

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NM OIL CONS. COMMISSION 30-015-23887

Drawer DD
Artesia, NM 88210

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

PLUG BACK ☐

b. TYPE OF WELL

OIL WELL ☐

GAS WELL ☒

OTHER ☐

SINGLE ZONE ☐

MULTIPLE ZONE ☐

2. NAME OF OPERATOR

Tenneco Oil Company (PH 512-734-8161)

3. ADDRESS OF OPERATOR

6800 Park Ten Blvd San Antonio, TX 78213

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)

At surface

1980' FWL & 660' FSL; S19, T21S, R26E

At proposed prod. zone

Same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE

6 1/2 mi. northwest of Carlsbad

16. DISTANCE FROM PROPOSED

LOCATION TO NEAREST

PROPERTY OR LEASE LINE, FT.

(Also to nearest drg. unit line, if any)

18. DISTANCE FROM PROPOSED LOCATION

TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

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

3413.8 GL

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	13 3/8" new	54.5# K-55 STC	±350'	Cement to circulate
12 1/4"	9 5/8" new	32# H-40 STC	2200'	Cement to circulate
8 1/2"	7" new	26# S-95 LTC	10,860'	Cement to top ±7000

1. Set 20" conductor pipe @ ± 40' from surface w/ rathole-driller.
2. Drill 17 1/2" hole to ±350' (watch for severe lost circ.).
3. Run and cement 13 3/8", 54.5#, K-55, STC CSG. Cement to surface with 1" if necessary WOC 8 hours total but continue NU immediately after cement.
4. Cut off 13 5/8" CSG & NU 13 3/8" x 13 5/8" - 5M SO & W head. Test head to 1/2 of pipe collapse rating.
5. NU 13 5/8" - 5M BOP stack. Test to 500 psi w/rig pump.
6. PU 12 1/4" bit and at least 12-8" DC; shock sub is advisable but use no reamers due to dry drilling possibilities. Drill to ± 2200'.
7. Run & cement 9 5/8" CSG. Cement needs to be CIR to surface. (If CMT not CIR to surf. use 1" integral joint tubing to recement top, check clearance.) WOC 8 hours as above.
8. Set 10-20% of CSG weight on slips the rest on bottom. NU 13 5/8" - 3M x 11" 5M CSG spool and test to 1/2 CSG collapse. NU and test BOP.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, 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

TITLE Division Drilling Engineer

DATE July 22, 1981

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

APPROVED

DEC 22 1981

JAMES A. GILLHAM
DISTRICT SUPERVISOR

Instructions

General: This form is designed for submitting proposals to perform certain well operations, as indicated, on all types of lands and leases for appropriate action by either a Federal or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

Item 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable State or Federal regulations concerning subsequent work proposals or reports on the well.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plat, separate or on this reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal or State agency offices.

Items 15 and 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective production sand.

Item 22: Consult applicable Federal or State regulations, or appropriate officials, concerning approval of the proposal before operations are started.

★ U.S. GOVERNMENT PRINTING OFFICE: 1963-O-711-396

9. PU 8 1/2" bit, install wear ring, test CSG to 1000PSI
10. drill float equipment.
11. Drill to 9000' & mud up thru steel pits (use 3-4% KCL for clay inhibition). Test BOP stack.
12. Drill to 10,860' (just above Morrow "C" sand). Log as per geological requirements. Run Repeat Formation Tester (RFT).
13. ITH and condition same.
14. RU and run 7" CSG. Cement and land in full tension. NU Type N Tubing spool (11" 5M x 7 1/16" 5M). NU BOP stack as per attached. Note: May have to rent smaller stack to accommodate additional ram and spool; must be able to drift tubing hanger.
15. RIH w/bit, 4 3/4" drill collars and 2 7/8" completion tubin stringer. (See sketch) Test CSG to 3600 PSI. Drill out flo equipment and CMT.
16. RU for ** drilling. Will need compressors, booster, blowi line, etc. This should be done in advance. Displace hole w/ natural gas.
17. Drill w/ ** TD @ 11,072' ±. TD to be determined by mud logger.
18. Run tubing hanger. (See attached "BOP Design" sketch.)
19. ND BOPE. NU and land tree. (See attached "Wellhead Equipmen sketch.")
20. RU and run wireline to retrieve back pressure valves. Test production through bit, collars and tubing.

** Natural Gas

All distances must be from the outer boundaries of the Section

Tenneco Oil Co.		Federal Fn.		Well No. 2
Section 19	Township 21S	Range 26E	County Eddy	
Actual Footage Location of Wells: 660 feet from the SOUTH line and 1980 feet from the WEST line				
Sound Level Elev. 3441.9	Producing Formation Morrow	Pool Catclaw Draw	Dedicated Acreage 640	

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.

2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☒ Yes ☐ No If answer is "yes," type of consolidation Communitization Agreement

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.

L-6815-1 W.I. - Tenneco - 87.5% Holly Energy, Inc. - 10.9375 Read & Stevens, Inc. - 1.5625 R.I. - State of New Mexico	NM-0106774-C W.I. - Tenneco - 87.5% Holly - 10.9375 Read & Stevens - 1.5625 R.I. - State of New Mexico
K-6262 W.I. - Tenneco - 87.5% Holly - 10.9375 Read & Stevens - 1.5625 R.I. - State of New Mexico	NM-0106774-A W.I. - Tenneco - 87.5% Holly Energy - 10.9375 Read & Stevens - 1.5625 R.I. - United States
NM-0400877-A W.I. - Tenneco - 87.5% Holly - 10.9375 Read & Stevens - 1.5625 R.I. - United States	NM-84 W.I. - Inexco Oil Co. R.I. - United States



CERTIFICATION	
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.	
Name <u>MOSS BANNERMAN</u>	
Position	<u>Division Drilling Engineer</u>
Company	<u>Tenneco Oil Company</u>
Date	<u>December 03, 1981</u>
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 knowledge and belief.	
Date Surveyed	<u>6-26-81</u>
Registered Professional Engineer and/or Land Surveyor	
Certificate No.	JOHN W. WEST 676 PATRICK A. ROMERO 6563 Ronald J. Eidson 3239

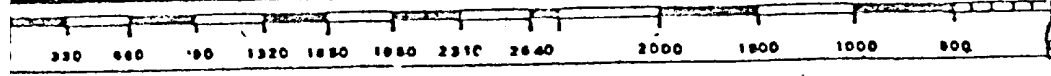


EXHIBIT "B"

TEN-POINT COMPLIANCE PROGRAM OF NTL-6 APPROVAL OF OPERATIONS

Attached to form 9-331C
Tenneco Oil Company
Fed. FN 19 Well #2
1980' FWL & 660' FSL
Sec. 19, T 21S, R 26E
Eddy County, New Mexico

1. The Geologic Surface Formation

The surface formation is Quaternary Alluvium Deposit

2. Estimated Tops of Important Geologic Markers

Quaternary Alluvium	Sfc
El Capitan Reef	700
Delaware	2275
Bone Springs	4475
Wolfcamp Carbonate	8275 -
Cisco	9300
Strawn	9620
Atoka Clastics	10,200
Morrow	10,612
Barnett Shale	11,022
Esti. TD.	11,072

3. Estimated Depths of Anticipated Water, Oil, Gas or Minerals

Delaware	2275-4475	Oil
Wolfcamp	8275-9300	Gas
Strawn	9620-10,200	Gas
Morrow	10,612-11,022	Gas

4. Proposed Casing Program:

<u>SIZE</u>	<u>INTERVAL</u>	<u>WEIGHT</u>	<u>GRADE</u>	<u>JOINT</u>	<u>NEW OR USED</u>
20"	0-40'				
13 3/8"	0-350'	54.5#	K-55	ST&C	NEW
9-5/8"	0-2200'	32#	H-40	ST&C	NEW
7"	0-10,860'	26#	S-95	LTC	NEW

CEMENT DESIGN

In setting 13-3/8" and 9-5/8", the cement will be circulated. 7" casing will be cemented approximately 2300' from surface (GL).

5. PRESSURE CONTROL EQUIPMENT:

Blowout preventer stack will consist of an annular type preventer and two (2) ram-type preventers with 3000 psi working pressure. A sketch of BOP stack is attached.

6. PROPOSED MUD PROGRAM:

Mud system will be gel-chemical with adequate stocks of sorptive agents on site to handle possible spills of fuel and oil on the surface. Heavier mud will be on location to be added if pressure requires.

<u>INTERVAL</u>	<u>MUD WEIGHT</u>	<u>VISCOSITY</u>	<u>FLUID LOSS</u>	<u>REMARKS</u>
0-350'	8.4	30	NA	Fresh Water
350'-2200'	8.4-8.8	30	NA	Fresh Water
2200'-9000'	8.4-9.0	30	NA	Fresh Water
9000'-10,860'	8.6-9.9	30	NA	Brine-Drispac starch
10,860'-11,072'	drill with natural gas			

7. AUXILIARY EQUIPMENT:

- A. Kelly cock will be kept in kelly.
- B. Full opening stabbing valve will be kept on rig floor in open in open position at all times.

8. TESTING, LOGGING AND CORING PROGRAMS:

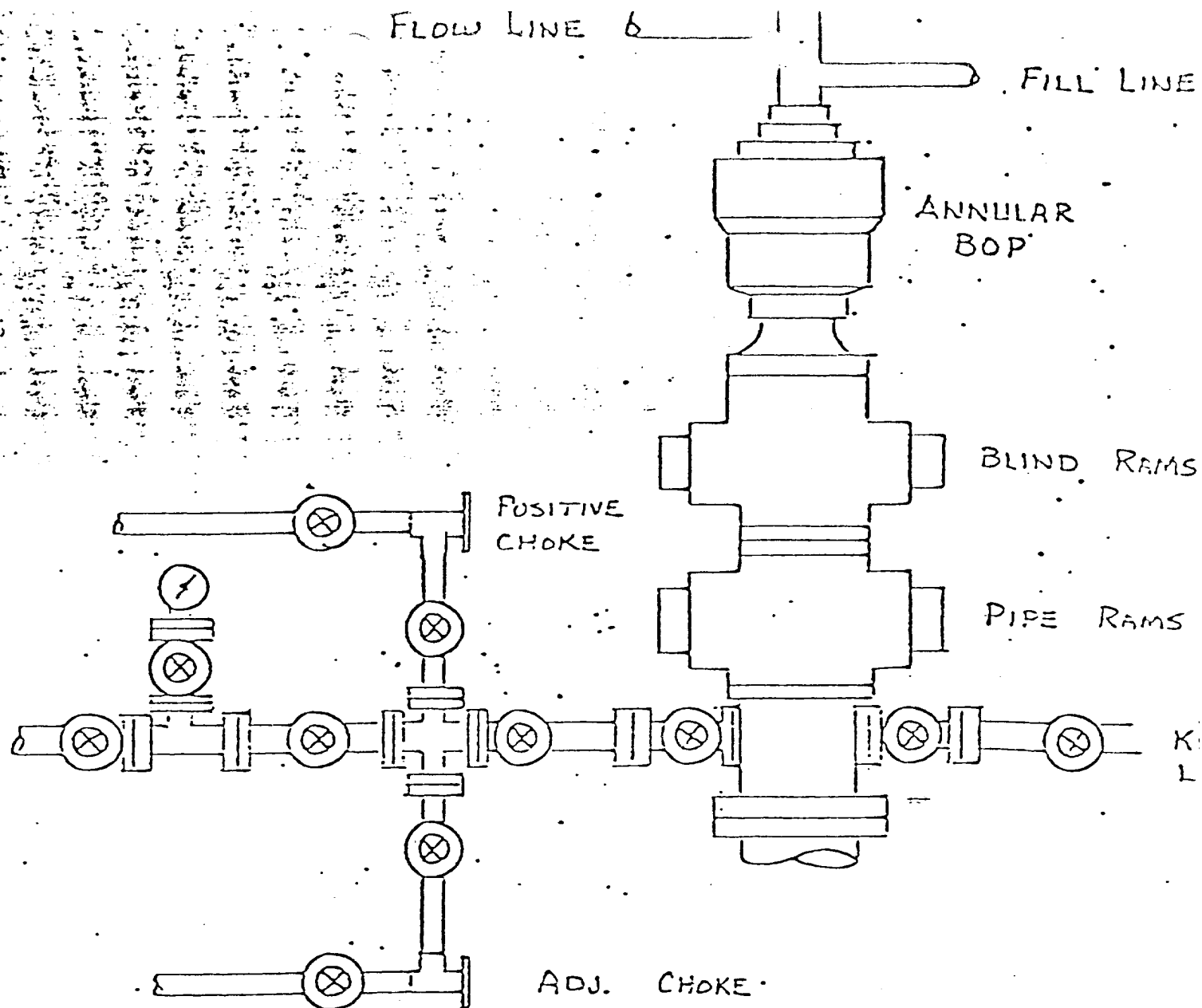
- A. DST's will be run if warranted.
- B. No coring is anticipated.
- C. CNL-FDC w/GR and caliper; DLL, shoe to TD.
- D. Repeat formation tester in selected intervals.

9. ABNORMAL PRESSURES, TEMPERATURES OR HYDROGEN SULFIDE GAS:

None anticipated.

10. ANTICIPATED STARTING DATE AND DURATION OF THE OPERATIONS:

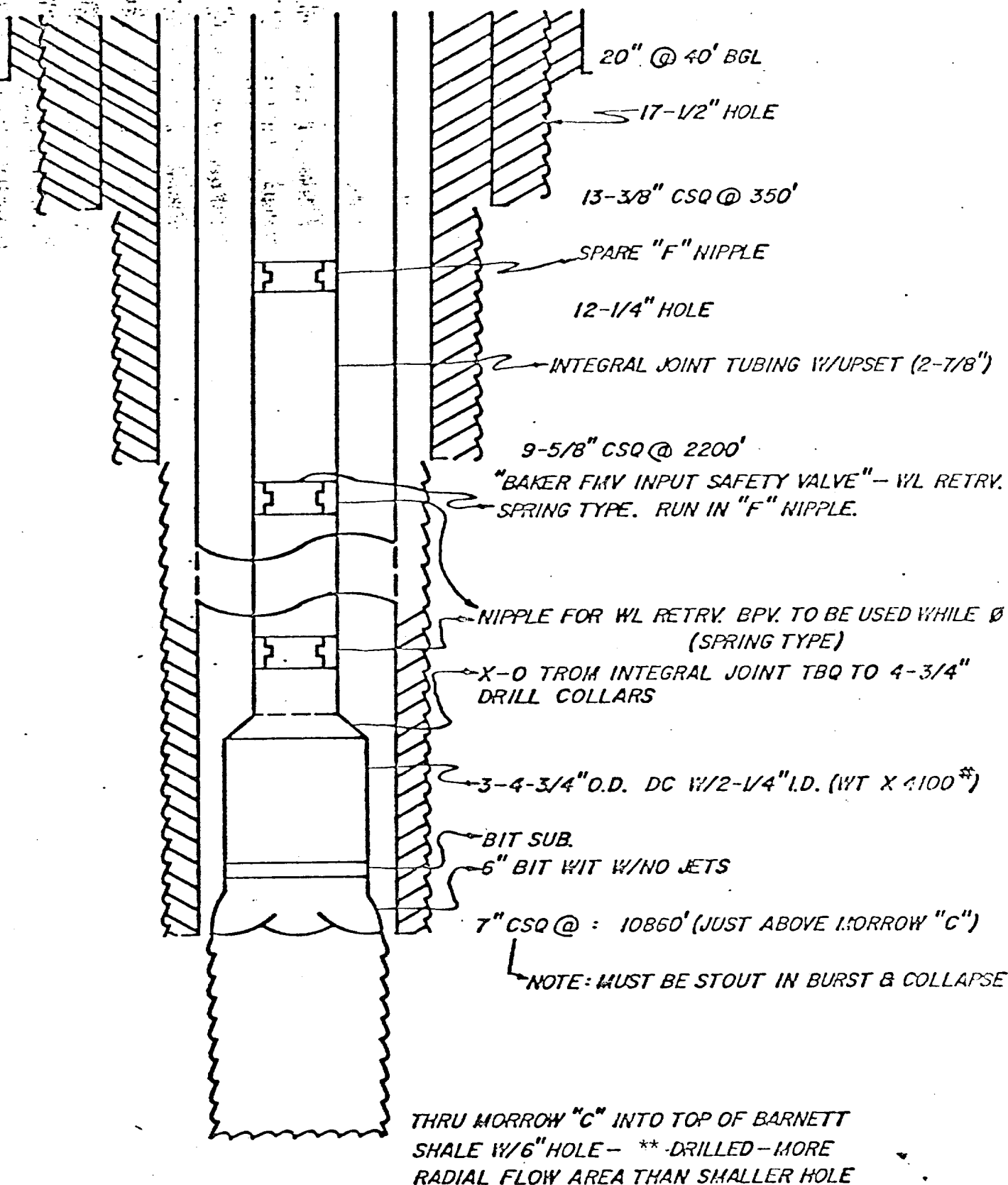
- A. Road and pad construction: November 5, 1981
- B. Spud well: December 5, 1981
- C. Duration of drilling and completion operations should be about 45-75 days.



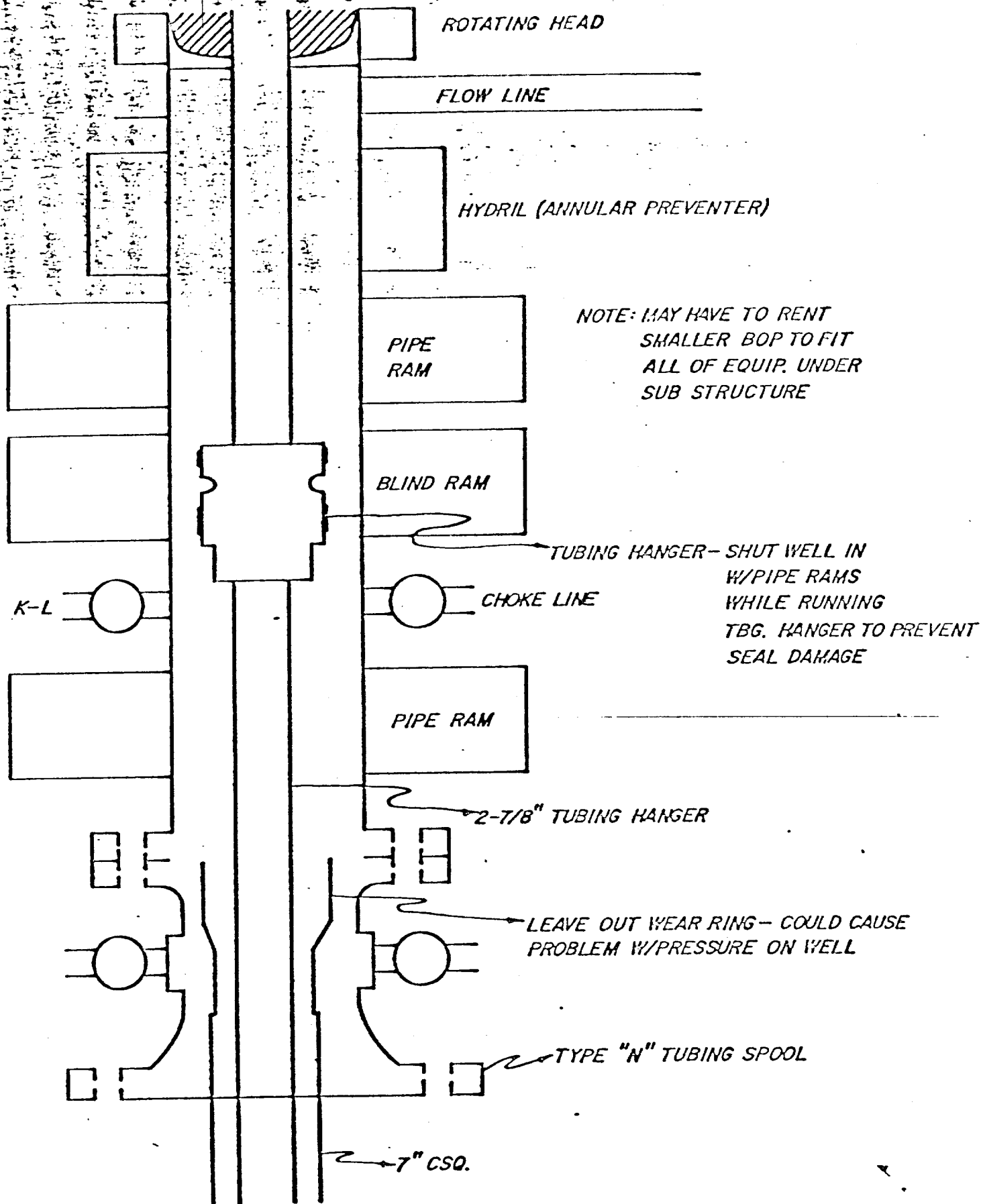
This is to be 3000 psi wp, which is adequate, that will be used on the 11" and 7 7/8" hole. This is the minimum possible BOP stack that will be used. Tenneco may choose to use more equipment and higher pressure.

Federal "FN" 19
Well No. 2
Eddy County, New Mexico

LIQUIDLESS- USING PROGRAM & COMPLETION STRING



LIQUIDLESS DESIGN FOR BOP



Tenneco Oil
Exploration and Production
A Tenneco Company

Southwestern Division

6800 Park Ten Blvd. • Suite 200 North
San Antonio, Texas 78213
(512) 734-8161

December 16, 1981

DEC 17 1981

United States Department of the Interior
Geological Survey
South Central Region
Roswell District
P. O. Drawer 1857
Roswell, NM 88201

ATTN: Mr. George Stewart

Gentlemen:

RE: Permitting the F.N. 19 No. 2 Federal

On July 24, 1981, Mr. Roy Goodwin submitted the subject well to be permitted using ** to drill the Morrow "C" interval. This plan was rejected and an alternate plan to drill the well conventionally was submitted and ultimately approved. I would like to present my arguments for using **. I feel that it can be done safely and with little risk.

The primary reason why Tenneco chose the subject well to evaluate the benefits of ** drilling is because it is a development well. This means that the maximum BHP and therefore, maximum shut-in pressure are known. Also, the formation tops are fairly well defined for casing points. We have known production rates by which to compare the value, if any, of drilling with air.

Basically, the well will be drilled conventionally down to just above the Morrow "C" zone at 10,860', and at this point 7" will be set. The Morrow "C" will be drilled with ** (about 150' total) and put on production without running a liner; that is, it will be left open hole (see Attachment #1).

After the 7" casing has been set, blow out preventers (see Attachment #2) will be nipped up on top of the tubing spool. Note that a rotating head is used to divert the gas/ ** while drilling. The rotating head will hold roughly 1000 PSI, and since the blowby line (flow line equivalent) will be 7" or larger, it would take a very large volume of gas to result in any significant pressure. Drilling can proceed safely while having over 10,000 PSI which would be much more than we expect from this well. Gas is prevented from coming up the drill pipe by using back pressure valves run on

** Natural Gas

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Exploration and Production

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wire lines (see Attachment #1).

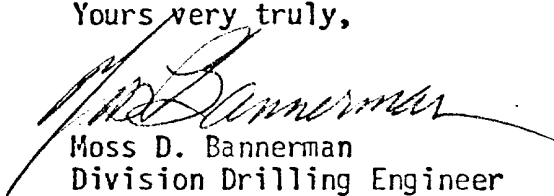
The well will be drilled with the tubing string to be used for the final completion. It will be integral joint tubing so that drilling with it should be no problem. If the well flows a larger amount of gas than can be safely tripped once total depth is reached, the tubing can be stripped out a few stands and a tubing hanger installed. The tubing hanger can then be stripped through the rams and landed in the tubing head, sealing off the annulus. Since the tubing is shut off with the back pressure valves, a back pressure valve can be installed and the blow-out preventer nipped down to install the tree and put the well on production.

Note that the bit and drill collars are still in the hole (see Attachment #1) and will be produced. The tubing will also serve the function of a kill string if the well must be killed with fluid. Also, the shut-in tubing pressure will be on the casing, since a packer will not be run. The casing is designed extra stout in burst and collapse to accomodate this situation.

Addressing the problem of using ** to drill the gas zone with this should be no problem. ** drilling is a common practice and, since it is being flared, there should be no danger to the crews and equipment other than those normally encountered. We will have fluid on hand to kill the well should there be any problems.

I feel that, since drilling with ** is an accepted industry practice, this plan should be reconsidered for permitting. There may be some real value for the technique in making the Morrow play more economical. I am open to any considerations you may have.

Yours very truly,



Moss D. Bannerman
Division Drilling Engineer

MDB/bss

Attachments

** Natural Gas