\text{First Stage Tail Cement} = 207.91 \text{ ft}^3$$

$$= 37.03 \text{ bbl}$$

Shoe Joint Volume: (40.00 ft fill)

$$40.00 \text{ ft} * 0.1305 \text{ ft}^3/\text{ft} = 5.22 \text{ ft}^3$$

$$= 0.93 \text{ bbl}$$

$$\text{Tail plus shoe joint} = 213.13 \text{ ft}^3$$

$$= 37.96 \text{ bbl}$$

$$\text{Total Tail} = 163 \text{ sks}$$

Stage 2

Cement : (2295.00 ft fill)

$$2295.00 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 50 \% = 596.43 \text{ ft}^3$$

$$\text{Total Second Stage Lead Cement} = 596.43 \text{ ft}^3$$

$$= 106.23 \text{ bbl}$$

$$\text{Sacks of Cement} = 216 \text{ sks}$$

Cement : (255.00 ft fill)

$$255.00 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 50 \% = 66.27 \text{ ft}^3$$

$$\text{Second Stage Tail Cement} = 66.27 \text{ ft}^3$$

$$= 11.80 \text{ bbl}$$

$$\text{Total Tail} = 50 \text{ sks}$$

Job Recommendation

Production Casing

Install floating equipment, run casing to bottom, and circulate minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Stage 1

Fluid 1: First Stage: Precede cement with 20 bbls
Fresh Water

Fluid Volume: 20 bbl

Fluid 2: First Stage: Lead with 95 sks
Interfill "C" Cement

Fluid Weight 11.50 lbm/gal
Slurry Yield: 2.76 ft³/sk
Total Mixing Fluid: 16.43 Gal/sk
Top of Fluid: 7200 ft
Calculated Fill: 1000 ft
Volume: 46.29 bbl
Calculated Sacks: 94.23 sks
Proposed Sacks: 95 sks

Fluid 3: First Stage: Tail-in with 165 sks

50/50 Poz Premium Cement (2% Gel)
0.6 % Halad(R)-9 (Low Fluid Loss Control)
3 lbm/sk Potassium Chloride (Cement Material)

Fluid Weight 14.20 lbm/gal
Slurry Yield: 1.31 ft³/sk
Total Mixing Fluid: 5.96 Gal/sk
Top of Fluid: 8200 ft
Calculated Fill: 800 ft
Volume: 37.96 bbl
Calculated Sacks: 163.07 sks
Proposed Sacks: 165 sks

Multiple Stage Cementer @ 7200 ft (MD)

Job Recommendation (Continued)

Production Casing

Stage 2

Fluid 1: Second Stage: Precede cement with 20 bbls
Fresh Water

Fluid Volume: 20 bbl

Fluid 2: Second Stage: Lead with 220 sks
Interfill "C" Cement

Fluid Weight 11.50 lbm/gal
Slurry Yield: 2.76 ft³/sk
Total Mixing Fluid: 16.43 Gal/sk
Top of Fluid: 4650 ft
Calculated Fill: 2295 ft
Volume: 106.24 bbl
Calculated Sacks: 216.28 sks
Proposed Sacks: 220 sks

Fluid 3: Second Stage: Tail-in with 50 sks
Premium Plus "Neat" Cement
94 lbm/sk Premium Plus Cement (Cement)

Fluid Weight 14.80 lbm/gal
Slurry Yield: 1.32 ft³/sk
Total Mixing Fluid: 6.32 Gal/sk
Top of Fluid: 6945 ft
Calculated Fill: 255 ft
Volume: 11.79 bbl
Calculated Sacks: 50 sks
Proposed Sacks: 50 sks