



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

BRUCE KING
GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

782-3108

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RE: Proposed:

MC _____
DHC _____
NSL X _____
NSP _____
SWD _____
WFX _____
PMX _____

Gentlemen:

I have examined the application for the:

Greenhill Petroleum Corp. Lovington San Andres Unit
Operator Lease & Well No. Unit S-I-R

and my recommendations are as follows:

OK

# 76-B	36-16-36
# 77-E	31-16-37
# 78-F	36-16-36
# 79-K	31-16-37
# 80-O	36-16-36
# 81-N	31-16-37
# 82-O	31-16-37
# 83-J	1-17-36
# 84-B	1-17-36
# 85-H	1-17-36
# 86-C	6-17-37
# 87-F	1-17-36
# 88-F	1-17-36

Yours very truly,

Jerry Sexton
Jerry Sexton
Supervisor, District 1

/ed



GREENHILL PETROLEUM CORPORATION

11490 WESTHEIMER ROAD, SUITE 200
HOUSTON, TEXAS 77077-6841
TELEPHONE (713) 589-8484
FAX (713) 589-7892

Incorporated in Delaware, U.S.A.

March 23, 1992

Oil Conservation Division
State of New Mexico
Energy, Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Attention: Mr. Mike Stogner

Re: Unorthodox Location and Drilling Permit
Proposed Well Number 77
Lovington San Andres Unit
Lea County, New Mexico

Dear Mr. Stogner:

Greenhill Petroleum Corporation respectfully requests the State of New Mexico Oil Conservation Division grant approval of the proposed unorthodox location and the attached permit to drill Well Number 77 in the Lovington San Andres Unit, located in Lea County, New Mexico.

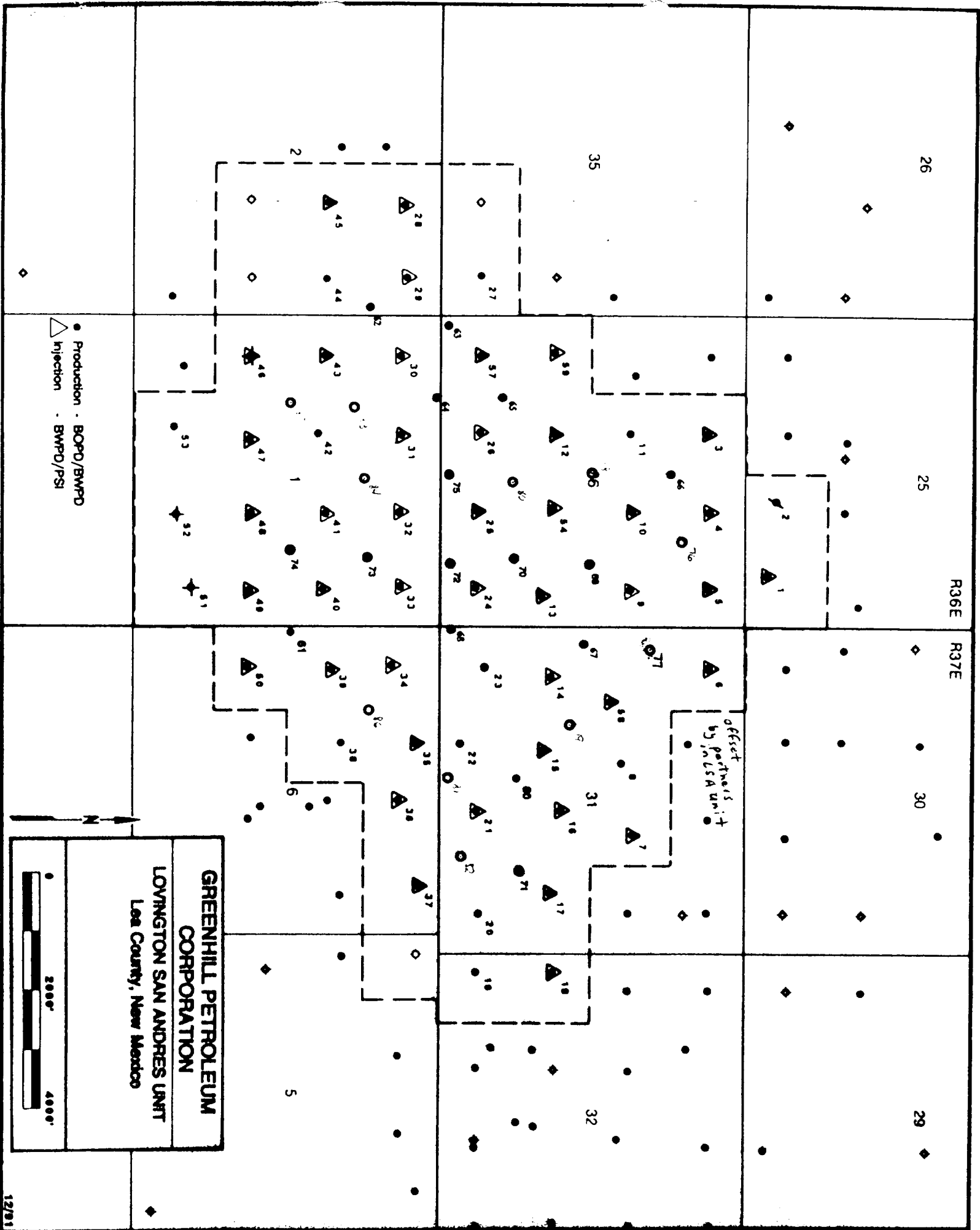
The Lovington San Andres Unit is presently developed and being waterflooded utilizing a 40-acre well density. It is believed that infill development using a 20-acre well density will improve waterflood sweep efficiency and will increase secondary oil recovery. The proposed location for Well Number 77 is located in the interior of the unit and is not competitive with offset wells outside the unit. Information gathered as a result of drilling this infill well will be utilized in evaluating additional infill development potential in the unit and ultimately may be used to evaluate the feasibility of tertiary recovery.

Greenhill Petroleum Corporation wishes to commence drilling operations on the proposed well as soon as possible and would appreciate a response to this request at your earliest convenience.

Respectfully yours,

Michael J. Newport
Land Manager-Permian Basin

MJN:sjs
92. 204
Enclosures



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONTACT RECOMMEND:
OFFICE FOR REVISION
OF COPIES REQUIRED
(Other instructions on
reverse side)

30-025-31543

MM Rowell District
Modified Form No.
M160-3160-2

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) 589-8484

3. ADDRESS OF OPERATOR

11490 Westheimer, Suite 200, Houston, Texas 77077

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

1582' FNL and 381' FWL
At proposed prod. zone

same

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

5 miles southeast of Lovington, NM

16. DISTANCE FROM PROPOSED*

LOCATION TO NEAREST
PROPERTY OR LEASE LINE, FT.
(Also to nearest drlg. unit line, if any) 939

16. NO. OF ACRES IN LEASE

17. NO. OF ACRES ASSIGNED
TO THIS WELL

49.68

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

954'

19. PROPOSED DEPTH

5185'

20. ROTARY OR CABLE TOOLS

Rotary

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

3830.9 GLE

Lea County Controlled Water Basin

22. APPROX. DATE WORK WILL START*

6-25-92

23.

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	J-55	ST+C	1300'	600sacks-circulat
7 7/8"	5 1/2"	15.5	J-55	LT+C	5185'	1100 sacks
						circulate

PROPOSAL SUBJECT TO
CERTAIN REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

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

Greg Salvo

TITLE Drilling Engineer

DATE 5-21-92

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the

1562-3108

OIL CONSERVATION DIVISION

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

DISTRICT I

P.O. Box 1980, Hobbs, NM 88240

DISTRICT II

P.O. Drawer DD, Artesia, NM 88210

DISTRICT III

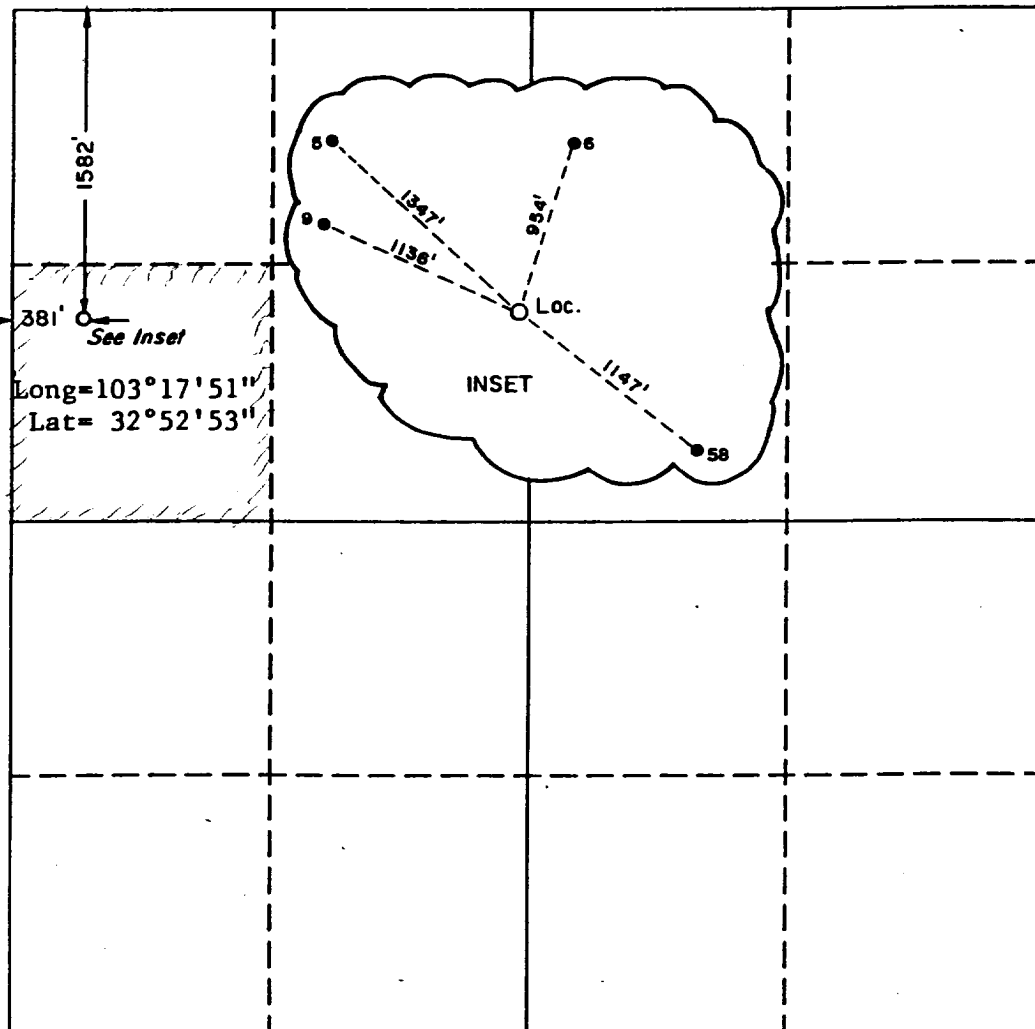
1000 Rio Brazos Rd., Artesia, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator Greenhill Petroleum Corp			Lease Lovington San Andres		Well No. 77
Unit Letter E	Section 31	Township 16 South	Range 37 East	County Lea	
Actual Footage Location of Well: 1582 feet from the north line and 381 feet from the west line					
Ground Level Elev. 3830.9'	Producing Formation San Andres		Pool Lovington Grayburg San Andres		Dedicated Acreage: 49.6840 Acres

- Outline the acreage dedicated to the subject well by colored pencil or hatchure 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 unitized
- If answer is "no" list of owners and tract descriptions which have actually been consolidated. (Use reverse side of this form necessary.)
- No allowable will be assigned to the well unit all interests have been consolidated (by communitization, unitization, forced-pooling, otherwise) or until a non-standard unit, eliminating such interest, 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 J. Newport
Printed Name
Michael J. Newport
Position
Land Manager-Permian Basin
Company
Greenhill Petroleum Corp.
Date
3-23-92

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 19, 1992

Signature & Seal of
Professional Surveyor

Certificate No. 676
RONALD J. EIDSEN, 3830
W.O. 11-0298

GREENHILL PETROLEUM CORPORATION
WELL PROGRAM

WELL NAME: Lovington San Andres Unit #77
AFE NO. :
NMOCC PERMIT NO.:

Location: 381' FWL & 1582' FNL Sec. 31-T16S-R37E, Lea County, NM

Directions:

GEOLOGICAL PROGNOSIS

Elevation: Est. 3845' KB ACT GLE 3831'

<u>Formations</u>	<u>Depth (Est.)</u>	<u>Subsea (Est.)</u>		
Ogalalla	260 (Base)	(+3585)	Top Yates	3053 (+792)
Red Beds	260-2050	(+1795)	Top Queen	3750 (+095)
Top Salt	2050	(+1797)	San Andres	4650 (-805)
Base Salt	3000	(+ 845)	Total Depth	51 <u>85</u> (-1340)

Log(s) at TD: NO OPEN HOLE LOGS PLANNED

Remarks: GRASED HOLE: C-R / CML

Casing Program

<u>Intervals</u>	<u>Length</u>	<u>Casing</u>	<u>Burst PSI (DF)</u>	<u>Coll PSI (DF)</u>	<u>Ten Lbs (DF)</u>	<u>Torque Ft-Lbs Optimum</u>
0 - 1300'	1300'	8-5/8" 24# J-55, ST&C, ERW	2950	1370	244M	2440
0 - 5150'	5150'	5-1/2" 15.5# K-55, LTC, ERW	4810	4040	217M	2170

Wellheads: 8-5/8": Larkin (weld on) 5-1/2": Larkin (threaded)

Remarks: Set 5-1/2" Csq. Head w/side outlets 8"-10" AGL

Lovington San Andres Unit #77

Cement Program

<u>Hole Size</u>	<u>Depth</u>	<u>Csg. Size</u>	<u>Cement</u>	<u>Yield CF/SX</u>	<u>Excess %</u>	<u>TOC</u>	<u>WOC Hr.</u>
12-1/4"	1300'	8-5/8"	300 SX C + 4% GEL 8.9 GAL H2O/SX 13.5 PPG, TAIL W/ 200 SX C + 2% CACL2 6.3 GAL H2O/SX 14.8 PPG	1.69 1.32	45	Surf.	8
7-7/8"	5150'	5-1/2"	LEAD C+ 16% GEL, 2% SALT 0.2% DISP, 15.35 GAL H2O 12.1 PPG, TAIL W/C+ADDS FOR 3HR TTT, 200 ML FL ZERO FREE H2O (350 sx)	2.63	15% ON FLUID CALIPER	SURF.	8

Remarks: TOTAL VOLUME BASED ON 1.15 X FLUID CALIPER. TAIL BASED ON EXPERIENCE. PIPE WILL BE DRIFTED PRIOR TO RUNNING AND IS TO BE RECIPROCATED WHILE CEMENTING.

Surface Casing: Run a centralizer on every 4th joint. Run GS, 1 jt, FC and csg. Threadlock bottom 2 joints. Displace with fresh water after dropping plug.

Production Casing: Remove varnish from bottom 900' (sandblast). Run FS, 1 jt, FC. Threadlock the bottom 2 joints. Centralize 1 per jt to top of San Andres & 1 every other jt to 4000'. Displace with fresh water after dropping plug.

Mud Program

<u>Interval</u>	<u>WT (LB/GAL)</u>	<u>VIS (SEC)</u>	<u>PH</u>	<u>WL (CC)</u>	<u>Type Mud & Additives</u>
0-1300'	8.6-8.8	30-35		NC	Fresh wtr., lime, gel, paper
1300'-5150'	10.0-10.1	29-30	AS NEEDED		Brine wtr., paper sweeps as needed, caustic for ph, MF55 for flocculation

Remarks: Circulate the steel pits using solids control equipment and flocculant as needed to keep the water clean.

**GREENHILL PETROLEUM CORPORATION
BOP SCHEMATIC
FOR LOVINGTON SAN ANDRES UNIT WELL #77**

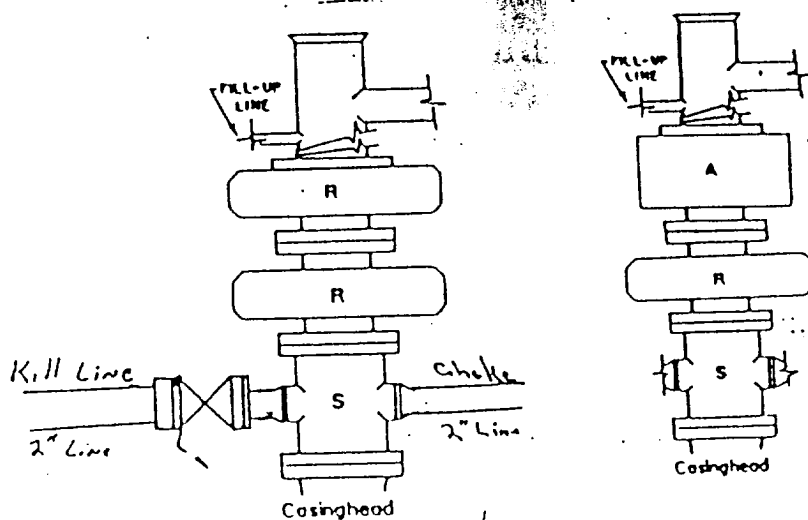


FIGURE K1-1. Recommended GPC Class 2 BOP stack, 2000 psl WP. Either SRd (left) or SA (right) arrangement is acceptable and drilling spool is optional.

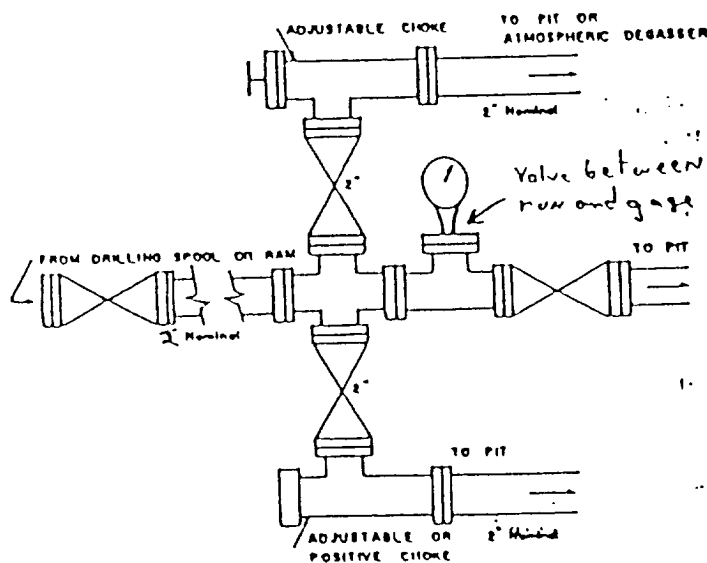


FIGURE K4-1. GPC recommended choke manifold for 2000 and 3000 psl WP service.