

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

1. NO. IVL. ON CASE, FROM 8118 SUBMIT IN TR. (Other instruct. on

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

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 ☒

Water Injector

SINGLE ZONE ☒

MULTIPLE ZONE ☐

2. NAME OF OPERATOR

St. Mary Land & Exploration c/o Nance Petroleum Corporation

3. ADDRESS OF OPERATOR

P. O. Box 7168 - Billings, MT 59103

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

1240' FNL & 300' FEL UL:A

At proposed prod. zone

Same

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

14 miles SE of Loco Hills

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT.

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

300'

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

630' (ESDU #6)

16. NO. OF ACRES IN DEEPEX UNIT

604.12

19. PROPOSED DEPTH

5550'

17. NO. OF ACRES ASSIGNED TO THIS WELL

~ 20

20. ROTARY OR CABLE TOOLS

Rotary

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

3710' GR

22. APPROX. DATE WORK WILL START*

Oct. 10, 2000

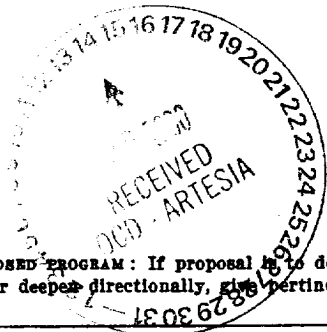
23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4"	8 5/8"	24	350 860'	225 sx circ.
7 7/8"	5 1/2"	15.5	5550	695 sx circ.

8-5/8": Circulate to the surface with 225 sx Premium Plus cement.

5-1/2": Circulate to the surface 365 sx Interfill C lead cement and tail in with 330 sx Super H w/2.5 lbm salt, 0.3% CFR-3, 0.3% Lap-1 & 5 lbm Gilsonite.

R-11254



APPROVAL SUBJECT TO
GENERAL 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

Herb Thackeray

TITLE

Herb Thackeray
Operations Engineer

DATE 8/17/00

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

APPROVED BY

UNITED STATES DEPARTMENT OF THE INTERIOR

TITLE

Acting Assistant Field Manager,
Lands And Minerals

DATE

SEP 1 2 2000

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

DISTRICT I
P.O. Box 1880, Hobbs, NM 88241-1880

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0718

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

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised February 10, 1994
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 56419	Pool Name Shugart Delaware East
Property Code 25743	Property Name ESDU	Well Number 20
OGRID No. 154903	Operator Name ST. MARY LAND & EXPLORATION CO.	Elevation 3710

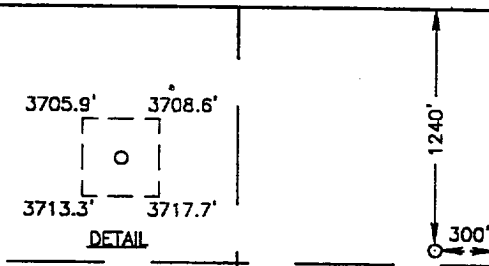
Surface Location

UL or lot No. A	Section 24	Township 18 S	Range 31 E	Lot Idn	Feet from the 1240	North/South line NORTH	Feet from the 300	East/West line EAST	County EDDY
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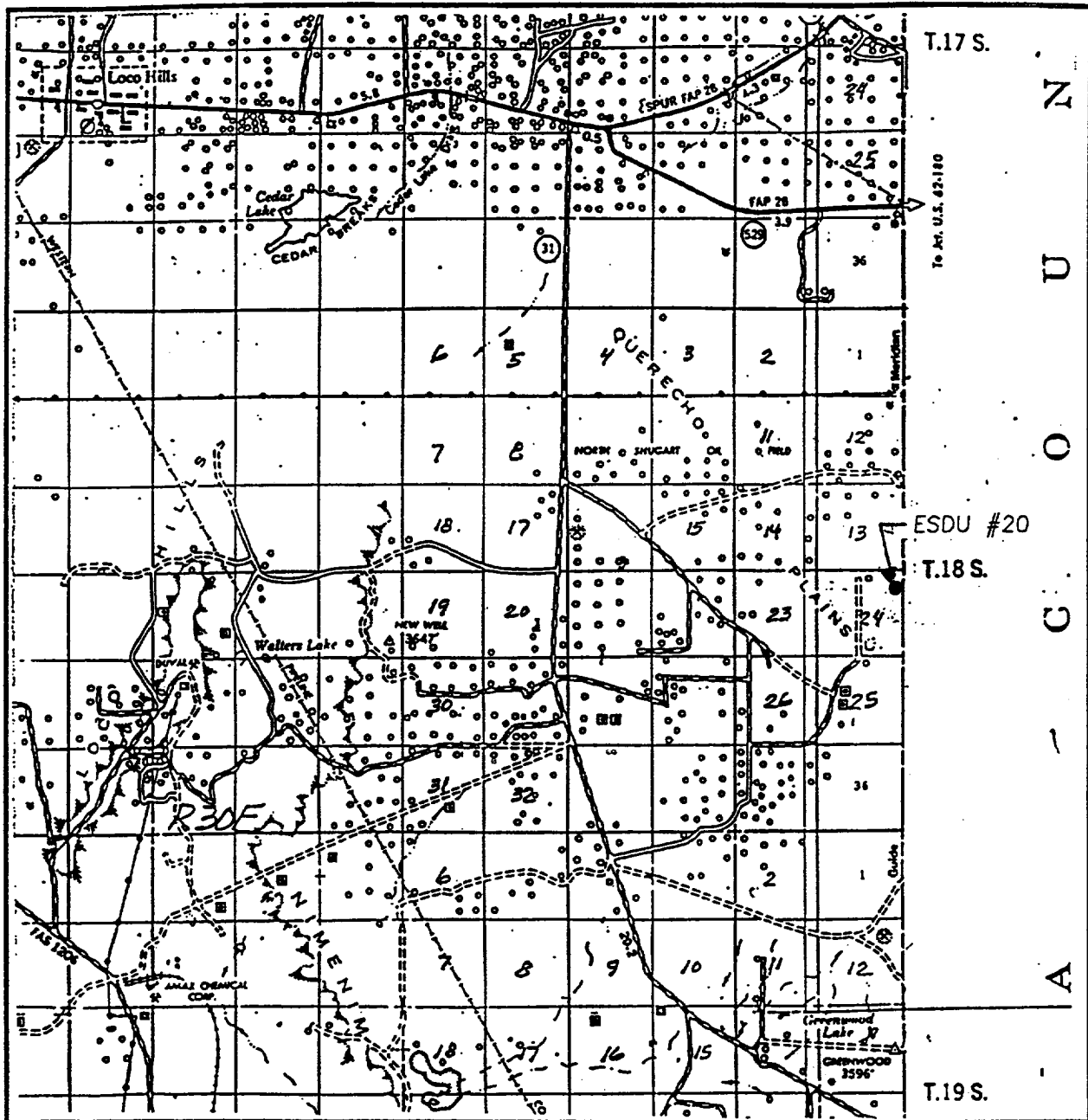
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres	Joint or Infill	Consolidation Code	Order No.						

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

				<p>OPERATOR CERTIFICATION</p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><i>Herb R. Thackeray</i> Signature Herb Thackeray Printed Name Operations Engineer Title 7/18/00 Date</p>
<p>SURVEYOR CERTIFICATION</p> <p>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 belief.</p> <p>JULY 7, 2000</p> <p>Date Surveyed DC</p> <p>Signature & Seal of Professional Surveyor <i>Ronald E. Edson</i> 00-71-0785</p> <p>Certificate No. RONALD E. EDSON 3239 GARY EDSON 12841 MACON McDONALD 12185</p>				

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 24 TWP. 18-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1240' FNL & 300' FEL

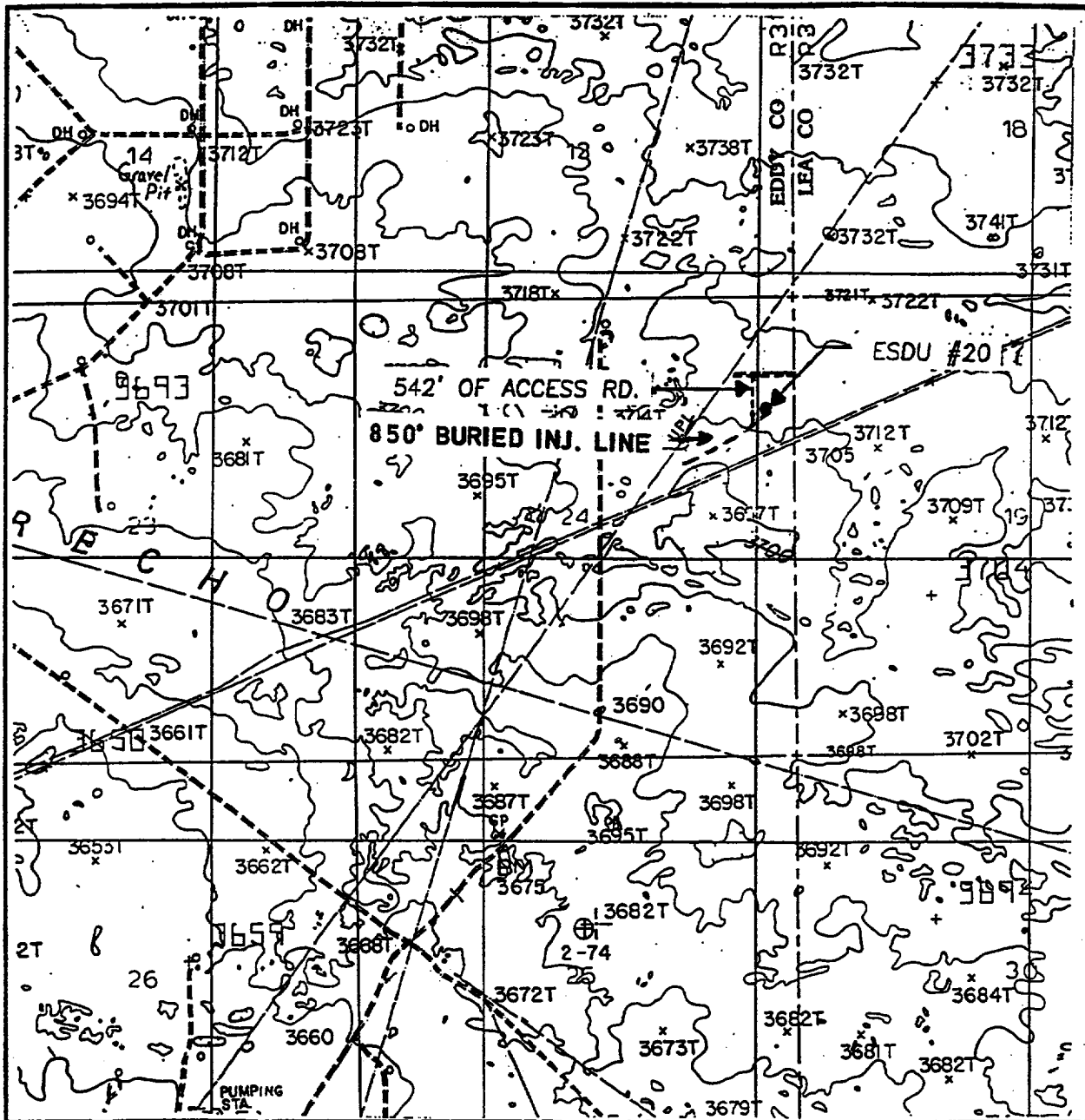
ELEVATION 3710

OPERATOR ST. MARY LAND & EXPLORATION CO.

LEASE ESDU

JOHN WEST SURVEYING
HOBBS, NEW MEXICO
(505 393-3117)

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
GREENWOOD LAKE - 10'

SEC. 24 TWP. 18-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1240' FNL & 300' FEL

ELEVATION 3710

OPERATOR ST. MARY LAND &
EXPLORATION CO.

LEASE ESDU

U.S.G.S. TOPOGRAPHIC MAP

GREENWOOD LAKE, N.M.

JOHN WEST SURVEYING
HOBBS, NEW MEXICO
(505 393-3117)

**Nine Point Drilling Plan
(supplement to BLM 3160-3)**

St. Mary Land and Exploration Co.
ESDU #20
1240' FNL, 300' FWL; Sec 24, T18S, R31E
East Shugart Delaware Unit - Property Code 25743
Shugart (Delaware) East Field
Eddy Co., NM
NM-025777

1. The geologic surface formation is quaternary.
2. Name and estimated tops of geologic horizons

Yates	2400'
Queen	3500'
Grayburg	4020'
San Andres	4420'
Delaware	4575'

3. Protection of possible useable water will be achieved by setting 8.625" surface casing @ 350' + and cementing it to surface. The Queen - Grayburg are oil and gas productive in this area in addition to the targeted Delaware-Brushy Canyon. Isolation will be achieved by setting 5.5" casing @ 5550' +/-, and cementing back to surface.
4. Specifically the casing strings referenced in #3 above will consist of the following:

Surface:	8.625" OD, 24#/ft, J55, STC, new pipe @ 350'+ in 12.25" hole
Production:	5.50" OD, 15.5#/ft, J55, LTC, new pipe @ 5550'+/- in 7.875" hole

Cementing programs for the above casing strings are:

Surface:	225 sx Premium Plus w/ 2% CaCl ₂ , .25#/sk celloflake mixed at 14.8 ppg, and having a yield of 1.34 cu ft/sk
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The above volume represents 100% excess over calculated hole volume, and will be adjusted to actual setting depth of casing. The slurries will be preceded by a fresh water spacer, and displaced with brine water.

Production:	(a) 365 sx Interfill C cement mixed @ 11.9 ppg and having a yield of 2.45 cu ft/sk
	(b) 330 sx Super H cement w/2.5 lbm salt, 0.3% CFR-3, 0.3% Lap-1, 5 lbm Gilsonite mixed @ 13.2 ppg, and having a yield of 1.63 cu ft/sk

The above are Halliburton products with 50% excess volume - actual volumes will be adjusted to the open hole caliper of this wellbore. The

cement slurries will be preceded by 12 bbls cement wash for mud removal and displaced with fresh water. Equivalent products from another vendor may be substituted for Halliburton depending on price/availability.

5. The well control equipment to be employed during the drilling of this well is as illustrated on EXHIBIT A. This equipment includes a pipe and blind rams, an annular preventer and a choke manifold of comparable pressure rating. Equipment will be rated for a minimum of 3000 psi, and will be tested to 80% of that pressure rating prior to drilling out the 8.625" surface casing.
6. It is anticipated that this well will be drilled to TD utilizing fluids shown below
 - 0-350' NewGel/Lime "spud mud" 8.6-9.0 ppg Utilize native solids to maintain sufficient viscosity to clean hole. Mix paper as required to control seepage loss.
 - 350-5000' Brine 9.9-10.0 ppg Circulate thru reserve pit for gravitational solids removal. Add paper as required to control seepage loss. Maintain pH using Lime.
 - 5000-5550' Salt gel 10-10.1 ppg Confine circulation to steel pits. Discontinue Lime, mix starch for filtration control. Maintain water loss @ 10-15 cc. Sweep hole with Loloss at TD to clean hole for logging operations.
7. Auxiliary equipment will include an upper kelly cock valve, safety valve to fit drill pipe and pressure gauges.
8. No drill stem testing is planned for this wellbore.

Coring the Brushy Canyon is being considered and may be proposed if economically feasible.

A one-man mud logging unit will be utilized from 3000' to TD to record geological tops, collect samples, and monitor drilling fluids for hydrocarbons. GR/Caliper, Density Neutron and Dual Induction Laterologs will be run at TD to evaluate porosity and saturations. A cased hole GR/CBL/CCL will be run during the completion for correlation and to evaluate cement quality.
9. The expected BHP at TD is not expected to exceed 1500 psi, and a BHT of 105 F is anticipated. There is no H₂S present in the hydrocarbons being produced from the other wells that the company operates in this section. Should such unexpected circumstances be encountered the operator and drilling contractor are prepared to take necessary steps to ensure safety of all personnel, and environment. Likewise, if water flow is experienced while drilling through the Penrose-Grayburg which has an active waterflood. Lost circulation is not expected to be a serious problem in this area, and hole seepage will be compensated for by additions of small amounts of LCM in the drilling fluid.

It is estimated that this well will be drilled and cased in 10-11 days. Drilling will commence as soon after approval is received and services can be contracted.

**Thirteen Point Plan for Surface Use
(additional data for form 3160-3)**

St. Mary Land and Exploration Co.
ESDU #20
1240' FNL, 300' FWL; Sec 24, T18S, R31E
East Shugart Delaware Unit - Property Code 25743
Shugart (Delaware) East Field
Eddy Co., NM
NM-025777

1. **EXISTING ROADS** – A “VICINITY MAP” and a “LOCATION VERIFICATION MAP” by John West Surveying are attached which show the location of existing roads and the area topography.

The road log to the location is as follows (the roads are better coming in from the east):
 - a) Entrance to the lease is from County Road 126, +/- 4 miles south of the junction of 126 & US 529.
 - b) Proceed west through cattleguard for +/- 1 mile to the Conoco Federal Battery.
 - c) Follow road through battery heading SW to next intersection at well pad for Geronimo Fed. #6 and ESDU #6.
 - d) Turn right and head east toward Inca Federal Battery.
 - e) Proposed entrance road is staked on south side of road.
 - f) The ESDU #20 location stake is 542' south of the road.
2. **PLANNED ACCESS ROADS** – Approximately 542' of new N-S access road will be built from the existing E-W road between Geronimo Fed. #6/ESDU #6 pad and the Inca battery.
3. **LOCATION OF EXISTING WELLS** – EXHIBIT B1 shows the location of other wells within a mile radius of the proposed location in Eddy County and EXHIBIT B2 in Lea, County.
4. **LOCATION OF EXISTING OR PROPOSED FACILITIES** –During the initial pilot stage, a fiberglass line will be laid to the well from the Geronimo Fed. #7 injector approximately 860' to the SW to utilize pressured injection water from the existing East Shugart (Penrose-Grayburg) waterflood. A new water injection facility will be proposed if the Delaware flood is successful and expanded unitwide.
5. **LOCATION AND TYPE OF WATER SUPPLY** - All water (fresh or otherwise) needed for the drilling and completion of this well will be purchased from a commercial source and trucked to the location via the existing and proposed access road. No water source wells will be drilled, and no surface water will be utilized.
6. **SOURCE OF CONSTRUCTION MATERIALS** - Construction material (caliche) required for the preparation of the drill site is available from a local source 3 ½ miles away. It is not anticipated that a significant amount of material will be required as the terrain is relatively flat. Transportation will be over the existing roads.

7. METHODS FOR HANDLING WASTE DISPOSAL -

- Drill cuttings will be disposed into drilling pits after fluids have evaporated .
- The drilling pits will be lined with a biodegradable plastic liner, and buried as per regulatory requirements. The pits will be located on the same location as the previously reclaimed Inca #12 pits.
- Receptacles for solid wastes (paper, plastic, etc) will be provided and equipped to prevent scattering by wind, animals, etc. This waste will be hauled to an approved landfill site.
- Any other waste generated by the drilling, completion, testing of this well will be removed from the site within 30 days of the completion of drilling or testing operations.
- A Porta-John will be provided for the crews. This will be properly maintained during the drilling operations and removed upon completion of the well.

8. ANCILLARY FACILITIES - The drilling, completion, and/or testing of this well will require no ancillary facilities.

9. WELLSITE LAYOUT - Attached as EXHIBITS C & D are plats showing the anticipated orientation of the drilling rig and the pad. A similar rig may have to be substituted for Big Dog Rig #3 if it is no longer available when approval is granted for this application. Material moved to create the drilling pits will be utilized in the dike around the pits so as to facilitate restoration of the area when operations are completed.

10. PLANS FOR SURFACE RESTORATION - Reclamation of the surface location will be in accordance with the requirements set forth by the BLM. As stated earlier all waste generated by this operation will be disposed of in an approved manner, and the site restored as closely as possible to its pre-operation appearance. Due to the topography of the area no problems are anticipated in achieving this status and no erosion or other detrimental effects are expected as a result of this operation.

11. OTHER INFORMATION - The surface ownership of the drill site and the access routes are under the control/ownership of :

Bureau of Land Management
P.O. Box 1778
Carlsbad, New Mexico 88221-1778
505-234-5972

The BLM representative for this area is Barry Hunt who can be reached at the above number, or 505-369-4046.

The site was archaeologically surveyed in July 2000. A copy of that report should be forwarded to the BLM by Desert West, the surveying company.

12. OPERATORS REPRESENTATIVE - St. Mary Land and Exploration is covered by Nationwide Bond No. 6041872. Nance Petroleum Corporation is a wholly owned subsidiary of St. Mary represented by:

Robert L. Nance, President

Gary L. Evertz, Operations Manager

Herb Thackeray, Operations Engineer
550 North 31st Street, Suite 500
P.O. Box 7168
Billings, MT 59103
406-245-8627 (o)
406-861-7372 (m)
406-656-7250 (h)

Jackie Herron, Contract Pumper
Hagerman, NM
505-746-7601 (m)
505-752-2701 (h)

13. OPERATORS CERTIFICATION

I hereby certify that I, Herb Thackeray-Operations Engineer, have inspected the proposed drill site and access route and that I am familiar with the conditions that currently exist; that the statements made in the APD package are to the best of my knowledge true and correct; and that the work associated with operations herein will be performed by ST. MARY L&E/NANCE PETROLEUM CORP and it's contractors and subcontractors in conformity with the terms and conditions of this APD package. I also certify responsibility for the operations conducted on that portion of the leased lands associated with this application with bond coverage being provided under a BLM nationwide bond.

This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Name and title: Herb Thackeray, Operations-Engineer for Nance Petroleum Corp.
A wholly owned subsidiary of St. Mary Land & Exploration Co.

Signature:

Herb R. Thackeray

Date:

8/17/00

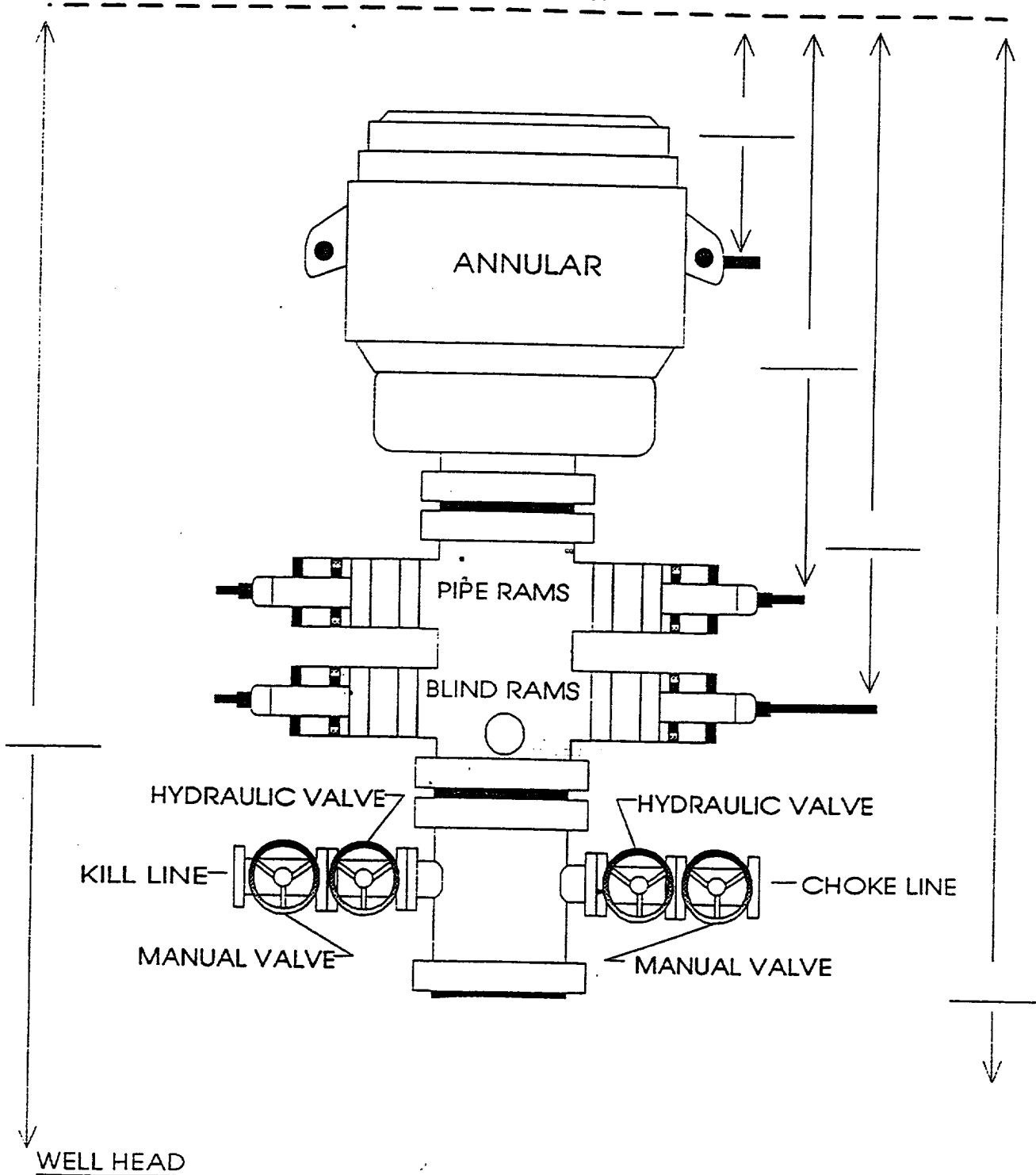
EXHIBIT A

B.O.P. STACK SPACING

AHEP-3187

SIZE: **11" 3000#**

TOP OF ROTARY

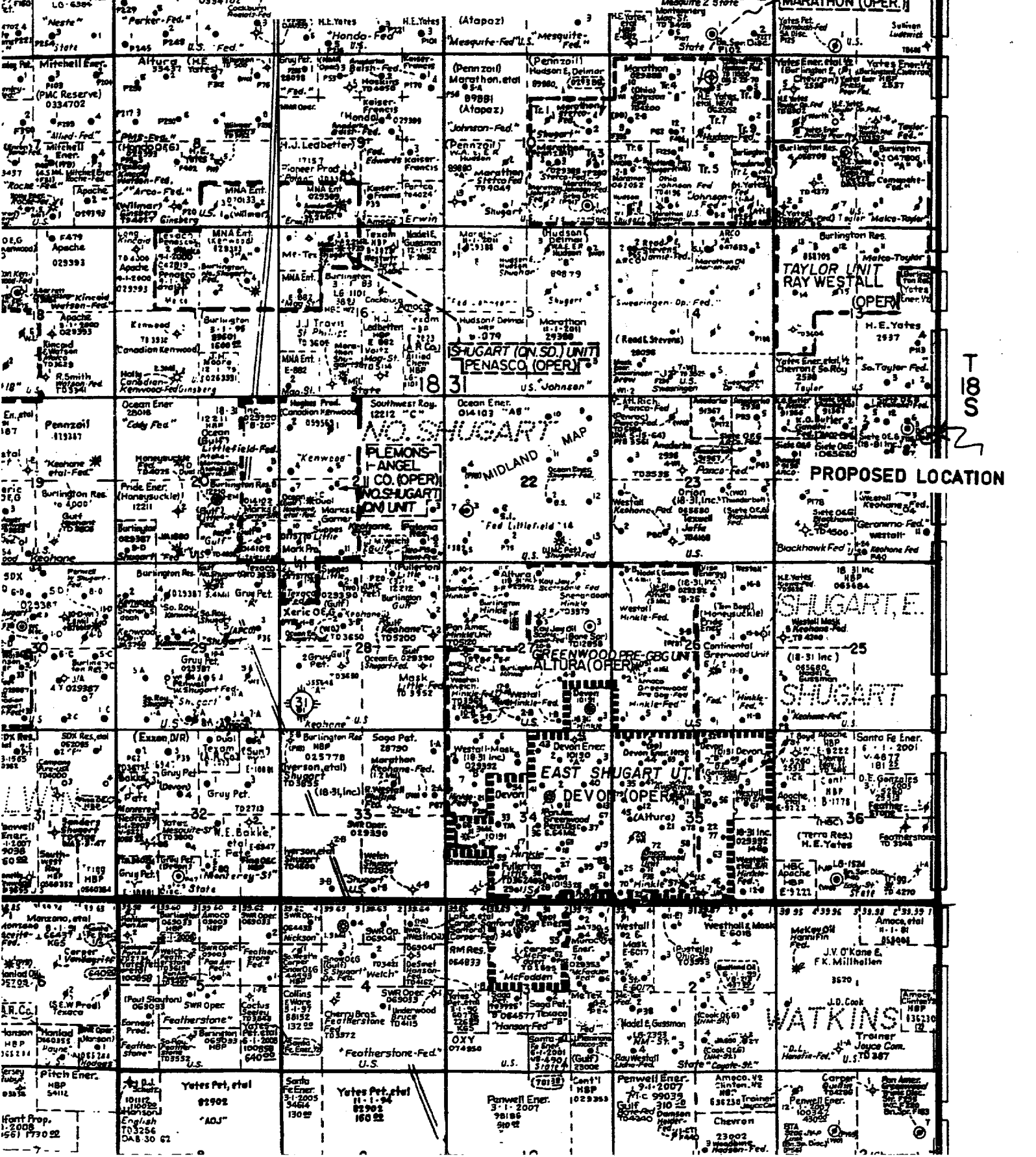


WELL ESDU #20 CONTRACTOR TBD

EXHIBIT B1

Eddy Co. Offset Wells

ESDU #20



T
18
S

PROPOSED LOCATION

SHUGART, E.

EAST SHUGART UT.

WATKINS



Rig #3 Rig Plan

*Or Equivalent

