

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

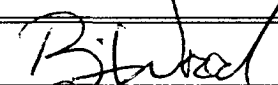
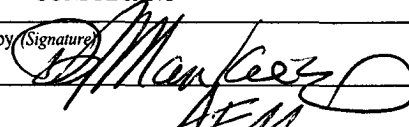
FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMSF-078095 A
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input checked="" 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 1050 17TH ST., SUITE 500 DENVER, CO 80265	3b. Phone No. (include area code) (303) 672-6970	8. Lease Name and Well No. HORTON 1 C
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 750 FNL & 1185 FEL At proposed prod. zone SAME		9. API Well No. 30-045- 33061
10. Field and Pool, or Exploratory BLANCO MESA V., BASIN DAK.		11. Sec., T. R. M. or Blk. and Survey or Area A-7-31N-11W NMPM
12. Distance in miles and direction from nearest town or post office* 6 AIR MILES NORTH OF AZTEC		12. County or Parish SAN JUAN
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 750'	16. No. of acres in lease 320	17. Spacing Unit dedicated to this well 320 MESA VERDE: E2 & DAKOTA: E2
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 953' (Horton 5)	19. Proposed Depth 7,815'	20. BLM/BIA Bond No. on file BLM NATIONWIDE ESB000024
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,477' GL	22. Approximate date work will start* 07/01/2005	23. Estimated duration 4 WEEKS

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. |

25. Signature 	Name (Printed/Typed) BRIAN WOOD	Date 04/30/2005
Title CONSULTANT		
PHONE: (505) 466-8120 FAX: (505) 466-9682		
Approved by (Signature) 	Name (Printed/Typed)	Date 6-15-05
Title AFM		
Office PFO		

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.

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.

*(Instructions on page 2)

cc: T Lovseth, D Nelsen, J Seiler

NMOCD

RECEIVED
GEOGRAPHIC INFORMATION
MAY 3 PM 2 13

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

Form C - 102

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

APA Number 30-045-33061	Pool Code 72319 & 71599	Pool Name BLANCO MESA VERDE & BASIN DAKOTA
Property Code 5619	Property Name 32167. HORTON	Well Number 1C
OGRD No. 23846	Operator Name QUESTAR EXPLORATION & PRODUCTION	Elevation 6477'

Surface Location

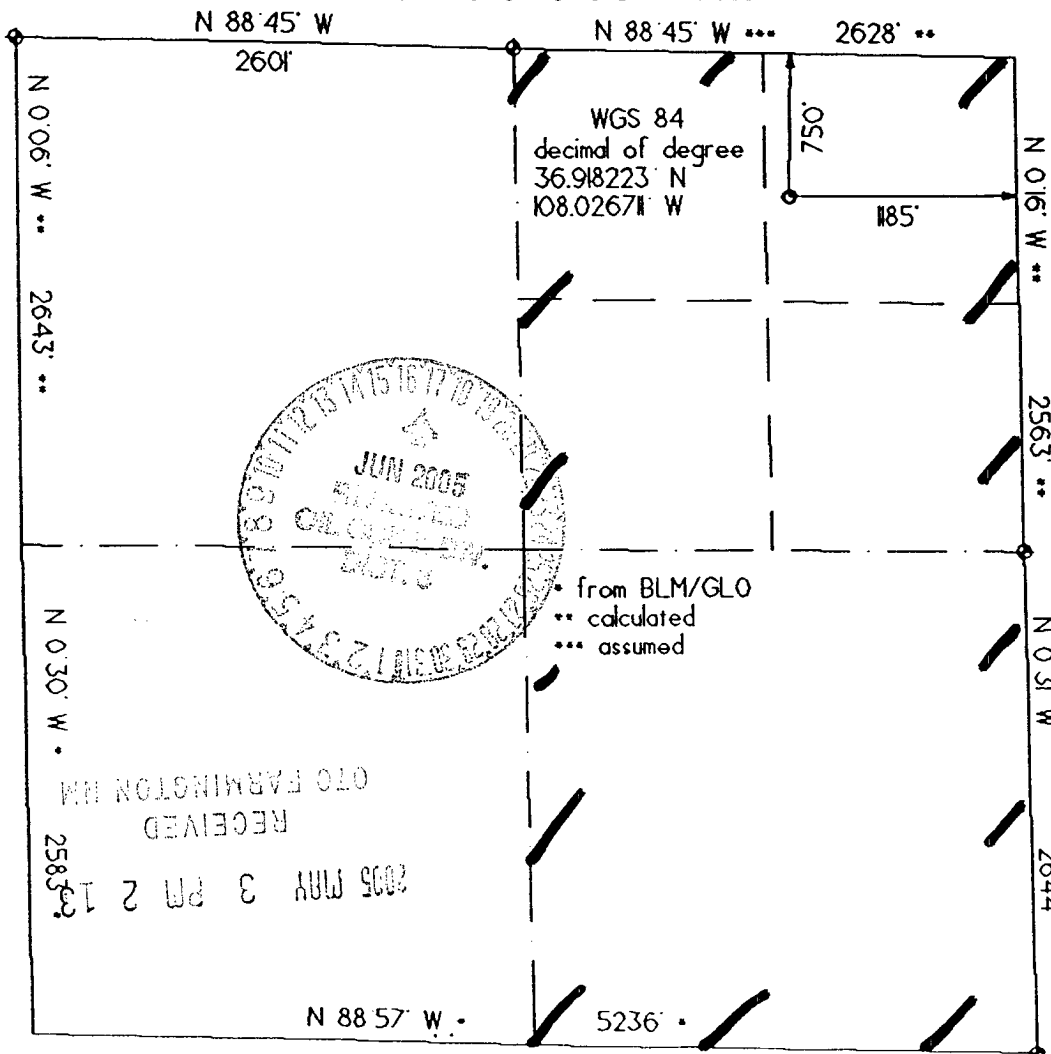
UL or Lot	Sec.	Twp.	Rge.	Lot Lth.	Feet from	North/South	Feet from	East/West	County
A	7	31 N	11 W		750'	NORTH	1185'	EAST	

Bottom Hole Location If Different From Surface

UL or Lot	Sec.	Twp.	Rge.	Lot Lth.	Feet from	North/South	Feet from	East/West	County
									SAN JUAN

Dedication 320	Joint ?	Consolidation	Order No.
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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

Brian Wood

Printed Name

BRIAN WOOD

Title

CONSULTANT

Date

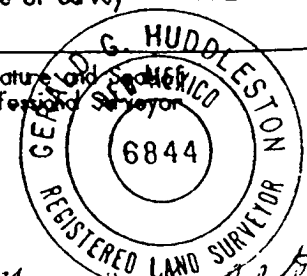
APRIL 30, 2005

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 **01/21/05**

Signature and Seal of Professional Surveyor



Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-103
May 27, 2004

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-045-
1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other		5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
2. Name of Operator QUESTAR EXPLORATION AND PRODUCTION COMPANY		6. State Oil & Gas Lease No. NMSF-078095A
3. Address of Operator 1050 17TH ST., SUITE 500, DENVER, CO 80265		7. Lease Name or Unit Agreement Name HORTON
4. Well Location Unit Letter A : 750 feet from the NORTH line and 1185 feet from the EAST line Section 7 Township 31N Range 11W NMPM County SAN JUAN		8. Well Number 1 C
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6,477' GL		9. OGRID Number 23846
Pit or Below-grade Tank Application <input checked="" type="checkbox"/> or Closure <input type="checkbox"/>		10. Pool name or Wildcat BLANCO MESA VERDE & BASIN DAKOTA
Pit type DRILLING Depth to Groundwater >500' Distance from nearest fresh water well >5,000' Distance from nearest surface water ~130'		
Pit Liner Thickness: 12 mil Below-Grade Tank: Volume bbls Construction Material		

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: DRILLING PIT <input checked="" type="checkbox"/>		OTHER: <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed & closed according to NMOC guidelines ☒ a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Brian Wood TITLE CONSULTANT DATE 4-30-05

Type or print name BRIAN WOOD

E-mail address: brian@permitswest.com Telephone No. 466-8120

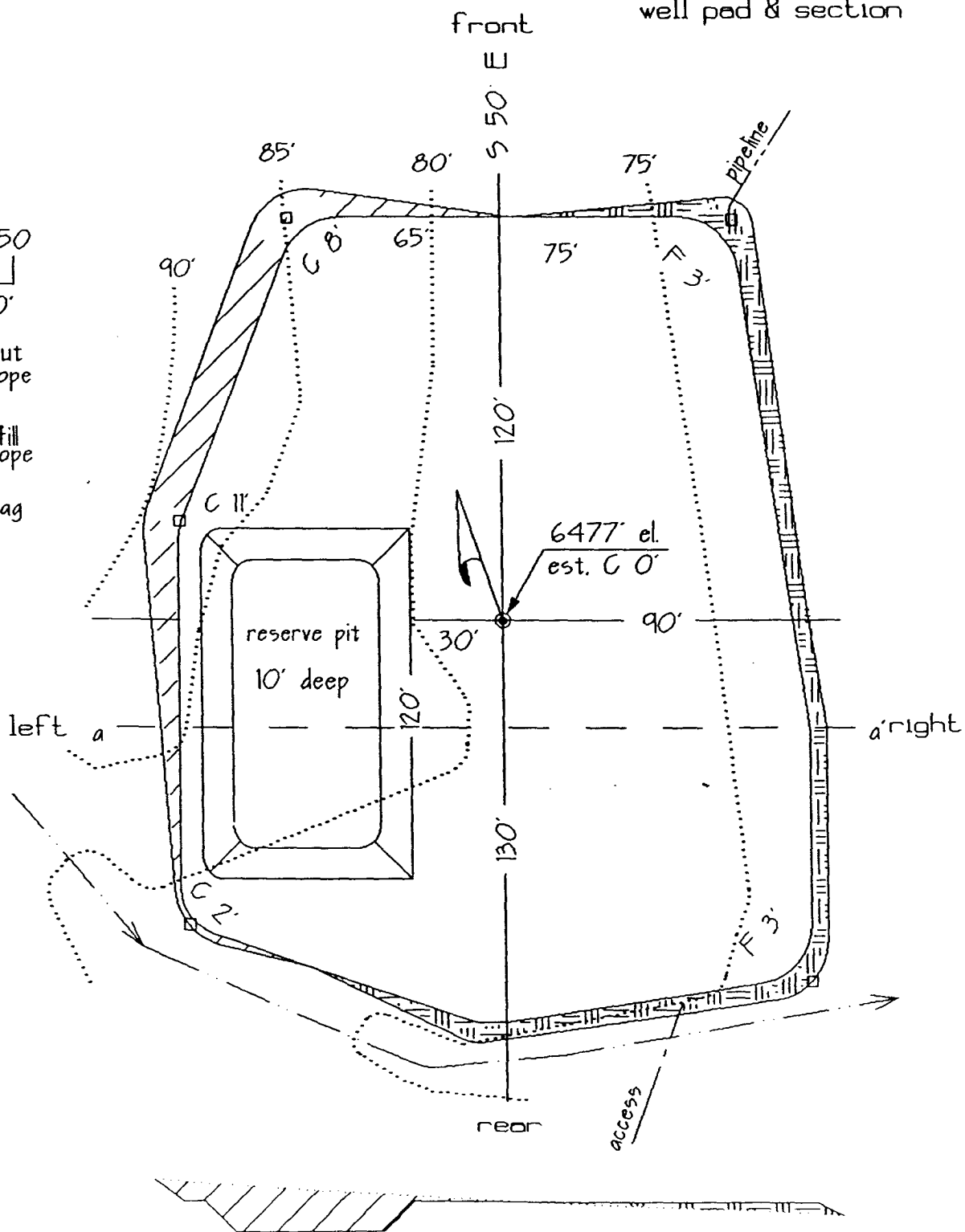
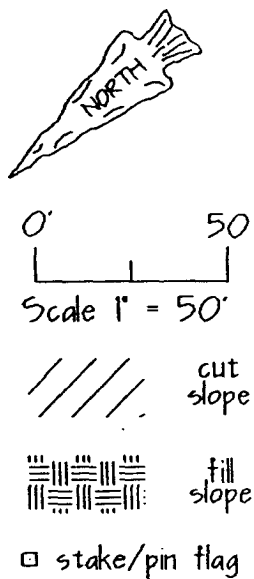
For State Use Only

DEPUTY OIL & GAS INSPECTOR, DIST. # JUN 17 2005

APPROVED BY: [Signature] TITLE

Conditions of Approval (if any): follow guidelines for vulnerable areas (200 ft from boundary 1420)

Horton 1 C well pad & section



Cross section

Questar Exploration and Production Company
Horton 1 C
750' FNL & 1185' FEL
Sec. 7, T. 31 N., R. 11 W.
San Juan County, New Mexico

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Drilling Program

1. FORMATION TOPS

<u>Name</u>	<u>GL Depth</u>	<u>KB Depth</u>	<u>Elevation</u>
Nacimiento	000'	15'	+6,477'
Ojo Alamo Sandstone	1,360'	1,375'	+5,177'
Kirtland Shale	1,435'	1,450'	+5,042'
Fruitland Coal	2,705'	2,720'	+3,772'
Pictured Cliffs Sandstone	3,165'	3,180'	+3,312'
Lewis Shale	3,345'	3,360'	+3,132'
Mesa Verde Group			
Cliff House Sandstone	4,735'	4,750'	+1,742'
Menefee Shale	4,965'	4,980'	+1,512'
Point Lookout Sandstone	5,365'	5,380'	+1,112'
Mancos Shale	5,785'	5,800'	+692'
Dakota Sandstone	7,565'	7,570'	-1,088'
Total Depth (TD)	7,815'	7,830'	-1,338'

2. NOTABLE ZONES

<u>Gas Zones</u>	<u>Water Zones</u>	<u>Coal Zone</u>
Fruitland	Ojo Alamo	Fruitland
Pictured Cliffs	Fruitland	
Mesa Verde Group		
Dakota		

Casing will be set to protect water, oil, gas, or other mineral bearing zones. Fresh water will be recorded by depth, cased, and cemented. Surface casing will be cemented to the surface. Intermediate string will be cemented from ≈350' below the Pictured Cliffs to the surface. Production liner will be cemented from TD to the top of the liner hanger.

Questar Exploration and Production Company
Horton 1 C
750' FNL & 1185' FEL
Sec. 7, T. 31 N., R. 11 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

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 PAGE 3.

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 if 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)
Surface & intermediate casing	1,500 psi (high)	250 psi (low)

All ram type preventers will have hand wheels. Wheels will be operable and accessible. Auxiliary equipment will include:

- manually operated kelly cock (upper and lower)
- full opening manual safety valves in the full open position capable of fitting all drill stem connections

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. Mud system will be visually monitored.

Questar Exploration and Production Company
Horton 1 C
750' FNL & 1185' FEL
Sec. 7, T. 31 N., R. 11 W.
San Juan County, New Mexico

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4. CASING & CEMENT

Design factors are:

Collapse = 1.125

Burst = 1.00

Tension = 1.80

Area Fracture Gradient = 0.75 psi/foot

Maximum anticipated mud weight = 9.0 pounds per gallon

Maximum anticipated surface treating pressure = 1,500 psi

Hole Size	O.D.	#/ft	Grade	Thread	Age	Collapse	Burst	Tensile	Depth
12-1/4"	9-5/8"	36	J-55	ST & C	New	2,020	3,520	394,000	0' - 320'
8-3/4"	7"	23	K-55	LT & C	New	3,270	4,360	309,000 341,000	320' - 3700'
6-1/4"	4-1/2"	10.5	K-55	ST & C	New	4,010	4,790	146,000	3500' - 6815'
6-1/4"	4-1/2"	11.6	K-55	LT & C	New	4,960	5,350	170,000	6815' - TD

Surface casing will be cemented to the surface with ≈ 130 sacks Class G + 2% CaCl_2 + 1/4 pound per sack Cello Flake. Weight = 15.8 pounds per gallon. Yield = 1.17 cubic feet per sack. Excess >50%. At least 4 centralizers will be installed. Have ≈ 50 sacks Class G cement with 3% CaCl_2 to top off if needed.

Production casing: will be cemented to the surface. Lead with ≈ 315 sacks Class G + additives (weight = 11.7 pounds per gallon & yield = 2.61 cubic feet per sack). Tail with ≈ 215 sacks 50/50 Class G/Poz + additives (weight = 13.5 pounds per gallon & yield = 1.40 cubic feet per sack). Excess: >100%. At least 10 centralizers will be installed.

Production liner will be cemented to $\approx 3,500'$ (i. e., 200' of overlap with intermediate casing.). Lead with ≈ 225 sacks light weight + additives (weight = 11.4 pounds per gallon & yield = 2.16 cubic feet per sack). Tail with ≈ 100 sacks 50/50 Class G/Poz + additives (weight = 13.5 pounds per gallon & yield = 1.41 cubic feet per sack). Excess: >20%. At least 10 centralizers will be installed.

Questar Exploration and Production Company
Horton 1 C
750' FNL & 1185' FEL
Sec. 7, T. 31 N., R. 11 W.
San Juan County, New Mexico

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5. MUD PROGRAM

Fresh water LSND with gel and polymer sweeps will be used from surface to ^{above} ~~below~~ 3,700 feet. Mud weight ^{above} ~~below~~ 3,700' will be <9.0 pounds per gallon. Weight will be increased as needed to maintain hole stability and control any gas influx into the intermediate hole.

The hole will be drilled with air below intermediate casing to TD. If the hole gets wet in this section then a light mud up will be required.

Sufficient mud materials to stabilize well bore (for either well control or lost circulation scenarios) will be maintained at the pad. No chrome based additives will be used.

6. CORES, TESTS, & LOGS

No cores, drill stem tests, or mud logs are planned. A Triple Combination (mud) log suite will be used from the base of the intermediate casing to the base of the surface casing. A Triple Combination (air) log suite will be used from TD to the intermediate casing.

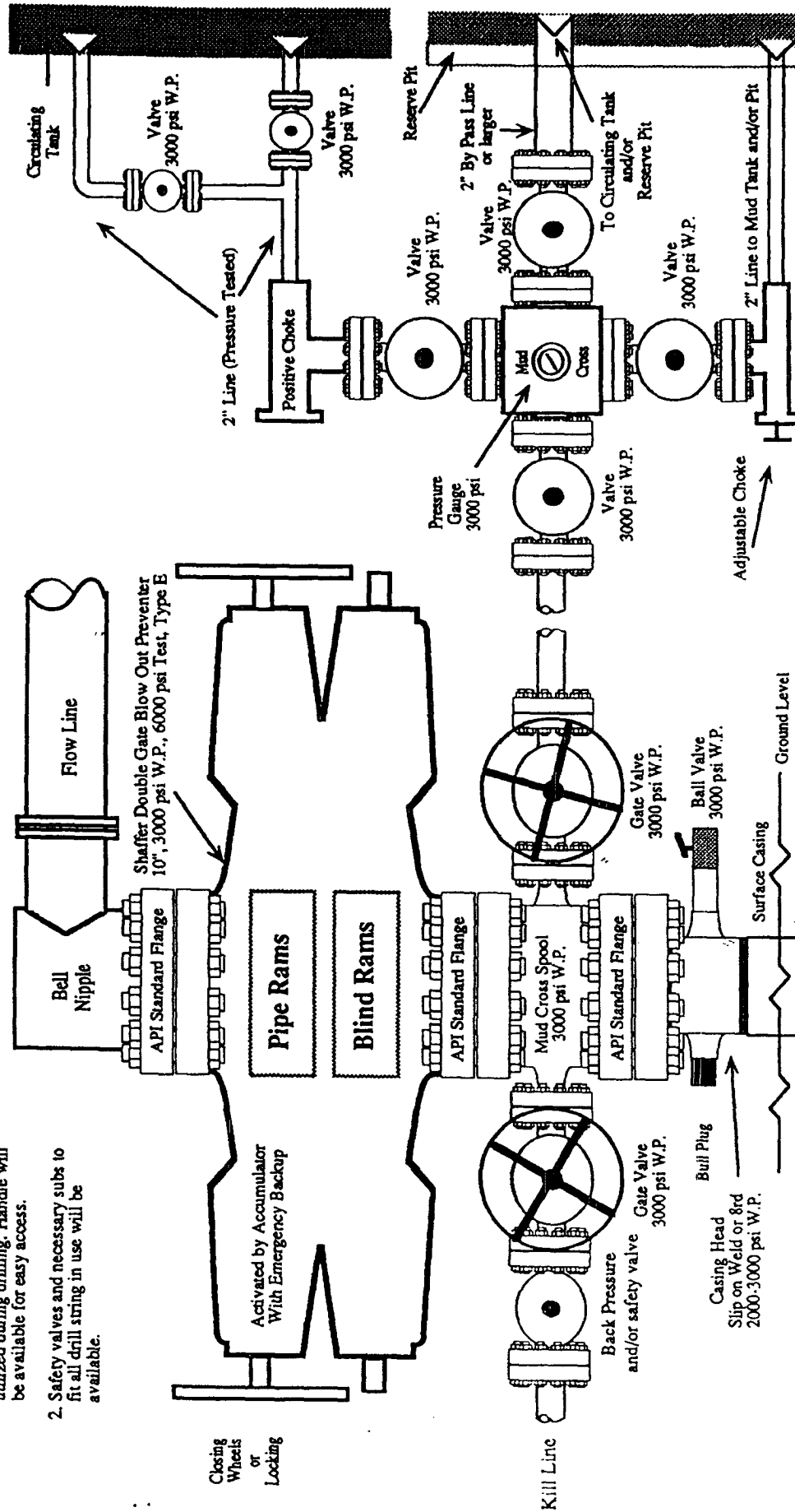
7. DOWN HOLE CONDITIONS

Maximum shut-in surface pressure will be ^{ABHP ~ 2600 psi} $\approx 1,500$ psi. BOP system is sufficient to control pressure. No abnormal temperatures (bottom hole = 180° F) or hydrogen sulfide are expected. Moderate lost circulation may occur in the Fruitland, Pictured Cliffs, and Mesa Verde. Hole deviation is probable below $\approx 3,000'$. Square drill collar and/or air hammers will be used while air drilling.

2,000 PSI BOP SYSTEM

Note: 1. An upper Kelly cock valve will be utilized during drilling. Handle will be available for easy access.

2. Safety valves and necessary subs to fit all drill string in use will be available.



Note: This equipment is designed to meet requirements for a 2-M rating standard per 43 CFR part 3160 (amended). Proper operation and testing of equipment will be carried out per standard. 2,000 psi equipment can be substituted in the drawing to meet minimum requirements per standard.