OPER OGRID NO. 25602
PROPERTY NO. 20429
POOL CODE 15200
EFF DATE 2/14/96
API NO. 30-025-33836

Form 3160-3
(December 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires: December 31, 1991

-96

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK: DRILL ☒ DEEPEN ☐

b. TYPE OF WELL: OIL WELL ☒ GAS WELL ☐ OTHER SINGLE ZONE ☐ MULTIPLE ZONE ☐

2. NAME OF OPERATOR: Stevens & Tull, Inc.

3. ADDRESS AND TELEPHONE NO.: P.O. Box 11005, Midland, TX 79702 915/699-1410

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 660' FEL & 660' FSL
At proposed prod. zone: 660' FEL & 660' FSL Unit P

5. LEASE DESIGNATION AND SERIAL NO.: NM 43739

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

7. UNIT AGREEMENT NAME: N/A

8. FARM OR LEASE NAME, WELL NO.: NMFU Federal #1

9. API WELL NO.:

10. FIELD AND POOL, OR WILDCAT: DK Abo

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 23, T-20-S, R-38-E

12. COUNTY OR PARISH: Lea

13. STATE: NM

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 9 miles north of Hobbs

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)

16. NO. OF ACRES IN LEASE: 40

17. NO. OF ACRES ASSIGNED TO THIS WELL: 40

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

19. PROPOSED DEPTH: 8000

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3567 GR

22. APPROX. DATE WORK WILL START*: 2/15/97

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4	8 5/8-J55	24#	1600	810 sx - Circulate WITNESS
7 7/8	5 1/2-J55	17#	8000	890 sx - TOC 3000'

1. Drill 12 1/4" hole to approximately 1600' or hard formation with fresh water.

2. Set 8 5/8" casing with 16 centralizers spaced every 100'. Cement with 610 sx Class "C" plus 4% gel plus 2% $CaCl_2$ tail with 200 sx Class "C" plus 2% $CaCl_2$ circulate to surface - WOC 12 hours before drilling out.

3. Drill 7 7/8" hole to approximately 8000' with brine and mud. Run open hole logs.

4. Set 5 1/2" casing with 20 centralizers. Cement with 545 sx 35:65 POZ "C" plus 6% gel plus 5% salt plus .25% celloflake tail with 345 sx Class "C" - TOC ± 3000'.

TIE Back 5½" to 8⅝
SEE STIPS. GG BLM

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.
SIGNED [signature] TITLE Consulting Engineer DATE 12/9/96

(This space for Federal or State office use)

PERMIT NO. ______ APPROVAL DATE ______

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:

APPROVED BY (ORIG. SGD.) ______ TITLE ADM. MINERALS DATE ______

*See Instructions On Reverse Side

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised February 10, 1994
Instruction on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025-33836	15200	-DK Abo

Property Code	Property Name	Well Number
20429	NMFU Federal	1

OGRID No.	Operator Name	Elevation
021602	Stevens & Tull, Inc.	3567'

Surface Location

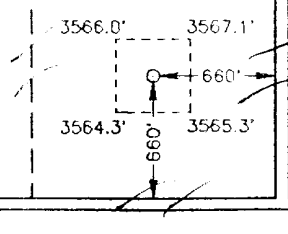
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	23	20 S	38 E		660	South	660	East	Lea

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
P	23	20S	38E		660	South	660	East	Lea

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40	I		

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



OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

Signature

Michael G. Mooney
Printed Name

Consulting Engineer
Title

12/5/96
Date

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 supervison, and that the same is true and correct to the best of my belief.

November 12, 1996
Date Surveyed

Signature & Seal of Professional Surveyor

GARY L. JONES
NEW MEXICO
7977
REGISTERED PROFESSIONAL LAND SURVEYOR

W.O. No. 6485a

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

DECEMBER 9, 1996
APPLICATION FOR PERMIT TO DRILL
STEVENS & TULL, INC.
NMFU FEDERAL NO. 1

660' from the south line. 660' from the east line. Section 23, T-20-S, R-38-E, Lea County, New Mexico.

The following items and attachments compliment Stevens & Tull, Inc.'s permit to drill the NMFU Federal No. 1.

1) The geologic surface formation is of Quaternary Age.

2) Estimated tops of geologic markers are as follows: Yates - 3000', Seven Rivers - 3160', San Andres - 4300', Blinebry - 6030', Tubb - 6600', Drinkard - 6860', ABO - 7150'.

3) The estimated depths at which water is expected are between 150' and 500'. The estimated depths which oil or gas is expected is between 2900' thru 7800'. Yates - Gas, Seven Rivers - Gas, San Andres - Oil, Blinebry - Oil, Tubb - Oil, Drinkard - Oil, ABO - Oil. Fresh water zones will be protected with independent casing and cement.

4) Red beds and fresh water will be protected with 8 5/8"-24#-J-55, LT&C casing run to a good shoe setting depth at approximately 1600' with centralizers and adequate cement to circulate to the surface. The Oil Sands will be protected with 5 1/2"-17#, J-55 LT&C casing run to a total depth of the well and cemented with adequate amounts to cover the top of the Yates Formation estimated at 3000'.

5) Pressure control, see the attached sketch.

6) Mud program, see the Horizon Mud Company recommendation attached.

7) There is no planned auxiliary equipment.

8) Open hole logs will be run from total depth to surface. No cores or DTS's are planned.

9) No abnormal temperatures or pressures are expected. No lost circulation is expected.

10) The anticipated starting date is February 15, 1997.

HORIZON MUD COMPANY

PROPOSED MUD PROGRAM

CASING DESIGN

8 5/8" Surface Casing at 1,600'

7 7/8" Open Hole to 8,000'

RECOMMENDED MUD PROPERTIES

DEPTH	MUD WEIGHT	VISCOSITY	FLUID LOSS
Spud	8.4- 8.6	32-34	No Control
500'	8.6- 8.8	32-34	No Control
1,000'	8.8- 9.2	32-34	No Control
1,300'	9.0- 9.4	32-34	No Control
1,600'	9.0- 9.4 ✓	32-34	No Control
Set 8 5/8" Surface Casing at 1,600'. Drill out with Brine Water.			
2,000'	9.6-10.0	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
6,900'	**10.1-10.2**	**30-32**	**<10**
7,400'	10.1-10.2	30-32	<10
7,700'	10.1-10.2	30-32	<10
8,000'	10.1-10.3 ✓	32-34	<10

RECOMMENDED MUD PROGRAM BY CASING INTERVAL

Surface Hole 0-1,650'

Spud with a **Gel/Lime** slurry, mixing one **Lime** per ten **Gel** for a 32-34 viscosity. Once the shallow poorly-consolidated surface formations have been drilled, allow the native solids to maintain a viscosity of 32-34 sec./qt. It is important that a stable viscosity be maintained with constant additions of fresh water at the flowline.

Hole conditions will dictate the need for any additional viscosity at total depth to insure good conditions for casing operations.

HORIZON
MUD COMPANY

Open Hole 1,650'-8,500'

Drill out from under the surface casing with brinewater and circulate through the reserve pit to minimize solids build-up. A flocculant **(MF-55)** can be used to aid in dropping solids, providing a clear fluid and maximum penetration rates.

We recommend maintaining an 9.0-9.5 pH with **Lime** before mud-up and **Caustic** after mud-up..

It is always possible in this general area to encounter lost circulation in the **San Andres** and **Glorieta** formations. Utilize Paper to control seepage loss. 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.

Run periodic sweeps (every 100-200') with **Paper** while drilling with water.

We recommend that the surface pit system have a minimum of **400-500 barrels** volume and a **Double-Screen Shale Shaker** for solids control. This will avoid costly dilution to maintain a clean fluid. It may also be possible to circulate through the reserve pit for solids control.

Clear water should be sufficient to drill to a depth of approximately **6,800'**. At this point, we recommend returning to the working pits and mudding up by **6,900'** with a **Starch/MF-55/DCS** system to achieve the following properties:

Mud Weight	**10.1-10.2**
Viscosity	**30-32**
Water Loss	**<10**

This should provide good samples for proper evaluation.

MF-55 is a non-ionic polymer that helps tie-up the water phase of the fluid. This has proven effective at minimizing invasion of the formation. **MF-55** is also a flocculant and will aid in dropping solids.

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

1. **minimize the usage of Mud Products**

2. **help drop solids providing a cleaner mud, lower mud weight and a thinner filter cake**

3. **improve clean-up of the pay zone should whole mud losses be encountered**

HORIZON
MUD COMPANY

While using **Starch** for viscosity or fluid loss control, it is important that the pH of the fluid remain below 10.0 to avoid burning the **Starch.**

Utilize fibrous-type LCM to control seepage after mud-up and follow the same procedure described earlier should total loss of returns occur.

We recommend increasing the viscosity to **32-34 secs.** just prior to total depth for additional hole cleaning.

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

DRILLING, CASING AND CEMENTING PROGRAM

1) Drill 12 1/4" hole to approximately 1600' or to firm formation with fresh mud, with a viscosity of 32 seconds per quart and no control over water loss. Maintain pump pressure less than 800 psi to prevent excessive hole enlargement.

2) Circulate hole clean with 2 hole volumes of mud.

3) Run 8 5/8" casing with a centralizer on the first collar and one on each third collar from the bottom. Use a Texas patterned guide shoe with an aluminum baffle float. Land the casing with the collar eighteen inches below the surface.

4) Cement the casing in place with 615 sacks Class "C" + 4% gel + 2% Calcium Chloride and 1/4# per sack cellophane, plus 200 sacks class "c" with 2% Calcium Chloride and 1/4# per sack cellophane. Displace the cement to the float. Shut in.

5) Wait on cement 12 hours before drilling out. Test pressure control equipment to 1000 psi for 30 minutes before drilling through the casing shoe.

6) Drill 7 7/8" hole with brine at native conditions to a depth of 6900'.

7) At 6900' depth maintain the mud viscosity at 32 seconds per quart and reduce water loss to less than 10 cc per 30 seconds.

8) Drill to TD of 8000'.

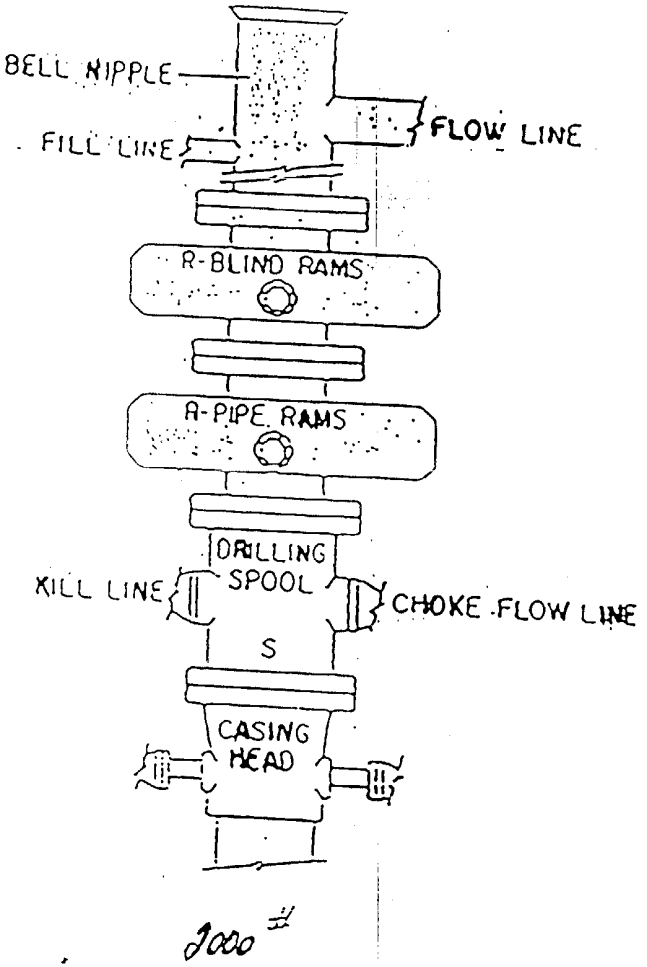
9) Circulate hole for 4 hours with mud at designed conditions.

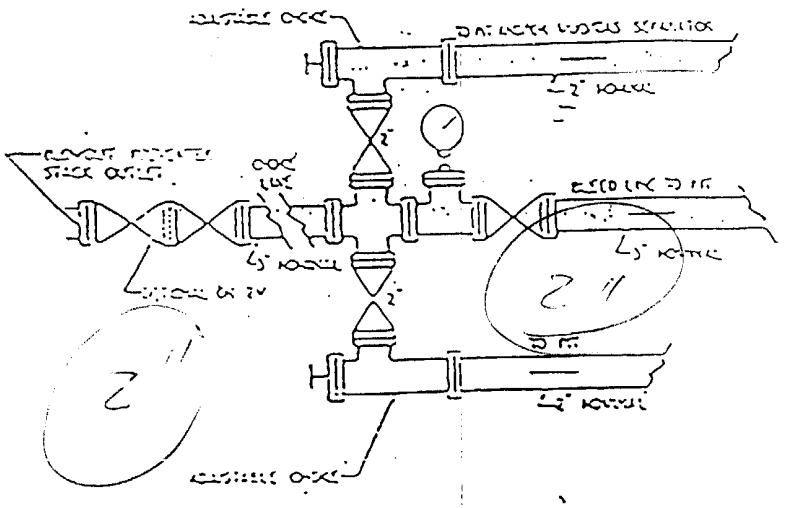
10) Pull out of the hole, lay down drill string.

11) Run 5 1/2" casing with guide shoe, float collar, latchdown wiper plug baffle and 20 centralizers, one on each collar from the first collar up.

12) Cement with 510 sacks 35:65 POZ (35% POZ : 65% Class C) plus 6% gel plus 5% salt plus 1/4#/sx celloflake plus 395 sacks Class "C" plus 0.5% fluid loss. Displace plug with 2% KCL water, release pressure and leave shut in.

Stevens & Tull, Inc.
NMFU FEDERAL No. 1
Lea County, New Mexico





PROPOSED BOP' CONFIGUREMENT