Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

30-015-26211

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: NM-0915

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WORK: DRILL [XX] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [XX] OTHER — SINGLE ZONE [ ] MULTIPLE ZONE [ ]

RECEIVED

7. UNIT AGREEMENT NAME: Big Eddy Unit

8. FARM OR LEASE NAME: Big Eddy Federal Unit

2. NAME OF OPERATOR: Bettis, Boyle & Stovall

9. WELL NO.: 113

3. ADDRESS OF OPERATOR: P. O. Box 1240, Graham, Texas 76046

OCT 16 '89

10. FIELD AND POOL, OR WILDCAT: Wildcat

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1980' FNL & 660' FWL
At proposed prod. zone: 1980' FNL & 660' FWL

O. C. D.
ARTESIA, OFFICE

Ut. E

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 22, T21S-R29E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 15 miles east of Carlsbad

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)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
660'	240	320
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
2800'	13,300'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3402.7' GR

22. APPROX. DATE WORK WILL START*: November 1, 1989

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"	54.50	400'	Circ
11"	8 5/8"	28/32	3,300'	Circ
7 7/8"	4 1/2"	11.60/13.50	13,300'	550 sx

Cement Program: 13 3/8" casing: 400 sx Class "C"
8 5/8" casing: 300 sx Class "C", tailend 900 sx Lite
5 1/2" casing: 550 sx Class "H"

GAS NOT DEDICATED

Mud Program: See Exhibit "G"

BOP Program: See Exhibit "E"

Post ID-1
10-20-89
New Loc + API

RECEIVED
SEP 21 '89
O. C. D.
ARTESIA, OFFICE

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 John D. Bettis' TITLE Agent DATE 9-19-89
John D. Bettis

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE 10-11-89

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 United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

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 plats, 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 zone.

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

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR Part 3160.

PRINCIPAL PURPOSE: The information is to be used to process and evaluate your application for permit to drill, deepen, or plug back an oil or gas well.

ROUTINE USES: (1) The analysis of the applicant's proposal to discover and extract the Federal or Indian resources encountered. (2) The review of procedures and equipment and the projected impact on the land involved. (3) The evaluation of the effects of proposed operation on surface and subsurface water and other environmental impacts. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions, as well as routine regulatory responsibility.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if the lessee elects to initiate drilling operation on an oil and gas lease.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq) requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases.

This information will be used to analyze and approve applications.

Response to this request is mandatory only if the lessee elects to initiate drilling operations on an oil and gas lease.

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

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 1-1-89

OIL CONSERVATION DIVISION

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
Bettis, Boyle & Stovall	Big Eddy Federal Unit	113

Unit Letter	Section	Township	Range	County
E	22	21 South	29 East NMPM	Eddy

Actual Footage Location of Well:
1980 feet from the North line and 660 feet from the West line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3402.7	Morrow	Wildcat	320 Acres

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

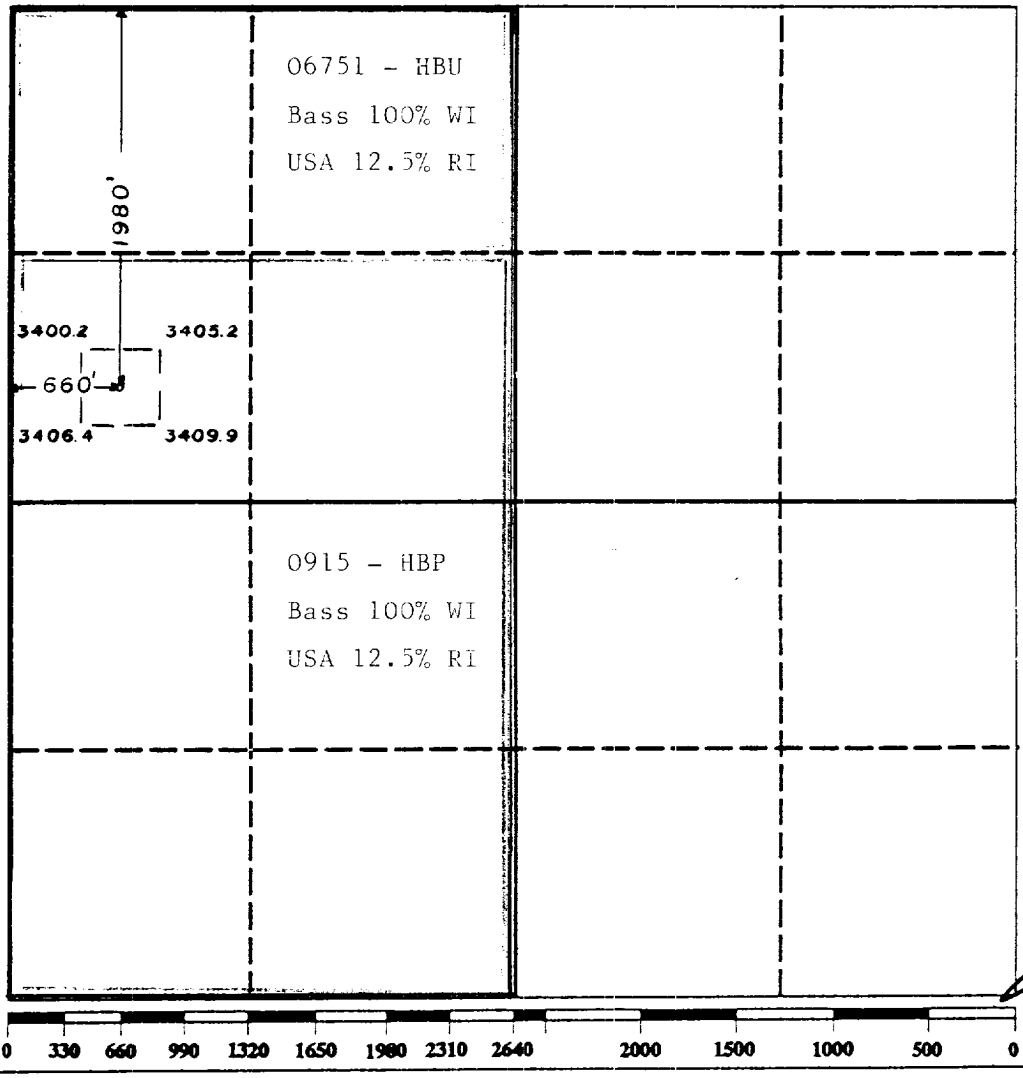
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the 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 in true and complete to the best of my knowledge and belief.

Signature: John D Bettis

Printed Name: John D. Bettis

Position: Agent

Company: Bettis, Boyle & Stovall

Date: 9-20-89

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 knowledge and belief.

Date Surveyed: August 28, 1989

Signature & Seal of Professional Surveyor

REGISTERED PROFESSIONAL LAND SURVEYOR STATE OF NEW MEXICO JOHN W WEST

Certificate No. JOHN W. WEST 676
RONALD J. EIDSON 3239

125630

APPLICATION FOR DRILLING

BETTIS, BOYLE & STOVALL
BIG EDDY UNIT #113
1980' FNL & 660' FWL
Section 22, T-21-S, R-29-E
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, Bettis, Boyle & Stovall submits the following items of pertinent information in accordance with USGS requirements.

1. The geologic surface formation is Quaternary.

2. The estimated tops of geologic markers are as follows:

Delaware	3,250'
Bone Spring	6,900'
Wolfcamp	10,200'
Strawn	11,400'
Atoka	12,000'
Morrow	12,700'

3. The estimated depths at which anticipated water, oil or gas formations are expected to be encountered.

Water:	Approximately	150'
Oil or Gas:	Strawn	11,400'-11,750'
	Atoka-Morrow	12,000'-13,300'

4. Proposed Casing Program: See Form 3160-3 and Exhibit F.

5. Pressure Control Equipment: See Form 3160-3 and Exhibit E.

6. Mud Program: See Exhibit G.

7. Auxilary Equipment: Kelly Cock; pit level indicators and flow sensor equipment; sub with full-opening valve on floor, drill pipe connection.

8. Testing, Logging and Coring Programs:

   Drill stem tests to be justified by valid show of oil or gas:

Wolfcamp	10,200'
Strawn	11,400'
Atoka-Morrow	12,000'-13,300'

Logging:

Logging unit from 3,300' to TD

Logging program: Neutron-Density Porosity Log
Dual Laterolog
Dual Spaced Sonic Log
Dip Meter

9. No abnormal pressures or temperatures are anticipated.

10. Anticipated starting date: November 1, 1989

MULTI-POINT SURFACE USE AND OPERATIONS PLAN

BETTIS, BOYLE & STOVALL
BIG EDDY UNIT #113
1980' FNL & 660' FWL
Section 22, T-21-S, R-29-E
Eddy County, New Mexico

This plan is submitted with Form 3160-3 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:

Exhibit A is a vicinity map.

Exhibit B is a portion of a U.S.G.S. topographic map of the area showing the location of the proposed wellsite and roads in the vicinity. The location is situated approximately fifteen miles east of Carlsbad, New Mexico, via the route shown in red.

Directions:

1. Proceed northeast from Carlsbad on Highway 180 approximately 15 miles.

2. Turn right on Highway 31 and continue south approximately 4 miles.

3. Turn right and continue approximately 3.75 miles to wellsite.

2. PLANNED ACCESS ROAD:

A. The proposed new access road will be 700' and connect two existing east-west lease roads.

B. The road will be a caliche road approximately 12 feet in width.

C. The center line of the 700' extension to the existing roads will be staked and flagged.

3. LOCATION OF EXISTING WELLS:

A. The well locations in the vicinity of the proposed well are shown on Exhibit C.

B. There is no producing well on this lease at present.

4. LOCATION OF PROPOSED FACILITIES:

In the event that the well is productive, the necessary production facilities will be installed on the drilling pad.

5. LOCATION AND TYPE OF WATER SUPPLY:

It is planned to drill the well with fresh water and brine water as presented in Exhibit G. All drilling fluids will be obtained from commercial sources and will be hauled to the location by truck over existing and proposed roads shown in Exhibits A & B.

6. SOURCES OF CONSTRUCTION MATERIALS:

Any caliche required for construction of the drilling pad and the access road will be obtained, with permission, from an existing pit on Federal-owned surface in Section 23, T-21-S, R-29-E.

7. METHODS OF HANDLING WASTE DISPOSAL:

A. Drill cuttings will be disposed of in the reserve pit.

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 separate disposal application will be submitted to the U.S.G.S. 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 waste 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:

None required.

9. WELLSITE LAYOUT:

A. Exhibit D shows the dimensions of the well pad and reserve pits and the location of major rig components.

B. The ground surface at the drilling location is sloping down to the east. The location will be leveled with compacted caliche.

C. The reserve pits will be plastic lined.

D. The pad and pit area has been staked and flagged.

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 aesthetically pleasing a condition as possible.

B. Unguarded pits, if any, containing fluids will be fenced until they have been filled.

C. If the proposed well is non-productive, all rehabilitation and/or vegetation requirements of the Bureau of Land Management and the United States

Geological Survey will be complied with and will be accomplished as expeditiously as possible. All pits will be filled and leveled within 90 days after abandonment.

11. TOPOGRAPHY:

See Exhibit H

12. OPERATOR'S REPRESENTATIVES:

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

Drilling Superintendent:

Bill Baker	Mobile:	505-887-9503-01124
	Office:	915-683-5511

Operations Manager:

Wayne Schkade	817-549-0780

Agent:

John D. Bettis	915-685-4128

Geologist:

Thomas R. Smith	915-685-4128

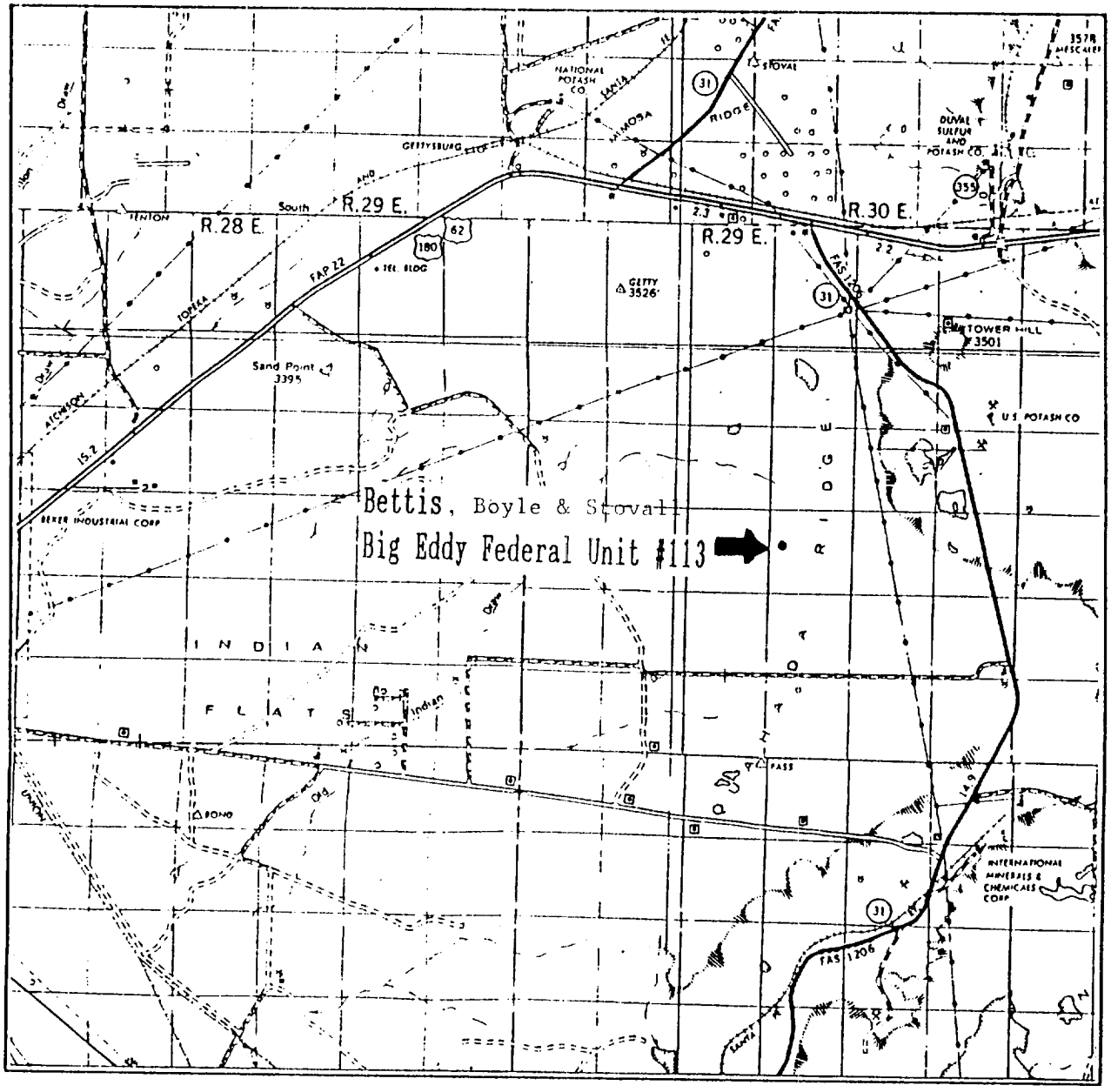
13. CERTIFICATION:

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 Bettis, Boyle & Stovall and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

9/20/89
Date

John D. Bettis

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 22 TWP. 21 S RGE. 29 E

SURVEY N.M.P.M.

COUNTY Eddy STATE NM

DESCRIPTION 1980' FNL & 660' FWL

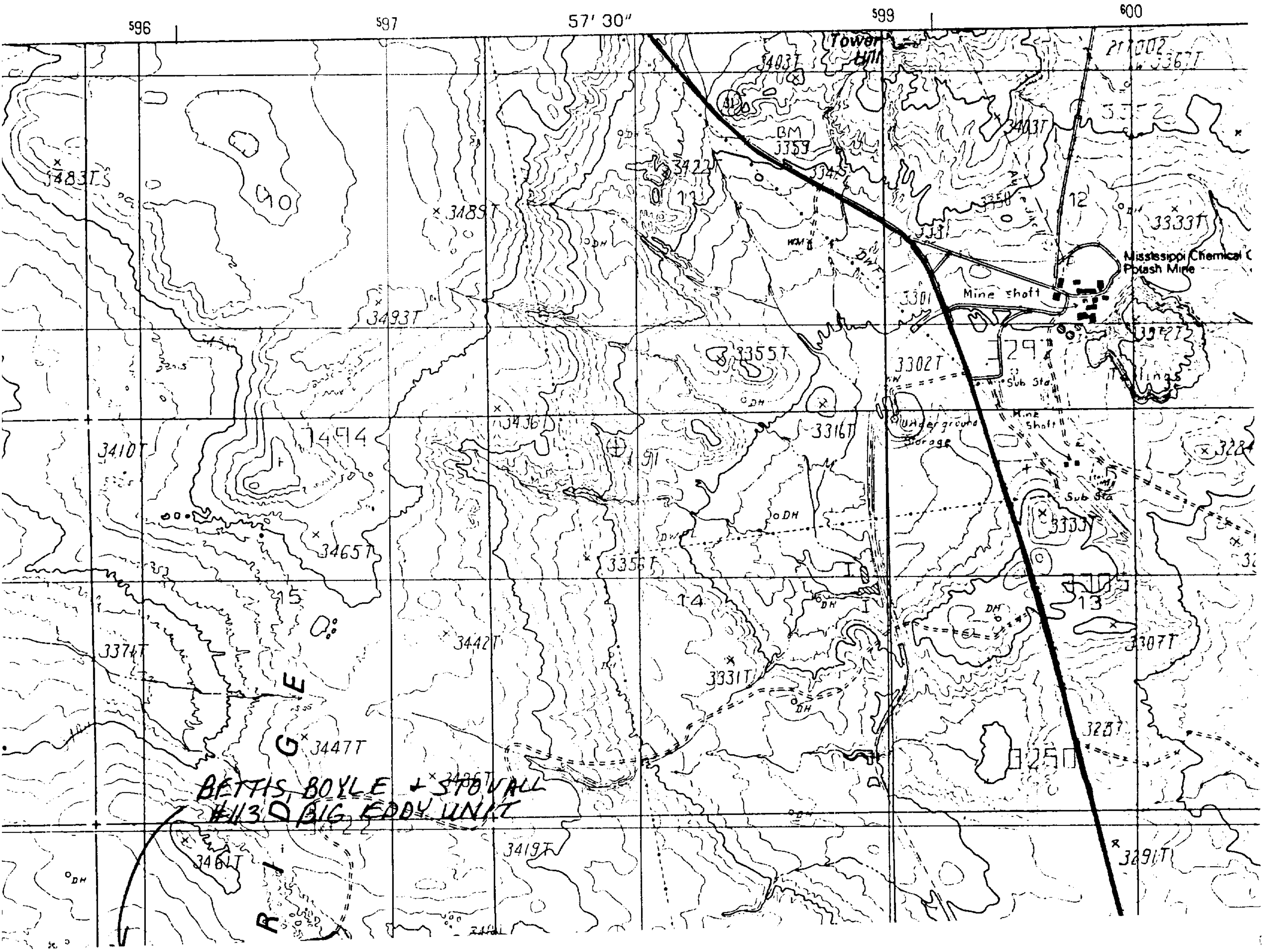
ELEVATION 3402.7

OPERATOR Bettis, Boyle & Stovall

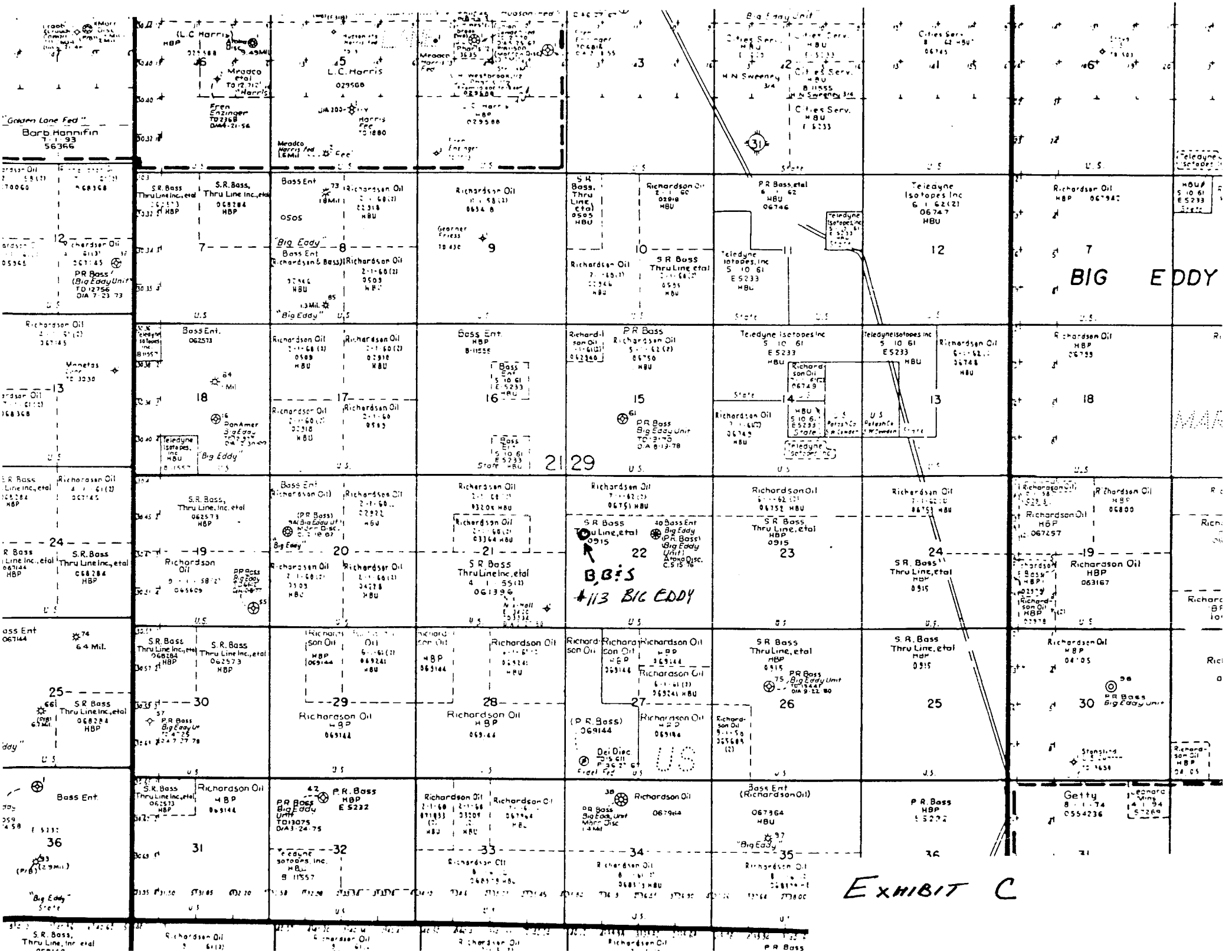
LEASE Big Eddy Federal Unit #113

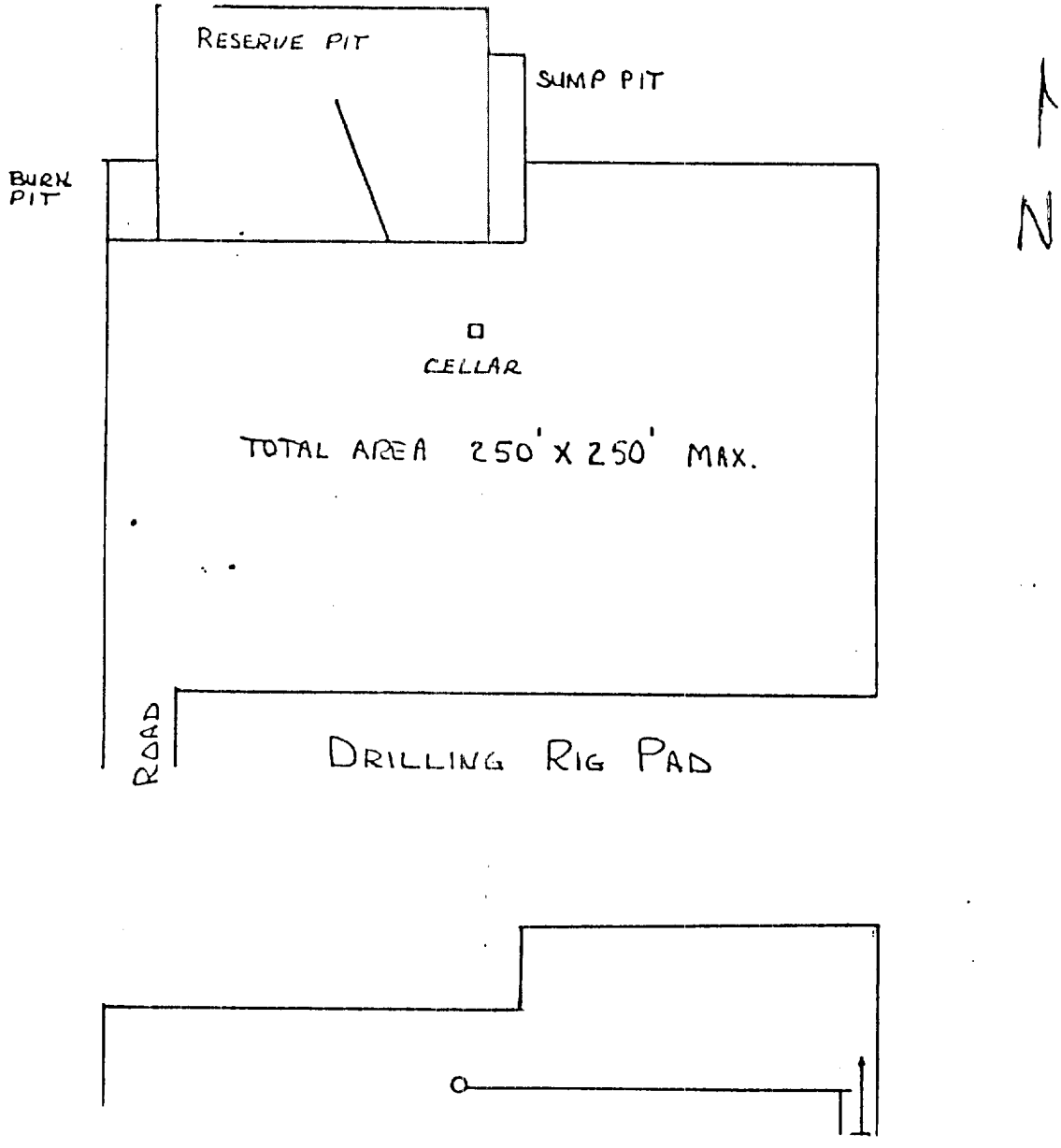
EXHIBIT A

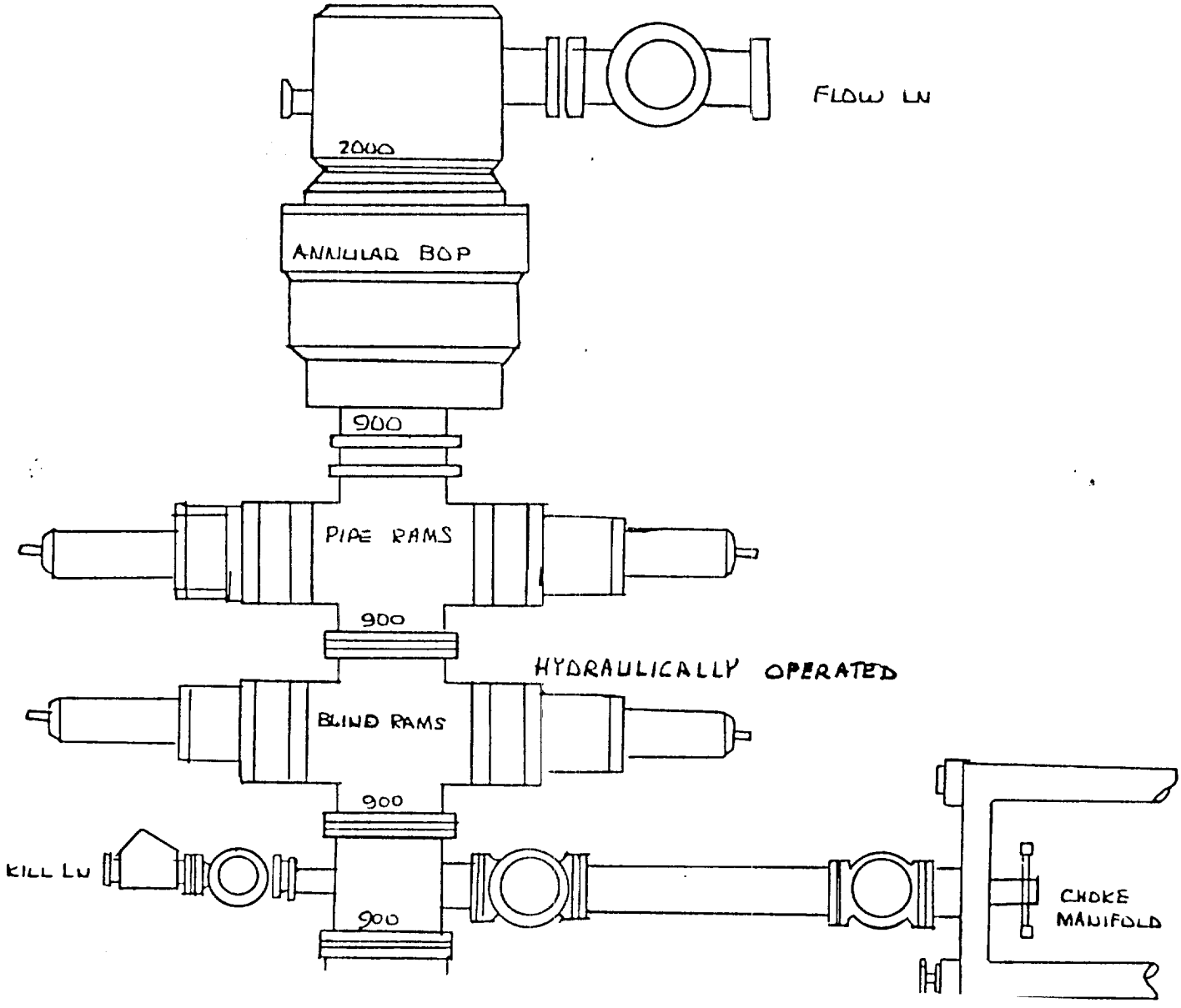
DR



596
597
57′ 30″
599
600
Tower Hill
3403T
BM 3359
3422
3483T
3489T
3493T
3355T
3302T
3316T
3410T
3436T
3465T
3356T
3371T
3442T
3331T
3447T
3461T
3419T
3291T
3307T
3333T
3367T
Mississippi Chemical C
Potash Mine
Mine shaft
Sub Sta
Underground Storage
12
13
14
15
R I D G E
BETTIS, BOYLE + STOVALL
#113 'D' BIG EDDY UNIT


BIG EDDY
B,B's #113 BIG EDDY
EXHIBIT C


RESERVE PIT
SUMP PIT
BURN PIT
CELLAR
TOTAL AREA 250' X 250' MAX.
ROAD
DRILLING RIG PAD
N


FLOW LN
2000
ANNULAR BOP
900
PIPE RAMS
900
HYDRAULICALLY OPERATED
BLIND RAMS
900
KILL LN
900
CHOKE MANIFOLD

BETTIS, BOYLE & STOVALL
BIG EDDY UNIT #113
1980' FNL & 660' FWL
Section 22, T-21-S, R-29-E
Eddy County, New Mexico

SUMMARY

Drilling, Drill Stem Tests, Casing, and Cementing Program

1. Drill 17 1/2" hole to 400'.

2. Cement 13 3/8", 54.5#, K-55 casing with 400 sx Class "C". Run Texas Pattern guide shoe with insert float valve in top of shoe joint. Weld first two joints of casing. Use one wooden plug to displace cement.

3. Release pressure immediately, nipple up, and install BOP's. Test casing to 600 psi after 18 hours and drill out cement.

4. Drill 11" hole to 3300'.

5. Cement 8 5/8", 28# & 32#, K-55 casing with 300 sx Class "C" Thickset followed by 900 sx Lite. Run guide shoe and insert float on bottom joint, and 4-8 centralizers. Weld first two joints of casing. Use one wooden plug to displace cement.

6. Release pressure, nipple up, and install BOP's. Test casing to 1500 psi for 30 minutes after WOC 18 hours and drill out cement after 24 hours.

7. Drill 7 7/8" hole to TD at 13,300'±. A fresh water mud system will be used to 3300'. Drill out intermediate with 9.3#/gal cut brine increasing weight to 10#/gal by 9900'. See attached Mud Program for details. Pit levelers and flowline sensors will be utilized on the pits. Drill stem tests are anticipated in the following zones: Wolfcamp 10,200'; Strawn 11,400'; Atoka-Morrow 12,000-13,300'. DST flow periods and shut-in time will be determined on location. A mud logging unit will be on location at 3300'±.

8. Run 4 1/2", 11.60# & 13.50#, N-80 casing and cement with 550 sx Class "H". Use guide shoe and float collar, and 15-20 centralizers where necessary. Use top and bottom rubber plugs, displace cement with clean, fresh water treated with 2% KCL and non-emulsifying agent.

9. Perforations and stimulation to be determined after completion.

Exhibit F

MILPARK™ DRILLING FLUIDS
A Baker Hughes company

Milpark Technical Information

Drilling Fluids Recommendations

Date July 31, 1989

Company Bettis Brothers Location Sec 22,T21S.R29E

Well Name Eddy County Prospect County Eddy State NM

CASING PROGRAM

13 3/8" @ 400'

8 5/8" @ 3,300'

TD @ 13,300'

RECOMMENDED DRILLING FLUIDS PROPERTIES

Depth	Mud Weight	Viscosity	API Filtrate	pH		
0-400'	8.4-9.0	32-38	NC	10.0		

Drill with Milgel (15-20 lb./bbl), Mil-Lime (1-2 lb./bbl) spud mud, circulating steel pits. Add Cottonseed Hulls and Mil-Fiber for lost circulation. If returns cannot be regained, dry-drill to casing point and spot a viscous pill to ensure proper pipe placement.

400'-3300'	8.5-10.5	32-34	NC	9.0-10.0

Drill out with Fresh Water, circulating the reserve pits and mixing Lime for pH maintenance. Utilize native solids to achieve a 32-34 sec/1000 cc funnel viscosity, add water at the flowline as needed to control viscosity in this range. Begin additions of 10.0 lb./gal Brine prior to drilling the anhydrite and salt sections to minimize washouts. Sweep hole with viscous Salt Water Gel or Dyna Sweep pills prior to running pipe. Add Paper-Ox to control seepage; greater losses will usually require Gel/LCM pills.

For lost circulation, mix a viscous pill consisting of Salt Water Gel (10-20 lb./bbl) and Kwik Seal (10-20 lb./bbl) pump as a sweep at a reduced pump rate to regain returns.

EXHIBIT G

MILPARK DRILLING FLUIDS
A Baker Hughes company

Milpark Technical Information

Drilling Fluids Recommendations

Date July 31, 1989

Company Bettis Brothers Location Sec 22, T21S, R29E

Well Name Eddy County Prospect County Eddy State NM

RECOMMENDED DRILLING FLUIDS PROPERTIES

Depth	Mud Weight	Viscosity	API Filtrate	pH		
3300'-11,300'	9.4	28-30	NC	10.0-10.5		

Drill out with existing system circulating the reserves for solids control and mixing Mil-Lime for pH maintenance. Add non-selective flocculant (Jet Jel, Selec Floc) at the flowline to drop out fine drilled solids and maximize use of reserve pit area. Add 10.0 lb /gal Brine to raise fluid weight to required level for increased wellbore stability. Viscous pills consisting of Milgel, Mil-Lime or Dyna-Sweep, pumped as a sweep, will clean wellbore, as well as sand off fractured and permeable zones and minimize losses.

While drilling with clear fluid, it may be necessary to periodically sweep the hole with Salt Gel or Dyna Sweep pills to assure adequate hole cleaning. Cutting transport depends on cuttings' size and density, fluid weight and viscosity, and annular flow rates. To transport cuttings uphole with clear water, annular fluid velocities of about 100 ft/min are needed. If annular flow rates are too low to clean the hole, then drilled solids will build up in the annulus, reducing penetration rate and increasing the risk of lost circulation.

Seepage losses are usually controlled with Ground Paper additions; more severe losses may require Gel/LCM (fiber, Multi-Seal, etc.) pills. For lost circulation, mix a viscous pill consisting of Salt Water Gel (10-20 lb./bbl) and Kwik Seal (10-20 lb./bbl) pump as a sweep at a reduced pump rate to regain returns.

11,300'-13,300'	9.8-10.3	32-38	8-12	9.0-9.5		

Return to steel pits, treat make up water with Soda Ash (hardness below 100 mg/l) and Caustic Soda (.3-.5 lb./bbl). Mix XC Polymer (.5-1.0 lb /bbl) for viscosity, Drispac (.5-1.5 lb./bbl) for filtrate control and Potassium Chloride for added

MILPARK DRILLING FLUIDS
A Baker Hughes company

Milpark Technical Information

Drilling Fluids Recommendations

Date July 31, 1989

Company Bettis Brothers Location Sec 22, T21S, R29E

Well Name Eddy County Prospect County Eddy State NM

RECOMMENDED DRILLING FLUIDS PROPERTIES

Depth	Mud Weight	Viscosity	API Filtrate	pH		

shale inhibition. Add pre-hydrated Milgel slurry to supplement polymers for viscosity.

NOTE: KCL muds will exhibit slow increase in chlorides (when potassium base exchange is occurring if the same concentration of K^+ (potassium) is maintained.

With property adjustments as dictated by hole conditions, this fluid should provide excellent properties for drilling, testing, logging, and casing operations.

MILPARK DRILLING FLUIDS
A Baker Hughes company

Milpark Technical Information

Drilling Fluids Recommendations

Date July 31, 1989

Company Bettis Brothers Location Sec 22,T21S,R29E

Well Name Eddy County Prospect County Eddy State NM

CASING PROGRAM

13 3/8" @ 400'

8 5/8" @ 3,300'

TD @ 13,300'

RECOMMENDED DRILLING FLUIDS PROPERTIES

Depth	Mud Weight	Viscosity	API Filtrate	pH		
0-400'	8.4-9.0	32-38	NC	10.0		

Drill with Milgel (15-20 lb.bbl), Mil-Lime (1-2 lb.bbl) spud mud, circulating steel pits. Add Cottonseed Hulls and Mil-Fiber for lost circulation. If returns cannot be regained, dry-drill to casing point and spot a viscous pill to ensure proper pipe placement.

400'-3300' 8.5-10.5 32-34 NC 9.0-10.0

Drill out with Fresh Water, circulating the reserve pits and mixing Lime for pH maintenance. Utilize native solids to achieve a 32-34 sec/1000 cc funnel viscosity, add water at the flowline as needed to control viscosity in this range. Begin additions of 10.0 lb./gal Brine prior to drilling the anhydrite and salt sections to minimize washouts. Sweep hole with viscous Salt Water Gel or Dyna Sweep pills prior to running pipe. Add Paper-Ox to control seepage; greater losses will usually require Gel/LCM pills.

For lost circulation, mix a viscous pill consisting of Salt Water Gel (10-20 lb./bbl) and Kwik Seal (10-20 lb./bbl) pump as a sweep at a reduced pump rate to regain returns.

EXHIBIT G

MILPARK DRILLING FLUIDS
A Baker Hughes company

Milpark Technical Information

Drilling Fluids Recommendations

Date July 31, 1989

Company Bettis Brothers Location Sec 22,T21S,R29E

Well Name Eddy County Prospect County Eddy State NM

RECOMMENDED DRILLING FLUIDS PROPERTIES

Depth	Mud Weight	Viscosity	API Filtrate	pH		
3300'-11,300'	8.4	28-30	NC	10.0-10.5		

Drill out with existing system, circulating the reserves for solids control and mixing Mil-Lime for pH maintenance. Add non-selective flocculant (Jet Jel, Selec Floc) at the flowline to drop out fine drilled solids and maximize use of reserve pit area. Add 10.0 lb./gal Brine to raise fluid weight to required level for increased wellbore stability. Viscous pills consisting of Milgel, Mil-Lime or Dyna-Sweep, pumped as a sweep, will clean wellbore, as well as seal off fractured and permeable zones and minimize losses.

While drilling with clear fluid, it may be necessary to periodically sweep the hole with Salt Gel or Dyna Sweep pills to assure adequate hole cleaning. Cutting transport depends on cuttings' size and density, fluid weight and viscosity, and annular flow rates. To transport cuttings uphole with clear water, annular fluid velocities of about 100 ft/min are needed. If annular flow rates are too low to clean the hole, then drilled solids will build up in the annulus, reducing penetration rate and increasing the risk of lost circulation.

Seepage losses are usually controlled with Ground Paper additions; more severe losses may require Gel/LCM (fiber, Multi-Seal, etc.) pills. For lost circulation, mix a viscous pill consisting of Salt Water Gel (10-20 lb./bbl) and Kwik Seal (10-20 lb./bbl) pump as a sweep at a reduced pump rate to regain returns.

11,300'-13,300' 9.8-10.3 32-38 8-12 9.0-9.5

Return to steel pits, treat make up water with Soda Ash (hardness below 100 mg/l) and Caustic Soda (.3-.5 lb./bbl). Mix XC Polymer (.5-1.0 lb./bbl) for viscosity, Drispac (.5-1.5 lb./bbl) for filtrate control and Potassium Chloride for added

MILPARK DRILLING FLUIDS
A Baker Hughes company

Milpark Technical Information

Drilling Fluids Recommendations

Date July 31, 1989

Company Bettis Brothers Location Sec 22, T21S, R29E

Well Name Eddy County Prospect County Eddy State NM

RECOMMENDED DRILLING FLUIDS PROPERTIES

Depth	Mud Weight	Viscosity	API Filtrate	pH		

shale inhibition. Add pre-hydrated Milgel slurry to supplement polymers for viscosity.

NOTE: KCL muds will exhibit slow increase in chlorides (when potassium base exchange is occurring if the same concentration of K^+ (potassium) is maintained.

With property adjustments as dictated by hole conditions, this fluid should provide excellent properties for drilling, testing, logging, and casing operations.