Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMLC029395B

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
LEE FEDERAL ~~24~~ 94

2. Name of Operator
APACHE CORPORATION
Contact: SORINA FLORES
E-Mail: sorina.flores@apachecorp.com

9. API Well No.
30-015-43365

3a. Address
303 VETERANS AIRPARK LN #1000
MIDLAND, TX 79705

3b. Phone No. (include area code)
Ph: 432-818-1167

10. Field and Pool, or Exploratory
CEDAR LAKE;GLOREITA-YESO

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 17 T17S R31E Mer NMP 105FSL 850FWL
32.827540 N Lat, 103.897675 W Lon

11. County or Parish, and State
EDDY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Accepted for record
NMOCD 10/6/15

BLM-CO-1463 NATIONWIDE; NMB000736

APACHE REQUEST TO CHG LEE FEDERAL 94 FROM VERTICAL TO ~~HORIZONTAL~~ & CHG FORMATION TOPS, CSG/CMT AS FOLLOWS:

DIRECTIONAL

TVD: 6400' MD: 6439'

FORMAATIONS:

RUSTLER	267'	QUEEN	2340'
TOP SALT	460'	GRAYBURG	2683'
BASE SALT	1297'	SAN ANDRES	3058'
YATES	1443'	GLORIETA	4542'

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

NM OIL CONSERVATION
ARTESIA DISTRICT
OCT 05 2015
RECEIVED

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #316957 verified by the BLM Well Information System
For APACHE CORPORATION, sent to the Carlsbad
Committed to AFMSS for processing by KENNETH RENNICK on 09/28/2015 ()

Name *(Printed/Typed)* SORINA FLORES — Title SUBMITTING CONTACT

Signature (Electronic Submission) — Date 09/18/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. Office _____

APPROVED
PETROLEUM ENGINEER
SEP 30 2015
Kenneth Rennick
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Additional data for EC transaction #316957 that would not fit on the form

32. Additional remarks, continued

SEVEN RIVERS 1735' YESO 4616'

NEW CSG PROGRAM:
17-1/2" 0'-380'
11" 0'-3500'
7-7/8" 0'-6439'

NEW CMT PROGRAM (WT,YLD,SLURRY WILL REMAIN SAME AS ON ORIG APD):
SURF: 425 SX LEAD
INTERM: 515 SX LEAD 140 SX TAIL
PROD: 115 SX LEAD 410 SX TAIL

NEW CONTINGENT CMT PROGRAM IF WTR FLOW ENCOUNTERED:
INTERM 2ND STAGE: 240 SX LEAD 140 SX TAIL

SURFACE TOC: 0' % EXCESS: 100%
INTERM TOC: 0' % EXCESS: 35%

NEW MUD PROGRAM FRO INT SHOE - TD:
INT SHOE - TD: WEIGHT: 8.6 - 10 PPG

NEW BH PRESSURE AT DEEPEST TVD: 2816 PSI

*** NEW FORM 3160.3, PLAT, DIRECTIONAL SURVEY, DRILLING PLAN ATTACHED ***

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMLC-029395B

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
LEE FEDERAL ~~94D~~ <308720> 94

2. Name of Operator APACHE CORPORATION

9. API Well No.
30-015-

3a. Address 303 VETERANS AIRPARK LN #1000
MIDLAND, TX 79705

3b. Phone No. *(include area code)*
432-818-1167

10. Field and Pool, or Exploratory
CEDAR LAKE;GLORIETA-YESO <96831>

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 105' FSL & 850' FWL (Sec: 17)
At proposed prod. zone 330' FNL & 990' FWL (Sec: 20)

11. Sec., T. R. M. or Blk. and Survey or Area
SEC: 17 T17S R31E

14. Distance in miles and direction from nearest town or post office*
APPROX 4 MILES EAST OF LOCO HILLS, NM

12. County or Parish
EDDY

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 105'

16. No. of acres in lease
1786.15 ACRES

17. Spacing Unit dedicated to this well
40 ACRES

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 270'

19. Proposed Depth
TVD: 6400'
MD: 6439'

20. BLM/BIA Bond No. on file
BLM-CO-1463 NATIONWIDE / NMB000736

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
GL: 3672'

22. Approximate date work will start*
As Soon As Approved

23. Estimated duration
~ 10 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature Sorina L Flores
Name *(Printed/Typed)* SORINA L. FLORES
Date 9/18/15

Title
SUPV OF DRILLING SERVICES

Approved by *(Signature)*
Name *(Printed/Typed)*
Date

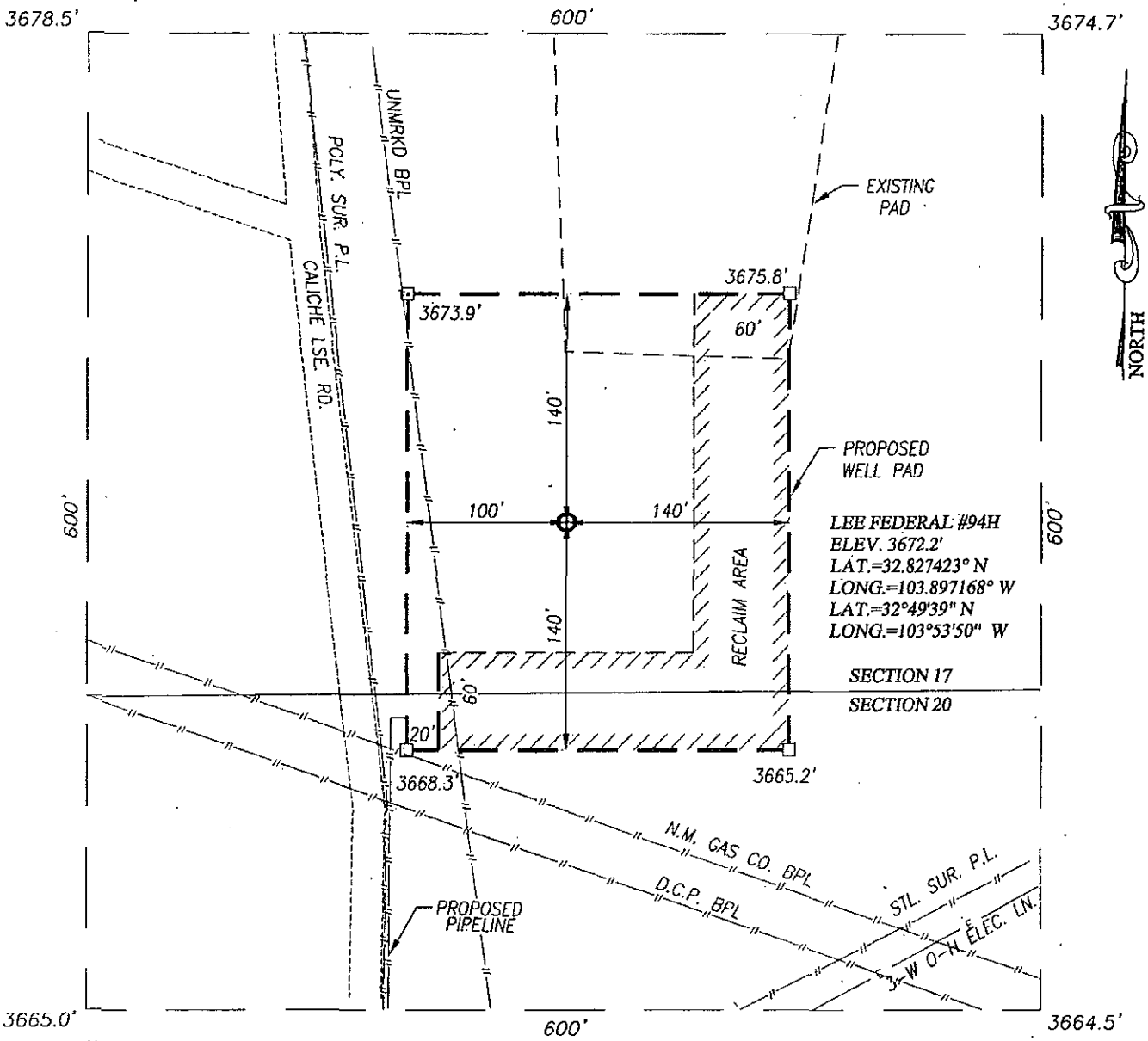
Title
Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)



NOTE:
1) SEE "TOPOGRAPHIC AND ACCESS ROAD MAP" FOR PROPOSED ROAD LOCATION.
2) ELECTRIC LINE HAS NOT BEEN SURVEYED

DIRECTIONS TO THIS LOCATION:

FROM US. HWY. 82 AND CO. RD. 222 (SHUGART) GO WEST ON US. HWY. 82 APPROX. 1 MILE TURN RIGHT ON CALICHE LEASE ROAD AND GO NORTHEAST APPROX 0.2 MILES TURN LEFT AND GO NORTHWEST APRROX 327' THEN TURN RIGHT AND GO NORTH APPROX. 0.4 MILES THE WELL LOCATION STAKE IS 150' EAST.

100 0 100 200 Feet

Scale: 1"=100'

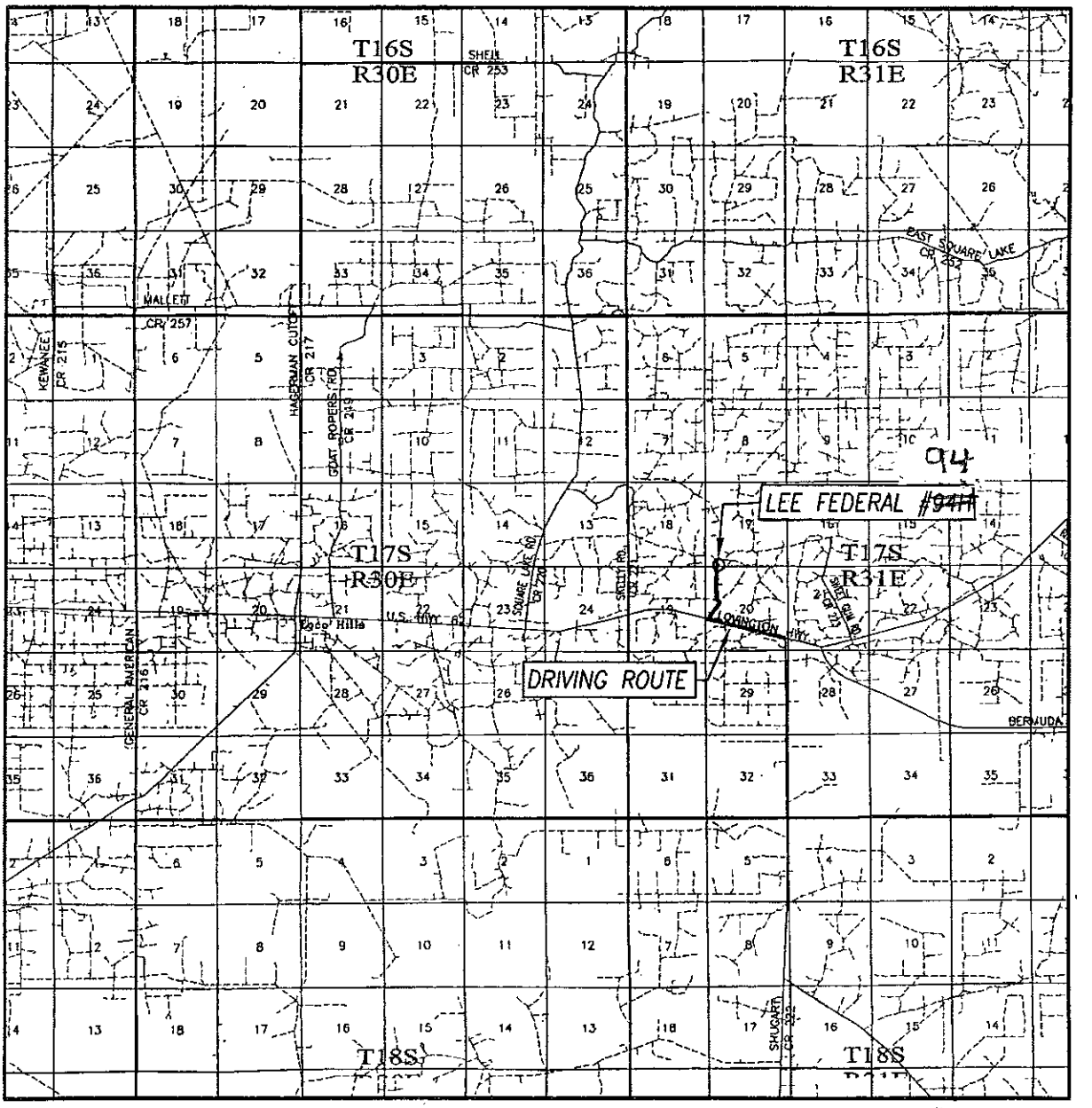
APACHE CORPORATION

LEE FEDERAL #94H WELL
LOCATED 105 FEET FROM THE SOUTH LINE
AND 850 FEET FROM THE WEST LINE OF SECTION 17,
TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 7/31/14	CAD Date: 8/6/14	Drawn By: LSL	
W.O. No.: 15130864	Rev: .	Rel. W.O.: 15130673	Sheet 1 of 1

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE TOPOGRAPHIC AND ACCESS ROAD MAP

SEC. 17 TWP. 17-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 105' FSL & 850' FWL

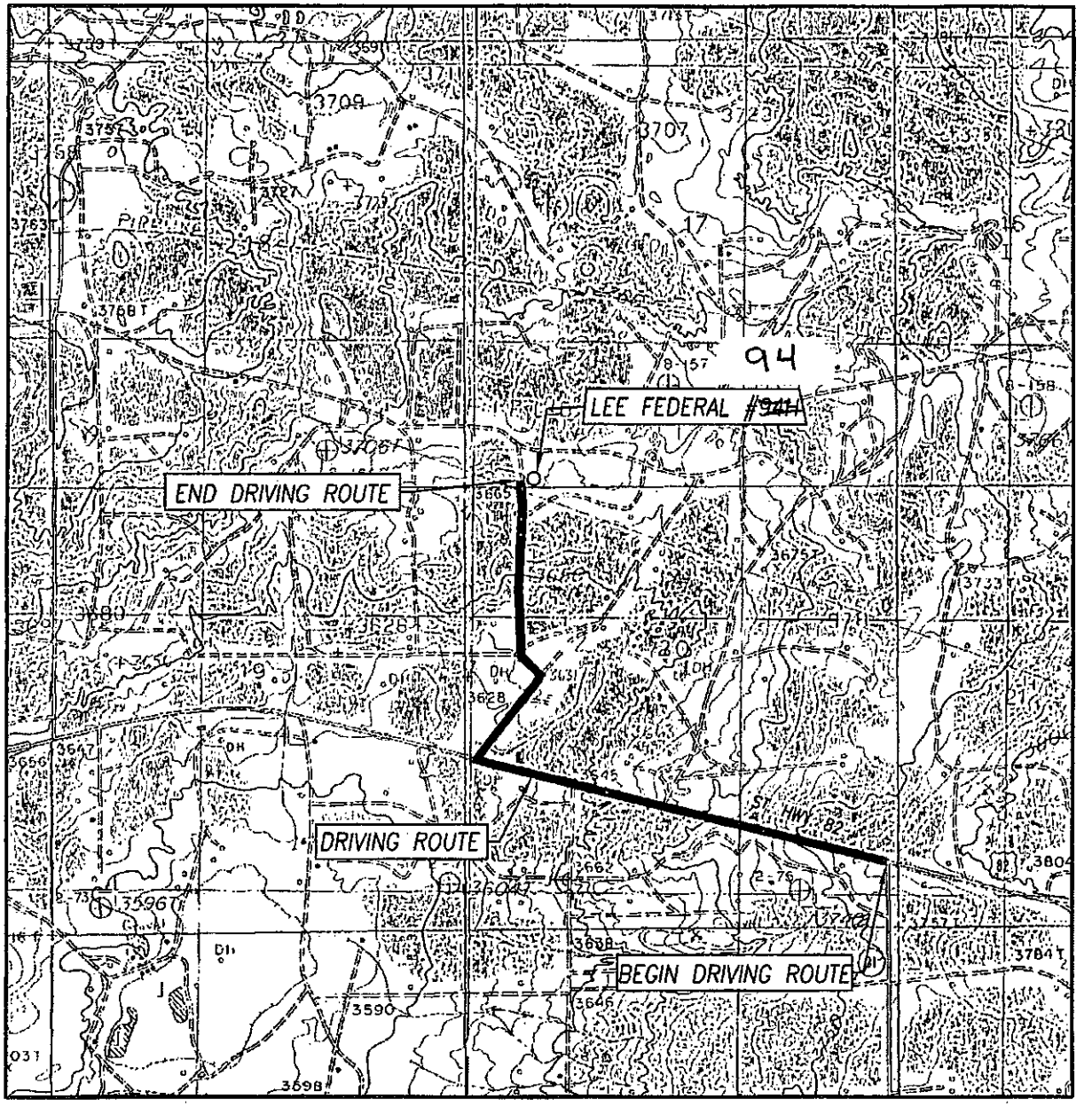
ELEVATION 3672'

OPERATOR APACHE CORPORATION

LEASE LEE FEDERAL

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

TOPOGRAPHIC AND ACCESS ROAD MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
LOCO HILLS, N.M. – 10'

SEC. 17 TWP. 17-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 105' FSL & 850' FWL

ELEVATION 3672'

OPERATOR APACHE CORPORATION

LEASE LEE FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
LOCO HILLS, N.M.

DIRECTIONS TO THIS LOCATION:

FROM US. HWY. 82 AND CO. RD. 222 (SHUGART) GO WEST ON US. HWY. 82 APPROX. 1 MILE TURN RIGHT ON CALICHE LEASE ROAD AND GO NORTHEAST APPROX 0.2 MILES TURN LEFT AND GO NORTHWEST APRROX 327' THEN TURN RIGHT AND GO NORTH APPROX. 0.4 MILES. THE WELL LOCATION STAKE IS 150' EAST.

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

APACHE CORPORATION

LEE FEDERAL ~~94H~~ 94

1. Geologic Formations

TVD of target	6400'	Pilot hole depth	N/A
MD at TD:	6439'	Deepest expected fresh water:	91'

Back Reef

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Aeolian	Surf		
Rustler	267'		
Top of Salt	460'		
Base of Salt	1297'		
Yates	1443'		
Seven Rivers	1735'	Oil	
Queen	2340'	Oil	
Grayburg	2683'	Oil	
San Andres	3058'	Oil	
Glorieta	4542'		
Yeso	4616'	Oil	

**H2S, water flows, loss of circulation, abnormal pressures, etc.*

2. Casing Program

Hole Size	Casing Interval From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17-1/2"	0'	380'	13-3/8"	48	H-40	STC	4.044	4.32	16.77
11"	0'	3500'	8-5/8"	32	J-55	STC	1.392	1.38	3.32
7-7/8"	0'	6439'	5-1/2"	17	J-55	LTC	1.531	1.66	2.24
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

**All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h*

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	

APACHE CORPORATION

LEE FEDERAL ~~94H~~ 94

Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf	425	14.8	1.34	6.34	6.4	Lead: Cl C + 1% CaCl2 (12hr-1344psi; 24hr-2390psi)
Inter	515	12.4	2.1	11.64	9.7	Lead: 35/65 Poz C w/6% Bentonite + 5% Salt (12hr-598psi; 24hr-859psi)
	140	14.8	1.34	6.31	7.5	Tail: Cl C (12hr-1364psi; 24hr-2026psi)
Prod	115	12.4	2.1	11.64	13.1	Lead: 35/65 Poz C + 6% Bentonite + 5% Salt (12hr-466psi; 24hr-737psi)
	410	14.2	1.28	5.61	6.5	Tail: 50:50 Poz C w/2% Bentonite + 5% Salt (12hr-941psi; 24hr-1588psi)

**DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.*

**If water flow is encountered, Apache may 2-stage Interm csg. A DVT may be used in the 8-5/8" csg & ECP may be placed below DVT. Csg slips may be set before cmtg. TD of 11" @ +/- 3500'. Assuming DVT set @ +/- 1800', the following will be used:*

Cement Volumes are too LOW

Csg	# Sks	Wt. lb/ gal	Yld ft3/ sk	H_2O gal/sk	500# Comp. Strength (hrs)	Slurry Description
Inter	240	12.4	2.1	11.64	9.7	Lead: Cl C (12hr-598psi; 24hr-859psi)
2nd Stage	ECP/DVT: 1800'					
	140	14.8	1.33	6.31	7.5	Tail: Cl C (12hr-1364psi; 24hr-2026psi)

See COA. Must pump more cement.

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate	0'	35%
Production	3000'	25%

Include Pilot Hole Cementing specs:

Pilot hole depth : N/A

KOP : N/A

Plug top	Plug Bottom	% Excess	No Sacks	Wt. lb/gal	Yld ft3/sack	Water gal/sk	Slurry Description and Cement Type
N/A							

4. Pressure Control Equipment

NO	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min Required WP	Type		✓	Tested to:
17-1/2"	13-5/8"	3M	Annular		x	50% of working pressure
			Blind Ram			2M
			Pipe Ram			
			Double Ram			
			Other*			
7-7/8"	11"	3M	Annular		x	50% testing pressure
			Blind Ram		x	2M
			Pipe Ram		x	
			Double Ram			
			Other*			

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
NO	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	NO	Are anchors required by manufacturer?
NO	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. • Provide description here See attached schematic.	

APACHE CORPORATION

LEE FEDERAL ~~94H~~ 94

5. Mud Program

Depth From	Depth To	Type	Weight (ppg)	Viscosity	Water Loss
0	Surf. shoe	FW	8.3-8.8	28-36	N/C
Surf csg	Int shoe	Brine	9.8-10.0	28-29	N/C
Int shoe	TD	Cut Brine	8.6-10.0	28-29	N/C

**Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.*

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
X	Resistivity	Int. shoe to KOP
X	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	2816 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe: N/A

See original COA

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
YES	H2S is present
	H2S Plan attached

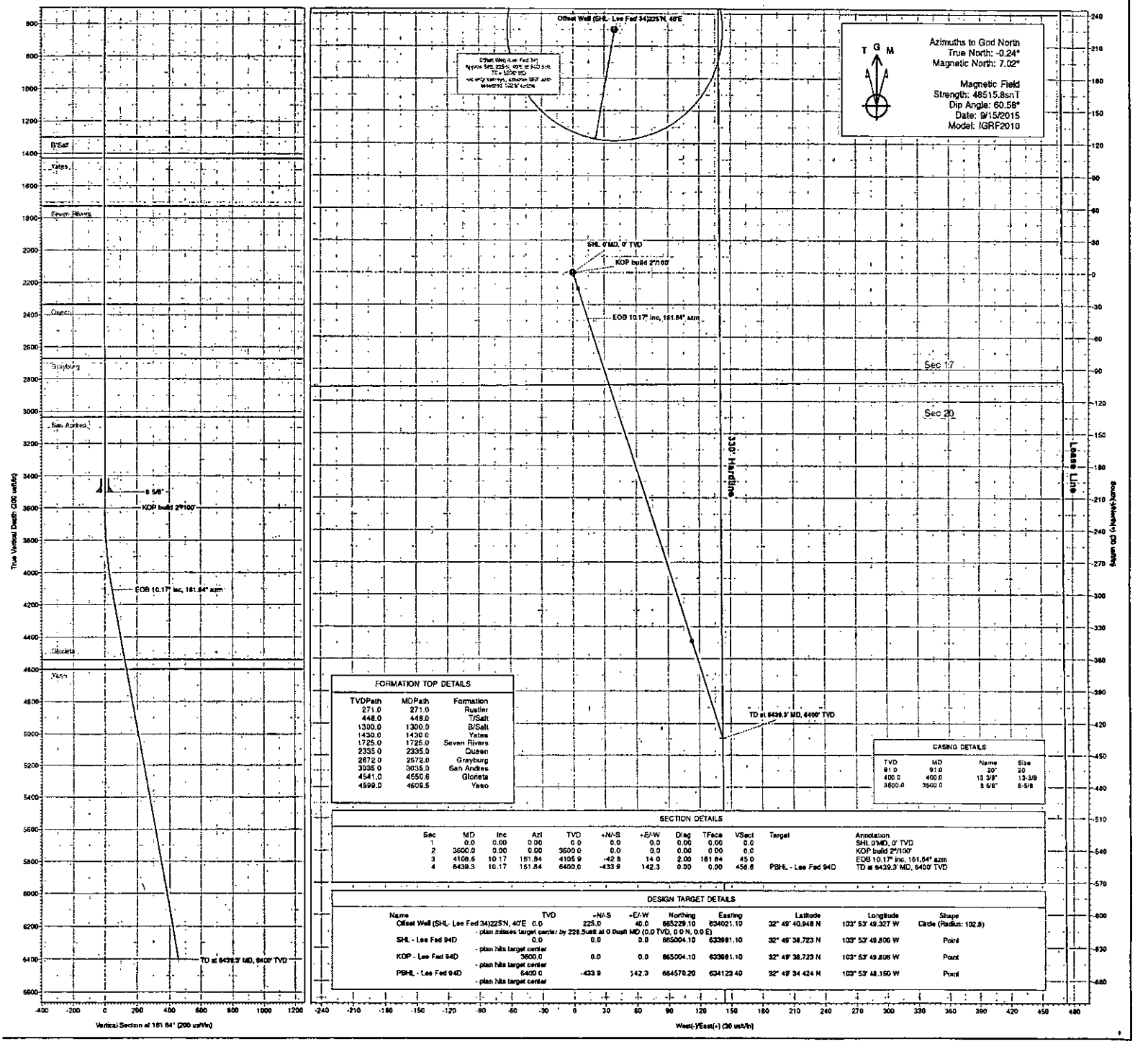
8. Other facets of operation

Is this a walking operation? NO
Will be pre-setting casing? NO

Attachments
YES Directional Plan
___ Other, describe

Company Name: Apache Corporation
Lee Federal #94
Design #1
Eddy County, New Mexico
Capstar 119 RKB 11' + GL 3672'
Created By: JamesA
11:38, September 15 2015

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



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
271.0	271.0	Rustler
448.0	448.0	T/Salt
1300.0	1300.0	B/Salt
1430.0	1430.0	Yates
1725.0	1725.0	Seven Rivers
2335.0	2335.0	Queen
2672.0	2672.0	Grayburg
3035.0	3035.0	San Andres
4541.0	4550.6	Glorieta
4599.0	4609.5	Yeso

CASING DETAILS

TVD	MD	Name	Size
91.0	91.0	20"	20
400.0	400.0	13 3/8"	13-3/8
3600.0	3600.0	8 5/8"	8-5/8

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		SHL 0'MD, 0' TVD
2	3600.0	0.00	0.00	3600.0	0.0	0.0	0.00	0.00	0.0		KOP build 2°/100'
3	4108.6	10.17	161.84	4105.9	-42.5	14.0	2.00	161.84	45.0		EOB 10.17° inc, 161.84° azm
4	6439.3	10.17	161.84	6400.0	-433.9	142.3	0.00	0.00	456.6	PBHL - Lee Fed 94D	TD at 6439.3' MD, 6400' TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Offset Well (SHL- Lee Fed 34)225'N, 40'E - plan misses target center by 228.5usft at 0 Dush MD (0.0 TVD, 0.0 N, 0.0 E)	0.0	225.0	40.0	665229.10	634021.10	32° 49' 40.948 N	103° 53' 49.327 W	Circle (Radius: 102.8)
SHL - Lee Fed 94D - plan hits target center	0.0	0.0	0.0	665004.10	633981.10	32° 49' 38.723 N	103° 53' 49.806 W	Point
KOP - Lee Fed 94D - plan hits target center	3600.0	0.0	0.0	665004.10	633981.10	32° 49' 38.723 N	103° 53' 49.806 W	Point
PBHL - Lee Fed 94D - plan hits target center	6400.0	-433.9	142.3	664570.20	634123.40	32° 49' 34.424 N	103° 53' 48.160 W	Point

Apache

Apache Corporation

Eddy County, New Mexico
Sec 17, T17-S, R31-E
Lee Federal ~~345~~ 94

Wellbore #1

Plan: Design #1

DDC Well Planning Report

15 September, 2015

DDC
The DIRECTIONAL DRILLING COMPANY

Database:	Compass	Local Co-ordinate Reference:	Well Lee Federal 94D
Company:	Apache Corporation	TVD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Project:	Eddy County, New Mexico	MD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Site:	Sec 17, T17-S, R31-E	North Reference:	Grid
Well:	Lee Federal ~~94~~ 94D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project Eddy County, New Mexico

Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Sec 17, T17-S, R31-E

Site Position:		Northing:	666,003.30 usft	Latitude:	32° 49' 48.532 N
From:	Map	Easting:	635,885.00 usft	Longitude:	103° 53' 27.445 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.24 °

Well Lee Federal 94D

Well Position	+N/-S	-999.2 usft	Northing:	665,004.10 usft	Latitude:	32° 49' 38.723 N
	+E/-W	-1,903.9 usft	Easting:	633,981.10 usft	Longitude:	103° 53' 49.806 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,672.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/15/2015	7.26	60.58	48,516

Design Design #1

Audit Notes:

Version:		Phase:	PLAN	Tie On Depth:	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	161.84

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,108.6	10.17	161.84	4,105.9	-42.8	14.0	2.00	2.00	31.82	161.84	
6,439.3	10.17	161.84	6,400.0	-433.9	142.3	0.00	0.00	0.00	0.00	PBHL - Lee Fed 94D

Database:	Compass	Local Co-ordinate Reference:	Well Lee Federal 94D
Company:	Apache Corporation	TVD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Project:	Eddy County, New Mexico	MD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Site:	Sec 17, T17-S, R31-E	North Reference:	Grid
Well:	Lee Federal ~~94D~~ 94	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 0'MD, 0' TVD									
0.1	0.00	0.00	0.1	0.0	0.0	0.0	0.00	0.00	0.00
20"									
91.0	0.00	0.00	91.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
271.0	0.00	0.00	271.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
13 3/8"									
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
T/Salt									
448.0	0.00	0.00	448.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
B/Salt									
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Yates									
1,430.0	0.00	0.00	1,430.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
Seven Rivers									
1,725.0	0.00	0.00	1,725.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
Queen									
2,335.0	0.00	0.00	2,335.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
Grayburg									
2,672.0	0.00	0.00	2,672.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
San Andres									
3,035.0	0.00	0.00	3,035.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	Compass	Local Co-ordinate Reference:	Well Lee Federal 94D
Company:	Apache Corporation	TVD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Project:	Eddy County, New Mexico	MD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Site:	Sec 17, T17-S, R31-E	North Reference:	Grid
Well:	Lee Federal 94	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP build 2°/100'									
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	2.00	161.84	3,700.0	-1.7	0.5	1.7	2.00	2.00	0.00
3,800.0	4.00	161.84	3,799.8	-6.6	2.2	7.0	2.00	2.00	0.00
3,900.0	6.00	161.84	3,899.5	-14.9	4.9	15.7	2.00	2.00	0.00
4,000.0	8.00	161.84	3,998.7	-26.5	8.7	27.9	2.00	2.00	0.00
4,100.0	10.00	161.84	4,097.5	-41.4	13.6	43.5	2.00	2.00	0.00
EOB 10.17° Inc, 161.84° azm									
4,108.6	10.17	161.84	4,105.9	-42.8	14.0	45.0	2.00	2.00	0.00
4,200.0	10.17	161.84	4,195.9	-58.1	19.1	61.2	0.00	0.00	0.00
4,300.0	10.17	161.84	4,294.3	-74.9	24.6	78.8	0.00	0.00	0.00
4,400.0	10.17	161.84	4,392.8	-91.7	30.1	96.5	0.00	0.00	0.00
4,500.0	10.17	161.84	4,491.2	-108.5	35.6	114.2	0.00	0.00	0.00
Glorieta									
4,550.6	10.17	161.84	4,541.0	-117.0	38.4	123.1	0.00	0.00	0.00
4,600.0	10.17	161.84	4,589.6	-125.2	41.1	131.8	0.00	0.00	0.00
Yeso									
4,609.5	10.17	161.84	4,599.0	-126.8	41.6	133.5	0.00	0.00	0.00
4,700.0	10.17	161.84	4,688.0	-142.0	46.6	149.5	0.00	0.00	0.00
4,800.0	10.17	161.84	4,786.5	-158.8	52.1	167.1	0.00	0.00	0.00
4,900.0	10.17	161.84	4,884.9	-175.6	57.6	184.8	0.00	0.00	0.00
5,000.0	10.17	161.84	4,983.3	-192.4	63.1	202.5	0.00	0.00	0.00
5,100.0	10.17	161.84	5,081.7	-209.2	68.6	220.1	0.00	0.00	0.00
5,200.0	10.17	161.84	5,180.2	-225.9	74.1	237.8	0.00	0.00	0.00
5,300.0	10.17	161.84	5,278.6	-242.7	79.6	255.4	0.00	0.00	0.00
5,400.0	10.17	161.84	5,377.0	-259.5	85.1	273.1	0.00	0.00	0.00
5,500.0	10.17	161.84	5,475.5	-276.3	90.6	290.8	0.00	0.00	0.00
5,600.0	10.17	161.84	5,573.9	-293.1	96.1	308.4	0.00	0.00	0.00
5,700.0	10.17	161.84	5,672.3	-309.8	101.6	326.1	0.00	0.00	0.00
5,800.0	10.17	161.84	5,770.7	-326.6	107.1	343.7	0.00	0.00	0.00
5,900.0	10.17	161.84	5,869.2	-343.4	112.6	361.4	0.00	0.00	0.00
6,000.0	10.17	161.84	5,967.6	-360.2	118.1	379.1	0.00	0.00	0.00
6,100.0	10.17	161.84	6,066.0	-377.0	123.6	396.7	0.00	0.00	0.00
6,200.0	10.17	161.84	6,164.5	-393.7	129.1	414.4	0.00	0.00	0.00
6,300.0	10.17	161.84	6,262.9	-410.5	134.6	432.0	0.00	0.00	0.00
6,400.0	10.17	161.84	6,361.3	-427.3	140.1	449.7	0.00	0.00	0.00
TD at 6439.3' MD, 6400' TVD									
6,439.3	10.17	161.84	6,400.0	-433.9	142.3	456.6	0.00	0.00	0.00

Database:	Compass	Local Co-ordinate Reference:	Well Lee Federal 94D
Company:	Apache Corporation	TVD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Project:	Eddy County, New Mexico	MD Reference:	Well @ 3683.0usft (Capstar 119 RKB 11' + GL 3672')
Site:	Sec 17, T17-S, R31-E	North Reference:	Grid
Well:	Lee Federal 94D 94	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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
SHL - Lee Fed 94D - plan hits target center - Point	0.00	0.00	0.0	0.0	0.0	665,004.10	633,981.10	32° 49' 38.723 N	103° 53' 49.806 W
Offset Well (SHL- Lee Fe - plan misses target center by 228.5usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E) - Circle (radius 102.8)	0.00	0.00	0.0	225.0	40.0	665,229.10	634,021.10	32° 49' 40.948 N	103° 53' 49.327 W
KOP - Lee Fed 94D - plan hits target center - Point	0.00	0.00	3,600.0	0.0	0.0	665,004.10	633,981.10	32° 49' 38.723 N	103° 53' 49.806 W
PBHL - Lee Fed 94D - plan hits target center - Point	0.00	0.00	6,400.0	-433.9	142.3	664,570.20	634,123.40	32° 49' 34.424 N	103° 53' 48.160 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
91.0	91.0	20"	20	26
400.0	400.0	13 3/8"	13-3/8	17-1/2
3,500.0	3,500.0	8 5/8"	8-5/8	11

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
271.0	271.0	Rustler		0.00	0.00
448.0	448.0	T/Salt		0.00	0.00
1,300.0	1,300.0	B/Salt		0.00	0.00
1,430.0	1,430.0	Yates		0.00	0.00
1,725.0	1,725.0	Seven Rivers		0.00	0.00
2,335.0	2,335.0	Queen		0.00	0.00
2,672.0	2,672.0	Grayburg		0.00	0.00
3,035.0	3,035.0	San Andres		0.00	0.00
4,550.6	4,541.0	Glorieta		0.00	0.00
4,609.5	4,599.0	Yeso		0.00	0.00

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
0.1	0.1	0.0	0.0	SHL 0'MD, 0' TVD
3,600.0	3,600.0	0.0	0.0	KOP build 2°/100'
4,108.6	4,105.9	-42.8	14.0	EOB 10.17° inc, 161.84° azm
6,439.3	6,400.0	-433.9	142.3	TD at 6439.3' MD, 6400' TVD

PECOS DISTRICT
CONDITIONS OF APPROVAL

LEE FEDERAL 94
API: 30-015-43365
Apache Corporation
Section 17, T. 17 S., R 31 E.
Lea County

Original COA still applies, except for the replacement of the cement filled requirement for the casing designs. This has been replaced with the following:

1. The **13-3/8** inch surface casing shall be set at approximately **380** feet (**in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:

Option #1 (Single Stage):

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option #2:

NOTE- Additional cement will be needed if the DV tool option is used as the cement volumes are severely low and will not circulate.

Operator has proposed DV tool at depth of 1800', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage. **Excess calculates to 13% - Additional cement may be required.**

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess calculates to be inadequate by 66% (AKA negative 66%) - Additional cement will be required.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.

KGR 09302015