

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

30-015-26355  
BLM Roswell District  
Modified Form No.  
NDC-110-2  
RECEIVED

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  
Greenhill Petroleum Corporation

3a. Area Code & Phone No.  
713 955-1146

3. ADDRESS OF OPERATOR  
12777 Jones Road, Suite 375, Houston, TX 77070

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)  
At surface  
10' FSL & 1250' FWL  
At proposed prod. zone  
Same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE  
Approximately 7 1/2 miles South of Loco Hills

15. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT.  
(Also to nearest drlg. unit line, if any) 10

16. NO. OF ACRES IN LEASE  
800

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.  
3700

19. PROPOSED DEPTH  
3700

20. ROTARY OR CABLE TOOLS  
Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)  
3438.1' GR

22. APPROX. DATE WORK WILL START  
As soon as possible

PROPOSED CASING AND CEMENTING PROGRAM

HOLE SIZE	CASING SIZE	WEIGHT/FOOT	GRADE	THREAD TYPE	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4	8 5/8	24#	K55	STCIRCULATE	+600'	See below
7 7/8	5 1/2	14#	K55 or J55	STCIRCULATE	3600'	See below

8 5/8" Surface Lead: 200 sx Howco Light Cmt Premium Plus + 1/4 PPS Flocele + 2% CaCl<sub>2</sub> @ 12.4 ppg.

Tail: 100 sx Premium Plus + 2% CaCl<sub>2</sub> @ 14.8 ppg

5 1/2" Production

Spacer - 10 bbls 2% KCL water  
750 gal Superflush 201  
5 bbls 2% KCL water

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS AND  
SPECIAL STIPULATIONS  
ATTACHED

Lead - 275 sx Howco Light Premium Plus + 15 PPS Salt + 1/4 PPS Flocele @ 12.4 ppg.

Tail - 275 sx 50/50 Poz mix Premium Plus + 2% Total Gel + 3 PPS Salt + .5% Halad-332 + 10 PPS Microbond @ 14.4 ppg.

Post ID-1  
5-11-90  
New Loc & API

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 Richard J. Lemport TITLE Landman DATE 3/19/90

(This space for Federal or State office use)

PERMIT NO. \_\_\_\_\_ APPROVAL DATE \_\_\_\_\_

Orig Signed by Richard J. Lemport

AREA MANAGER

CARLSBAD RESOURCE AREA

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE 4-30-90

CONDITIONS OF APPROVAL, IF ANY:

\*See Instructions On Reverse Side

Submit to Appropriate  
District Office  
State Lease - 4 copies  
Fee Lease - 3 copies

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised 1-1-89

OIL CONSERVATION DIVISION

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

RECEIVED

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

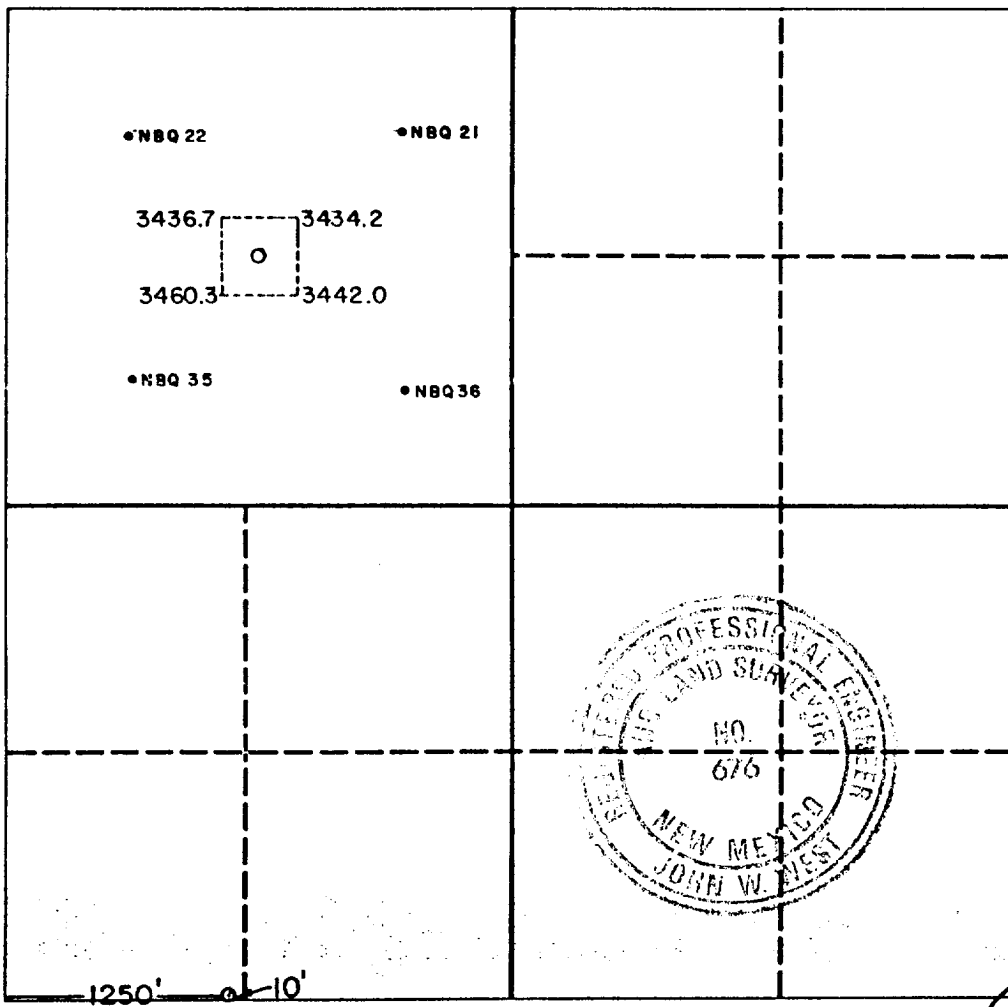
All Distances must be from the outer boundaries of the section

APR 5 10 41 AM '90

CARET  
AREA

Operator GREENHILL PETROLEUM CORP.			Lease NORTH BENSON QUEEN UNIT		Well No. 47
Unit Letter M	Section 27	Township 18 South	Range 30 East	County Eddy	
Actual Footage Location of Well: 10 feet from the South line and 1250 feet from the West line					
Ground level Elev. 3438.1	Producing Formation Queen		Pool N. Benson	Dedicated Acreage: 40 Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?  
☐ Yes ☐ No If answer is "yes" type of consolidation \_\_\_\_\_  
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 interest, has been approved by the Division.



OPERATOR CERTIFICATION

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

Signature  
*Michael J. Lupton*  
Printed Name  
Landman  
Position  
Greenhill Petroleum Corp.  
Company  
Landman  
Date  
3/30/90

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 knowledge and belief.

Date Surveyed  
February 8, 1990  
Signature & Seal of  
Professional Surveyor  
*John W. West*  
Certificate No. JOHN W. WEST, 676  
RONALD J. EIDSON, 3239

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Application For Permit To Drill

Greenhill Petroleum Corporation

North Benson Queen Unit Well # 47

# 47- 10'FSL & 1250' FWL, Sec 27, T18S, R30E  
Eddy County, New Mexico

MAR 22 10 59 AM '90

CARLOS  
AREA REG. : OFFICE  
LITERS

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CARLOS  
AREA REG. : OFFICE  
LITERS

Greenhill Petroleum submits the following attachments in addition to the Form 3160-3, Application for Permit to Drill, in accordance with Onshore Oil and Gas Order Nos. 1 and 2.

1. The well location plat depicting the location of well number 47.
2. The unprepared ground elevation is: 3438.1' for # 47.
3. A rotary drilling rig will be used for drilling these wells. The contractor has not been determined at this time.
4. The drilling program containing the following information.

Estimated tops of geologic markers  
Estimated depths of fresh water and producing horizons  
Proposed coring program  
Proposed electric logging program  
Proposed casing program and wellheads  
Proposed mud program  
Proposed cementing program  
Emergency Notification call list

5. The estimated duration of each well is 25 days; drilling 11 days, completion 10 days, rig moves 4 days.
6. Operational requirements.
7. BOP requirements and equipment.
8. BOP sketch.
9. A H<sub>2</sub>S Contingency Plan. H<sub>2</sub>S equipment will be installed before drilling H<sub>2</sub>S or suspected H<sub>2</sub>S formations.

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Greenhill Petroleum Corporation and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date 5/7/90



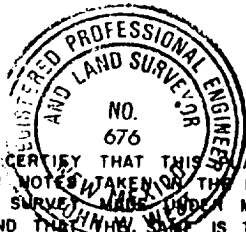
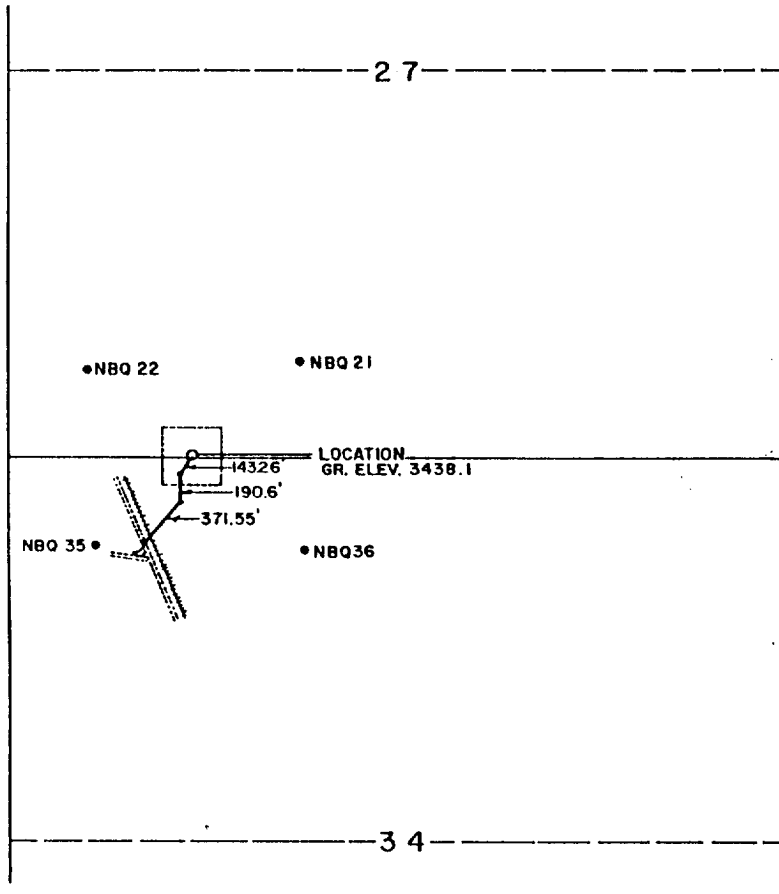
H. P. Bezner  
Drilling Manager

SECTIONS 27 & 34, TOWNSHIP 18 SOUTH, RANGE 30 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO

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CARL...  
AREA...



I HEREBY CERTIFY THAT THIS MAP  
WAS MADE FROM NOTES TAKEN ON THE FIELD  
IN A BONA FIDE SURVEY MADE UNDER MY  
SUPERVISION, AND THAT THE SAME IS TRUE  
AND CORRECT TO THE BEST OF MY KNOWL-  
EDGE AND BELIEF.

*John W. West*  
JOHN W. WEST, N.M. P.E. & L.S. No. 676  
TEXAS R.P.S. No. 1138  
RONALD J. EIDSON, N.M. L.S. No. 3239  
TEXAS R.P.S. No. 1883

GREENHILL PETROLEUM CORP.

A Proposed Road To North Benson Queen Unit  
No. 47, Crossing Sections 27 & 34, Township  
18 South, Range 30 East, N.M.P.M., Eddy County  
New Mexico.

JOHN W. WEST ENGINEERING COMPANY  
CONSULTING ENGINEERS HOBBS, NEW MEXICO

Scale: 1" = 1000'	Drawn By: Presley
Date: 2/10/90	Sheet 1 of 1 Sheets

GREENHILL PETROLEUM CORPORATION  
WELL PROGRAM

Well Name: North Benson Queen Unit # 47  
AFE No.: \_\_\_\_\_

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Location: 10' FSL & 1250' FWL, Section 27, T18S, R30E, Eddy Co., New Mexico  
Directions: \_\_\_\_\_

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GEOLOGICAL PROGNOSIS

Elevation: Ground Level @ 3438.1'

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Formations	Depth (Est.)	Subsea (Est.)
Possible F. Water	0- 380'	Freshwater
Top Anhydrite	380'	+3070'
Top Salt	590'	+2860'
Base Salt	1470'	+1980'
Top Yates	1650'	+1800'
Top Queen	2775' Poss. Prod.	+ 675'
Top Penrose	2985' Poss. Prod.	+ 465'

Formations	Depth (Est.)	Subsea (Est.)
Top Grayburg	3370'	+ 80'
Core Points	2775-2835' ( 60')	
240' Total	2870-2930' ( 60')	
	2985-3045' ( 60')	
	3310-3370' ( 60')	

Logs: At TD: GR-DLL-MSFL-SOMIC-CAL, GR-CAL-DSN II-SDL from TD to surface casing.

Remarks: Rotary SWC: As required

Casing Program

Intervals	Length	Casing	Burst PSI (DF)	Coll PSI (DF)	Ten LBS (DF)	Torque Ft-Lbs (Optimum)
0 - 600'	600'	8 5/8", 24 # K55, STC (2000psi Wellhead)	2950 (1.48)	1370 (4.62)	263M (18+)	
Set in the cap rock at the top of the salt at + 560'.						
0 - 3600'	3600'	5 1/2", 14.0# K55, STC, SMLS (3000psi Wellhead)	4270 (1.42)	3120 (1.56)	189M (3.39)	

Wellheads: Larkin 8 5/8" Fig 92, 2000 psi WP, Threaded. Larkin 5 1/2" Fig 612, 3000psi with a top flange, Threaded.

Remarks: BOP Tests: Test BOPs and surface equipment to 2000psi on nipple up and when any seals are broken. Test 8 5/8" and 5 1/2" to 1000psi for 30 minutes. Repair if more than 10% of the pressure is loss in 30 minutes.

Cement Program

Hole Size	Depth	CSG Size	Cement	Yield CF/SX	Excess (%)	TOC Surf	WOC HRS.
12 1/4"	600'	8 5/8"	Lead: 275 SX HOWCO C + 1/4 PPS FLOCELE + 2% CaCl <sub>2</sub> @ 12.4ppg Tail: 100 SX HOWCO C + 2% CaCl <sub>2</sub> @ 14.8ppg	1.83	100		8
Lost circulation is possible, have 1" and cement available for top out cement job.							
7 7/8"	3600'	5 1/2"	750 gal Superflush 201 Lead: 275sx Halliburton Light Premium Plus + 15PPS Salt + 1/4 PPS Flocele (12.4 ppg) Tail: 275 sx 50/50 Poxmix Premium Plus + 2% Gel + 3PPS Salt + .5% HALAD-322 + 10 PPS Microbond (14.4ppg)	2.32 1.39	100 50	Surf 2200'	12 12

Cement Program

Hole Size	Depth	CSG Size	Cement	Yield CF/SX	Excess (%)	TOC Surf	WOC HRS.
12 1/4"	600'	8 5/8"	450 SX C + 3% CaCl <sub>2</sub> (14.8 ppg)	1.32	140		8
Lost circulation is possible, have 1" and cement available for top out cement job.							
7 7/8"	3600'	5 1/2"	750 gal Superflush 201 Lead: 275sx Halliburton Light Premium Plus + 15PPS Salt + 1/4 PPS Flocele (12.4 ppg) Tail: 275 sx 50/50 Poxmix Premium Plus + 2% Gel + 3PPS Salt + .5% HALAD-322 + 10 PPS Microbond (14.4ppg)	2.32 1.39	100 50	Surf 2200'	12 12

Surf CSG: Run a centralizer on joints 1,2, and every fourth joint to surface. Run QS, 1 jt. IF and CSG. Thread lock bottom

## Mud Program

Interval	WT (LB/GAL)	VIS (SEC)	PH	WL (CC)	Type Mud & Additives
0 - 600'	8.4 - 8.6	30 - 35		NC	Fresh wtr. lime, gel, paper
					Start brine additions on
600 - 2700'	9.3+	40 ±		NC	drill out. Use brine.
2700 - 3600'	9.5 - 10.0	40		6- 8 cc	Yellow starch and salt gel to protect the formation and cores.

Remarks: Lost circulation is possible during the drilling of the 12 1/4" hole. Have paper and LCM available. Dry drill only if circulation cannot be regained.

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CARLETON COLLEGE  
AREA 111 BUILDINGNOTIFICATION

NAME	TITLE	HOME PHONE
Hugh Bezner	Drilling Manager	(713) 980-0808
Cy Schaadt	Sr. Drilling Engineer	(713) 974-1733
Phil Geaslan	Drilling Engineer	(713) 353-1875
Charles Little	Production Superintendent	(713) 251-5156
Larry Cochran	Petroleum Engineer	(713) 460-3650
Norby Renaud	Production Engineer	(713) 320-0940
David Tilley	Production Engineer	
Ken Pfau	Production Geological Engr.	(713) 334-2072
Harry Faulkner	Petrophysical Engineer	(713) 556-6466

GREENHILL PETROLEUM CORPORATION

OPERATIONAL REQUIREMENTS for

NORTH BENSON QUEEN UNIT # 47

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AREA... INS

The following are either GPC requirements for safe operations or requirements for operations on State and Federal leases.

1. Signs: The sign will show the operator's name, lease or unit name, well number, and location of the well by footage and the lease serial number.
2. Pits: The pits will be lined to prevent leakage to the soil.
3. Pits: GPC will deep bury the mud and pit contents.
4. Cement: Minimum WOC time is 8 hours for all strings. A minimum of 500 psi compressive strength at the shoe is required before drilling out. The critical zone criteria outlined in the NM Rule 107 will be observed. WOC time must be recorded on the IADC report.
5. Casing test pressure: The surface and production casing will be tested to 1000psi before drilling the float collar. Pressure will be held for 30 minutes, if pressure decline more than 10% corrective measures must be taken before drilling out. Pressure and time will be reported on the IADC Report.
6. All state and local drilling permits will be obtained prior to spud.
7. Maximum casing pressure will be posted for each casing string.
8. A member of the drill crew will be on the rig floor at all times.
9. General Requirements for Oil and Gas Operations on Federal Leases, attached, contains additional requirements for the North Benson Queen Unit.

Greenhill Petroleum Corporation

North Benson Queen # 47

BOP Requirements

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AREA HEADQUARTERS

1. All BOP equipment will meet the minimum requirements for 2M equipment as specified in Order No. 2, FR Vol 53, No. 223, November 18, 1988.
2. BOPs: The BOPs (2M system) will consist of 1 ram and 1 annular preventer or 2 rams, configured SRR, RSR or SRA depending on the contractor's substructure. The rams and annular preventers will be 2000 psi working pressure. Choke lines, kill lines and associated equipment will be 2" minimum.
3. BOP tests: Ram BOPs must be tested to rated working pressure or 70% of the internal yield of the casing, which ever is less. For the 8 5/8" string the minimum internal yield is 2950psi, 70% is 2065psi. The wellhead and BOPs are 2000psi WP. The required test pressure is 2000psi for rams and 1000psi for the annular. Preventers will be retested if any pressure seal is broken. Rams and associated equipment will be for 30 minutes, annular test will be for 10 minutes. Record all tests on the IADC report.
4. BOPs: Rams will be function tested once each trip, but no less than once each day (24 hrs). The annular preventer shall be actuated on the drill pipe at least once each week.
5. BOPs: Casing rams are required prior to running production casing.
6. BOP Other: Hand wheels will be installed if the rig does not have automatic locking devices (valves installed in the closing lines as close as possible to the preventer(s)). The accumulator and associated power sources will conform to the minimum requirements outlined in Order No. 2.
7. Drill string BOP: An inside BOP and full opening stabbing valve (Upper Kelly cock valve) will be on the floor at all times. This valve will be tested while testing the BOPs.
8. PVT monitoring: The drilling crew will visually monitor the pit level and flow line volume while operating.
9. Fillup line: A fillup line will be installed in the bell nipple above the preventers.
10. Trip tank: A trip tank will also be used for all trips. The driller will record the fillup required every 5 stands of drill pipe or every stand of collars. Mud level will be maintained at 100' below the rotary or less while tripping.
11. BOP Drills: Drills will be performed each week with each crew. All drills will be recorded on the IADC report.



GREENHILL PETROLEUM CORPORATION  
BOP SCHEMATIC FOR NORTH BENSON QUEEN  
WELLS # 46 AND #47

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CALL  
AREA

OFF  
FMS

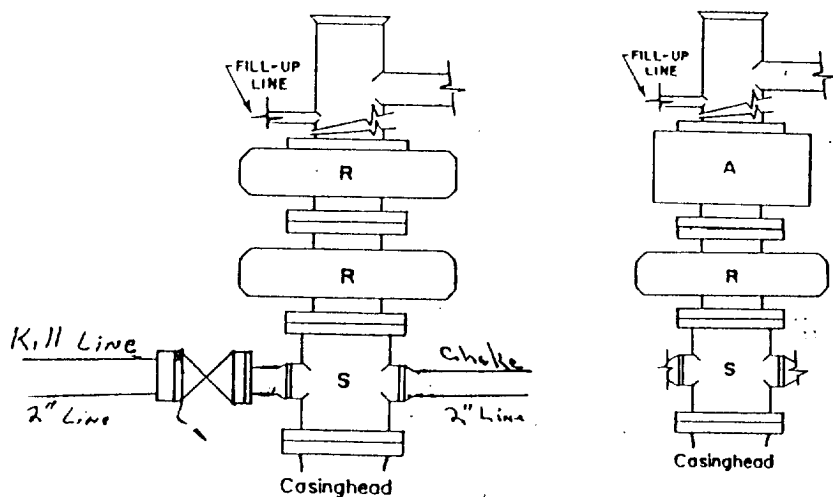


FIGURE K1-1. Recommended GPC Class 2 BOP stack, 2000 psi WP. Either SRd (left) or SA (right) arrangement is acceptable and drilling spool is optional.

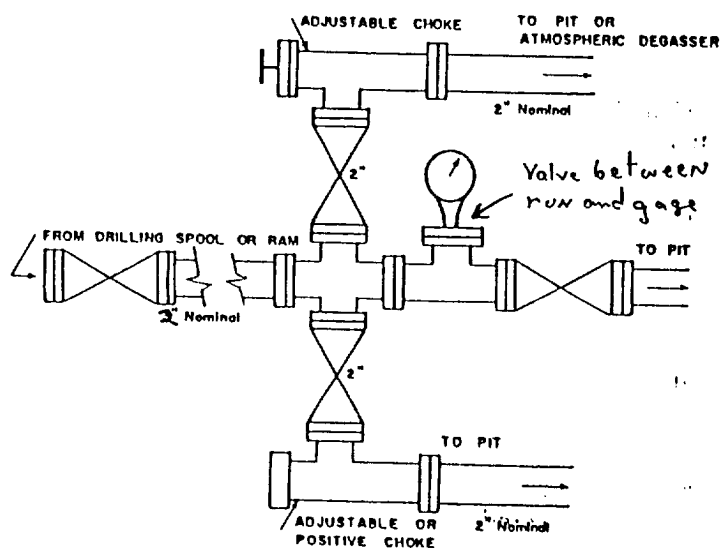


FIGURE K4-1. GPC recommended choke manifold for 2000 and 3000 psi WP service.

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Surface Use and Operation Plan  
Greenhill Petroleum Corporation  
North Benson Queen Unit Well No. 47  
#47-10 FSL & 1250 FWL, Sec 28, T18S-R30E  
Eddy County, New Mexico  
(Development Well)

APR 5 10 42 AM '90  
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TERS

This plan is submitted with Form 9-331C, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of necessary surface disturbance involved, and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effects associated with the operation.

1. EXISTING ROADS

- A. Exhibit A is a Cad map of the North Benson Queen Unit Area on a scale of approximately 1 inch to 500 feet showing the location of the proposed wellsite, roads in the vicinity, road to the location, existing flowlines, injection wells, etc. The road into the location is colored in red and begins on the map with the asterisk next to Section 33.

Exhibit B is a lease map prepared by Midland Map Company showing the location of the proposed wellsite roads in the vicinity. The proposed location is situated approximately 11 miles Southeast of Artesia, New Mexico, via the access route shown in red.

DIRECTIONS

From Artesia go approximately 11 miles in a southeast direction on Highway 360 to the intersection of County roads 360 and 251, go 1.8 miles NE on 251 turn right onto Road 250 (Grubbs Road) and go .6 miles to NBQ Well Number 35, turn left onto a caliche road and immediately right onto the location (NBQ 47) road and go 460 feet to the location.

Surface Use and Operation Plan  
North Benson Queen Unit Well No. 47

2. PLANNED ACCESS ROAD

- A. The proposed new access will be approximately 460 feet in length from point of origin to the edge of the drilling pad. The road will lie in a north to south direction.
- B. The new road will be approximately 12 feet in width.
- C. The new road will be covered with caliche. No turnouts will be necessary.
- D. The center line of the new road has been staked and flagged and the route of the road is clearly visible.

3. LOCATION OF EXISTING WELLS

- A. The well locations in the vicinity of the proposed well are shown in Exhibit A. There are several wells within a one mile radius because this is a producing field.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

- A. In the event that the well is productive, a two inch steel flowline will be connected to existing facilities.

5. LOCATION AND TYPE OF WATER SUPPLY

- A. Water for drilling will come from a line laid from the fresh water injection plant in the SE/4 of Section 28.

6. SOURCES OF CONSTRUCTION MATERIALS

- A. Any caliche required will come from the deep bury pit on the proposed location.

7. METHODS OF HANDLING WASTE DISPOSAL

- A. Drill cuttings will be disposed of in the reserve pits.
- B. Drilling fluids will be allowed to evaporate in the reserve pits until the pits are dry.
- C. Water produced during operations will be collected in tanks until hauled to an approved disposal system or a

Surface Use and Operation Plan  
North Benson Queen Unit Well No. 47

separate disposal application will be submitted to the USGS for appropriate approval.

- D. Oil produced during operations will be stored in tanks until sold.
- E. Current laws and regulations pertaining to the disposal of human wastes will be complied with.
- F. Trash, waste paper, garbage and junk will be buried in a separate trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind.
- G. All trash and debris will be buried or removed from the wellsite within 30 days after finishing drilling and/or completion operations.

8. ANCILLARY FACILITIES

- A. None required

9. WELLSITE LAYOUT

- A. Exhibit C shows the dimensions of the well pad and reserve pits, and the location of major rig components.
- B. The reserve pits will be plastic lined.

10. PLANS FOR RESTORATION OF THE SURFACE

- A. After finishing drilling and/or completion operations, all equipment and other material not needed for further operations will be removed. The location will be cleared of all trash and junk, to leave the wellsite in as good a condition as possible. All pits will be filled and leveled within 90 days after abandonment.

11. TOPOGRAPHY

- A. The wellsite and access route are located in sand hills near Loco Hills.
- B. The top soil at the wellsite is sandy.
- C. The vegetation cover at the wellsite is moderately sparse, with prairie grasses, some yucca, and

Surface Use and Operation Plan  
North Benson Queen Unit Well No. 47

miscellaneous weeds.

- D. No wildlife was observed but it is likely that rabbits, lizards, insects, and rodents traverse the area. The area is used for cattle grazing.
- E. There are no ponds, lakes, streams, or rivers within several miles of the wellsite.
- F. There are no residences in the area.
- G. The wellsite is located on federal surface.
- H. There is no evidence of any archaeological, historical, or cultural sites in the vicinity of the location.

12. OPERATOR'S REPRESENTATIVES

- A. The field representatives responsible for assuring compliance with the approved surface use plan are:

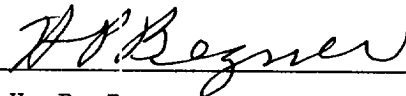
Charley Little  
Operations Manager  
12777 Jones Road  
Suite 375  
Houston, TX 77070

Hugh P. Bezner  
Drilling Manager  
11767 Katy Freeway  
Suite 540  
Houston, TX 77079

13. CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Greenhill Petroleum Corporation and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

---

  
H. P. Bezner

MJN:SKG