

APPENDIX A

MASTER DRILLING PLAN

Pinnacle Gas Resources, Inc. Sweetwater South Federal POD Sweetwater County, Wyoming

Plan of Development (POD) – Interim Coalbed Methane Wells

The Pinnacle Gas Resources, Inc. (Pinnacle) Sweetwater South Coalbed Methane Federal Plan of Development Project is located in Sweetwater County, Wyoming. This POD includes portions of Sections 26 and 35 in Township 23 North, Range 97 West.

The Sweetwater South Federal POD development proposal consists of 8 wells at 8 locations with attendant developments and facilities as shown on the Project Map (see Project Map in Section 5). These 8 wells, identified in Appendix 3.1 *Proposed Well List*, are coalbed methane (CBNG) exploration/development wells. The listed wells and corresponding leases are located within the Sweetwater South Coalbed Methane Federal Plan of Development Project area. Drill site locations will be on approved 80-acre spacing, although in the future, Pinnacle may find it necessary to increase that to 40-acre spacing.

1. ESTIMATED IMPORTANT GEOLOGICAL MARKERS

| <u>Formation</u> | <u>Depth (feet)</u> |
|------------------|---------------------|
| Fort Union | 1400 |
| Big Red | 3800 |

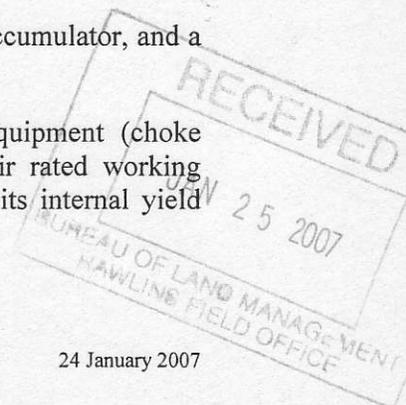
Please see Table 1-2: *Proposed Well List – Drilling Data* in Appendix 3.1 *Proposed Well List* for target coal seam for each well.

2. ESTIMATED DEPTH OF ANTICIPATED WATER OR GAS

Shallow sands from surface to the top of the Fort Union coals may contain fresh water. Any shallow water zones encountered will be adequately protected and reported. All potentially productive hydrocarbon zones will be cemented off.

3. PRESSURE CONTROL PROGRAM

- 1.0 TYPE:** 10” 2mm Hydril with choke, manifold, and 9”-10” casing head. There will be a fill line above the uppermost preventer.
- 2.0 PRESSURE RATING:** 2000 psi BOP, 2000 psi choke manifold and accumulator, and a 2000 psi casing head.
- 3.0 TESTING PROCEDURE:** Hydril preventer and related control equipment (choke manifold, Kelly cocks, etc.) will be pressure-tested to 100% of their rated working pressure for 10 minutes. The casing string will be tested to 70% of its internal yield strength.



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|---|------------|-------------|
| <i>Sweetwater South Federal POD</i> Pinnacle Gas Resources, Inc. | Rev | Date |
| | A | 12-Sep-06 |
| MASTER DRILLING PLAN – Section 3 Master Drilling Plan | B | 24- Jan-07 |
| | C | |

BOPs will be tested when installed, every 30 days, or when any seal is broken (per Onshore Order No. 2). The fill line will be 2", the kill line will be 2", and the choke relief line will be 3". BOP drills and tests will be recorded in the driller's log.

The choke manifold will be located outside the sub-structure or hydraulic BOP closing unit will be located at least 25 feet from the well head. Exact locations and configurations will depend on the particular rig contracted to drill each hole.

The choke line that connects the BOP stack to the choke manifold will be as straight as possible and turns, if required, will have a targeted T-block if the required BOP stack is three thousand pounds or greater. A flare line will be installed after the choke manifold and will extend a minimum of 125 feet from the center of the drill hole to the pit.

4. CASING AND CEMENTING PROGRAM

1.0 Casing Program

The wells will be drilled to an estimated total depth of less than 4800' (TMD). Surface casing on all Pinnacle Gas Resources, Inc. wells will always be at least 10% of the total depth of the well. Pinnacle Gas Resources, Inc. will cement all surface casings with Type III cement with returns of the cement slurry to surface.

| DEPTH | HOLE SIZE (inches) | CASING SIZE (inches) | GRADE | WT./FT. | JOINT |
|--------------|---------------------------|-----------------------------|--------------|----------------|--------------|
| * | 12 ¼ | 9 5/8 | J55 | 36# | ST&C |
| TD | 8 3/4 | 7 | J-55 | 23# | ST&C/LT&C |

Casing strings will be pressure tested to 0.22 psi/ft or 1500 psi, whichever is greater. Minimum design factors for tension, collapse, and burst are:

- Tension: 1.6
- Collapse: 1.125
- Burst: 1.0

2.0 Cementing Program

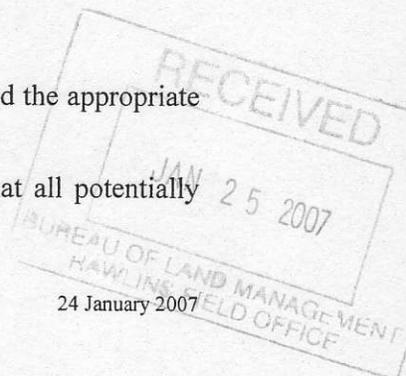
1.0.0 Surface Pipe

Surface pipe will be cemented back to the surface, with 100% excess, using CBM Lite cement and a 2% calcium chloride accelerator with additives.

2.0.0 Production Casing

Production casing will be cemented back to surface using lite cement and the appropriate number of sacks of Class G (tail).

A sufficient amount of cement will be used, in all cases, to ensure that all potentially



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| Sweetwater South Federal POD Pinnacle Gas Resources, Inc. | Rev | Date |
| | A | 12-Sep-06 |
| MASTER DRILLING PLAN – Section 3 Master Drilling Plan | B | 24- Jan-07 |
| | C | |

productive hydrocarbon zones are cemented off. Bond logs will be run in the event of lost circulation.

3.0.0 WOC Time

WOC time is a *minimum* of 12 hours until cement is stabilized.

4.0.0 Centralizers

Three (3) on bottom three (3) jts of surface pipe (1 on each jt.); three (3) on bottom of long string; one (1) in surface for production casing.

5. MUD PROGRAM

| TABLE 5-1 | | | | |
|-----------|-----------------------------------|--------|------------------|------------|
| INTERVAL | TYPE | WEIGHT | FUNNEL VISCOSITY | FLUID LOSS |
| 0-TD | Native/surfactants/LCM*/bentonite | 9.34 | 35-40 seconds | NC |

*Drilling mud would consist of fresh water, native clays, and bentonite gel. As hole conditions dictate, small amounts of polymer additives, potassium chloride salts, surfactants, and loss-circulation materials will be added for hole cleaning and stabilization.

6. WATER SOURCE

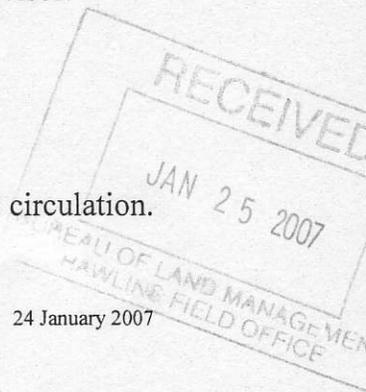
Water for the drilling program will be pulled from a private water well in the NENE Section 11, TR45, T24N, R97W near Hay Reservoir and from SWS State 01BR-36-23-97. Water analysis reports from both wells can be found in Appendix 6.2.

7. EVALUATION PROGRAM

- 1.0 **Logs:** Dual Induction/Gamma Ray (TD-surface), Density (optional)
- 2.0 **DSTs:** None anticipated
- 3.0 **Cores:** None anticipated
- 4.0 **Samples:** 10' samples to bottom of producing casing; 1' samples across coal. Evaluation program may change at the discretion of the well site supervisor.

8. ABNORMAL CONDITIONS

- 1.0 None anticipated during drilling and completion.
- 2.0 The surface sands and the Fort Union coal are potential zones of lost circulation.



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|--|------------|-------------|
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| | A | 12-Sep-06 |
| MASTER DRILLING PLAN – Section 3 Master Drilling Plan | B | 24- Jan-07 |
| | C | |

This will be alleviated by the use of lost circulation materials, as needed.

- 3.0 Maximum anticipated bottom hole pressure equals 2078 psi. Maximum anticipated surface pressure equals 0 psi.
- 4.0 Pinnacle does not expect to encounter any H₂S gas based on reports from previous drilling in the area at the same depth.

9. DRILLING ACTIVITY

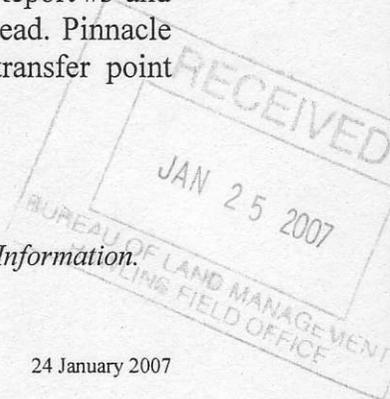
- 1.0 **Anticipated Starting Date:** BLM will be notified of spud date at least 24 hours in advance for each individual well.
- 2.0 **Drilling Days:** Approximately 10 days
- 3.0 **Completion Days:** Approximately 20 days
- 4.0 **Auxiliary Equipment and Additional Instructions:**
 - A Kelly cock will be kept in the string at all times.
 - Each tour, the mud system will be checked periodically.
 - A stabbing valve will be kept on the derrick floor to be stabbed into the drill pipe whenever the Kelly is not in the string.
 - No bit float will be used.

10. COMPLETION ACTIVITY/STIMULATION

- 1.0 **Perforate Big Red Coal:** Six (6) shots per foot with 4" casing gun.
- 2.0 **Frac with proposed frac program:** 6000# per foot with 20/40 frac sand.
- 3.0 **Tubing:** 2 7/8" J55, 6.4#.
- 4.0 **Drill site:** As approved, will be of sufficient size to accommodate all completion activities.
- 5.0 **Gas Measurement:** Pinnacle proposes and requests approval to use 2" meter tubes that are constructed in accordance with API 14.3/AGA 2000 Report #3 and EFCs that comply with the standards in NTL 2004-1 at the well head. Pinnacle will also have a centralized measurement facility at a custody transfer point planned for the northeast of Section 26, T23N, R97W.

11. NOTIFICATION

Specific contacts and phone numbers are located in Appendix 4.8 *Contact Information*.



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| MASTER DRILLING PLAN – Section 3 Master Drilling Plan | C | |

All wells (drilling, producing, suspended, or abandoned) shall be identified in accordance with 43 CFR 3162.6 which requires the name of the operator, lease number, well number, and location of the well. In accordance with *Onshore Oil & Gas Order No.1*, all wells will be reported on MMS form 3160-6, *Monthly Report of Operations and Production* (form #3160-6), starting with the month in which operations commenced and continuing each month until the well is physically plugged and abandoned.

All undesirable events (fires, accidents, blowouts, spills, discharges) as specified in NTL-3A will be reported to the Rawlins Field Office. Major events will be reported verbally within twenty-four (24) hours and will be followed with a written report within fifteen (15) days. 'Other than Major Events' will be reported in writing within fifteen (15) days. 'Minor Events' will be reported on the *Monthly Report of Operations and Production* (Form #3160-6).

No well abandonment operations will be commenced without the prior approval of the Authorized Officer (AO). In the case of newly-drilled dry holes or failures, and in emergency situations, oral approval will be obtained from the Area Petroleum Engineer.

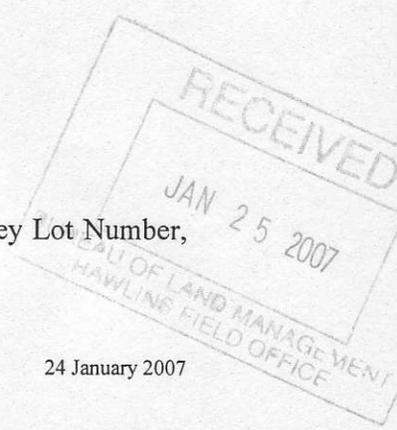
A *Notice of Intent to Abandon* (Form #3160-5) will be filed with the AO within fifteen (15) days following the granting of oral approval to plug and abandon. Upon completion of approval plugging, a regulation marker will be erected in accordance with 43 CFR 3162.6. The following information will be permanently placed on the marker with a plate or cap, or beaded-on with a welding torch: Operator Name, Well Name and Number, Location by Quarter/Quarter, Section, Township, Range, and Federal Lease Number.

A *Subsequent Report of Abandonment* (Form #3160-5) will be submitted within thirty (30) days following the actual plugging of the well bore. This report will indicate where plugs were placed and the current status of surface restoration operations. If surface restoration has not been completed at that time, a follow-up report on form 3160-5 will be filed when all surface restoration work has been completed and the location is considered ready for final inspection. Pursuant to NTL-4A, lessees and operators are authorized to vent/flare gas during initial well evaluation tests, not exceeding a period of thirty (30) days or the production of fifty (50) MMCF of gas, whichever occurs first. An application must be filed with the AO, and approval received, for any venting/flaring of gas beyond the initial thirty (30) days or otherwise authorized test period.

Not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than ninety (90) days, the operator shall notify the AO by letter or Sundry Notice of the date on which such production has begun or resumed.

The notification shall provide, as a minimum, the following information:

- Operator name, address, telephone number
- Well name and number
- Well location, i.e. quarter/quarter, applicable Dependent Resurvey Lot Number, township, range, and principal meridian.

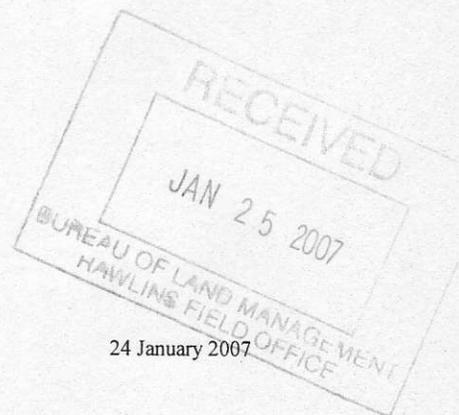


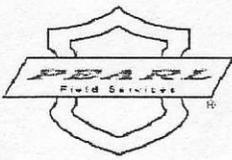
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| | Rev | Date |
| | A | 12-Sep-06 |
| | B | 24- Jan-07 |
| MASTER DRILLING PLAN – Section 3 Master Drilling Plan | C | |

- Date well was placed into production status
- The nature of the well’s production, i.e. crude oil, casinghead gas, natural gas, and entrained liquid hydrocarbons
- The OCS, Federal, or Indian lease prefix and number on which the well is located. Otherwise, the non-Federal or non-Indian land category, i.e. state or private.

As per 43 CFR 3162.7-4(d), within sixty (60) days following construction of a new tank battery, a site facility diagram of the battery showing actual conditions and piping must be submitted to the AO. Facility diagrams shall be filed within sixty (60) days after existing facilities are modified.

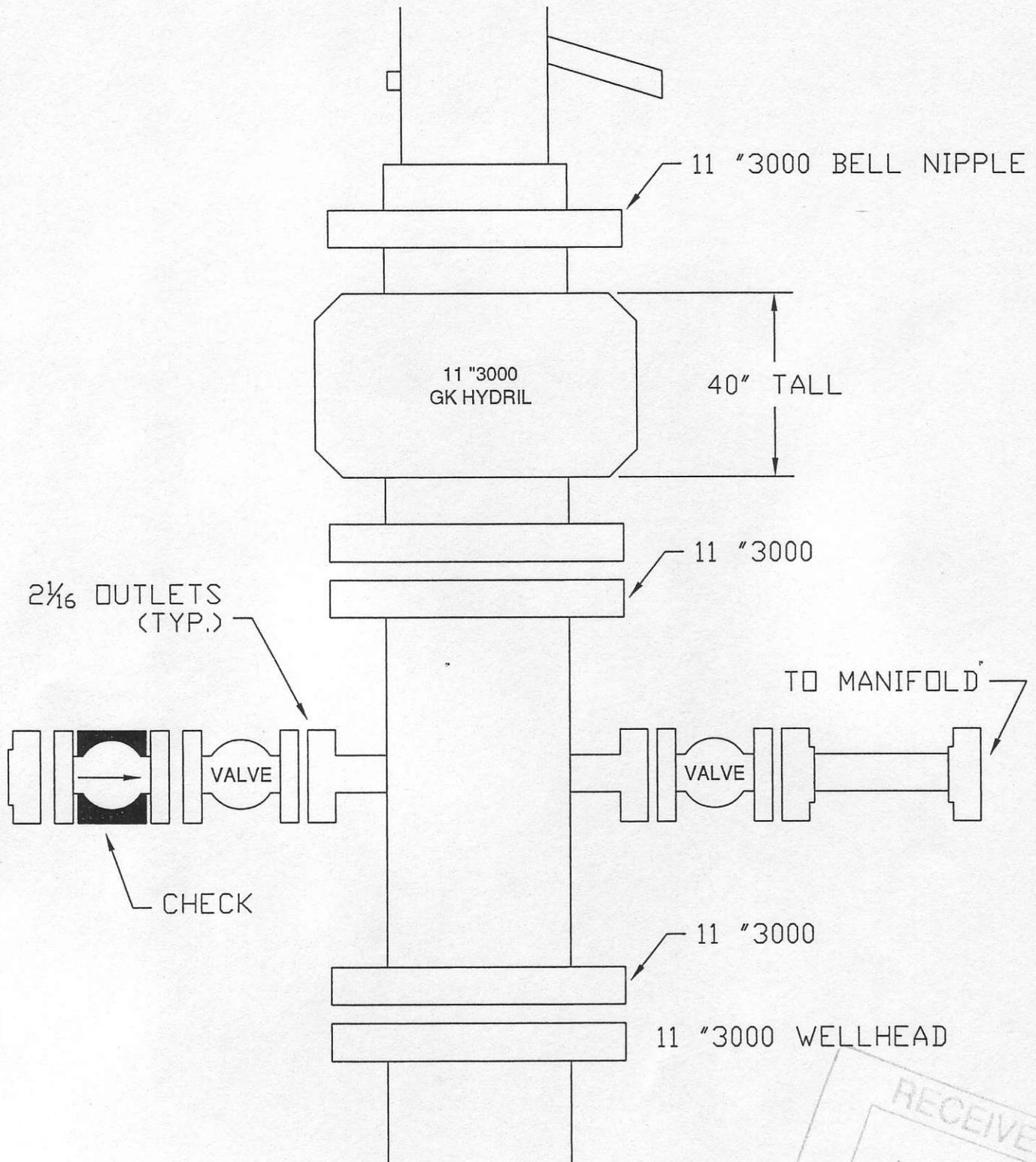
Pursuant to *Onshore Oil & Gas Order No.1*, lessees and operators have the responsibility to see that their exploration, development, production, and construction operations are conducted in such a manner which conforms with applicable Federal laws and regulations and with State and local laws and regulations to the extent that such state and local laws and regulations are applicable to operations on Federal and Indian lands.



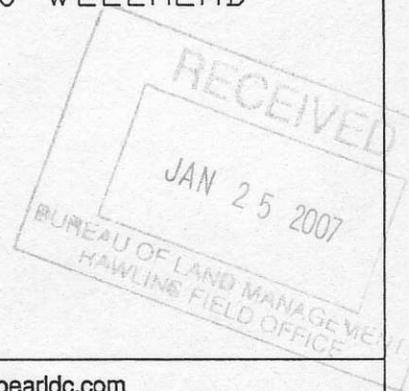


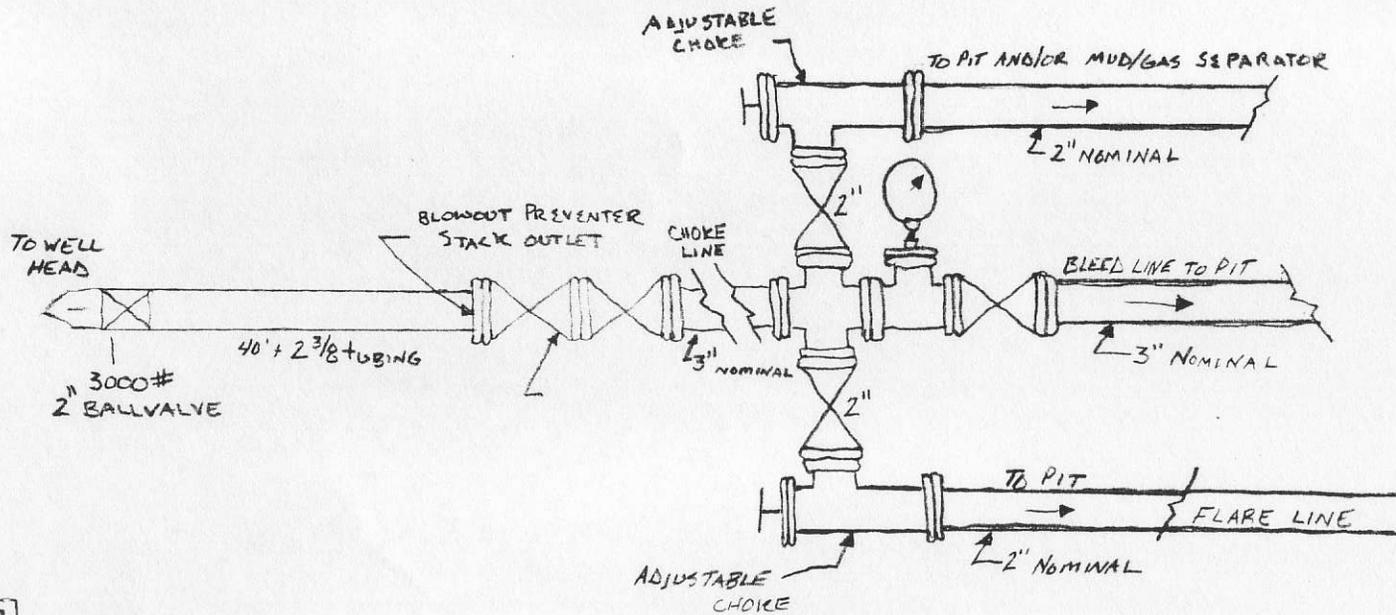
CLIENT: PINNACLE GAS RESOURCES, INC.
PROJECT NAME: SOUTH SWEETWATER PROJECT
PROJECT No.: 40-0034
DRAWING TITLE: DIVERTER SCHEMATIC DRAWING
DRAWING No.: SOUTH SWEETWATER DIVERTER SHT. 1

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|-----------|-----------|
| ISSUE | |
| REV. | A |
| REV. DATE | 23-JAN-07 |
| BY | JJR |
| APPROVED | |



DIVERTER SCHEMATIC





TYPICAL CHOKE MANIFOLD ASSEMBLY

6 VALVE MANIFOLD (GATE VALVES)
2 CHOKES 2 1/16" 5,000# VALVES

PINNACLE GAS RESOURCES, INC.

14 FEB 07

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FEB 15 2006
BUREAU OF LAND MANAGEMENT
RAWLINS FIELD OFFICE