Form 3160-3
(August, 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

New Mexico Oil Conservation Division, District I
1625 N. French Drive
Hobbs, NM 88240

Form approved
OMB No. 1004-0136
Expires November 30, 2000

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a TYPE OF WORK: ☒ DRILL ☐ REENTER

b. TYPE OF WELL: ☒ OIL WELL ☐ GAS WELL ☐ Other ___ ☐ SINGLE ZONE ☐ MULTIPLE ZONE

2. NAME OF OPERATOR
DEVON ENERGY PRODUCTION COMPANY, L.P.

3a. ADDRESS AND TELEPHONE NO.
20 NORTH BROADWAY, SUITE 1500, OKC, OK 73102

3b. TELEPHONE (Include area code).
(405) 228-7512

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

OPER. OGRID NO. 6137
PROPERTY NO. 33130
POOL CODE 39380
EFF. DATE 11-19-03
API NO. 30-025-36486

5. LEASE DESIGNATION AND SERIAL NO.
NMNM63994

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME, WELL NO.
Hornet 6 Federal #1

9. API WELL NO.
30-025-36486

10. FIELD AND POOL, OR WILDCAT
Livingston Ridge Delaware Southeast

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
Sec 6 T23S R32E, Lot 1

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR
35 miles W of Eunice, NM

12. COUNTY OR PARISH
Lea

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. Spacing Unit dedicated to this well
660'	960.00	39
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. BLM/BIA Bond No. on file**
	8600'	CO1104
21. ELEVATIONS (Show whether DF, RT, GR, etc.)	**22. APPROX. DATE WORK WILL START***	**23. Estimated duration**
3517' GR	October 31, 2003	45 days

24. Attachments

Carlsbad Controlled Water Basin

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be required by the authorized officer.

RECEIVED
NOV 2003
OCD-HOBBS

Drilling Program
Surface Use and Operating Plan
Exhibit #1 = Blowout Prevention Equipment
Exhibit #2 = Location and Elevation Plat
Exhibit #3 = Road Map and Topo Map
Exhibit #4 = Production Facilities Plat
Exhibit #5 = Rotary Rig Layout
Exhibit #6 = Casing Design
H_2S Operating Plan
Archeological clearance report

The undersigned accepts all applicable terms, conditions, stipulations and restrictions concerning operations conducted on the leased land or portions thereof, as described above

Bond Coverage: Nationwide
BLM Bond #: CO-1104

CARLSBAD
DECLARED WATER BASIN
CEMENT BEHIND THE 13 3/8"
CASING MUST BE CIRCULATED

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

25. Signature	Name (Printed/Typed)	Date
Karen Cottom	KAREN COTTOM	10/2/03

Title: OPERATIONS TECHNICIAN

Approved by (signature)	Name (Printed/Typed)	Date
/S/ JOE G. LARA	/S/ JOE G. LARA	NOV 17 2003
Title ACTING FIELD MANAGER	**Office** CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR 1 YEAR

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 on reverse)

DRILLING PROGRAM

Devon Energy Production Company, LP
Hornet 6 Federal #1
Surface Location: 660' FNL & 660' FEL, Lot 1, Sec 6 T23S R32E, Lea, NM
Bottom hole Location: 660' FNL & 660' FEL, Lot 1, Sec 6 T23S R32E, Lea, NM

1. Geologic Name of Surface Formation

a. Permian

2. Estimated tops of geological markers:

a. Rustler	460'
b. Salt	830'
c. Base of Salt	4300'
d. Delaware	4560'
e. Cherry Canyon	5550'
f. Brushy Canyon	7180'
g. Bone Spring LS	8450'

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

a. Cherry Canyon	5550'	Oil

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13 3/8" casing at 850' and circulating cement back to surface. Potash and salt will be protected by setting 8 5/8" casing at 4350' and circulating cement to surface. The Delaware intervals will be isolated by setting 5 ½" casing to total depth and circulating cement above the base of the 8 5/8" casing.

4. Casing Program:

Hole Size	Interval	OD Csg	Weight	Collar	Grade
25"	0' –40'	20"	Na	Na	Conductor
17 ½"	0' – 850'	13 3/8"	48#	ST&C	H-40
11"	0' – 4350'	8 5/8"	32#	LT&C	J55
7 7/8"	0' – 8600'	5 ½"	15.5# & 17#	LT&C	J55

5. Cement & Setting Depth:

a. 20"	Conductor	Cement with ready-mix to surface.
b. 13 3/8"	Surface	Cement to surface with 610 sx Poz C (35:65) + 2% Cacl2 followed by 250 sx Class C + 2% Cacl2
c. 8 5/8"	Intermediate	Cement to surface with 1280 sx Poz C (35:65) + 5% Nacl2 followed by 300 sx 60:40 Class C + 5% Nacl2

d. 5 ½" Production Cement with 430 sx 35:65:6 + 3% Nacl2 + 0.25% retarder + 0.3% FL + LCM followed by 490 sx 60:40 + 1% Nacl2 + 0.5% Bonding agent + LCM

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach above the 8 5/8" casing seat @ 4350'

6. **Pressure Control Equipment:**

The blowout preventor equipment (BOP) shown in Exhibit #1 will consist of a (3M system) double ram type (3000 psi WP) preventor and a bag-type (Hydril) preventor (3000 psi WP). Both units will be hydraulically operated and the ram type preventor will be equipped with blind rams on top and 4 ½" drill pipe rams on bottom. Both BOP's will be installed on the 13 3/8" surface casing and utilized continuously until total depth is reached. All BOP's and associated equipment will be tested to 1200 psi before drilling out the 13 3/8" casing shoe (70% of 48#, H-40 casing). Prior to drilling out the 8 5/8" casing shoe, the BOP's and Hydril will be tested as per BLM Drilling Operations Order #2.

Pipe rams will be operated and check each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily drillers log. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the ram-type BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines and choke manifold having 3000 psi WP rating.

7. **Proposed Mud Circulation System**

Depth	Mud Wt.	Visc	Fluid Loss	Type System
0' – 850'	8.5-9.0	27-32	NC	Native spud mud
850' – 4350'	9.7-10.2	28-30	NC	Brine water
4350' – 8600'	8.4-8.9	28-34	25	Fresh water w/gel

The necessary mud products for weight addition and fluid loss control will be on location at all times.

8. **Auxiliary Well Control and Monitoring Equipment:**
   a. A Kelly cock will be in the drill string at all times.
   b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
   c. Hydrogen Sulfide detection equipment will be in operations after drilling out the 13 3/8" casing shoe until the 8 5/8" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8' shoe until total depth is reached.

9. **Logging, Coring, and Testing Program:**
   a. Drill stem tests will be based on geological sample shows.
   b. The open hole electrical logging program will be:
      i. Total Depth to Intermediate Casing Dual Laterolog-Micro Laterolog with SP and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
      ii. Total Depth to Surface Compensated Neutron with Gamma Ray
      iii. No coring program is planned

iv. Additional testing will be initiated subsequent to setting the 5 ½" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

10. Potential Hazards:

a. No abnormal pressures or temperatures are expected. There is no known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6 No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP 2900 psi and Estimated BHT 125°.

11. Anticipated Starting Date and Duration of Operations:

a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 32 days. If production casing is run then an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:
   a. Characteristics of H2S
   b. Physical effects and hazards
   c. Proper use of safety equipment and life support systems.
   d. Principle and operation of H2S detectors, warning system and briefing areas
   e. Evacuation procedures, routes and first aid.
   f. Proper use of 30-minute pressure demand air pack.

2. H2S Detection and Alarm System
   a. H2S detectors and audio alarm system to be located at bell nipple, end of blooie line (mud pit) and on derrick floor or doghouse.

3. Windsock and/or wind streamers
   a. Windsock at mud pit area should be high enough to be visible
   b. Windsock at briefing area should be high enough to be visible
   c. There should be a windsock at entrance to location

4. Condition Flags and Signs
   a. Warning Sign on access road to location
   b. Flags to be displayed on sign at entrance to location. Green flag, normal safe condition. Yellow flag indicates potential pressure and danger. Red flag, danger, H2S present in dangerous concentration. Only emergency personnel admitted to location.

5. Well Control Equipment
   a. See Exhibit "E" & "E-1"

6. Communication
   a. While working under masks chalkboards will be used for communication.
   b. Hand signals will be used where chalk board is inappropriate
   c. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

7. Drill stem Testing
   a. Exhausts will be watered
   b. Flare line will be equipped with an electric igniter or a propane pilot light in case gas reaches the surface.
   c. If the location is near to a dwelling a closed DST will be performed.

8. Drilling contractor supervisor will be required to be familiar with the effects H2S has on tubular goods and other mechanical equipment.
   If H2S is encountered, mud system will be altered if necessary to maintain control or formation. A mud gas separator will be brought into service along with H2S scavengers if necessary.

SURFACE USE PLAN
Devon Energy Production Company, LP
Hornet 6 Federal #1
Surface Location: 660' FNL & 660' FEL, Lot 1, Sec 6 T23S R32E, Lea, NM
Bottom hole Location: 660' FNL & 660' FEL, Lot 1, Sec 6 T23S R32E, Lea, NM

1. **Existing Roads:**
   a. The well site and elevation plat for the proposed are reflected on Exhibit 2. The well was staked by Basin Surveys.
   b. All roads into the location are depicted on Exhibit 3.
   c. Directions to Location: From the junction of US Hwy 62/180 and Co. Rd H-29, go south on H-29 for 15.8 miles to a lease road; thence east on lease road fofr 1.2 mile to a "Y", go left at "Y" and continue east for 0.9 mile to a water line and proposed lease road.
2. **Access Road**
   a. Exhibit #3 shows the existing lease road. Approximately 2620' of new access road will be constructed. It will be constructed as follows:
   b. The maximum width of the road will be 15'. It will be crowned and made of 6" of rolled and compacted caliche. Water will be deflected, as necessary, to avoid accumulation and prevent surface erosion.
   c. Surface material will be native caliche. This material will be obtained from a BLM approved pit nearest in proximity to the location. The average grade will be approximately 1%.
   d. No cattle guards, grates or fence cuts will be required. No turnouts are planned.

3. **Proposed Facilities**
   a. In the event the well is found productive, a tank battery would be constructed and the necessary production equipment will be installed at the well site.
   b. If necessary, the well will be operated by means of an electric prime mover. Electric power poles will be set along side of the access road.
   c. The tank battery, all connections and all lines will adhere to API standards.
   d. The well will be operated by means of a gas driven prime mover. No power will be required.
   e. If the well is productive, rehabilitation plans are as follows:
      i. The reserve pit will be back-filled after the contents of the pit are dry (within 120 days after completion, weather permitting).
      ii. The original topsoil from the well site will be returned to the location. The drill site will then be contoured as close as possible to the original state.
4. **Methods of Handling Waste Material:**
   a. Drill cuttings will be disposed of in the reserve pits.
   b. All trash, junk and other waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary landfill.
   c. The supplier, including broken sacks, will pick up salts remaining after completion of well.
   d. Wastewater from living quarters will be drained into hole with a minimum of 10'. These holes will be covered during drilling and will be back filled when the well is completed. A Porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete

e. Remaining drilling fluids will be allowed to evaporate in the reserve pits until the pits are dry enough to be broken out for further drying. If the drilling fluids do not evaporate in a reasonable time they will be hauled off by transports to a state approved disposal site. Later pits will be broken out to speed dry. Water produced during completion will be put in reserve pits. Oil and condensate produced will be put in a storage tank and sold.

5. **Well Site Layout**
   a. Exhibit D Shows the proposed well site layout.
   b. This exhibit indicated proposed location of reserve and sump pits and living facilities.
   c. Mud pits in the active circulating system will be steel pits & the reserve pits is proposed to be unlined unless subsurface condition encountered during pit construction indicate that lining is needed for lateral containment of fluids.
   d. If needed, the reserve pit is to be lined with polyethylene. The pit liner will be 6 mils thick. Pit liner will extend a minimum 2' over the reserve pits dikes where the liner will be anchored down.
   e. The reserve pit will be fenced on three sides with four strands of barbed wire during drilling and completion phases. The fourth side will be fenced after all drilling operations have ceased. If the well is a producer, the reserve pit fence will be torn down. The reserve pit and those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.

6. **Other Information:**
   a. The area surrounding the well site is grassland. The topsoil is very sandy in nature. The vegetation is moderately sparse with native prairie grass, sagebrush, yucca and miscellaneous weeds.
   b. The surface and minerals are owned by the US Government and is administered by the Bureau of Land Management. The surface is of limited use except for the grazing of livestock and the production of oil and gas.
   c. An archaeological survey will be submitted to the Bureau of Land Management
   d. There are no dwellings within 2 miles of location.

Operators Representative:

The Devon Energy Production Company, L.P. representatives responsible for ensuring compliance of the surface use plan are listed below.

James Blount
Operations Engineer Advisor

Devon Energy Production Company, L.P.
20 North Broadway, Suite 1500
Oklahoma City, OK 73102-8260

(405) 228-4301 (office)
(405) 834-9207 (Cellular)

Don Mayberry
Superintendent

Devon Energy Production Company, L.P.
Post Office Box 250
Artesia, NM 88211-0250

(505) 748-3371 (office)
(505) 746-4945 (home)

Certification

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road; that I am familiar with the conditions that 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 Devon Energy Production Company, L.P. and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

Signed: Karen Cottom Date: October 2, 2003

Karen Cottom
Operations Technician

Attachment to Exhibit #1
NOTES REGARDING BLOWOUT PREVENTERS
Devon Energy Production Company, LP
Hornet 6 Federal #1
Surface Location: 660' FNL & 660' FEL, Lot 1, Sec 6 T23S R32E, Lea, NM
Bottom hole Location: 660' FNL & 660' FEL, Lot 1, Sec 6 T23S R32E, Lea, NM

1. Drilling nipple will be constructed so it can be removed mechanically without the aid of a welder. The minimum internal diameter will equal BOP bore.

2. Wear ring will be properly installed in head.

3. Blowout preventer and all associated fittings will be in operable condition to withstand a minimum 3000 psi working pressure.

4. All fittings will be flanged.

5. A full bore safety valve tested to a minimum 3000 psi WP with proper thread connections will be available on the rotary rig floor at all times.

6. All choke lines will be anchored to prevent movement.

7. All BOP equipment will be equal to or larger in bore than the internal diameter of the last casing string.

8. Will maintain a kelly cock attached to the kelly.

9. Hand wheels and wrenches will be properly installed and tested for safe operation.

10. Hydraulic floor control for blowout preventer will be located as near in proximity to driller's controls as possible.

11. All BOP equipment will meet API standards and include a minimum 40 gallon accumulator having two independent means of power to initiate closing operation.

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201-1287

Statement Accepting Responsibility for Operations

Operator Name:	**Devon Energy Production Company, LP**
Street or Box:	**20 North Broadway, Suite 1500**
City, State:	**Oklahoma City, Oklahoma**
Zip Code:	**73102-8260**

The undersigned accepts all applicable terms, conditions, stipulations and restrictions concerning operations conducted on the leased land or portion thereof, as described below.

Lease No.:	**NMNM63994**
Legal Description of Land:	**39.59 acres 6-T23S-R32E**
Formation(s):	**Delaware/Bone Spring**
Bond Coverage:	**Nationwide**
BLM Bond File No.:	**CO-1104**
Authorized Signature:	Karen Cottom **Karen Cottom**
Title:	**Operations Technician**
Date:	October 2, 2003

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
DISTRICT II
811 South First, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
DISTRICT IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 South Pacheco
Santa Fe, New Mexico 87504-2088

Form C-102
Revised March 17, 1999

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025-36486	~~96149~~ 39380	LIVINGSTON RIDGE: DELAWARE SOUTHEAST

Property Code	Property Name	Well Number
33130	HORNET "6" FEDERAL	1

OGRID No.	Operator Name	Elevation
6137	DEVON ENERGY PRODUCTION CO., L.P.	3517'

Surface Location

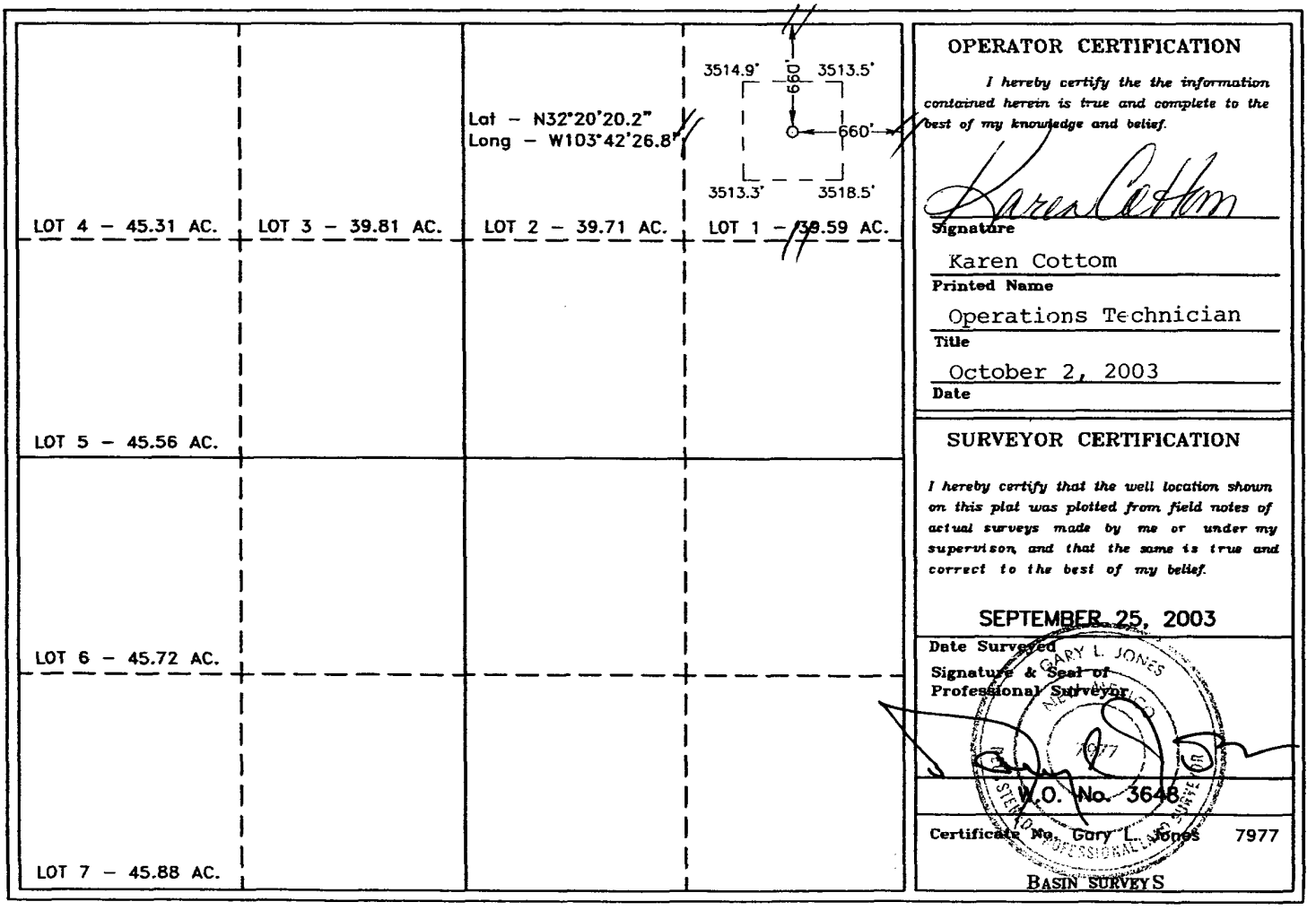
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A LOT 1	6	23 S	32 E		660	NORTH	660	EAST	LEA

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.
39.59			

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



OPERATOR CERTIFICATION

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

Signature: Karen Cottom

Printed Name: Karen Cottom

Title: Operations Technician

Date: October 2, 2003

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 belief.

Date Surveyed: SEPTEMBER 25, 2003

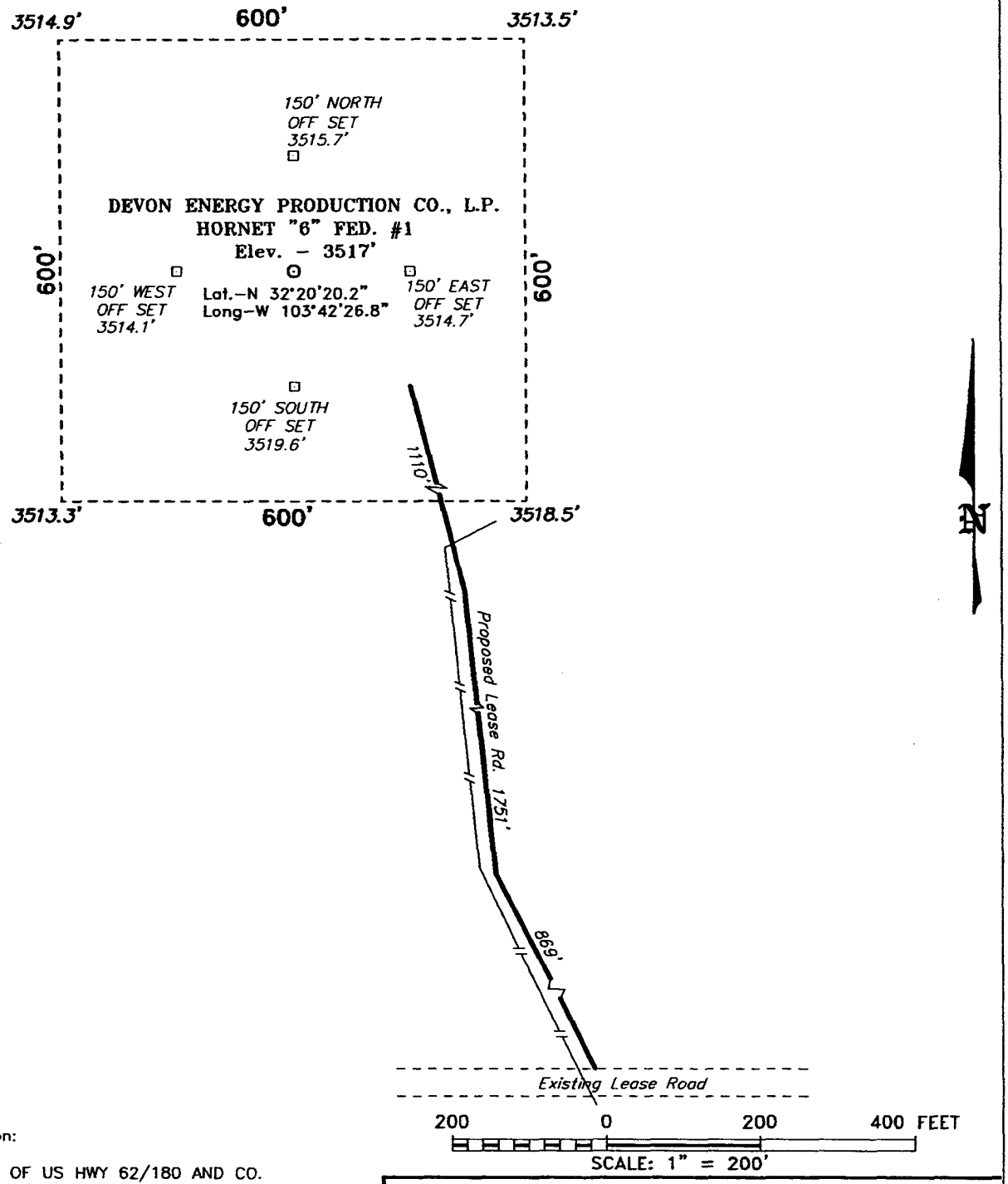
Signature & Seal of Professional Surveyor: GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

W.O. No. 3648

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

SECTION 6, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, **NEW MEXICO.**



Directions to Location:

FROM THE JUNCTION OF US HWY 62/180 AND CO. RD. H-29, GO SOUTH ON H-29 FOR 15.8 MILES TO A LEASE ROAD; THENCE EAST ON LEASE ROAD FOR 1.2 MILE TO A "Y", GO LEFT AT "Y" AND CONTINUE EAST FOR 0.9 MILE TO A WATER LINE AND PROPOSED LEASE ROAD.

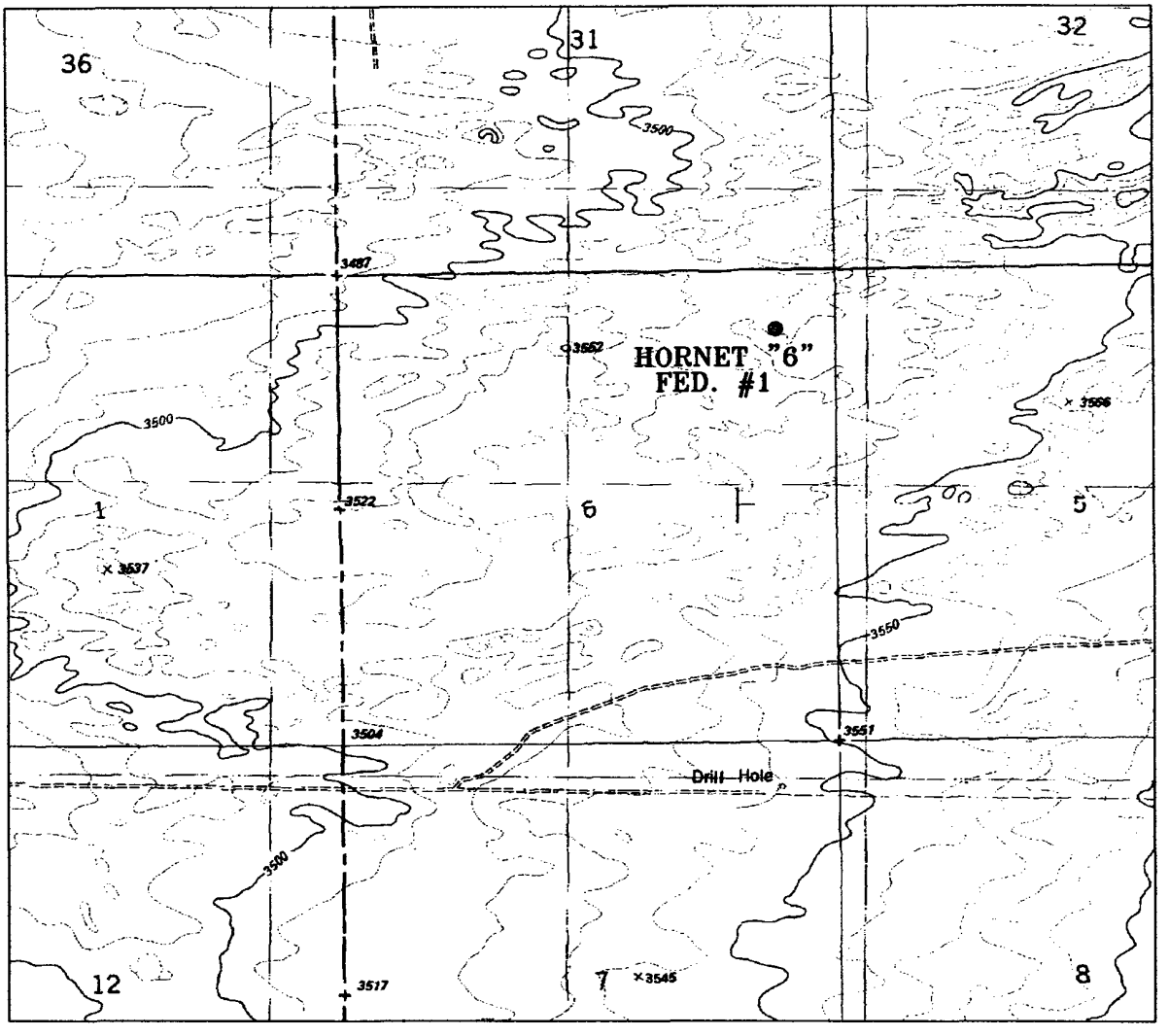
DEVON ENERGY PROD. CO., L.P.

REF: HORNET "6" FEDERAL No. 1 / Well Pad Topo

THE HORNET "6" FED. No. 1 LOCATED 660' FROM THE NORTH LINE AND 660' FROM THE EAST LINE OF SECTION 6, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 3648	Drawn By: K. GOAD		
Date: 09-26-2003	Disk: KJG CD#4 - 3648A.DWG	Survey Date: 09-25-2003	Sheet 1 of 1 Sheets

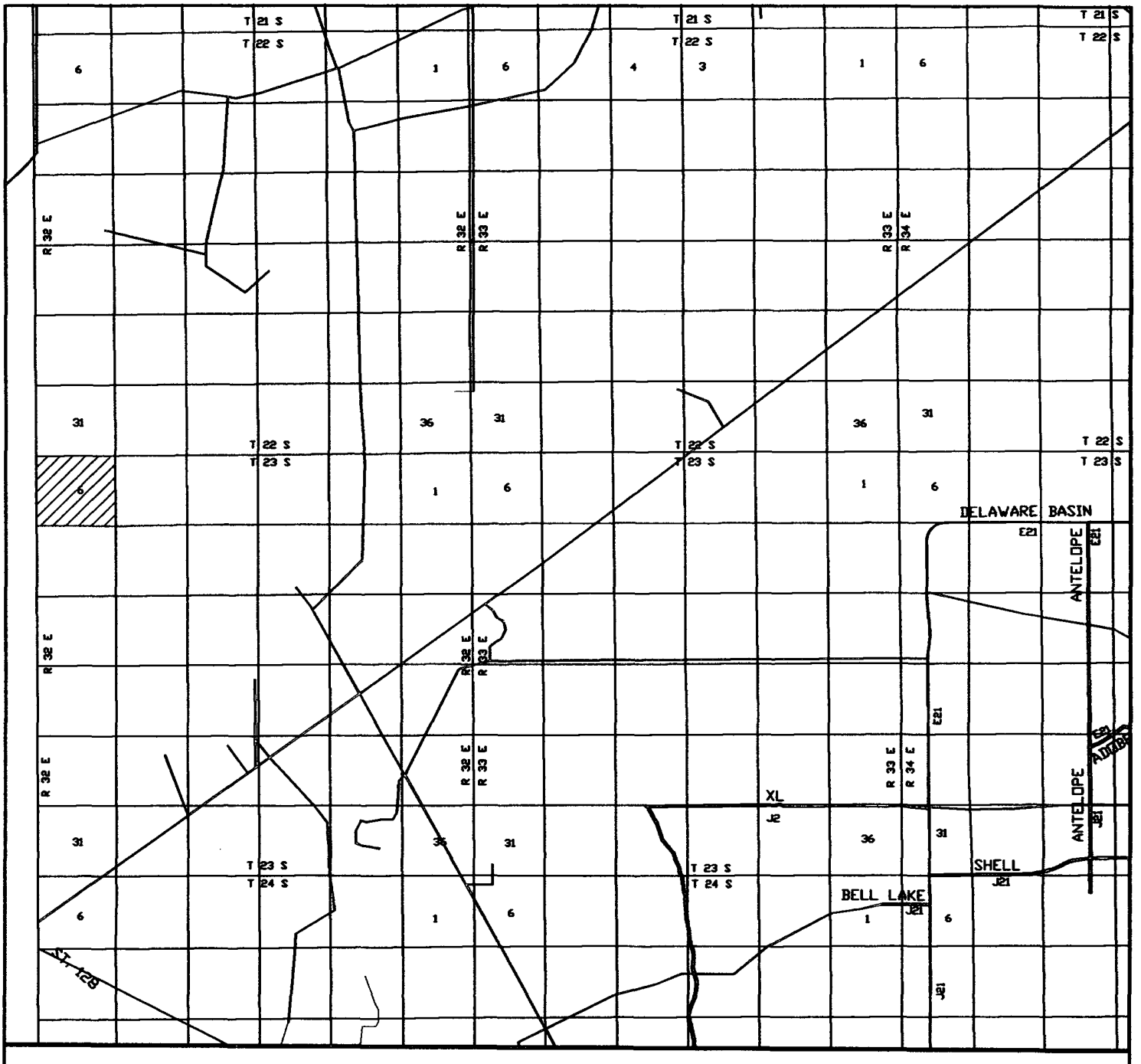


HORNET "6" FEDERAL #1
660' FNL AND 660' FEL
Section 6, Township 23 South, Range 32 East,
N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

W.O. Number:	3648AA - KJG CD#4
Survey Date:	09-25-2003
Scale:	1" = 2000'
Date:	09-26-2003

DEVON ENERGY PROD. CO., L.P.



HORNET "6" FEDERAL #1
660' FNL AND 660' FEL
Section 6, Township 23 South, Range 32 East, N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

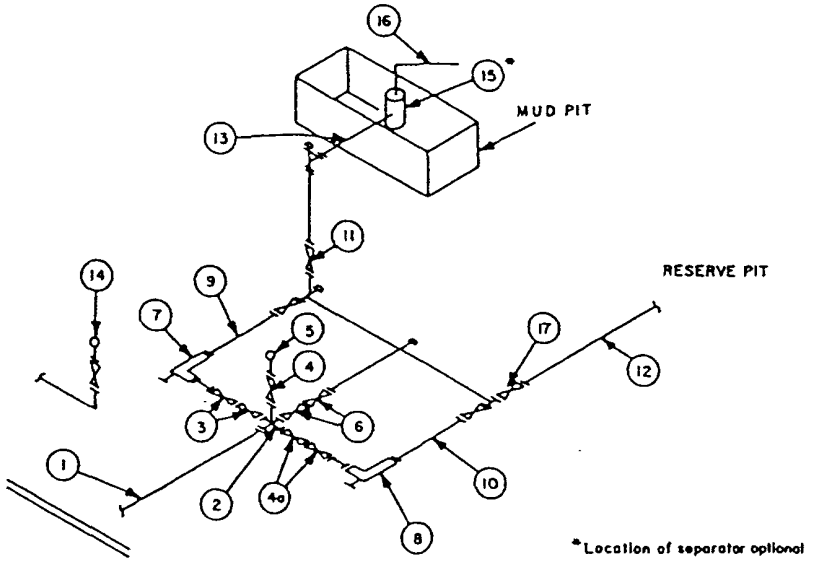
W.O. Number:	3648AA - KJG CD#4
Survey Date:	09-25-2003
Scale:	1" = 2 MILES
Date:	09-26-2003

DEVON ENERGY PROD. CO., L.P.

MINIMUM CHOKE MANIFOLD
3,000, 5,000 and 10,000 PSI Working Pressure

3 MWP - 5 MWP - 10 MWP

EXHIBIT 1-A



BEYOND SUBSTRUCTURE

MINIMUM REQUIREMENTS										
		3,000 MWP			5,000 MWP			10,000 MWP		
No.		I.D.	NOMINAL	RATING	I.D.	NOMINAL	RATING	I.D.	NOMINAL	RATING
1	Line from drilling spool		3"	3,000		3"	5,000		3"	10,000
2	Cross 3"x3"x3"x2"			3,000			5,000			
	Cross 3"x3"x3"x3"									10,000
3	Valves(1) Gate ☐ Plug ☐(2)	3-1/8"		3,000	3-1/8"		5,000	3-1/8"		10,000
4	Valve Gate ☐ Plug ☐(2)	1-13/16"		3,000	1-13/16"		5,000	1-13/16"		10,000
4a	Valves(1)	2-1/16"		3,000	2-1/16"		5,000	3-1/8"		10,000
5	Pressure Gauge			3,000			5,000			10,000
6	Valves Gate ☐ Plug ☐(2)	3-1/8"		3,000	3-1/8"		5,000	3-1/8"		10,000
7	Adjustable Choke(3)	2"		3,000	2"		5,000	2"		10,000
8	Adjustable Choke	1"		3,000	1"		5,000	2"		10,000
9	Line		3"	3,000		3"	5,000		3"	10,000
10	Line		2"	3,000		2"	5,000		3"	10,000
11	Valves Gate ☐ Plug ☐(2)	3-1/8"		3,000	3-1/8"		5,000	3-1/8"		10,000
12	Lines		3"	1,000		3"	1,000		3"	2,000
13	Lines		3"	1,000		3"	1,000		3"	2,000
14	Remote reading compound standpipe pressure gauge			3,000			5,000			10,000
15	Gas Separator		2'x5'			2'x5'			2'x5'	
16	Line		4"	1,000		4"	1,000		4"	2,000
17	Valves Gate ☐ Plug ☐(2)	3-1/8"		3,000	3-1/8"		5,000	3-1/8"		10,000

(1) Only one required in Class 3M.

(2) Gate valves only shall be used for Class 10M.

(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling.

EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTIONS

1. All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.
2. All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.
3. All lines shall be securely anchored.
4. Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available.
5. Choke manifold pressure and standpipe pressure gauges shall be available at the choke manifold to assist in regulating chokes. As an alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge.
6. Line from drilling spool to choke manifold should be as straight as possible. Lines downstream from chokes shall make turns by large bends or 90° bends using bull plugged tees.
7. Discharge lines from chokes, choke bypass and from top of gas separator should vent as far as practical from the well.

MINIMUM BLOWOUT PREVENTER REQUIREI S

EXHIBIT # 1

3,000 psi Working Pressure

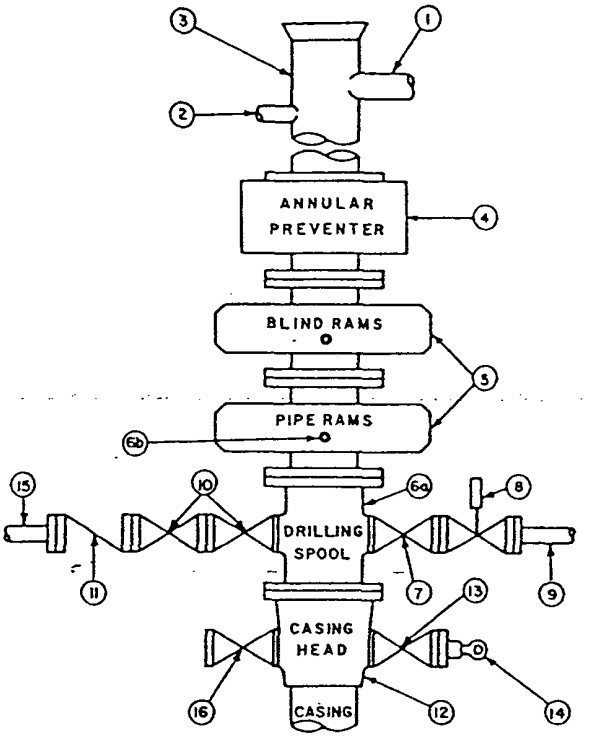
3 MWP

STACK REQUIREMENTS

No.	Item	Min. I.D.	Min. Nominal
1	Flowline		
2	Fill up line		2"
3	Drilling nipple		
4	Annular preventer		
5	Two single or one dual hydraulically operated rams		
6a	Drilling spool with 2" min. kill line and 3" min choke line outlets		
	—or—		
6b	2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above.)		
7	Valve Gate ☐ Plug ☐	3-1/8"	
8	Gate valve—power operated	3-1/8"	
9	Line to choke manifold		3"
10	Valves Gate ☐ Plug ☐	2-1/16"	
11	Check valve	2-1/16"	
12	Casing head		
13	Valve Gate ☐ Plug ☐	1-13/16"	
14	Pressure gauge with needle valve		
15	Kill line to rig mud pump manifold		2"

OPTIONAL			
16	Flanged valve	1-13/16"	

CONFIGURATION A



CONTRACTOR'S OPTION TO FURNISH:

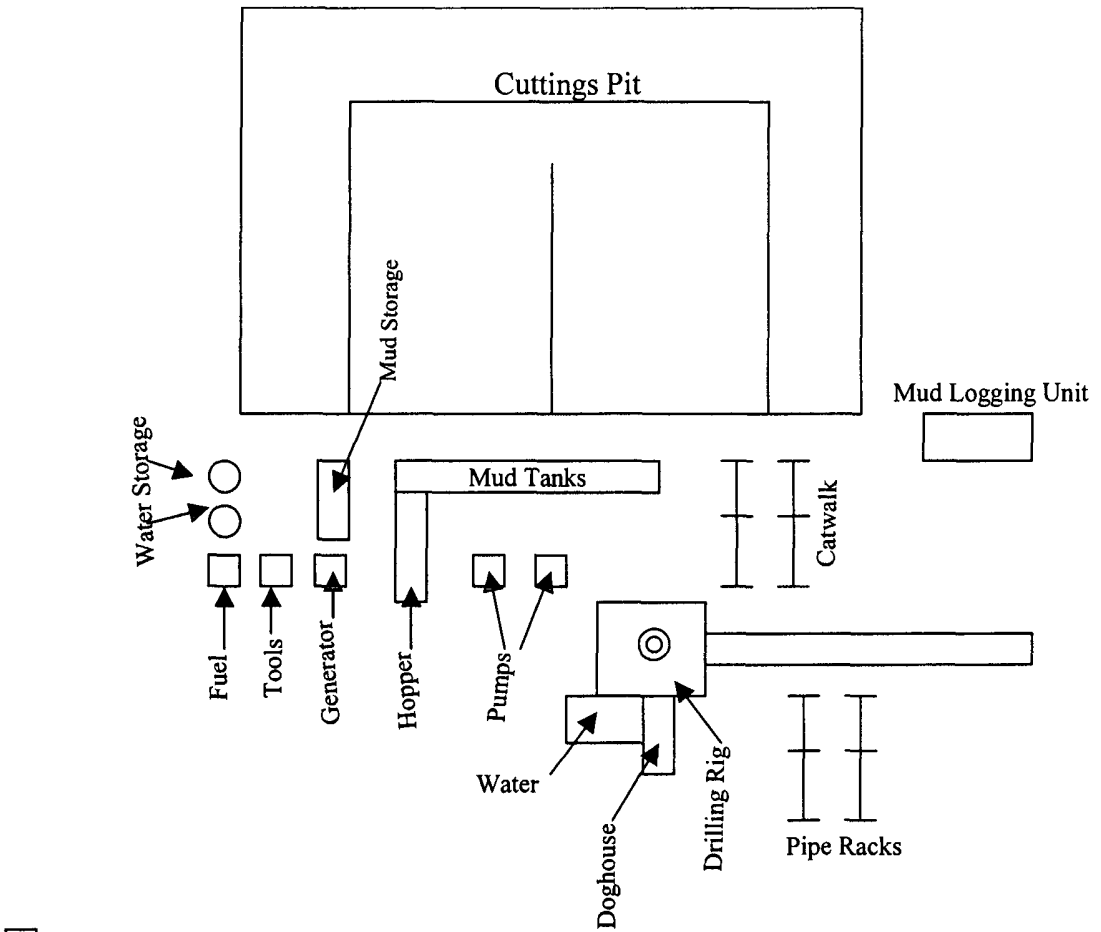
1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 3,000 psi, minimum.
2. Automatic accumulator (80 gallon, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers position.
4. Kelly equipped with Kelly cock.
5. Inside blowout prevventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.

MEC TO FURNISH:

1. Bradenhead or casinghead and side valves.
2. Wear bushing, if required.

GENERAL NOTES:

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke. Valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position.
4. Chokes will be positioned so as not to hamper or delay changing of choke beans. Replaceable parts for adjustable choke, other bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.
5. All valves to be equipped with handwheels or handles ready for immediate use.
6. Choke lines must be suitably anchored.
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency.
9. All seamless steel control piping (3000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Do not use kill line for routine fill-up operations.



N

Devon Energy Production Company, LP Hornet 6 Federal #1
Drilling Pad **Exhibit #**

Well name:	**Hornet 6 Fed #1**
Operator:	**Devon Energy**
String type:	Surface
Location:	New Mexico

Design parameters:

Collapse

Mud weight: 9.000 ppg
Design is based on evacuated pipe.

Burst

Max anticipated surface pressure: 440 psi
Internal gradient: 0.120 psi/ft
Calculated BHP 500 psi

No backup mud specified.

Minimum design factors:

Collapse:

Design factor 1.125

Burst:

Design factor 1.00

Tension:

8 Round STC:	1.80 (J)
8 Round LTC:	1.80 (J)
Buttress:	1.60 (J)
Premium:	1.50 (J)
Body yield:	1.60 (B)

Tension is based on air weight.
Neutral point: 434 ft

Environment:

H2S considered?	No
Surface temperature:	75 °F
Bottom hole temperature:	82 °F
Temperature gradient:	1.40 °F/100ft
Minimum section length:	500 ft

Non-directional string.

Re subsequent strings:

Next setting depth:	2,200 ft
Next mud weight:	9.000 ppg
Next setting BHP:	1,029 psi
Fracture mud wt:	19.250 ppg
Fracture depth:	500 ft
Injection pressure	500 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Est. Cost ($)
1	500	13.375	48.00	H-40	ST&C	500	500	12.59	6201

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (kips)	Tension Strength (kips)	Tension Design Factor
1	234	740	3.17	500	1730	3.46	24	322	13.42 J

Devon Energy

Date: October 2,2003
Oklahoma City, Oklahoma

Remarks:
Collapse is based on a vertical depth of 500 ft, a mud weight of 9 ppg The casing is considered to be evacuated for collapse purposes.
Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.

Well name:	**Hornet 6 Fed #1**
Operator:	**Devon Energy**
String type:	Intermediate
Location:	New Mexico

Design parameters:

Collapse

Mud weight: 10.000 ppg
Design is based on evacuated pipe.

Burst

Max anticipated surface pressure: 2,919 psi
Internal gradient: 0.120 psi/ft
Calculated BHP 3,435 psi

No backup mud specified.

Minimum design factors:

Collapse:

Design factor 1.125

Burst:

Design factor 1.00

Tension:

8 Round STC:	1.80 (J)
8 Round LTC:	1.80 (J)
Buttress:	1.60 (J)
Premium:	1.50 (J)
Body yield:	1.60 (B)

Tension is based on air weight.
Neutral point: 3,661 ft

Environment:

H2S considered?	No
Surface temperature:	75 °F
Bottom hole temperature:	135 °F
Temperature gradient:	1.40 °F/100ft
Minimum section length:	500 ft

Non-directional string.

Re subsequent strings:

Next setting depth:	8,400 ft
Next mud weight:	9.000 ppg
Next setting BHP:	3,927 psi
Fracture mud wt:	19.250 ppg
Fracture depth:	4,300 ft
Injection pressure	4,300 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Est. Cost ($)
1	4300	8.625	32.00	J-55	LT&C	4350'	4350	7.875	34652

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (kips)	Tension Strength (kips)	Tension Design Factor
1	2234	2530	1.13	3435	3930	1.14	137.6	417	3.03 J

Devon Energy

Date: October 2,2003
Oklahoma City, Oklahoma

Remarks:
Collapse is based on a vertical depth of 4300 ft, a mud weight of 10 ppg The casing is considered to be evacuated for collapse purposes.
Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.

Well name:	**Hornet 6 Fed #1**
Operator:	**Devon Energy**
String type:	Production
Location:	New Mexico

Design parameters:

Collapse

Mud weight: 9.000 ppg
Design is based on evacuated pipe.

Burst

Max anticipated surface pressure: 2,919 psi
Internal gradient: 0.120 psi/ft
Calculated BHP 3,927 psi

No backup mud specified.

Minimum design factors:

Collapse:

Design factor 1.125

Burst:

Design factor 1.00

Tension:

8 Round STC: 1.80 (J)
8 Round LTC: 1.80 (J)
Buttress: 1.60 (J)
Premium: 1.50 (J)
Body yield: 1.60 (B)

Tension is based on air weight.
Neutral point: 7,235 ft

Estimated cost: 30,210 ($)

Environment:

H2S considered? No
Surface temperature: 75 °F
Bottom hole temperature: 193 °F
Temperature gradient: 1.40 °F/100ft
Minimum section length: 500 ft

Non-directional string.

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Est. Cost ($)
3	600	5.5	17.00	J-55	LT&C	600	600	4.767	2325
2	6800	5.5	15.50	J-55	LT&C	7400	7400	4.825	24011
1	1000	5.5	17.00	J-55	LT&C	8400	8400	4.767	3874

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (kips)	Tension Strength (kips)	Tension Design Factor
3	281	3893	13.88	2991	5320	1.78	132.6	247	1.86 J
2	3460	3968	1.15	3807	4810	1.26	122.4	217	1.77 J
1	3927	4910	1.25	3927	5320	1.35	17	247	14.53 J

Devon Energy

Date: October 2,2003
Oklahoma City, Oklahoma

Remarks:
Collapse is based on a vertical depth of 8400 ft, a mud weight of 9 ppg The casing is considered to be evacuated for collapse purposes.
Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.