

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0136
Expires November 30, 2000

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMSF-078147 A
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator QUESTAR EXPLORATION AND PRODUCTION COMPANY		7. If Unit or CA Agreement, Name and No. N/A
3a. Address 1331 17th ST., SUITE 800 DENVER, CO 80202	3b. Phone No. (include area code) (303) 672-6916	8. Lease Name and Well No. HORTON 3 B
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 1,000' FNL & 725' FEL At proposed prod. zone SAME		9. API Well No. 30-045- 31703
14. Distance in miles and direction from nearest town or post office* 10 AIR MILES NE OF LaPLATA		10. Field and Pool, or Exploratory BLANCO MESA VERDE
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 725'		11. Sec., T., R., M., or Blk. and Survey or Area A 13-32n-12w NMPM
16. No. of Acres in lease 317.36		12. County or Parish SAN JUAN
17. Spacing Unit dedicated to this well 317.36 ACRES (N2)		13. State NM
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 853'		20. BLM/BIA Bond No. on file SL-6308873, BLM ES0019
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,575' GL		22. Approximate date work will start* JULY 1, 2003
23. Estimated duration 30 DAYS		

24. Attachments

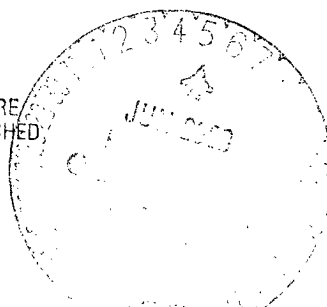
The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, shall be attached to this form:

- | | |
|---|--|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 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). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

Comments

Archaeology report LAC 2003-1b filed 5-7-03

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

DRILLING OPERATIONS AUTHORIZED ARE
SUBJECT TO COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS"

070 Farmington, NM

JUN 22 11 00 05

RECEIVED

cc: BLM, Lovseth, Nelsen, NMOCD (via BLM), Ohlman

25. Signature 	Name (Printed/Typed) BRIAN WOOD	Date 5-16-03
Title CONSULTANT	PHONE: 505 466-8120	FAX: 505 466-9682
Approved by (Signature) 	Name (Printed/Typed) David J. Mankiewicz	Date JUN - 3 2003
Title	Office	

Application approval does not warrant or certify the 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.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

NMOCD

Energy, Minerals & Mining Resources Department
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

☐ AMENDED REPORT

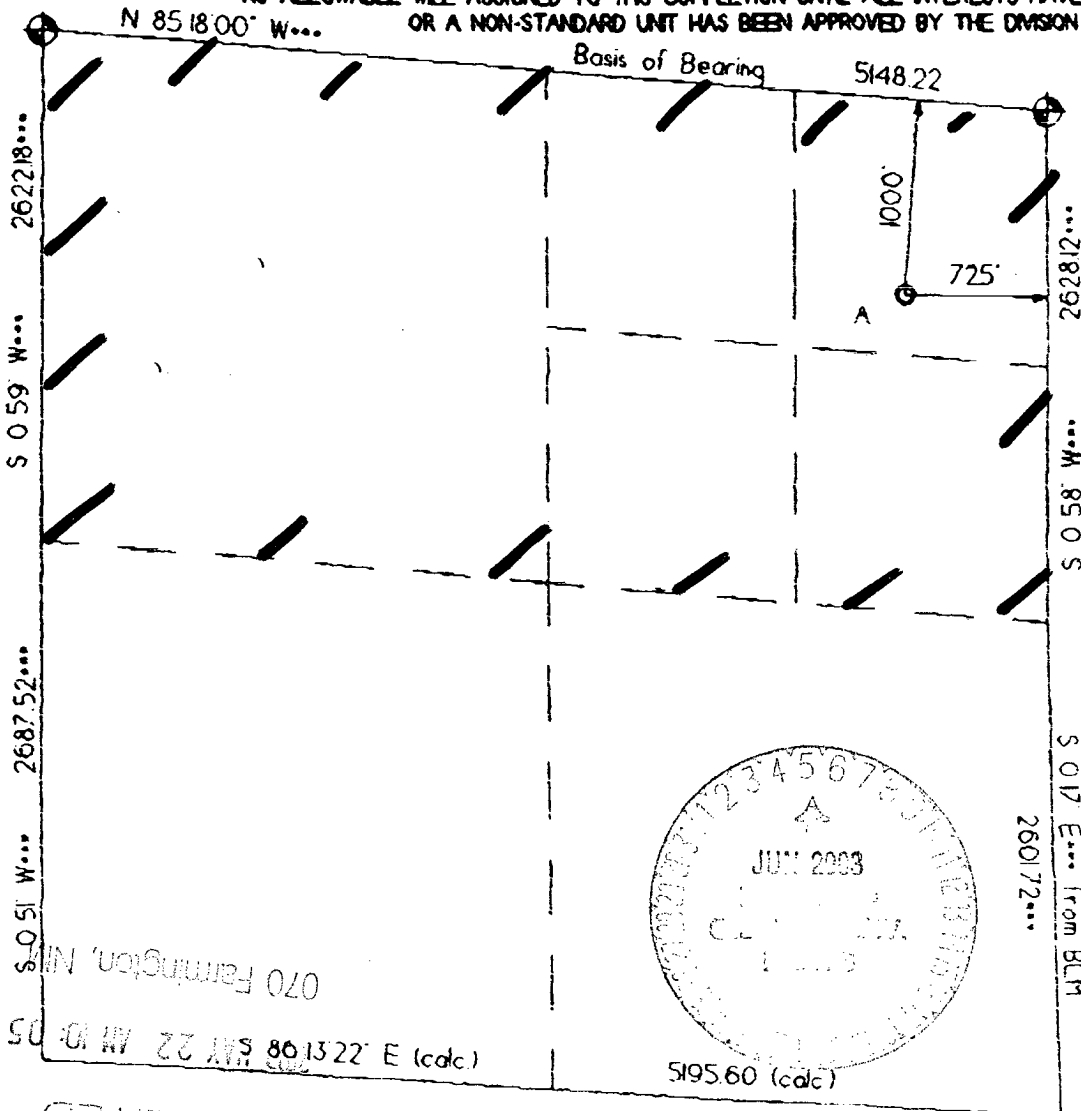
WELL LOCATION AND ACREAGE DEDICATION PLAT

APA Number 30-045-31703	Pool Code 72319	Pool Name BLANCO MESA VERDE
Property Code 5619	Property Name 32167 . HORTON	Well Number 3 B
OGRI No. 23846	Operator Name QUESTAR EXPLORATION & PRODUCTION	Elevation 6575

Surface Location									County
UL or Lot	Sec.	Twp.	Rge.	Lot Id.	Feet from	North/South	Feet from	East/West	
A	13	32 N	12 W		1000	NORTH	725	EAST	SAN JUAN

Bottom Hole Location if Different From Surface									County
UL or Lot	Sec.	Twp.	Rge.	Lot Id.	Feet from	North/South	Feet from	East/West	
Dedication 317.36	Joint ?	Consolidation	Order No.						

NO ALLOWABLE WILL 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 that the information contained herein is true and complete to the best of my knowledge and belief. Signature <i>B. Wood</i>	
Printed Name BRIAN WOOD	
Title CONSULTANT	
Date MAY 16, 2003	
SURVEYOR CERTIFICATION I hereby certify that the well location 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. Date of Survey <i>25 May 03</i>	
Signature and Seal of Professional Surveyor 	

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Questar Exploration and Production Company
Horton 3 B
1000' FNL & 725' FEL
Sec. 13, T. 32 N., R. 12 W.
San Juan County, New Mexico

PAGE 2

Oil and gas shows will be tested and evaluated for commercial potential as determined by the company geologist. Goal is the Mesa Verde.

3. PRESSURE CONTROL (Also see PAGES 3 - 5)

The drilling contract has not yet been awarded, thus the exact type of BOP to be used is not now known. Diagrams of a typical 2,000 psi BOP stack and manifold are on PAGES 3 and 4.

Call BLM at (505) 599-8900 >24 hours before testing. BOP system will be installed and pressure tested before drilling the surface casing shoe. It will be retested if a pressure seal is broken or is 30 days have elapsed since the last successful test of the equipment. Test pressures are ...

Pipe rams	2,000 psi (high)	250 psi (low)
Choke manifold & lines	2,000 psi (high)	250 psi (low)

Will initially pressure test BOP and ancillary equipment to 250 psi for 5 minutes, followed by a test to 2,000 psi for 10 minutes. Casing will be tested for 30 minutes. BOP equipment will remain in use until the well is completed or abandoned. Safety valve and sub with a full opening valve to fit the drill pipe and collars will be available on the rig floor in the open position at all time for use when the kelly is not in use.

All BOP mechanical and pressure tests will be recorded on the driller's log. BOPs will be inspected and opened and closed at least daily to assure good mechanical working order. These inspections will also be recorded on the daily drilling report.

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PAGE 5

4. CASING & CEMENT

Design factors are: Collapse = 1.125
Burst = 1.00
Tension = 1.80
Area Fracture Gradient = 0.83 psi/foot

Casing Integrity Tests: test to 0.22 psi/foot or 1,500 psi whichever is more
(not to exceed 70% of the rated burst pressure of the casing)

Surface Casing: Test to 1,500 psi

(drill out surface casing $\leq 10'$ & test shoe to 12 ppg [estimate 75 psi with fresh H₂O in hole])

Intermediate Casing: Test to 1,500 psi

(with 8.5 pounds per gallon fluid in hole)

Production Casing: Test to 1,200 psi

(with 8.5 pounds per gallon fluid in hole)

<u>Hole Size</u>	<u>O. D.</u>	<u>#/ft</u>	<u>Grade</u>	<u>Thread</u>	<u>Age</u>	<u>Collapse</u>	<u>Burst</u>	<u>Tensile</u>	<u>Depth</u>
20"	14"-16"	Corrugated	Conductor	Used					0' - 40'
12-1/4"	9-5/8"	32	H-40	S T & C	New	1,370	2,270	254,000	0' - 200'
8-3/4"	7"	23	J-55	S T & C	New	3,270	4,360	284,000	0' - 3,405'
6-1/4"	4-1/2"	9.5	J-55	S T & C	New	3,310	4,380	101,000	3,105' - TD

Conductor pipe will be cemented to the surface with ≈ 45 cubic feet of construction cement.

Surface casing (0' - 200') will be run as follows:

- Guide shoe
- One joint
- Insert float
- Remainder of casing
- Three bow spring centralizers (10' above shoe joint, middle of the second joint, and one on the second to last joint)
- Thread lock bottom joint of casing and float equipment. Reciprocate casing 20' while cementing. Land casing so casing head flange will be at ground level and the shoe joint is as near bottom as possible.

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PAGE 6

Surface casing will be cemented to the surface as follows:

- a) Circulate and condition the hole until the returns are clean ($\geq 1\frac{1}{2}$ times bottoms up or one internal casing volume, whichever is greater)
- b) Pump ≈ 10 barrels fresh water
- c) Slurry = 125 sacks Class G + 2% CaCl_2 + $\frac{1}{4}$ lb/sk Cello Flake. Weight = 15.8 pounds per gallon. Yield = 1.16 cubic feet per sack. Mix water = 4.95 gallons per sack. Volume = 144 cubic feet based on 18 cubic feet for 40' of shoe joint + 63 cubic feet for annulus + 100 cubic feet excess (100%).
- d) Use top wiper plug. Displace with water. Casing capacity = 12.6 barrels to the float collar.
- e) Have ≈ 100 sacks Class G cement, 5 joints 1" line pipe, and enough CaCl_2 to mix 2% by volume with the top off cement to circulate top 100' of casing annulus if cement drops from surface. W. O. C. = 6 hours before cutting off and nipple up. Casing head flange = $9\frac{5}{8}$ " x 11" 2,000 psi.

Intermediate casing (0' - 3,405') will be run as follows:

- a) Float shoe
- b) One joint
- c) Float collar
- d) Ten centralizers (two centralizers placed on joints 1, 6, 7, and 8 in the hole (10' from each end) and the third to the last joint run in the hole)
- e) Lock shoe joint and float equipment with thread lock compound

Intermediate casing will be cemented to surface as follows:

- a) Reciprocate casing $\approx 20'$ during cementing
- b) Circulate and condition the hole until the returns are clean ($\geq 1\frac{1}{2}$ times bottoms up or one internal casing volume, whichever is greater)
- c) Pump ≈ 20 barrels fresh water
- d) Lead slurry = 280 sacks 35/65 Poz-G + retarder for 2-1/2 hours pumpability at 95° F + friction reducer for turbulent flow at 5 barrels per minute + fluid loss additive. Weight = 11.4 pounds per gallon. Yield = 2.90 cubic feet per sack. Mix water = 17.78 gallons per sack. Volume = 812 cubic feet.

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PAGE 7

- e) Tail slurry = 195 sacks Class G + friction reducer + fluid loss additive.
Weight = 13.5 pounds per gallon. Yield = 1.30 cubic feet per sack. Mix water = 5.48 gallons per sack. Volume = 254 cubic feet
- f) Total intermediate casing cement volume = 1,066 cubic feet (>100% excess). Final volume calculation will be based on caliper log results.
- g) Displacement volume to float collar = 132 barrels (displace with 10 barrels fresh water followed by mud)
- h) After displacement, check to insure floats are holding. If they hold, then release pressure and start to nipple down. If not, hold 200 psi over plug, bumping pressure until floats hold, then start to nipple down.

Production liner (5,955' to 3,105') will be run as follows:

- a) Float shoe
- b) One joint
- c) Float collar
- d) Ten centralizers (two centralizers placed on joint 1 (10' from each end) and one on the third to the last joint in the hole - placement of the remaining centralizers will be determined from log analysis)
- e) Lock shoe joint and float equipment with thread lock compound
- f) Remainder of line (enough liner to overlap intermediate casing by 300')
- f) Liner hanger and setting tool

Production liner will be cemented by ...

- a) Blow hole clean
- b) Pump ≈20 barrels fresh water
- c) Slurry = 405 sacks 50/50 Poz-G + retarder for 2-1/2 hours pumpability at 110° F + friction reducer for turbulent flow at 5 barrels per minute + fluid loss additive. Weight = 13.5 pounds per gallon. Yield = 1.30 cubic feet per sack. Mix water = 5.48 gallons per sack. Volume = 526 cubic feet (≈80% excess)
- d) Final cement volume calculations will be based on caliper log results. Estimated top of cement will be ≈300' above the top of the liner (i. e., ≈3,105' since top of liner will be ≈3,405')
- e) Displace with 10 barrels of fresh water followed by 2% KCl water