API Well Number: 43047522570000

**STATE OF UTAH**
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT ☐

## APPLICATION FOR PERMIT TO DRILL

**1. WELL NAME and NUMBER**
Morgan State 921-36K4BS

**2. TYPE OF WORK**
DRILL NEW WELL ■ REENTER P&A WELL ☐ DEEPEN WELL ☐

**3. FIELD OR WILDCAT**
NATURAL BUTTES

**4. TYPE OF WELL**
Gas Well Coalbed Methane Well: NO

**5. UNIT or COMMUNITIZATION AGREEMENT NAME**

**6. NAME OF OPERATOR**
KERR-MCGEE OIL & GAS ONSHORE, L.P.

**7. OPERATOR PHONE**
720 929-6515

**8. ADDRESS OF OPERATOR**
P.O. Box 173779, Denver, CO, 80217

**9. OPERATOR E-MAIL**
julie.jacobson@anadarko.com

**10. MINERAL LEASE NUMBER (FEDERAL, INDIAN, OR STATE)**
ML 22265

**11. MINERAL OWNERSHIP**
FEDERAL ☐ INDIAN ☐ STATE ■ FEE ☐

**12. SURFACE OWNERSHIP**
FEDERAL ☐ INDIAN ☐ STATE ■ FEE ☐

**13. NAME OF SURFACE OWNER (if box 12 = 'fee')**

**14. SURFACE OWNER PHONE (if box 12 = 'fee')**

**15. ADDRESS OF SURFACE OWNER (if box 12 = 'fee')**

**16. SURFACE OWNER E-MAIL (if box 12 = 'fee')**

**17. INDIAN ALLOTTEE OR TRIBE NAME (if box 12 = 'INDIAN')**

**18. INTEND TO COMMINGLE PRODUCTION FROM MULTIPLE FORMATIONS**
YES ■ (Submit Commingling Application) NO ☐

**19. SLANT**
VERTICAL ☐ DIRECTIONAL ■ HORIZONTAL ☐

| 20. LOCATION OF WELL | FOOTAGES | QTR-QTR | SECTION | TOWNSHIP | RANGE | MERIDIAN |
|---|---|---|---|---|---|---|
| LOCATION AT SURFACE | 1262 FSL 1134 FWL | SWSW | 36 | 9.0 S | 21.0 E | S |
| Top of Uppermost Producing Zone | 1863 FSL 2139 FWL | NESW | 36 | 9.0 S | 21.0 E | S |
| At Total Depth | 1863 FSL 2139 FWL | NESW | 36 | 9.0 S | 21.0 E | S |

**21. COUNTY**
UINTAH

**22. DISTANCE TO NEAREST LEASE LINE (Feet)**
1863

**23. NUMBER OF ACRES IN DRILLING UNIT**
639

**25. DISTANCE TO NEAREST WELL IN SAME POOL (Applied For Drilling or Completed)**
306

**26. PROPOSED DEPTH**
MD: 10764 TVD: 10577

**27. ELEVATION - GROUND LEVEL**
5083

**28. BOND NUMBER**
22013542

**29. SOURCE OF DRILLING WATER / WATER RIGHTS APPROVAL NUMBER IF APPLICABLE**
43-8496

### Hole, Casing, and Cement Information

| String | Hole Size | Casing Size | Length | Weight | Grade & Thread | Max Mud Wt. | Cement | Sacks | Yield | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| Surf | 12.25 | 8.625 | 0 - 2640 | 28.0 | J-55 LT&C | 0.2 | Type V | 180 | 1.15 | 15.8 |
| | | | | | | | Class G | 270 | 1.15 | 15.8 |
| Prod | 7.875 | 4.5 | 0 - 10764 | 11.6 | HCP-110 LT&C | 13.0 | Premium Lite High Strength | 320 | 3.38 | 12.0 |
| | | | | | | | 50/50 Poz | 1570 | 1.31 | 14.3 |

### ATTACHMENTS

**VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES**

- ✔ WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER
- ✔ COMPLETE DRILLING PLAN
- ☐ AFFIDAVIT OF STATUS OF SURFACE OWNER AGREEMENT (IF FEE SURFACE)
- ☐ FORM 5. IF OPERATOR IS OTHER THAN THE LEASE OWNER
- ✔ DIRECTIONAL SURVEY PLAN (IF DIRECTIONALLY OR HORIZONTALLY DRILLED)
- ✔ TOPOGRAPHICAL MAP

**NAME** Danielle Piernot | **TITLE** Regulatory Analyst | **PHONE** 720 929-6156

**SIGNATURE** | **DATE** 12/20/2011 | **EMAIL** danielle.piernot@anadarko.com

**API NUMBER ASSIGNED**
43047522570000

**APPROVAL**

Permit Manager

RECEIVED: March 20, 2012

# Kerr-McGee Oil & Gas Onshore. L.P.

**MORGAN STATE 921-36K4BS**

Surface: 1262 FSL / 1134 FWL SWSW
BHL: 1863 FSL / 2139 FWL NESW

Section 36 T9S R21E

Unitah County, Utah
Mineral Lease: ML-22265

**ONSHORE ORDER NO. 1**

**DRILLING PROGRAM**

**1. & 2.a** **Estimated Tops of Important Geologic Markers:**
**Estimated Depths of Anticipated Water, Oil, Gas, or Mineral Formations:**

| Formation | Depth | Resource |
|---|---|---|
| Uinta | 0 - Surface | |
| Green River | 1,413' | |
| Birds Nest | 1,687' | Water |
| Mahogany | 2,188' | Water |
| Wasatch | 4,639' | Gas |
| Mesaverde | 7,310' | Gas |
| Sego | 9,497' | Gas |
| Castlegate | 9,552' | Gas |
| MN5 | 9,977' | Gas |
| TVD = | 10,577' | |
| TD = | 10,764' | |

**2.c** Kerr McGee Oil & Gas Onshore LP (Kerr McGee) will either drill to the the Blackhawk formation, which is part of the Mesaverde formation, or the Wasatch/Mesaverde formation. If Kerr McGee drills to the Blackhawk formation (part of the Mesaverde formation), please refer to MN5 as the bottom formation. The attached Blackhawk Drilling Program includes Total Vertical Depth, Total Depth, and appropriate casing and cement programs for the deeper formation.

If Kerr McGee drills to the Wasatch/Mesaverde formation please refer to Sego as the bottom formation. The attached Wasatch/Mesaverde Drilling Program includes Total Vertical Depth, Total Depth, and appropriate casing and cement programs for the depths the Wasatch/Mesaverde formations are found.

**3.** **Pressure Control Equipment** (Schematic Attached)

Please refer to the attached Blackhawk Drilling Program and the Wasatch/Mesaverde Drilling Program

RECEIVED: December 20, 2011

**4. Proposed Casing & Cementing Program:**

Please refer to the attached Blackhawk Drilling Program and the Wasatch/Mesaverde Drilling Program

**5. Drilling Fluids Program:**

Please refer to the attached Blackhawk Drilling Program and the Wasatch/Mesaverde Drilling Program

**6. Evaluation Program:**

Please refer to the attached Blackhawk Drilling Program and the Wasatch/Mesaverde Drilling Program

**7. Abnormal Conditions:**

**7.a Blackhawk (Part of Mesaverde Formation) Target Formation**

Maximum anticipated bottom hole pressure calculated at 10577' TVD, approximately equals 6,981 psi (0.66 psi/ft = actual bottomhole gradient)

Maximum Anticipated Bottom Hole Pressure (MABHP) = Pore Pressure at TD

Maximum anticipated surface pressure equals approximately 4,702 psi (bottom hole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/foot, per Onshore Order No. 2).

Per Onshore Order No. 2 - Max Anticipated Surf. Press.(MASP) = (Pore Pressure at next csg point-
(0.22 psi/ft-partial evac gradient x TVD of next csg point))

**7.b Wasach/Mesaverde Target Formation**

Maximum anticipated bottom hole pressure calculated at 9497' TVD, approximately equals 6,078 psi (0.64 psi/ft = actual bottomhole gradient)

Maximum Anticipated Bottom Hole Pressure (MABHP) = Pore Pressure at TD

Maximum anticipated surface pressure equals approximately 3,975 psi (bottom hole pressure minus the pressure of a partially evacuated hole calculated at 0.22 psi/foot, per Onshore Order No. 2).

Per Onshore Order No. 2 - Max Anticipated Surf. Press.(MASP) = (Pore Pressure at next csg point-
(0.22 psi/ft-partial evac gradient x TVD of next csg point))

**8. Anticipated Starting Dates:**

Drilling is planned to commence immediately upon approval of this application.

**9. Variances:**

Please refer to the attached Blackhawk Drilling Program and the Wasatch/Mesaverde Drilling Program
Onshore Order #2 – Air Drilling Variance

Kerr-McGee Oil & Gas Onshore LP (KMG) respectfully requests a variance to several requirements associated with air drilling outlined in Onshore Order 2

- Blowout Prevention Equipment (BOPE) requirements;
- Mud program requirements; and
- Special drilling operation (surface equipment placement) requirements associated with air drilling.

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This Standard Operating Practices addendum provides supporting information as to why KMG current air drilling practices for constructing the surface casing hole should be granted a variance to Onshore Order 2 air drilling requirements.

The reader should note that the air rig is used only to construct a stable surface casing hole through a historically difficult lost circulation zone. A conventional rotary rig follows the air rig, and is used to drill and construct the majority of the wellbore.

More notable, KMG has used the air rig layout and procedures outlined below to drill the surface casing hole in approximately 675 wells without incident of blow out or loss of life.

**Background**

In a typical well, KMG utilizes an air rig for drilling the surface casing hole, an interval from the surface to surface casing depths, which varies in depth from 1,700 to 2,800 feet. The air rig drilling operation does not drill through productive or over pressured formations in KMG field, but does penetrate the Uinta and Green River Formations. The purpose of the air drilling operation is to overcome the severe loss circulation zone in the Green River known as the Bird's Nest while creating a stable hole for the surface casing. The surface casing hole is generally drilled to approximately 500 feet below the Bird's Nest.

Before the surface air rig is mobilized, a rathole rig is utilized to set and cement conductor pipe through a competent surface formation. Generally, the conductor is set at 40 feet. In some cases, conductor may be set deeper in areas that the surface formation is not found competent. This rig also drills the rat and mouse holes in preparation for the surface casing and production string drilling operations.

The air rig is then mobilized to drill the surface casing hole by drilling a 12 1/4 inch hole for the first 200 feet, then will drill a 11inch hole to just above the Bird's Nest interval with an air hammer. The hammer is then tripped and replaced with a 11 inch tri-cone bit. The tri-cone bit is used to drill to the surface casing point, approximately 500 feet below the loss circulation zone (Bird's Nest). The 8-5/8 inch surface casing is then run and cemented in place, thereby isolating the lost circulation zone.

KMG fully appreciates Onshore Order 2 well control and safety requirements associated with a typical air drilling operations. However, the requirements of Onshore Order 2 are excessive with respect to the air rig layout and drilling operation procedures that are currently in practice to drill and control the surface casing hole in KMG Fields.

**Variance for BOPE Requirements**

The air rig operation utilizes a properly lubricated and maintained air bowl diverter system which diverts the drilling returns to a six-inch blooie line. The air bowl is the only piece of BOPE equipment which is installed during drilling operations and is sufficient to contain the air returns associated with this drilling operation. As was discussed earlier, the drilling of the surface hole does not encounter any over pressured or productive zones, and as a result standard BOPE equipment should not be required. In addition, standard drilling practices do not support the use of BOPE on 40 feet of conductor pipe.

**Variance for Mud Material Requirements**

Onshore Order 2 also states that sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring adequate well control. Once again, the surface hole drilling operations does not encounter over pressured or productive intervals, and as a result there is not a need to control pressure in the surface hole with a mud system. Instead of mud, the air rigs utilize water from the reserve pit for well control, if necessary. A skid pump which is located near the reserve pit (see attachment) will supply the water to the well bore.

**Variance for Special Drilling Operation (surface equipment placement) Requirements**

Onshore Order 2 requires specific safety distances or setbacks for the placement of associated standard air drilling equipment, wellbore, and reserve pits. The air rigs used to drill the surface holes are not typical of an air rig used to drill a producing hole in other parts of the US. These are smaller in nature and designed to fit a KMG location. The typical air rig layout for drilling surface hole in the field is attached.

RECEIVED: December 20, 2011

Typically the blooie line discharge point is required to be 100 feet from the well bore. In the case of a KMG well, the reserve pit is only 45 feet from the rig and is used for the drill cuttings. The blooie line, which transports the drill cuttings from the well to the reserve pit, subsequently discharges only 45 feet from the well bore.

Typically the air rig compressors are required to be located in the opposite direction from the blooie line and a minimum of 100 feet from the well bore. At the KMG locations, the air rig compressors are approximately 40 feet from the well bore and approximately 60 feet from the blooie line discharge due to the unique air rig design. The air compressors (see attachment) are located on the rig (1250 cfm) and on a standby trailer (1170 cfm). A booster sits between the two compressors and boosts the output from 350 psi to 2000 psi. The design does put the booster and standby compressor opposite from the blooie line.

Lastly, Onshore Order 2 addresses the need for an automatic igniter or continuous pilot light on the blooie line. The air rig does not utilize an igniter as the surface hole drilling operation does not encounter productive formations.

**Variance for FIT Requirements**
KMG also respectfully requests a variance to Onshore Order 2, Section III, Part Bi, for the pressure integrity test (PIT, also known as a formation integrity test (FIT)). This well is not an exploratory well and is being drilled in an area where the formation integrity is well known. Additionally, when an FIT is run with the mud weight as required, the casing shoe frequently breaks down and causes subsequent lost circulation when drilling the entire depth of the well.

**Conclusion**
The air rig operating procedures and the attached air rig layout have effectively maintained well control while drilling the surface holes in KMG Fields. KMG respectfully requests a variance from Onshore Order 2 with respect to air drilling well control requirements as discussed above.

**10. Other Information:**

Please refer to the attached Blackhawk Drilling Program and the Wasatch/Mesaverde Drilling Program

RECEIVED: December 20, 2011

KerrMcGee

## KERR-McGEE OIL & GAS ONSHORE LP

# BLACKHAWK DRILLING PROGRAM

| | | | |
|---|---|---|---|
| COMPANY NAME | KERR-McGEE OIL & GAS ONSHORE LP | DATE | December 19, 2011 |
| WELL NAME | **MORGAN STATE 921-36K4BS** | TD | 10,577' TVD 10,764' MD |
| FIELD | Natural Buttes | COUNTY Uintah | STATE Utah |
| FINISHED ELEVATION | 5,076' | | |
| SURFACE LOCATION | SWSW 1262 FSL 1134 FWL Sec 36 T 9S R 21E | | |
| | Latitude: 39.988875 Longitude: -109.504739 NAD 27 | | |
| BTM HOLE LOCATION | NESW 1863 FSL 2139 FWL Sec 36 T 9S R 21E | | |
| | Latitude: 39.99057 Longitude: -109.501153 NAD 27 | | |
| OBJECTIVE ZONE(S) | BLACKHAWK | | |
| ADDITIONAL INFO | Regulatory Agencies: UDOGM (Minerals), UDOGM (Surface), UDOGM Tri-County Health Dept. | | |

| GEOLOGICAL | | | MECHANICAL | | |
|---|---|---|---|---|---|
| LOGS | FORMATION TOPS | DEPTH | HOLE SIZE | CASING SIZE | MUD WEIGHT |
| | | 40' | | 14" | |
| | | 200' | 12-1/4 | 8-5/8", 28#, IJ-55, LTC | Air mist |
| | | | 11.00' | 8-5/8", 28#, IJ-55, LTC | Air mist |
| | Green River @ | 1,413' | | | |
| | Top of Birds Nest @ | 1,687' | | | |
| | Mahogany @ | 2,188' | | | |
| | Preset f/ GL @ 2,640' TVD | | | | |
| | Wasatch @ | 4,639' | | | |
| | Mesaverde @ | 7,310' TVD | | | |
| | Sego @ | 9,497' TVD | | | |
| | Castlegate @ | 9,552' TVD | | | |
| | MN5 @ | 9,977' TVD | | | |
| | TD @ | 10,577' TVD 10,764' MD | | | |

**All water flows encountered while drilling will be reported to the appropriate agencies.**

Note: 11" surface hole will usually be drilled ±400' below the lost circulation zone (aka bird's nest). Drilled depth may be ±200' of the estimated set depth depending on the acutal depth of the loss zone.

Mud logging program TBD
Cased hole logging program from TD - surf csg

| | | |
|---|---|---|
| 7-7/8" | 4-1/2" 11.6# HCP-110 Ultra DQX/LTC csg | Water / Fresh Water Mud 8.3-13.0 ppg |

Max anticipated Mud required 13.0 ppg

RECEIVED: December 20, 2011

# KERR-McGEE OIL & GAS ONSHORE LP

## BLACKHAWK DRILLING PROGRAM

### CASING PROGRAM

| | SIZE | INTERVAL | | | WT. | GR. | CPLG. | DESIGN FACTORS BURST | COLLAPSE | TENSION LTC | TENSION DQX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDUCTOR | 14" | 0-40' | | | | | | | | | |
| | | | | | | | | 3,390 | 1,880 | 348,000 | N/A |
| SURFACE | 8-5/8" | 0 | to | 2,640 | 28.00 | IJ-55 | LTC | 2.04 | 1.52 | 5.38 | N/A |
| | | | | | | | | 10,690 | 8,650 | 279,000 | 367,174 |
| PRODUCTION | 4-1/2" | 0 | to | 5,000 | 11.60 | HCP-110 | DQX | 1.19 | 1.21 | | 3.67 |
| | 4-1/2" | 5,000 | to | 10,764' | 11.60 | HCP-110 | LTC | 1.19 | 1.21 | 5.21 | |

**Surface Casing:**

(Burst Assumptions: TD = 13.0 ppg) 0.73 psi/ft = frac gradient @ surface shoe

Fracture at surface shoe with 0.1 psi/ft gas gradient above

(Collapse Assumption: Fully Evacuated Casing, Max MW) (Tension Assumptions: Air Weight of Casing*Buoy.Fact. of water)

**Production casing:**

(Burst Assumptions: Pressure test with 8.4ppg @ 9000 psi) 0.66 psi/ft = bottomhole gradient

(Collapse Assumption: Fully Evacuated Casing, Max MW) (Tension Assumptions: Air Weight of Casing*Buoy.Fact. of water)

### CEMENT PROGRAM

| | | FT. OF FILL | DESCRIPTION | SACKS | EXCESS | WEIGHT | | YIELD |
|---|---|---|---|---|---|---|---|---|
| SURFACE | LEAD | 500' | Premium cmt + 2% CaCl | 180 | 60% | 15.80 | | 1.15 |
| **Option 1** | | | + 0.25 pps flocele | | | | | |
| | TOP OUT CMT (6 jobs) | 1,200' | 20 gals sodium silicate + Premium cmt | 270 | 0% | 15.80 | | 1.15 |
| | | | + 2% CaCl + 0.25 pps flocele | | | | | |
| SURFACE | | | **NOTE: If well will circulate water to surface, option 2 will be utilized** | | | | | |
| **Option 2** | LEAD | 2,140' | 65/35 Poz + 6% Gel + 10 pps gilsonite | 200 | 35% | 11.00 | | 3.82 |
| | | | + 0.25 pps Flocele + 3% salt BWOW | | | | | |
| | TAIL | 500' | Premium cmt + 2% CaCl | 150 | 35% | 15.80 | | 1.15 |
| | | | + 0.25 pps flocele | | | | | |
| | TOP OUT CMT | as required | Premium cmt + 2% CaCl | as req. | | 15.80 | | 1.15 |
| PRODUCTION | LEAD | 4,134' | Premium Lite II +0.25 pps | 320 | 35% | 12.00 | | 3.38 |
| | | | celloflake + 5 pps gilsonite + 10% gel | | | | | |
| | | | + 0.5% extender | | | | | |
| | TAIL | 6,630' | 50/50 Poz/G + 10% salt + 2% gel | 1,570 | 35% | 14.30 | | 1.31 |
| | | | + 0.1% R-3 | | | | | |

*Substitute caliper hole volume plus 0% excess for LEAD if accurate caliper is obtained

*Substitute caliper hole volume plus 10% excess for TAIL if accurate caliper is obtained

### FLOAT EQUIPMENT & CENTRALIZERS

| | |
|---|---|
| SURFACE | Guide shoe, 1 jt, insert float. Centralize first 3 joints with bow spring centralizers. Thread lock guide shoe |
| PRODUCTION | Float shoe, 1 jt, float collar. 15 centralizers for a Mesaverde and 20 for a Blackhawk well. |

### ADDITIONAL INFORMATION

Test casing head to 750 psi after installing. Test surface casing to 1,500 psi prior to drilling out.

BOPE: 11" 5M with one annular and 2 rams. The BOPE will be installed before the production hole is drilled and tested to 5,000 psi (annular to 2,500 psi) prior to drilling out the surface casing shoe. Record on chart recorder and tour sheet. Function test rams on each trip. Maintain safety valve and inside BOP on rig floor at all times. Most rigs have top drives; however, if used, the Kelly is to be equipped with upper and lower kelly valves.

Surveys will be taken at 1,000' minimum intervals.

Most rigs have PVT System for mud monitoring. If no PVT is available, visual monitoring will be utilized.

**DRILLING ENGINEER:** Nick Spence / Danny Showers / Chad Loesel **DATE:**

**DRILLING SUPERINTENDENT:** Kenny Gathings / Lovel Young **DATE:**

RECEIVED: December 20, 2011

KerrMcGee

# KERR-McGEE OIL & GAS ONSHORE LP
# WASATCH/MESAVERDE DRILLING PROGRAM

| | | | |
|---|---|---|---|
| COMPANY NAME | KERR-McGEE OIL & GAS ONSHORE LP | DATE | December 19, 2011 |
| WELL NAME | **MORGAN STATE 921-36K4BS** | TD | 9,497' TVD 9,684' MD |
| FIELD | Natural Buttes | COUNTY Uintah | STATE Utah / FINISHED ELEVATION 5,076' |
| SURFACE LOCATION | SWSW 1262 FSL 1134 FWL Sec 36 T 9S R 21E | | |
| | Latitude: 39.988875 Longitude: -109.504739 NAD 27 | | |
| BTM HOLE LOCATION | NESW 1863 FSL 2139 FWL Sec 36 T 9S R 21E | | |
| | Latitude: 39.99057 Longitude: -109.501153 NAD 27 | | |
| OBJECTIVE ZONE(S) | Wasatch/Mesaverde | | |
| ADDITIONAL INFO | Regulatory Agencies: UDOGM (Minerals), UDOGM (Surface), UDOGM Tri-County Health Dept. | | |

| GEOLOGICAL | | | MECHANICAL | | |
|---|---|---|---|---|---|
| LOGS | FORMATION TOPS | DEPTH | HOLE SIZE | CASING SIZE | MUD WEIGHT |
| | | 40' | | 14" | |
| | | 200' | 12-1/4 | 8-5/8", 28#, IJ-55, LTC | Air mist |
| | | | 11.00' | 8-5/8", 28#, IJ-55, LTC | Air mist |
| | | | 7-7/8" | 4-1/2" 11.6# I-80 Ultra DQX/LTC csg | Water / Fresh Water Mud 8.3-12.5 ppg |

**All water flows encountered while drilling will be reported to the appropriate agencies.**

**Green River @ 1,413'**
**Top of Birds Nest @ 1,687'**
**Mahogany @ 2,188'**

**Preset f/ GL @ 2,640' TVD**

Note: 11" surface hole will usually be drilled ±400' below the lost circulation zone (aka bird's nest). Drilled depth may be ±200' of the estimated set depth depending on the acutal depth of the loss zone.

**Wasatch @ 4,639'**

Mud logging program TBD
Cased hole logging program from TD - surf csg

**Mesaverde @ 7,310' TVD**

**Sego 9,497' TVD**

Max anticipated Mud required 12.5 ppg

**TD @ 9,497' TVD**
**9,684' MD**

# KERR-McGEE OIL & GAS ONSHORE LP

## WASATCH/MESAVERDE DRILLING PROGRAM

### CASING PROGRAM

| | SIZE | INTERVAL | | | WT. | GR. | CPLG. | DESIGN FACTORS BURST | COLLAPSE | TENSION LTC | TENSION DQX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDUCTOR | 14" | 0-40' | | | | | | | | | |
| | | | | | | | | 3,390 | 1,880 | 348,000 | N/A |
| SURFACE | 8-5/8" | 0 | to | 2,640 | 28.00 | IJ-55 | LTC | 2.04 | 1.52 | 5.38 | N/A |
| | | | | | | | | 7,780 | 6,350 | | 267,035 |
| PRODUCTION | 4-1/2" | 0 | to | 5,000 | 11.60 | I-80 | DQX | 1.11 | 1.03 | | 2.94 |
| | | | | | | | | 7,780 | 6,350 | 223,000 | |
| | 4-1/2" | 5,000 | to | 9,684' | 11.60 | I-80 | LTC | 1.11 | 1.03 | 5.07 | |

**Surface Casing:**

(Burst Assumptions: TD = 12.5 ppg) 0.73 psi/ft = frac gradient @ surface shoe

Fracture at surface shoe with 0.1 psi/ft gas gradient above

(Collapse Assumption: Fully Evacuated Casing, Max MW) (Tension Assumptions: Air Weight of Casing*Buoy.Fact. of water)

**Production casing:**

(Burst Assumptions: Pressure test with 8.4ppg @ 7000 psi) 0.64 psi/ft = bottomhole gradient

(Collapse Assumption: Fully Evacuated Casing, Max MW) (Tension Assumptions: Air Weight of Casing*Buoy.Fact. of water)

### CEMENT PROGRAM

| | | FT. OF FILL | DESCRIPTION | SACKS | EXCESS | WEIGHT | | YIELD |
|---|---|---|---|---|---|---|---|---|
| SURFACE | LEAD | 500' | Premium cmt + 2% CaCl | 180 | 60% | 15.80 | | 1.15 |
| **Option 1** | | | + 0.25 pps flocele | | | | | |
| | TOP OUT CMT (6 jobs) | 1,200' | 20 gals sodium silicate + Premium cmt | 270 | 0% | 15.80 | | 1.15 |
| | | | + 2% CaCl + 0.25 pps flocele | | | | | |
| SURFACE | | | **NOTE: If well will circulate water to surface, option 2 will be utilized** | | | | | |
| **Option 2** | LEAD | 2,140' | 65/35 Poz + 6% Gel + 10 pps gilsonite | 200 | 35% | 11.00 | | 3.82 |
| | | | + 0.25 pps Flocele + 3% salt BWOW | | | | | |
| | TAIL | 500' | Premium cmt + 2% CaCl | 150 | 35% | 15.80 | | 1.15 |
| | | | + 0.25 pps flocele | | | | | |
| | TOP OUT CMT | as required | Premium cmt + 2% CaCl | as req. | | 15.80 | | 1.15 |
| PRODUCTION | LEAD | 4,134' | Premium Lite II +0.25 pps | 320 | 35% | 12.00 | | 3.38 |
| | | | celloflake + 5 pps gilsonite + 10% gel | | | | | |
| | | | + 0.5% extender | | | | | |
| | TAIL | 5,550' | 50/50 Poz/G + 10% salt + 2% gel | 1,310 | 35% | 14.30 | | 1.31 |
| | | | + 0.1% R-3 | | | | | |

*Substitute caliper hole volume plus 0% excess for LEAD if accurate caliper is obtained

*Substitute caliper hole volume plus 10% excess for TAIL if accurate caliper is obtained

### FLOAT EQUIPMENT & CENTRALIZERS

| | |
|---|---|
| SURFACE | Guide shoe, 1 jt, insert float. Centralize first 3 joints with bow spring centralizers. Thread lock guide shoe |
| PRODUCTION | Float shoe, 1 jt, float collar. 15 centralizers for a Mesaverde and 20 for a Blackhawk well. |

### ADDITIONAL INFORMATION

Test casing head to 750 psi after installing. Test surface casing to 1,500 psi prior to drilling out.

BOPE: 11" 5M with one annular and 2 rams. The BOPE will be installed before the production hole is drilled and tested to 5,000 psi (annular to 2,500 psi) prior to drilling out the surface casing shoe. Record on chart recorder and tour sheet. Function test rams on each trip. Maintain safety valve and inside BOP on rig floor at all times. Most rigs have top drives; however, if used, the Kelly is to be equipped with upper and lower kelly valves.

Surveys will be taken at 1,000' minimum intervals.

Most rigs have PVT System for mud monitoring. If no PVT is available, visual monitoring will be utilized.

**DRILLING ENGINEER:** _____ **DATE:** _____

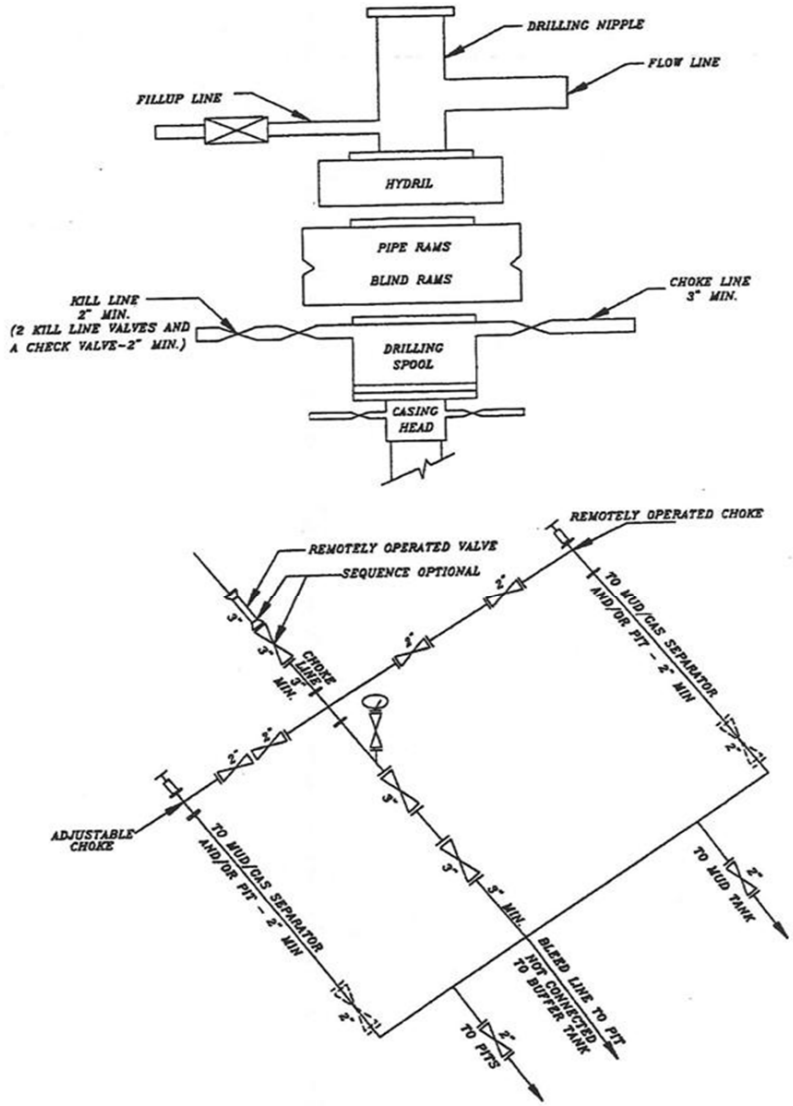
Nick Spence / Danny Showers / Chad Loesel

**DRILLING SUPERINTENDENT:** _____ **DATE:** _____

Kenny Gathings / Lovel Young

RECEIVED: December 20, 2011

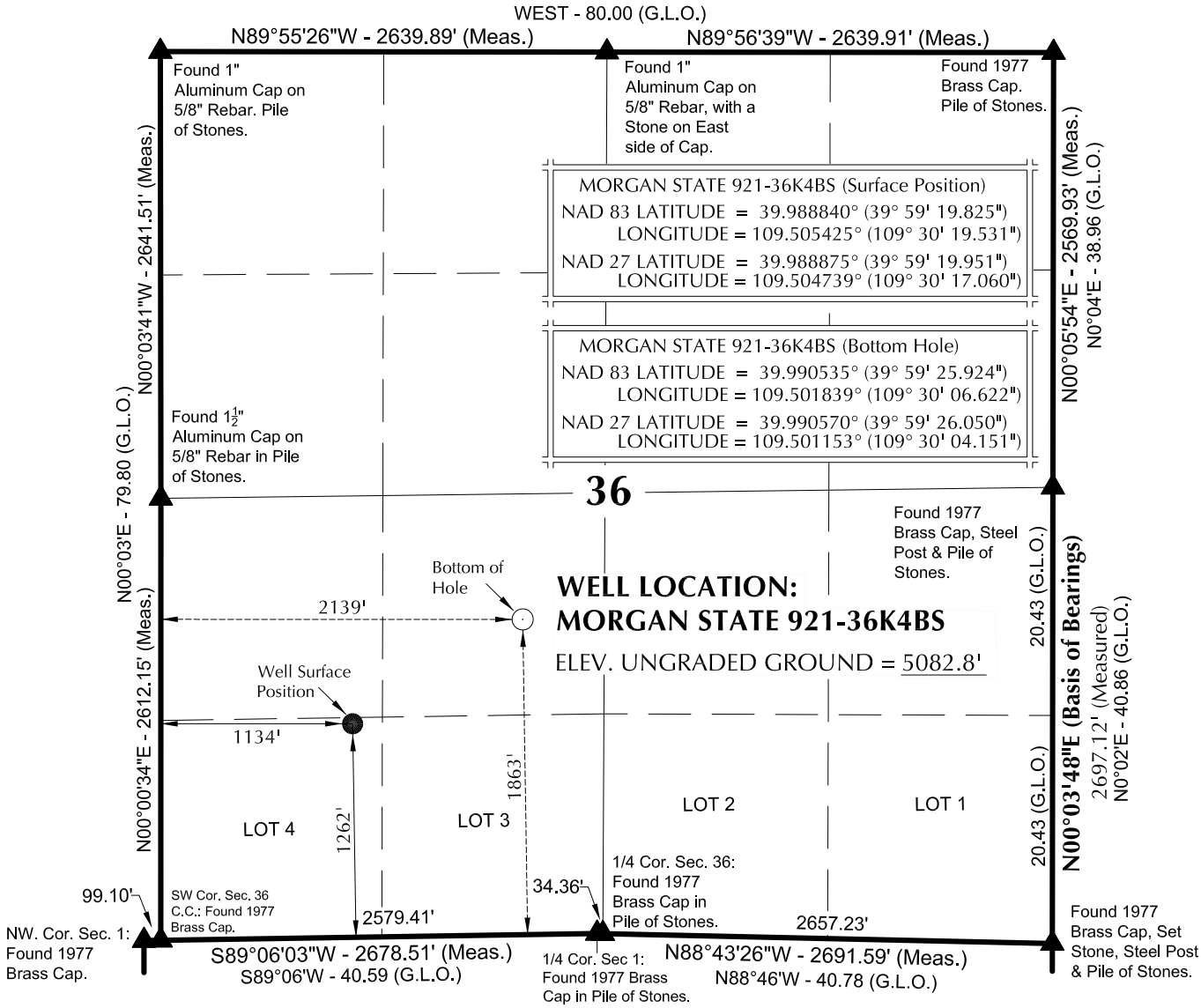
**EXHIBIT A**
**MORGAN STATE 921-36K4BS**




**SCHEMATIC DIAGRAM OF 5,000 PSI BOP STACK**

RECEIVED: December 20, 2011

# T9S, R21E, S.L.B.&M.




NOTES:

▲ = Section Corners Located

1. Well footages are measured at right angles to the Section Lines.
2. G.L.O. distances are shown in feet or chains. 1 chain = 66 feet.
3. The Bottom of hole bears N58°27'57"E 1179.54' from the Surface Position.
4. Bearings are based on Global Positioning Satellite observations.
5. Basis of elevation is Tri-Sta "Two Water" located in the NW ¼ of Section 1, T10S, R21E, S.L.B.&M. The elevation of this Tri-Sta is shown on the Big Pack Mtn NE 7.5 Min. Quadrangle as being 5238'.

N

1000' 500' 0' 1000'

SCALE

SURVEYOR'S CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

11-12-11

PROFESSIONAL LAND SURVEYOR No.6028691 JOHN R. LAUGHLIN STATE OF UTAH

PROFESSIONAL LAND SURVEYOR
REGISTRATION No. 6028691
STATE OF UTAH

**Kerr-McGee Oil & Gas Onshore, LP**
1099 18th Street - Denver, Colorado 80202

**WELL PAD: MORGAN STATE 921-36M**

**MORGAN STATE 921-36K4BS**
**WELL PLAT**
**1863' FSL, 2139' FWL (Bottom Hole)**
**NE ¼ SW ¼ OF SECTION 36, T9S, R21E, S.L.B.&M., UINTAH COUNTY, UTAH.**

609 CONSULTING, LLC
2155 North Main Street
Sheridan WY 82801
Phone 307-674-0609
Fax 307-674-0182

**TIMBERLINE** (435) 789-1365
ENGINEERING & LAND SURVEYING, INC.
209 NORTH 300 WEST - VERNAL, UTAH 84078

| | | |
|---|---|---|
| DATE SURVEYED: 8-29-11 | SURVEYED BY: M.S.B. | SHEET NO: 2 |
| DATE DRAWN: 10-26-11 | DRAWN BY: T.J.R. | |
| SCALE: 1" = 1000' | Date Last Revised: | 2 OF 18 |

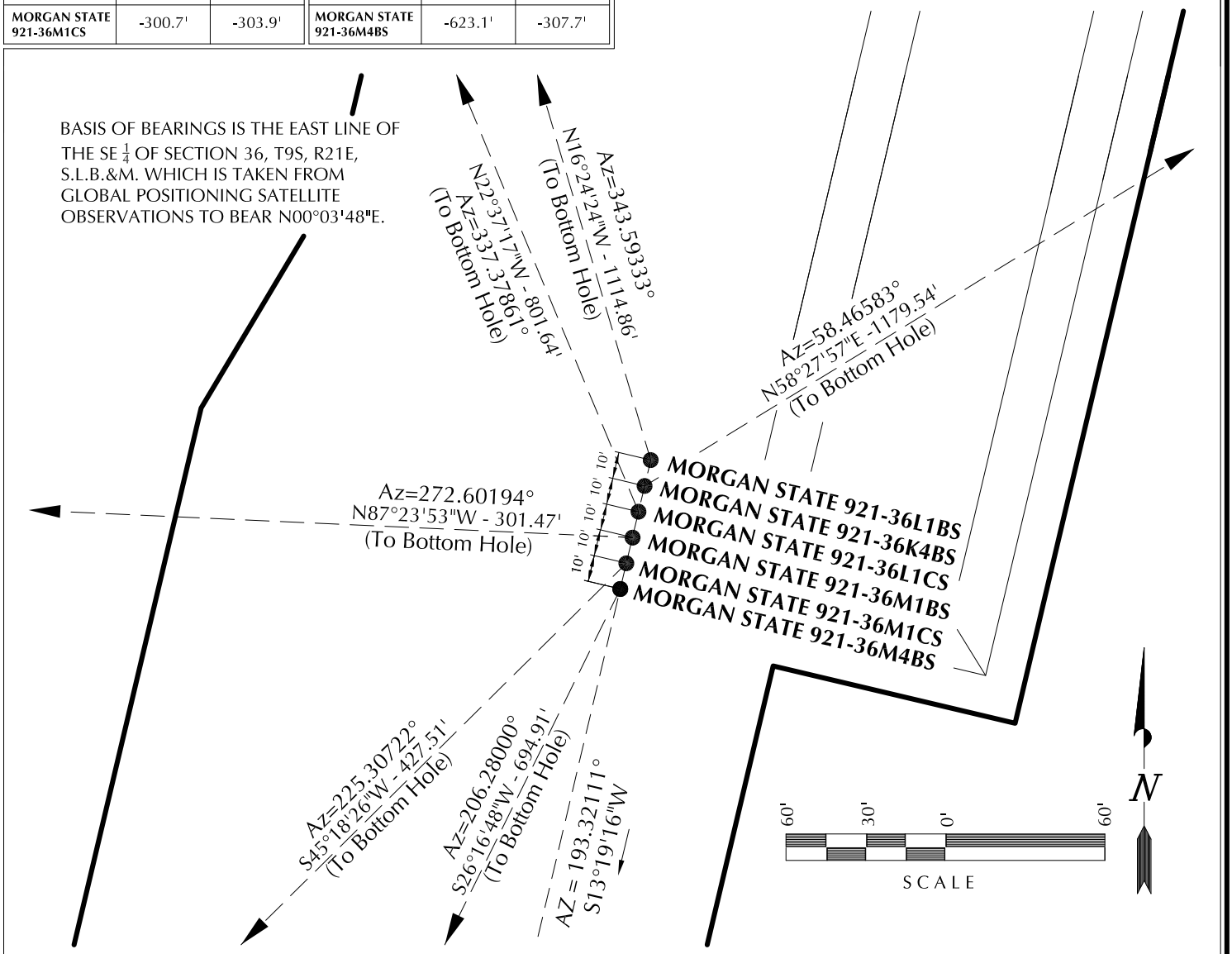
API Well Number: 43047522570000

| WELL NAME | SURFACE POSITION | | | | | BOTTOM HOLE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | NAD83 | | NAD27 | | | NAD83 | | NAD27 | | |
| | LATITUDE | LONGITUDE | LATITUDE | LONGITUDE | FOOTAGES | LATITUDE | LONGITUDE | LATITUDE | LONGITUDE | FOOTAGES |
| MORGAN STATE 921-36L1BS | 39°59'19.922"<br>39.988867° | 109°30'19.502"<br>109.505417° | 39°59'20.048"<br>39.988902° | 109°30'17.030"<br>109.504731° | 1272' FSL<br>1136' FWL | 39°59'30.487"<br>39.991802° | 109°30'23.553"<br>109.506542° | 39°59'30.613"<br>39.991837° | 109°30'21.081"<br>109.505856° | 2346' FSL<br>821' FWL |
| MORGAN STATE 921-36K4BS | 39°59'19.825"<br>39.988840° | 109°30'19.531"<br>109.505425° | 39°59'19.951"<br>39.988875° | 109°30'17.060"<br>109.504739° | 1262' FSL<br>1134' FWL | 39°59'25.924"<br>39.990535° | 109°30'06.622"<br>109.501839° | 39°59'26.050"<br>39.990570° | 109°30'04.151"<br>109.501153° | 1863' FSL<br>2139' FWL |
| MORGAN STATE 921-36L1CS | 39°59'19.729"<br>39.988814° | 109°30'19.561"<br>109.505434° | 39°59'19.855"<br>39.988849° | 109°30'17.089"<br>109.504747° | 1252' FSL<br>1131' FWL | 39°59'27.038"<br>39.990844° | 109°30'23.526"<br>109.506535° | 39°59'27.164"<br>39.990879° | 109°30'21.054"<br>109.505848° | 1997' FSL<br>823' FWL |
| MORGAN STATE 921-36M1BS | 39°59'19.633"<br>39.988787° | 109°30'19.590"<br>109.505442° | 39°59'19.759"<br>39.988822° | 109°30'17.119"<br>109.504755° | 1243' FSL<br>1129' FWL | 39°59'19.767"<br>39.988824° | 109°30'23.459"<br>109.506516° | 39°59'19.893"<br>39.988859° | 109°30'20.987"<br>109.505830° | 1261' FSL<br>828' FWL |
| MORGAN STATE 921-36M1CS | 39°59'19.536"<br>39.988760° | 109°30'19.620"<br>109.505450° | 39°59'19.662"<br>39.988795° | 109°30'17.149"<br>109.504763° | 1233' FSL<br>1127' FWL | 39°59'16.564"<br>39.987935° | 109°30'23.522"<br>109.506534° | 39°59'16.690"<br>39.987970° | 109°30'21.050"<br>109.505847° | 937' FSL<br>823' FWL |
| MORGAN STATE 921-36M4BS | 39°59'19.440"<br>39.988733° | 109°30'19.649"<br>109.505458° | 39°59'19.566"<br>39.988768° | 109°30'17.178"<br>109.504772° | 1223' FSL<br>1125' FWL | 39°59'13.283"<br>39.987023° | 109°30'23.597"<br>109.506555° | 39°59'13.409"<br>39.987058° | 109°30'21.126"<br>109.505868° | 605' FSL<br>817' FWL |

**RELATIVE COORDINATES** - From Surface Position to Bottom Hole

| WELL NAME | NORTH | EAST | WELL NAME | NORTH | EAST | WELL NAME | NORTH | EAST | WELL NAME | NORTH | EAST |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MORGAN STATE 921-36L1BS | 1069.5' | -314.9' | MORGAN STATE 921-36K4BS | 616.9' | 1005.4' | MORGAN STATE 921-36L1CS | 740.0' | -308.3' | MORGAN STATE 921-36M1BS | 13.7' | -301.2' |

| WELL NAME | NORTH | EAST | WELL NAME | NORTH | EAST |
|---|---|---|---|---|---|
| MORGAN STATE 921-36M1CS | -300.7' | -303.9' | MORGAN STATE 921-36M4BS | -623.1' | -307.7' |




**Kerr-McGee Oil & Gas Onshore, LP**
1099 18th Street - Denver, Colorado 80202

## WELL PAD - MORGAN STATE 921-36M

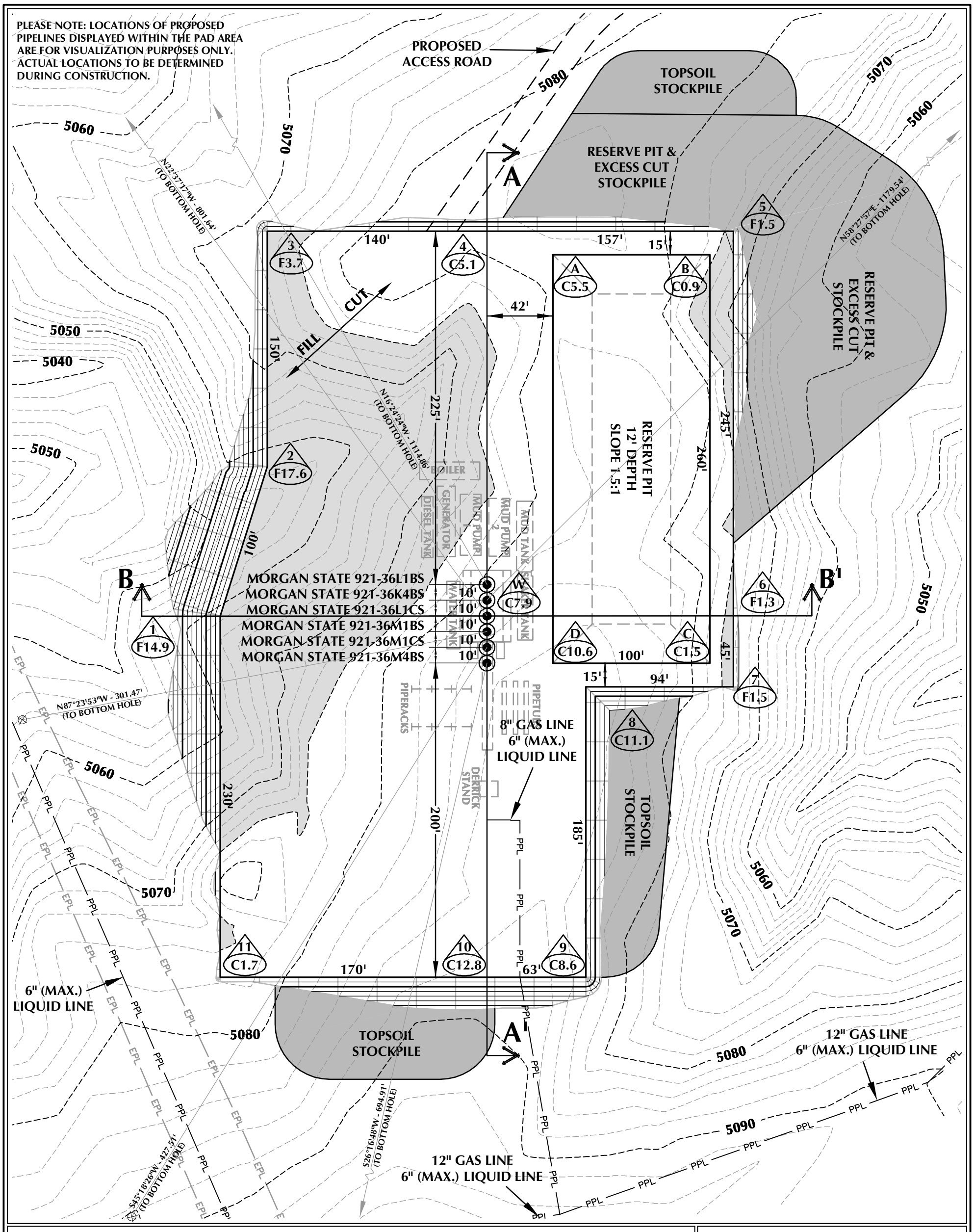
**WELL PAD INTERFERENCE PLAT**
**WELLS - MORGAN STATE 921-36L1BS, MORGAN STATE 921-36K4BS, MORGAN STATE 921-36L1CS, MORGAN STATE 921-36M1BS, MORGAN STATE 921-36M1CS & MORGAN STATE 921-36M4BS**
**LOCATED IN SECTION 36, T9S, R21E, S.L.B.&M., UINTAH COUNTY, UTAH.**

609
CONSULTING, LLC
2155 North Main Street
Sheridan WY 82801
Phone 307-674-0609
Fax 307-674-0182

**TIMBERLINE** (435) 789-1365
ENGINEERING & LAND SURVEYING, INC.
209 NORTH 300 WEST - VERNAL, UTAH 84078

| | | |
|---|---|---|
| DATE SURVEYED: 8-29-11 | SURVEYED BY: M.S.B. | SHEET NO: 7 |
| DATE DRAWN: 10-26-11 | DRAWN BY: T.J.R. | |
| SCALE: 1" = 60' | Date Last Revised: | 7 OF 18 |

RECEIVED: December 20, 2011




## WELL PAD - MORGAN STATE 921-36M DESIGN SUMMARY

EXISTING GRADE @ CENTER OF WELL PAD = 5083.9'
FINISHED GRADE ELEVATION = 5076.0'
CUT SLOPES = 1.5:1
FILL SLOPES = 1.5:1
TOTAL WELL PAD AREA = 3.47 ACRES
TOTAL DISTURBANCE AREA = 4.65 ACRES
SHRINKAGE FACTOR = 1.10
SWELL FACTOR = 1.00

**Kerr-McGee Oil & Gas Onshore, LP**
1099 18th Street - Denver, Colorado 80202

### WELL PAD QUANTITIES

TOTAL CUT FOR WELL PAD = 20,005 C.Y.
TOTAL FILL FOR WELL PAD = 15,958 C.Y.
TOPSOIL @ 6" DEPTH = 2,795 C.Y.
EXCESS MATERIAL = 4,047 C.Y.

### RESERVE PIT QUANTITIES

TOTAL CUT FOR RESERVE PIT
+/- 8,870 C.Y.
RESERVE PIT CAPACITY (2' OF FREEBOARD)
+/- 33,770 BARRELS

### WELL PAD LEGEND

- EXISTING WELL LOCATION
- PROPOSED WELL LOCATION
- PROPOSED BOTTOM HOLE LOCATION
- EXISTING CONTOURS (2' INTERVAL)
- PROPOSED CONTOURS (2' INTERVAL)
- PPL — PROPOSED PIPELINE
- EPL — EXISTING PIPELINE

HORIZONTAL 0 30' 60' 1" = 60'
2' CONTOURS

WELL PAD - MORGAN STATE 921-36M

WELL PAD - LOCATION LAYOUT
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

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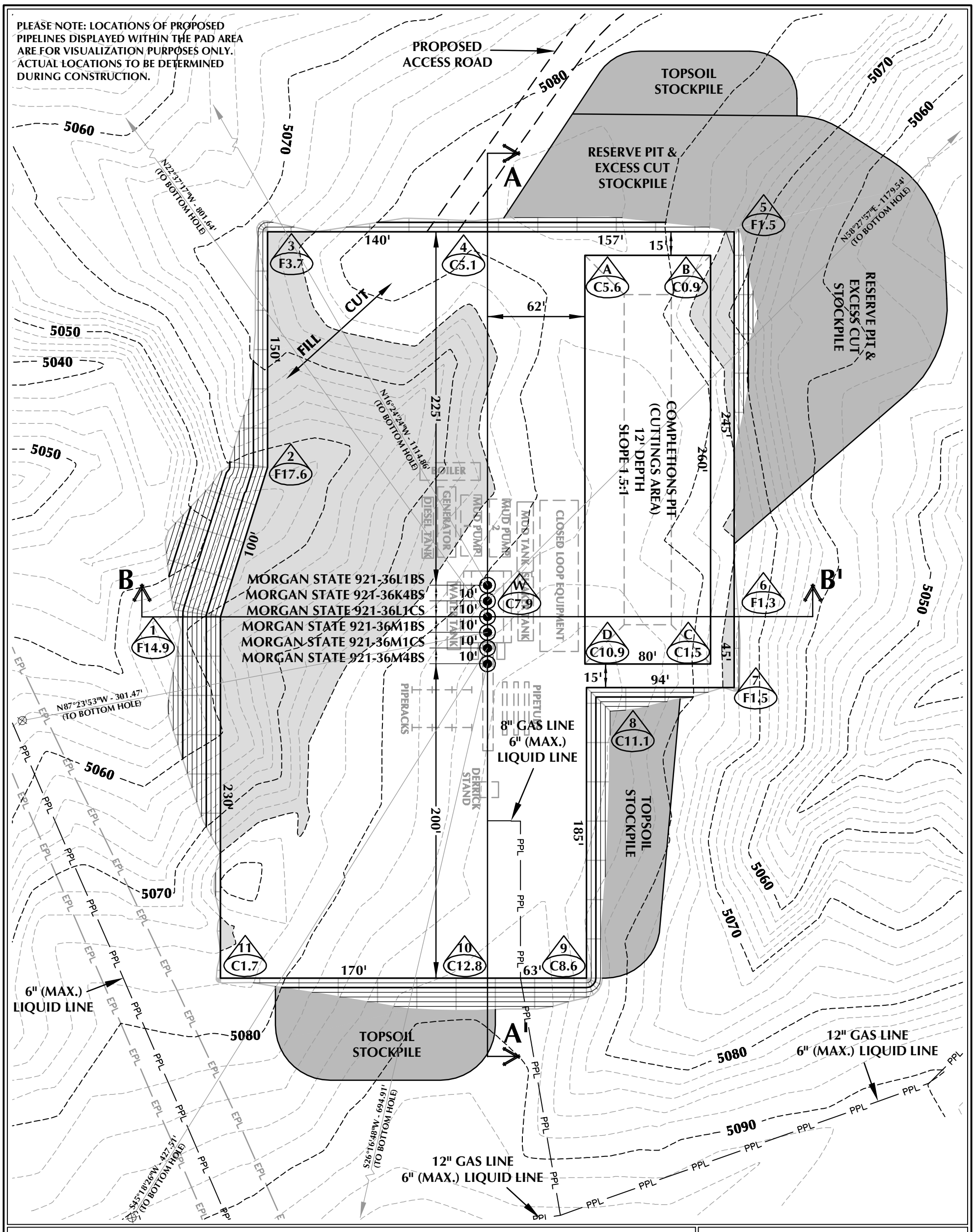
TIMBERLINE (435) 789-1365
ENGINEERING & LAND SURVEYING, INC.
209 NORTH 300 WEST - VERNAL, UTAH 84078

SCALE: 1"=60' | DATE: 11/11/11 | SHEET NO: 8
REVISED:
8 OF 18

K:\ANADARKO\2011\2011_65_NBU_FOCUS_921-36\DWGS\MORGAN STATE 921-36M\MORGAN STATE 921-36M.dwg, 11/15/2011 7:41:16 PM, andy

RECEIVED: December 20, 2011




## WELL PAD - MORGAN STATE 921-36M (CLOSED LOOP) DESIGN SUMMARY

EXISTING GRADE @ CENTER OF WELL PAD = 5083.9'
FINISHED GRADE ELEVATION = 5076.0'
CUT SLOPES = 1.5:1
FILL SLOPES = 1.5:1
TOTAL WELL PAD AREA = 3.47 ACRES
TOTAL DISTURBANCE AREA = 4.65 ACRES
SHRINKAGE FACTOR = 1.10
SWELL FACTOR = 1.00

**Kerr-McGee Oil & Gas Onshore, LP**
1099 18th Street - Denver, Colorado 80202

### WELL PAD QUANTITIES

TOTAL CUT FOR WELL PAD = 20,005 C.Y.
TOTAL FILL FOR WELL PAD = 15,958 C.Y.
TOPSOIL @ 6" DEPTH = 2,795 C.Y.
EXCESS MATERIAL = 4,047 C.Y.

### COMPLETIONS PIT QUANTITIES

TOTAL CUT FOR COMPLETIONS PIT
+/- 6,720 C.Y.
COMPLETIONS PIT CAPACITY
(2' OF FREEBOARD)
+/- 25,260 BARRELS

### WELL PAD LEGEND

- EXISTING WELL LOCATION
- PROPOSED WELL LOCATION
- PROPOSED BOTTOM HOLE LOCATION
- EXISTING CONTOURS (2' INTERVAL)
- PROPOSED CONTOURS (2' INTERVAL)
- PPL — PROPOSED PIPELINE
- EPL — EXISTING PIPELINE

HORIZONTAL 0 30' 60' 1" = 60'
2' CONTOURS

WELL PAD - MORGAN STATE 921-36M

WELL PAD - LOCATION LAYOUT
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

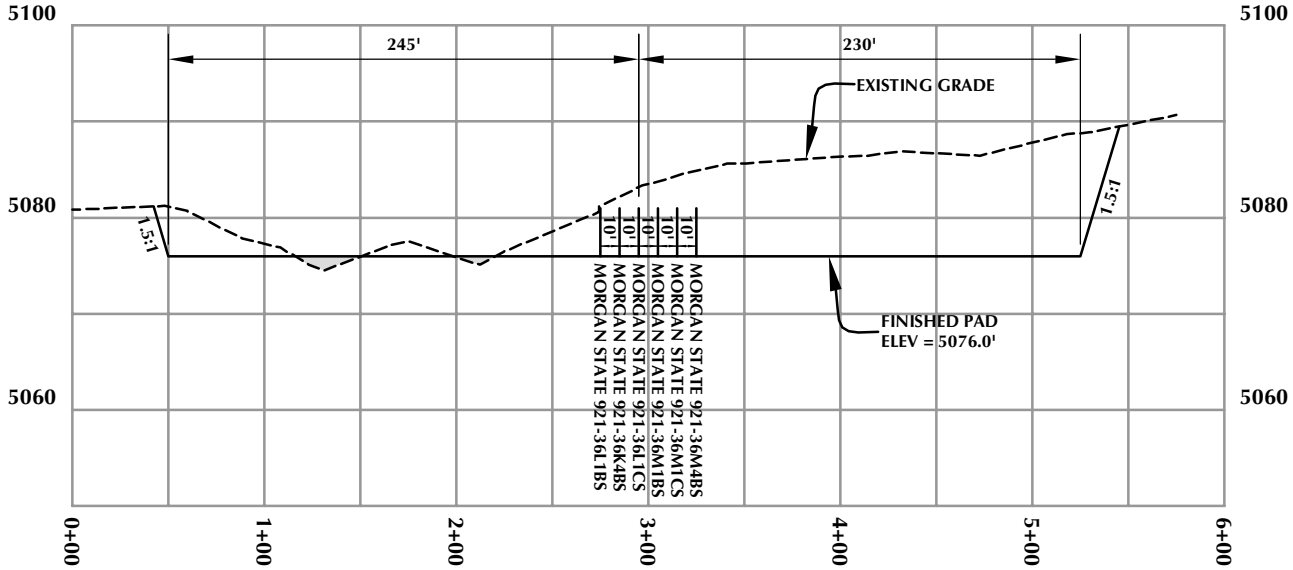
609 CONSULTING, LLC
2155 North Main Street
Sheridan, WY 82801
Phone 307-674-0609
Fax 307-674-0182

TIMBERLINE (435) 789-1365
ENGINEERING & LAND SURVEYING, INC.
209 NORTH 300 WEST - VERNAL, UTAH 84078

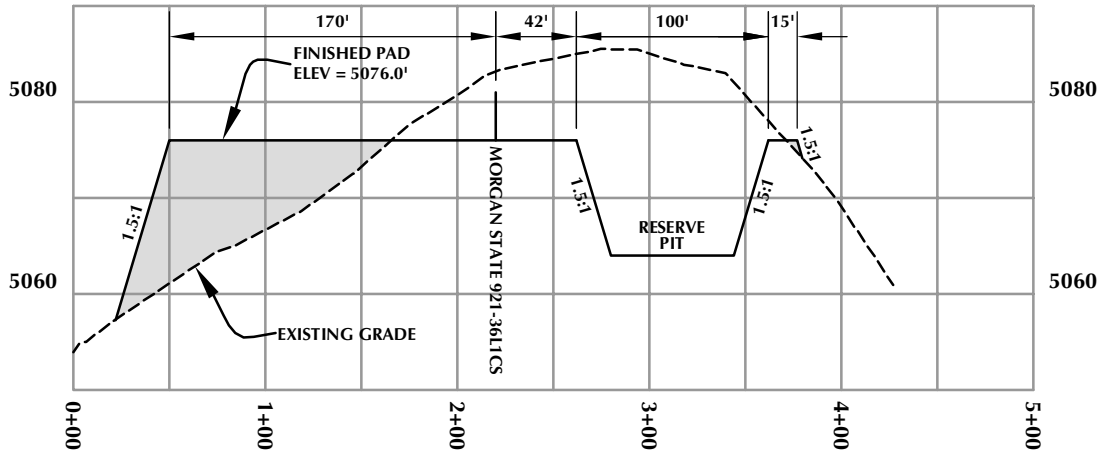
SCALE: 1"=60' | DATE: 11/15/11 | SHEET NO: 8B 8B OF 18
REVISED:

K:\ANADARKO\2011\2011_65_NBU_FOCUS_921-36\DWGS\MORGAN STATE 921-36M\MORGAN STATE 921-36M.dwg, 11/15/2011 9:46:14 PM, andy

RECEIVED: December 20, 2011




## CROSS SECTION A-A'




## CROSS SECTION B-B'

**Kerr-McGee Oil & Gas Onshore, LP**
1099 18th Street - Denver, Colorado 80202

**WELL PAD - MORGAN STATE 921-36M**

WELL PAD - CROSS SECTIONS
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

609
CONSULTING, LLC
2155 North Main Street
Sheridan, WY 82801
Phone 307-674-0609
Fax 307-674-0182

HORIZONTAL 0 50' 100' 1" = 100'
VERTICAL 0 10' 20' 1" = 20'

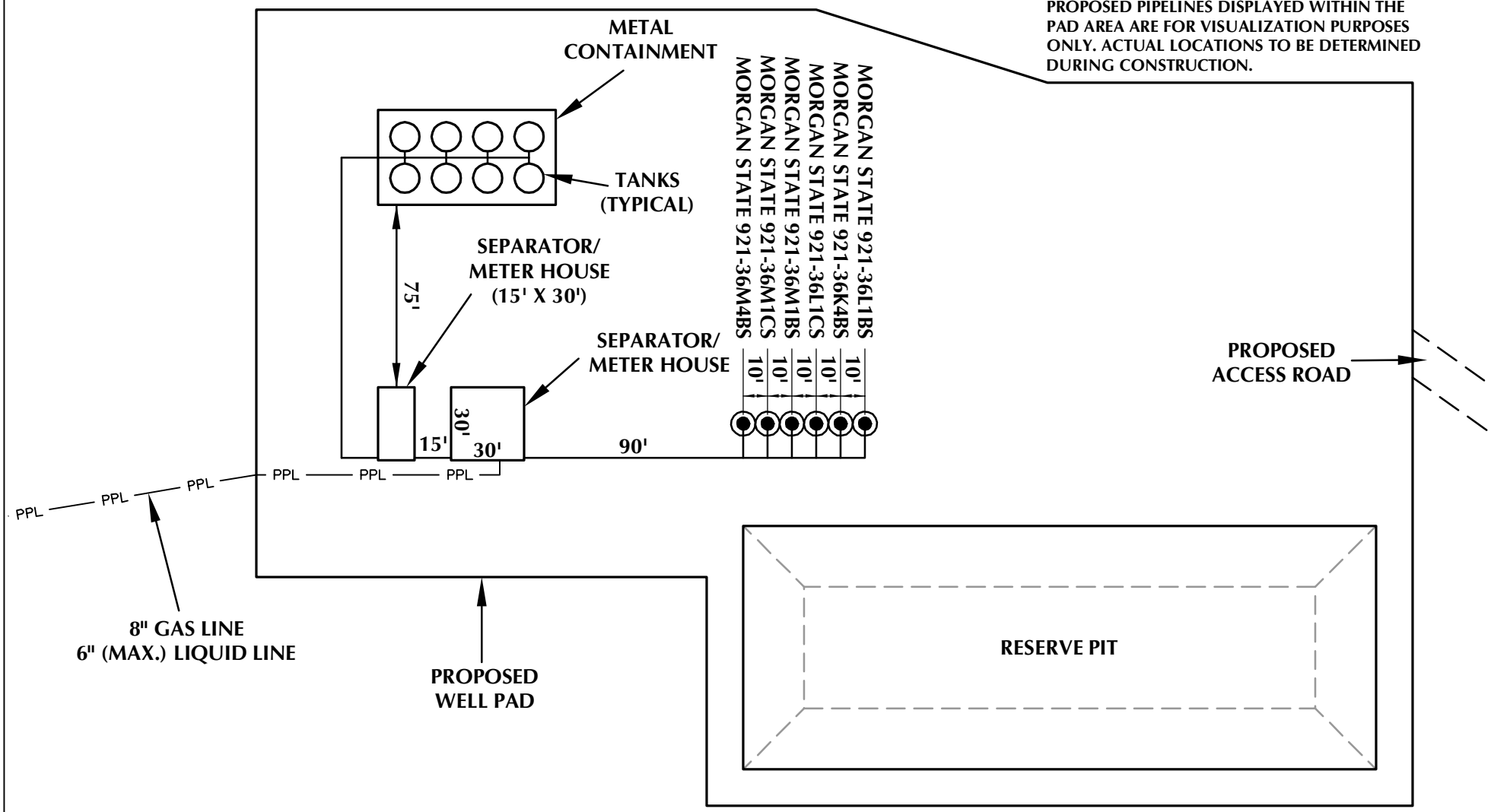
TIMBERLINE (435) 789-1365
ENGINEERING & LAND SURVEYING, INC.
209 NORTH 300 WEST - VERNAL, UTAH 84078

Scale: 1"=100' | Date: 11/11/11 | SHEET NO: 9
REVISED:
9 OF 18

K:\ANADARKO\2011\2011_65_NBU_FOCUS_921-36\DWGS\MORGAN STATE 921-36M\MORGAN STATE 921-36M.dwg, 11/15/2011 8:00:19 PM, andy

RECEIVED: December 20, 2011

PLEASE NOTE: LOCATIONS OF FACILITIES AND PROPOSED PIPELINES DISPLAYED WITHIN THE PAD AREA ARE FOR VISUALIZATION PURPOSES ONLY. ACTUAL LOCATIONS TO BE DETERMINED DURING CONSTRUCTION.




**Kerr-McGee Oil & Gas Onshore, LP**
1099 18th Street - Denver, Colorado 80202

**WELL PAD - MORGAN STATE 921-36M**

WELL PAD - FACILITIES DIAGRAM
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

609 CONSULTING, LLC
2155 North Main Street
Sheridan, WY 82801
Phone 307-674-0609
Fax 307-674-0182

**WELL PAD LEGEND**

- EXISTING WELL LOCATION
- PROPOSED WELL LOCATION
- PPL — PROPOSED PIPELINE
- EPL — EXISTING PIPELINE

HORIZONTAL 0 30' 60' 1" = 60'

TIMBERLINE (435) 789-1365
ENGINEERING & LAND SURVEYING, INC.
209 NORTH 300 WEST - VERNAL, UTAH 84078

Scale: 1"=60' | Date: 11/11/11 | SHEET NO: 10 | 10 OF 18
REVISED:

K:\ANADARKO\2011\2011_65_NBU_FOCUS_921-36\DWGS\MORGAN STATE 921-36M\MORGAN STATE 921-36M.dwg, 11/11/2011 3:42:32 PM, getty

API Well Number: 43047522570000

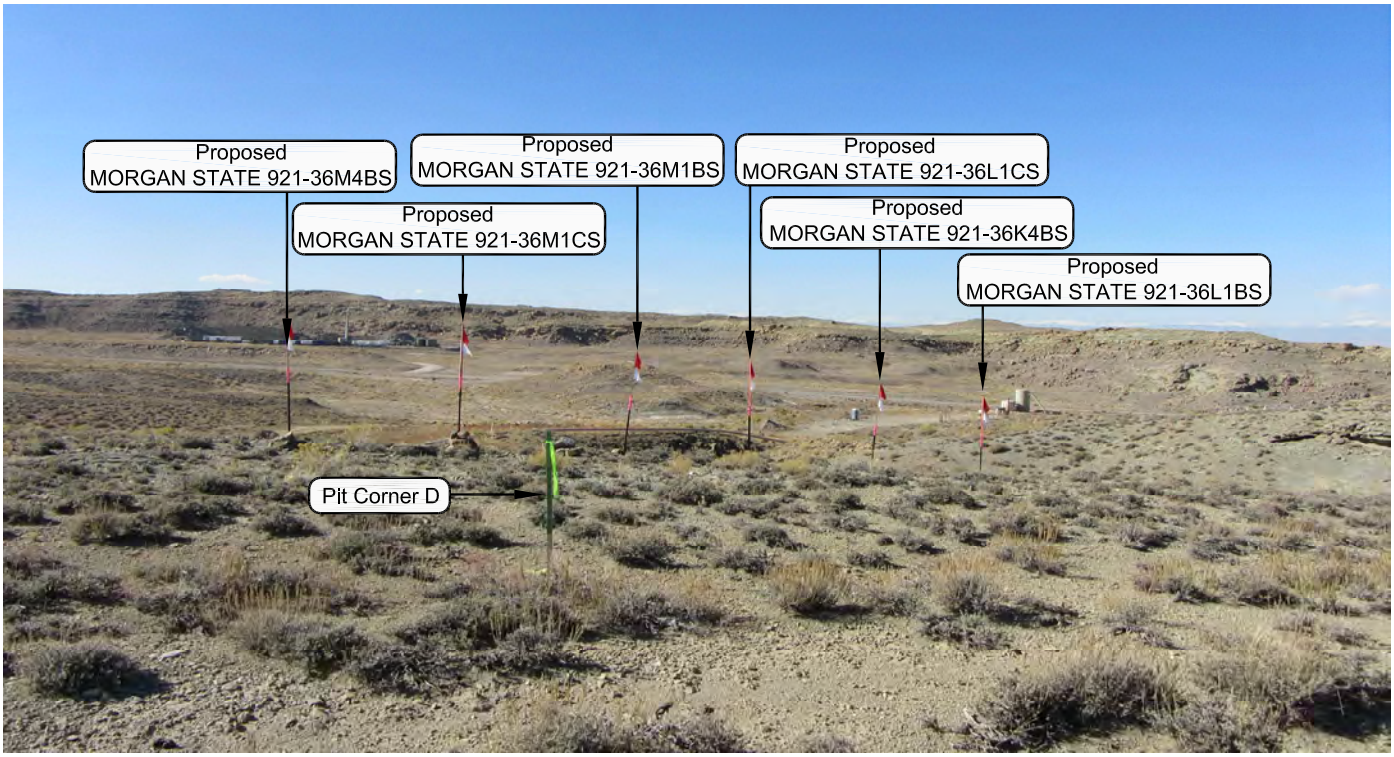



**PHOTO VIEW: FROM PIT CORNER D TO LOCATION STAKE** **CAMERA ANGLE: NORTHWESTERLY**

**PHOTO VIEW: FROM BEGINNING OF PROPOSED ROAD** **CAMERA ANGLE: SOUTHWESTERLY**

**Kerr-McGee Oil & Gas Onshore, LP**
1099 18th Street - Denver, Colorado 80202

**WELL PAD - MORGAN STATE 921-36M**

**LOCATION PHOTOS**
**MORGAN STATE 921-36L1BS, MORGAN STATE 921-36K4BS, MORGAN STATE 921-36L1CS, MORGAN STATE 921-36M1BS, MORGAN STATE 921-36M1CS & MORGAN STATE 921-36M4BS**
**LOCATED IN SECTION 36, T9S, R21E, S.L.B.&M., UINTAH COUNTY, UTAH.**

609
CONSULTING, LLC
2155 North Main Street
Sheridan WY 82801
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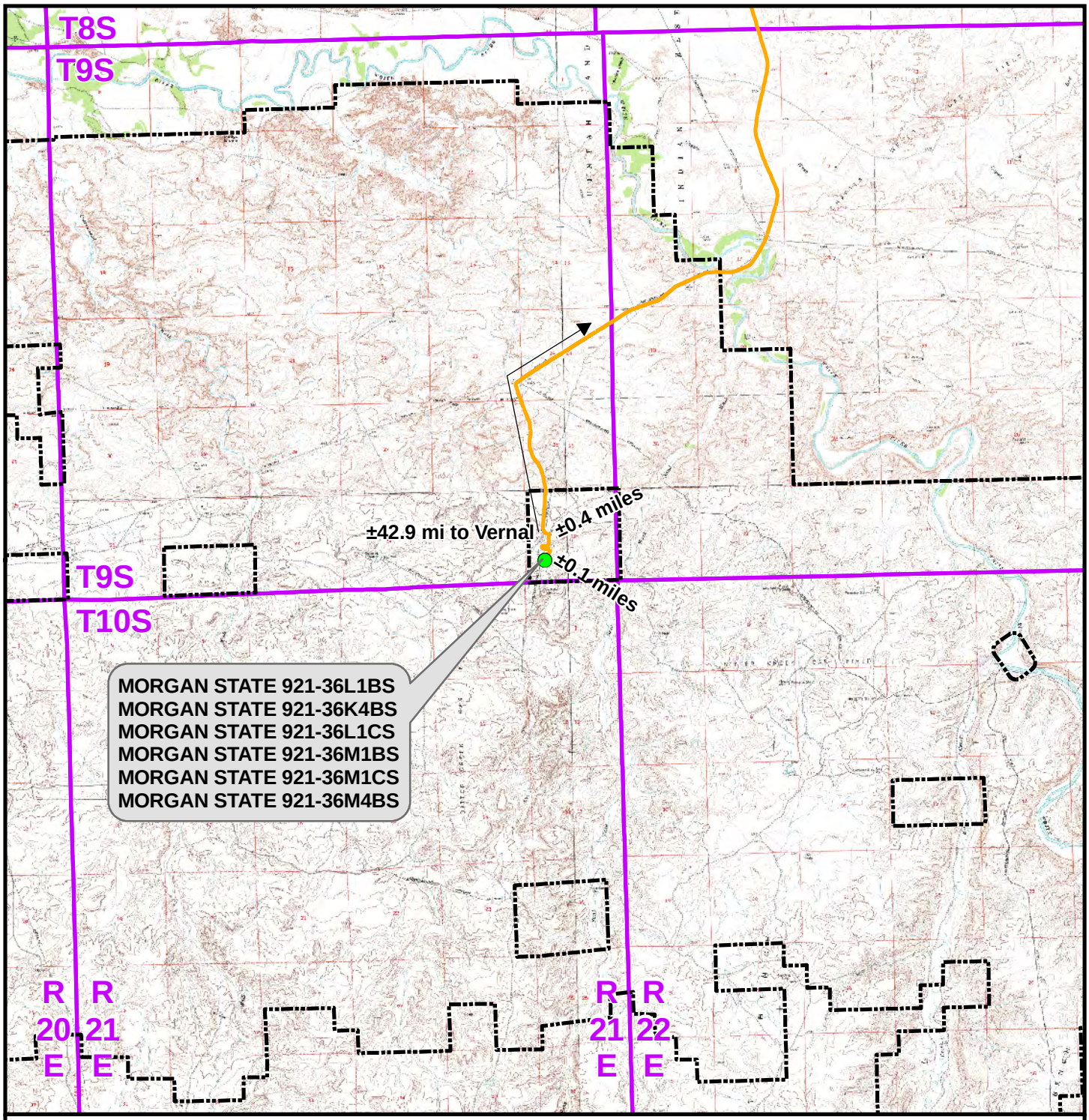
Fax 307-674-0182

TIMBERLINE (435) 789-1365
ENGINEERING & LAND SURVEYING, INC.
209 NORTH 300 WEST - VERNAL, UTAH 84078

| | | |
|---|---|---|
| DATE PHOTOS TAKEN: 8-29-11 | PHOTOS TAKEN BY: M.S.B. | SHEET NO: |
| DATE DRAWN: 10-26-11 | DRAWN BY: T.J.R. | 11 |
| Date Last Revised: | | 11 OF 18 |

RECEIVED: December 20, 2011




**Legend**

Distance From Well Pad - MORGAN STATE 921-36M To Unit Boundary: ±1,125ft

- Proposed Well Location
- Natural Buttes Unit Boundary
- Access Route - Proposed

**WELL PAD - MORGAN STATE 921-36M**

TOPO A
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

**Kerr-McGee Oil & Gas Onshore L.P.**

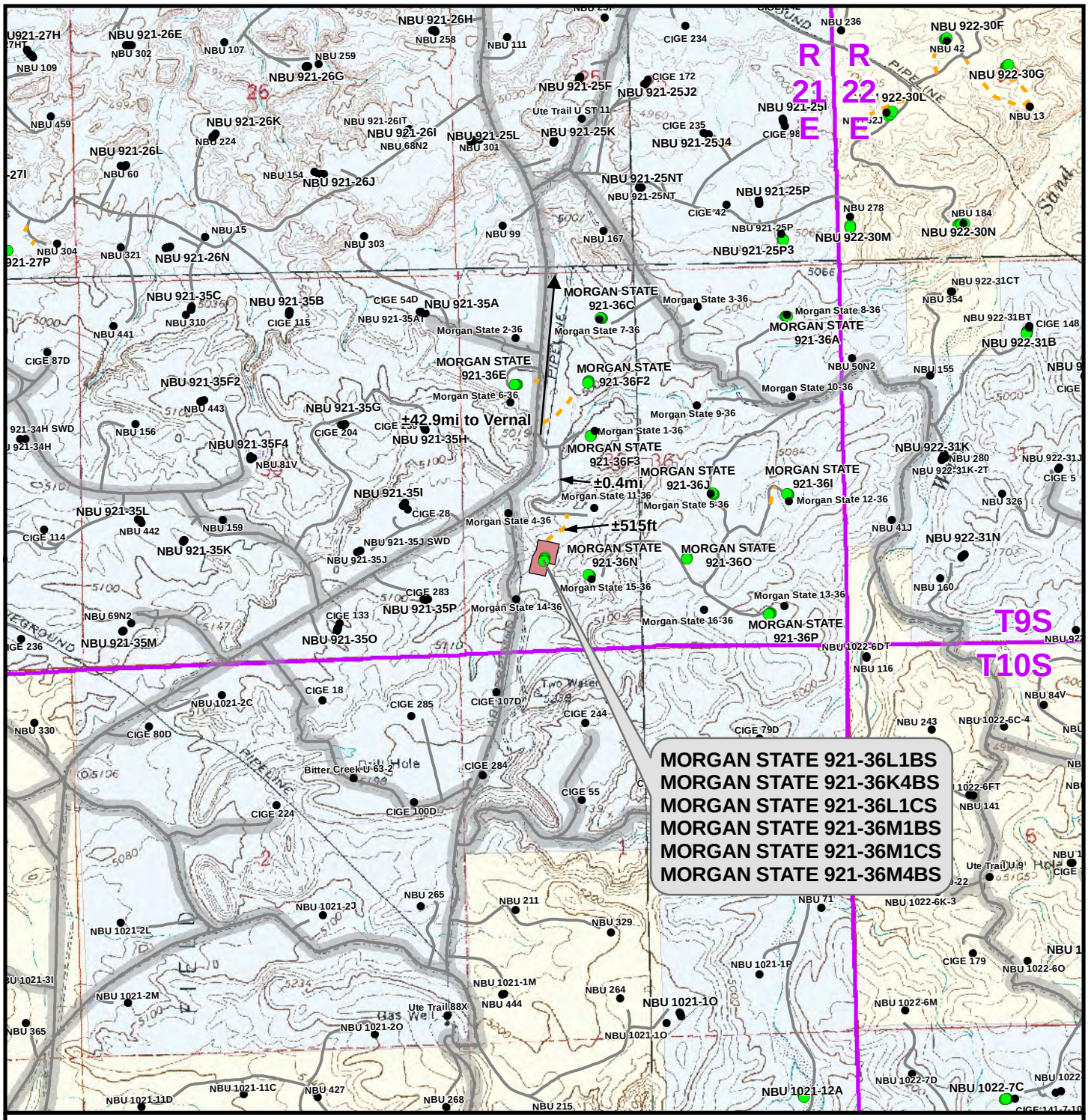
1099 18th Street
Denver, Colorado 80202

609 CONSULTING, LLC
2155 North Main Street
Sheridan, Wyoming 82801
Phone 307-674-0609
Fax 307-674-0182

N

| | | |
|---|---|---|
| SCALE: 1:100,000 | NAD83 USP Central | SHEET NO: 12 |
| DRAWN: TL | DATE: 11 Nov 2011 | |
| REVISED: | DATE: | 12 OF 18 |

RECEIVED: December 20, 2011




**Legend**

Total Proposed Road Length: ±515ft

- Well - Proposed
- Well - Existing
- Well Pad
- Road - Proposed
- Road - Existing
- County Road
- Bureau of Land Management
- Indian Reservation
- State
- Private

**WELL PAD - MORGAN STATE 921-36M**

TOPO B
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

**Kerr-McGee Oil & Gas Onshore L.P.**

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Denver, Colorado 80202

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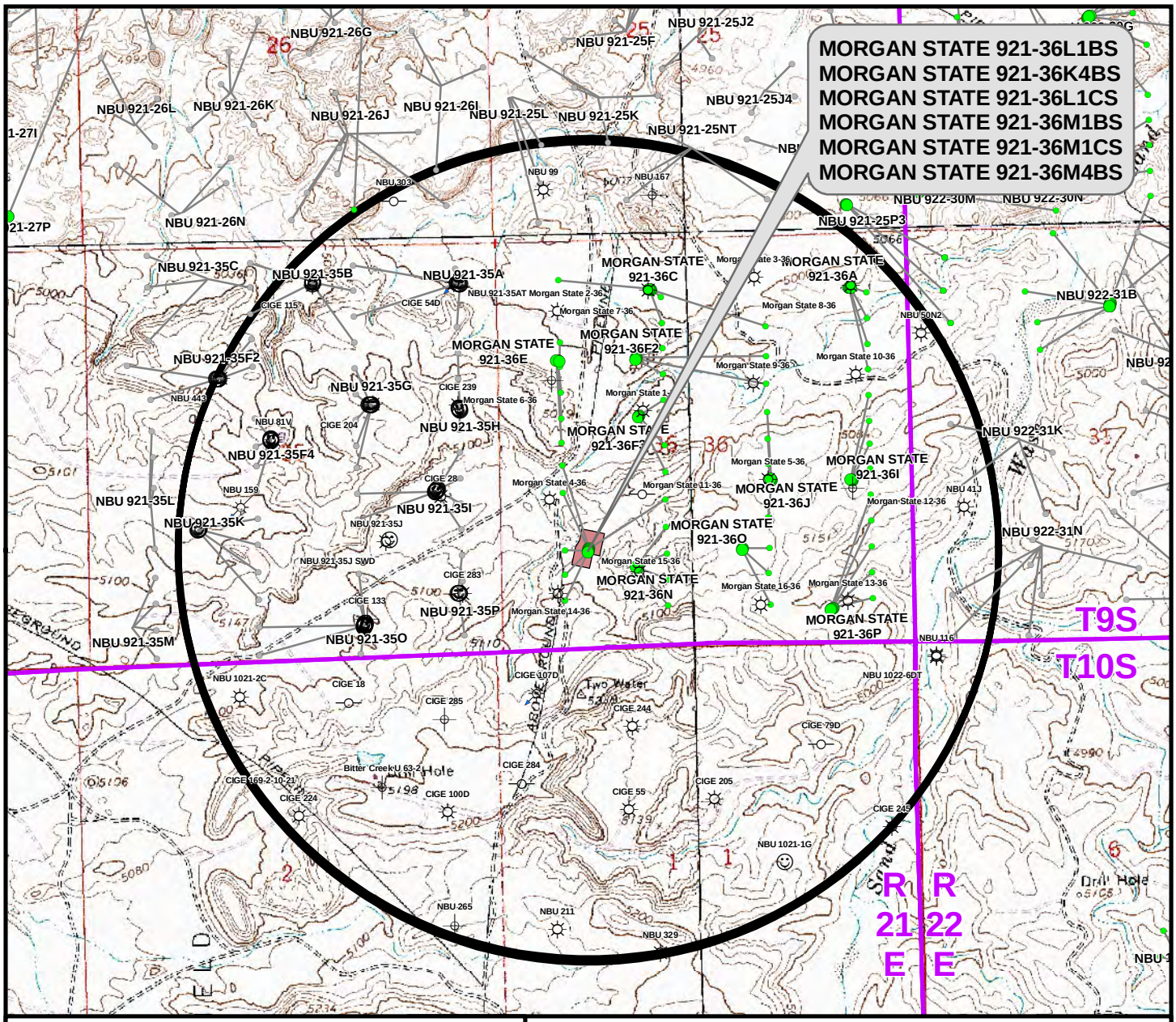
2155 North Main Street
Sheridan, Wyoming 82801
Phone 307-674-0609
Fax 307-674-0182

N

| | | |
|---|---|---|
| SCALE: 1" = 2,000ft | NAD83 USP Central | SHEET NO: 13 |
| DRAWN: TL | DATE: 11 Nov 2011 | 13 OF 18 |
| REVISED: | DATE: | |

RECEIVED: December 20, 2011

API Well Number: 43047522570000




Well locations derived from Utah Division of Oil, Gas and Mining (UDOGM) (oilgas.ogm.utah.gov). The estimated distances from proposed bore locations to the nearest existing bore locations are based on UDOGM data.

| Proposed Well | Nearest Well Bore | Footage |
|---|---|---|
| MORGAN STATE 921-36L1BS | Morgan State 4-36 | 469ft |
| MORGAN STATE 921-36K4BS | Morgan State 11-36 | 306ft |
| MORGAN STATE 921-36L1CS | Morgan State 4-36 | 194ft |
| MORGAN STATE 921-36M1BS | Morgan State 14-36 | 563ft |
| MORGAN STATE 921-36M1CS | Morgan State 14-36 | 249ft |
| MORGAN STATE 921-36M4BS | Morgan State 14-36 | 136ft |

**Legend**

- Well - Proposed
- Bottom Hole - Proposed
- Bottom Hole - Existing
- Well Path
- Well Pad
- Well - 1 Mile Radius
- Producing
- Spudded
- APD Approved
- Preliminary Location
- Deferred
- Cancelled
- Temporarily Abandoned
- Active Injector
- Location Abandoned
- Plugged & Abandoned
- Shut-In

**WELL PAD - MORGAN STATE 921-36M**

TOPO C
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

**Kerr-McGee Oil & Gas Onshore L.P.**

1099 18th Street
Denver, Colorado 80202

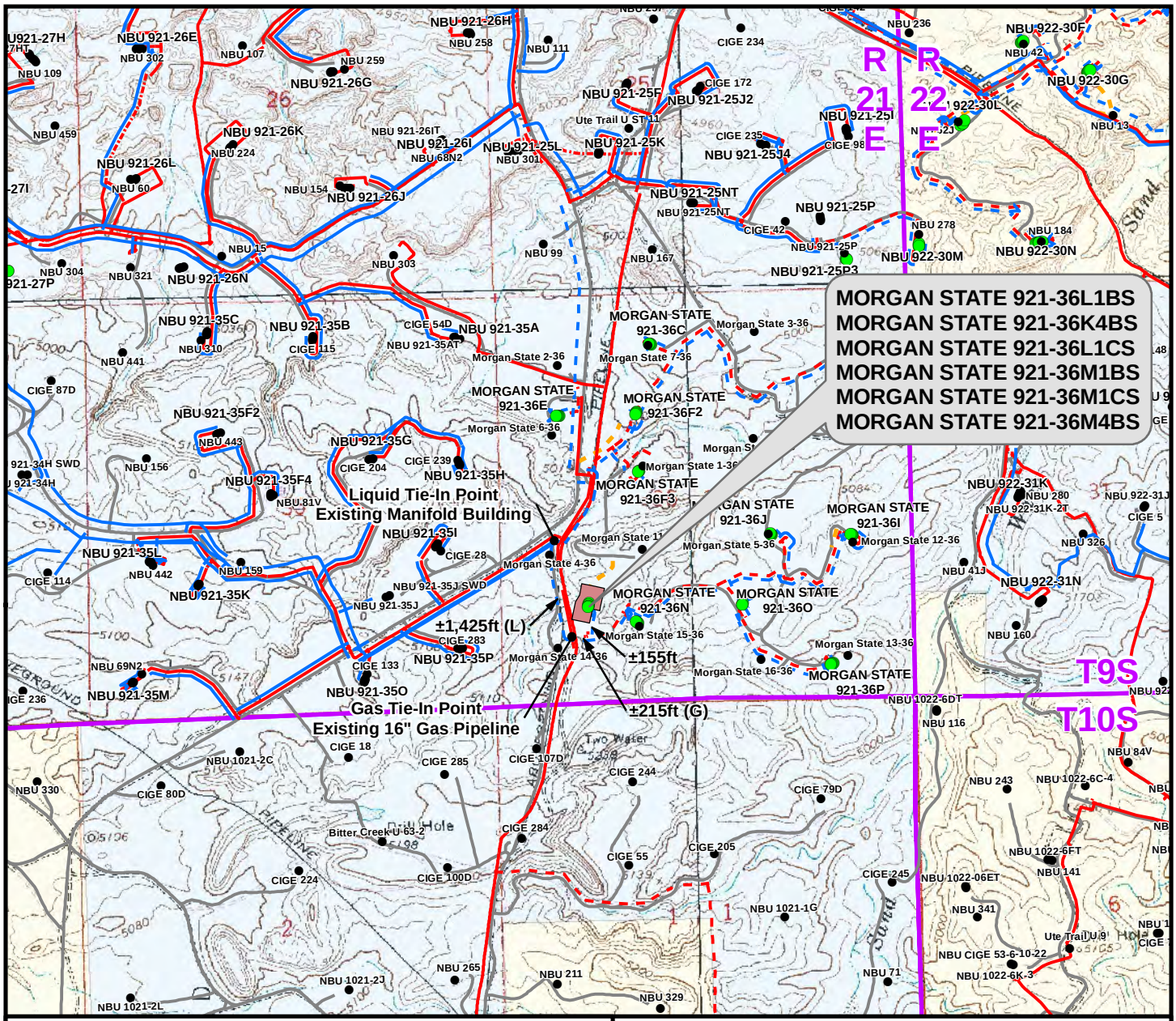
609 CONSULTING, LLC
2155 North Main Street
Sheridan, Wyoming 82801
Phone 307-674-0609
Fax 307-674-0182

N

| | | |
|---|---|---|
| SCALE: 1" = 2,000ft | NAD83 USP Central | SHEET NO: 14 |
| DRAWN: TL | DATE: 11 Nov 2011 | 14 OF 18 |
| REVISED: | DATE: | |

RECEIVED: December 20, 2011

API Well Number: 43047522570000




| Proposed Liquid Pipeline | Length |
|---|---|
| Buried 6"(Max.) (Meter House to Edge of Pad) | ±120ft |
| Buried 6"(Max.) (Edge of Pad to 36N Intersection) | ±155ft |
| Buried 6"(Max.) (36N Intersection to Existing Manifold Building) | ±1,425ft |
| TOTAL PROPOSED BURIED LIQUID PIPELINE = | ±1,700ft |

| Proposed Gas Pipeline | Length |
|---|---|
| Buried 8" (Meter House to Edge of Pad) | ±120ft |
| Buried 8" (Edge of Pad to 36N Intersection) | ±155ft |
| Buried 12" (36N Intersection to Existing Buried 16" Gas Pipeline) | ±215ft |
| TOTAL PROPOSED BURIED GAS PIPELINE = | ±490ft |

**Legend**

- Well - Proposed
- Well - Existing
- Well Pad
- Gas Pipeline - Proposed
- Gas Pipeline - To Be Upgraded
- Gas Pipeline - Existing
- Liquid Pipeline - Proposed
- Liquid Pipeline - Existing
- Road - Proposed
- Road - Existing
- Bureau of Land Management
- Indian Reservation
- State
- Private

## WELL PAD - MORGAN STATE 921-36M

TOPO D
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

**Kerr-McGee Oil & Gas Onshore L.P.**

1099 18th Street
Denver, Colorado 80202

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2155 North Main Street
Sheridan, Wyoming 82801
Phone 307-674-0609
Fax 307-674-0182

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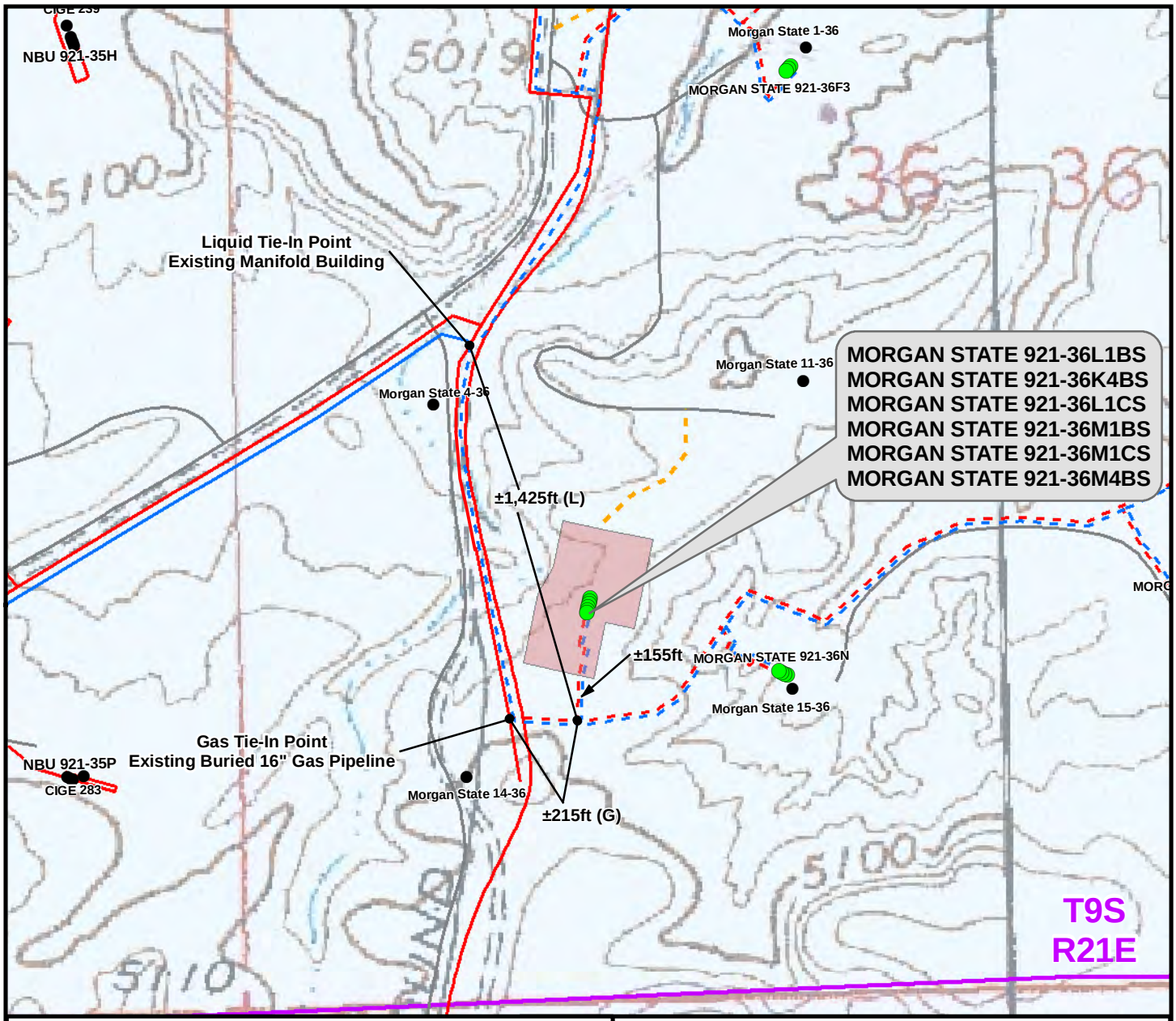
| | | |
|---|---|---|
| SCALE: 1" = 2,000ft | NAD83 USP Central | SHEET NO: 15 |
| DRAWN: TL | DATE: 11 Nov 2011 | 15 OF 18 |
| REVISED: | DATE: | |

RECEIVED: December 20, 2011




| Proposed Liquid Pipeline | Length |
|---|---|
| Buried 6"(Max.) (Meter House to Edge of Pad) | ±120ft |
| Buried 6"(Max.) (Edge of Pad to 36N Intersection) | ±155ft |
| Buried 6"(Max.) (36N Intersection to Existing Manifold Building) | ±1,425ft |
| TOTAL PROPOSED BURIED LIQUID PIPELINE = | ±1,700ft |

| Proposed Gas Pipeline | Length |
|---|---|
| Buried 8" (Meter House to Edge of Pad) | ±120ft |
| Buried 8" (Edge of Pad to 36N Intersection) | ±155ft |
| Buried 12" (36N Intersection to Existing Buried 16" Gas Pipeline) | ±215ft |
| TOTAL PROPOSED BURIED GAS PIPELINE = | ±490ft |

**Legend**

- Well - Proposed
- Well - Existing
- Well Pad - Proposed
- Well Pad - Existing
- Gas Pipeline - Proposed
- Gas Pipeline - To Be Upgraded
- Gas Pipeline - Existing
- Liquid Pipeline - Proposed
- Liquid Pipeline - Existing
- Road - Existing
- Road - Proposed
- Bureau of Land Management
- Indian Reservation
- State
- Private

## WELL PAD - MORGAN STATE 921-36M

TOPO D2 (PAD & PIPELINE DETAIL)
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

**Kerr-McGee Oil & Gas Onshore L.P.**

1099 18th Street
Denver, Colorado 80202

609 CONSULTING, LLC
2155 North Main Street
Sheridan, Wyoming 82801
Phone 307-674-0609
Fax 307-674-0182

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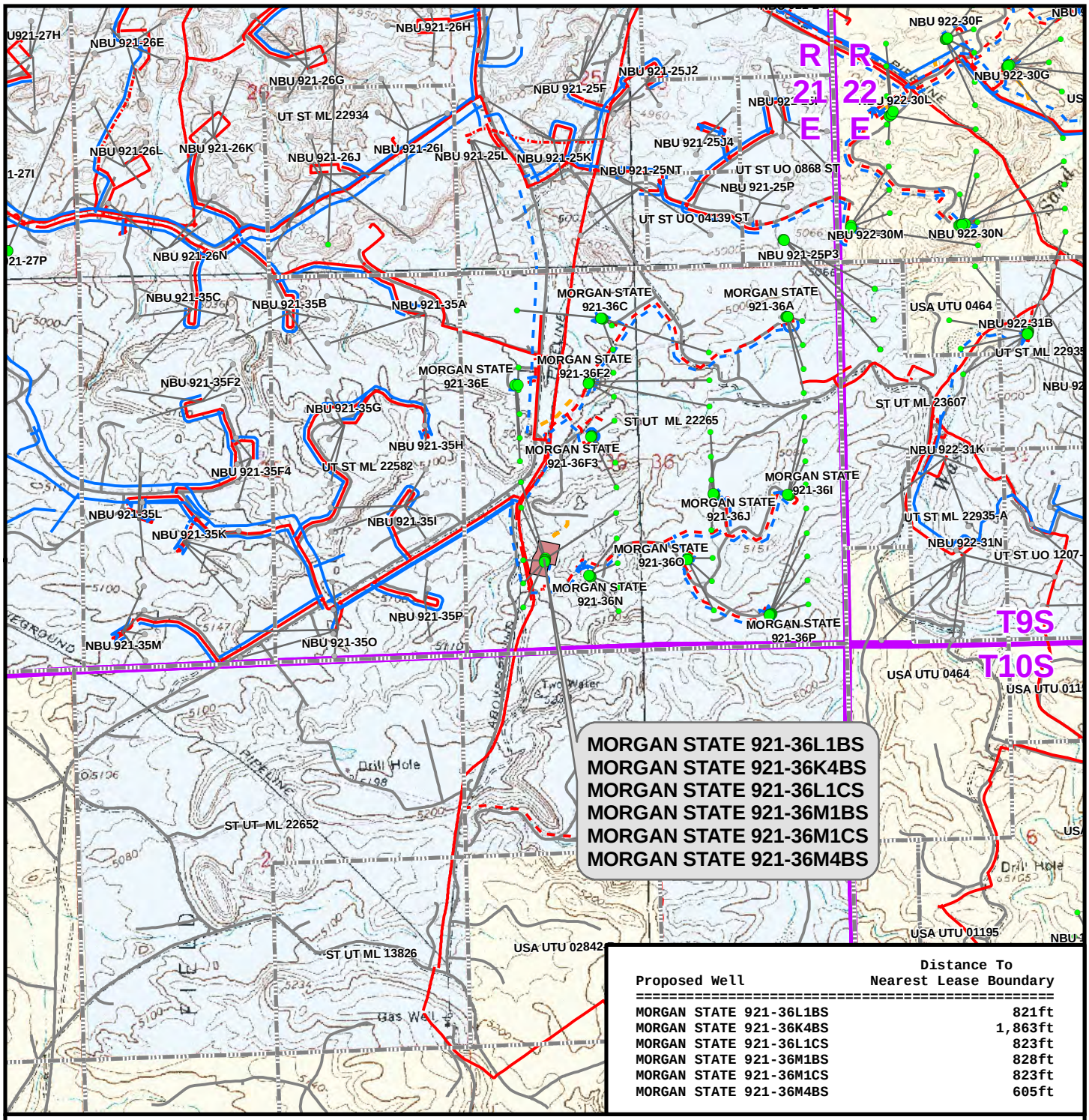
| | | |
|---|---|---|
| SCALE: 1" = 500ft | NAD83 USP Central | SHEET NO: 16 |
| DRAWN: TL | DATE: 11 Nov 2011 | 16 OF 18 |
| REVISED: | DATE: | |

RECEIVED: December 20, 2011

API Well Number: 43047522570000




| Proposed Well | Distance To Nearest Lease Boundary |
|---|---|
| MORGAN STATE 921-36L1BS | 821ft |
| MORGAN STATE 921-36K4BS | 1,863ft |
| MORGAN STATE 921-36L1CS | 823ft |
| MORGAN STATE 921-36M1BS | 828ft |
| MORGAN STATE 921-36M1CS | 823ft |
| MORGAN STATE 921-36M4BS | 605ft |

**Legend**

- Well - Proposed
- Bottom Hole - Proposed
- Bottom Hole - Existing
- Well Path
- Well Pad
- Lease Boundary
- Gas Pipeline - Proposed
- Gas Pipeline - To Be Upgraded
- Gas Pipeline - Existing
- Liquid Pipeline - Proposed
- Liquid Pipeline - Existing
- Road - Proposed
- Road - Existing
- Bureau of Land Management
- Indian Reservation
- State
- Private

## WELL PAD - MORGAN STATE 921-36M

TOPO E
MORGAN STATE 921-36L1BS,
MORGAN STATE 921-36K4BS,
MORGAN STATE 921-36L1CS,
MORGAN STATE 921-36M1BS,
MORGAN STATE 921-36M1CS &
MORGAN STATE 921-36M4BS
LOCATED IN SECTION 36, T9S, R21E,
S.L.B.&M., UINTAH COUNTY, UTAH

**Kerr-McGee Oil & Gas Onshore L.P.**

1099 18th Street
Denver, Colorado 80202


609 CONSULTING, LLC
2155 North Main Street
Sheridan, Wyoming 82801
Phone 307-674-0609
Fax 307-674-0182


N

| | | |
|---|---|---|
| SCALE: 1" = 2,000ft | NAD83 USP Central | SHEET NO: 17 |
| DRAWN: TL | DATE: 11 Nov 2011 | 17 OF 18 |
| REVISED: | DATE: | |

RECEIVED: December 20, 2011

**Kerr-McGee Oil & Gas Onshore, LP**
**WELL PAD – MORGAN STATE 921-36M**
**WELLS – MORGAN STATE 921-36L1BS, MORGAN STATE 921-36K4BS, MORGAN STATE 921-36L1CS, MORGAN STATE 921-36M1BS, MORGAN STATE 921-36M1CS & MORGAN STATE 921-36M4BS**
**Section 36, T9S, R21E, S.L.B.&M.**

From the intersection of U.S. Highway 40 and 500 East Street in Vernal, Utah, proceed in an easterly, then southerly direction along U.S. Highway 40 approximately 3.3 miles to the junction of State Highway 45. Exit right and proceed in a southerly direction along State Highway 45 approximately 20.2 miles to the junction of the Glen Bench Road (County B Road 3260). Exit right and proceed in a southwesterly direction along the Glen Bench Road approximately 19.4 miles to a service road to the southwest. Exit left and proceed in a southeasterly, then southerly, then southwesterly, then southeasterly direction along the service road approximately 0.4 miles to the proposed access road to the south. Follow road flags in a southerly, then southwesterly direction approximately 515 feet to the proposed well location.

Total distance from Vernal, Utah to the proposed well location is approximately 43.4 miles in a southerly direction.



RECEIVED: December 20, 2011

API Well Number: 43047522570000

Scientific Drilling
Rocky Mountain Operations

Project: UTAH - UTM (feet), NAD27, Zone 12N
Site: MORGAN STATE 921-36M PAD
Well: MORGAN STATE 921-36K4BS
Wellbore: OH
Design: PLAN #1 PRELIMINARY

Anadarko Petroleum Corporation

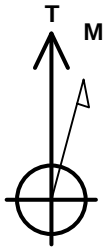
**WELL DETAILS: MORGAN STATE 921-36K4BS**

GL 5076 & KB 4 @ 5080.00ft (ASSUMED)

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|
| 0.00 | 0.00 | 14525506.00 | 2059253.25 | 39° 59' 19.950 N | 109° 30' 17.060 W |

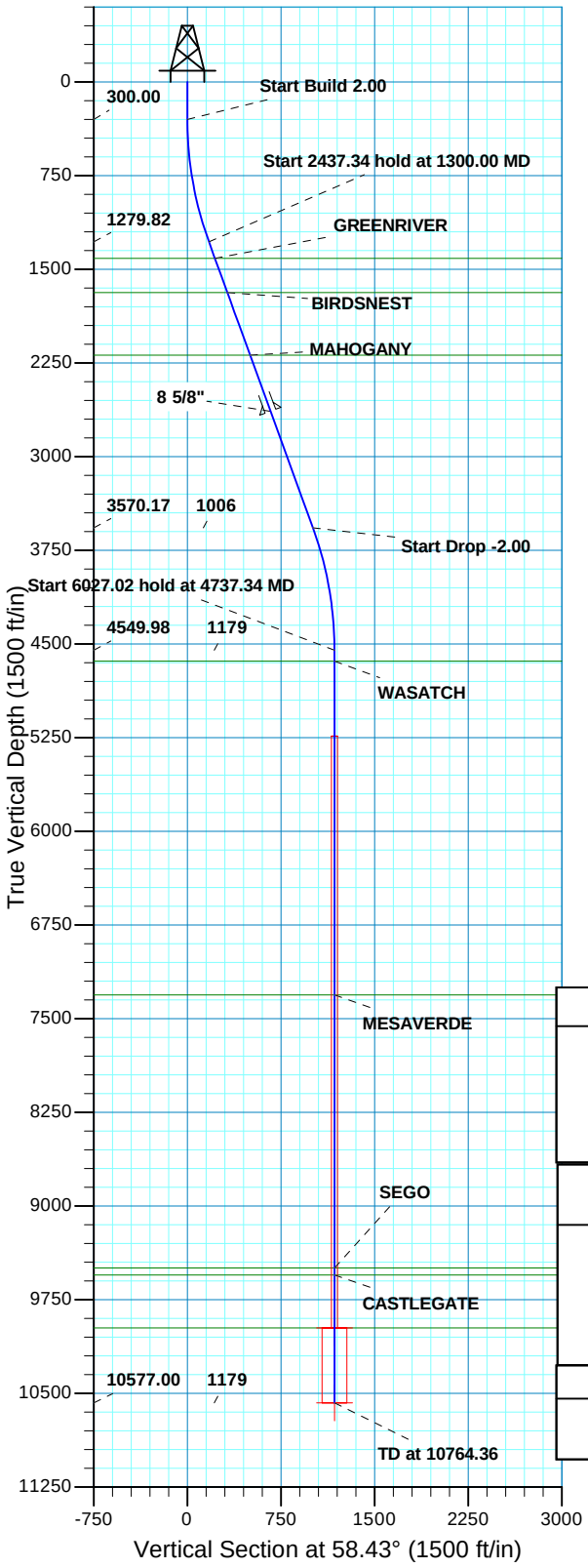
**DESIGN TARGET DETAILS**

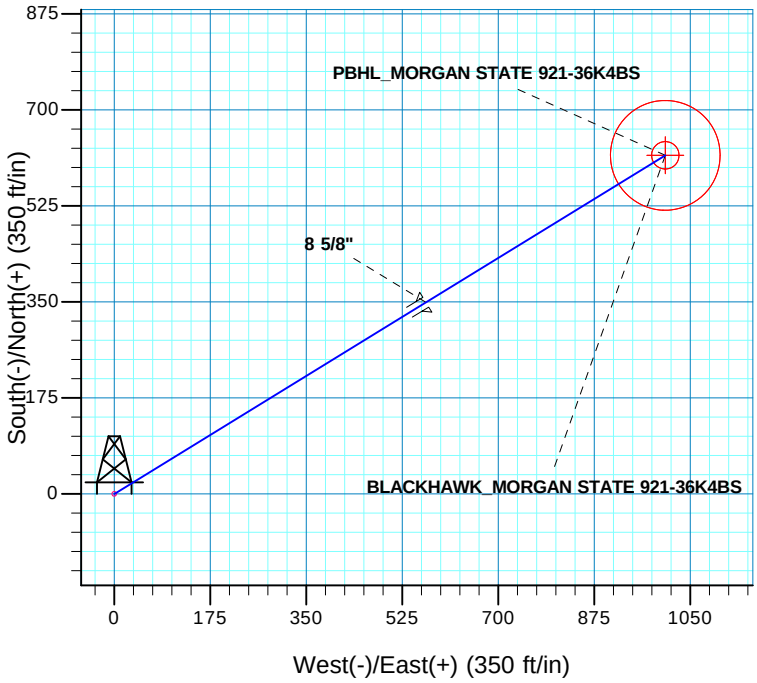
| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|---|---|---|---|---|---|---|---|---|
| BLACKHAWK - plan hits target center | 9977.00 | 617.35 | 1004.63 | 14526140.11 | 2060247.39 | 39° 59' 26.052 N | 109° 30' 4.151 W | Circle (Radius: 25.00) |
| PBHL - plan hits target center | 10577.00 | 617.35 | 1004.63 | 14526140.11 | 2060247.39 | 39° 59' 26.052 N | 109° 30' 4.151 W | Circle (Radius: 100.00) |




Azimuths to True North
Magnetic North: 11.02°

Magnetic Field
Strength: 52274.4snT
Dip Angle: 65.85°
Date: 2011/12/05
Model: IGRF2010




**SECTION DETAILS**

| MD | Inc | Azi | TVD | +N/-S | +E/-W | DIeg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1300.00 | 20.00 | 58.43 | 1279.82 | 90.45 | 147.20 | 2.00 | 58.43 | 172.77 | |
| 3737.34 | 20.00 | 58.43 | 3570.17 | 526.90 | 857.43 | 0.00 | 0.00 | 1006.39 | |
| 4737.34 | 0.00 | 0.00 | 4549.98 | 617.35 | 1004.63 | 2.00 | 180.00 | 1179.16 | |
| 10764.36 | 0.00 | 0.00 | 10577.00 | 617.35 | 1004.63 | 0.00 | 0.00 | 1179.16 | PBHL_MORGAN STATE 921-36K4BS |

**PROJECT DETAILS: UTAH - UTM (feet), NAD27, Zone 12N**

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 12N (114 W to 108 W)
Location: SECTION 36 T9S R21E
System Datum: Mean Sea Level

**FORMATION TOP DETAILS**

| TVDPath | MDPath | Formation |
|---|---|---|
| 1413.00 | 1441.73 | GREENRIVER |
| 1687.00 | 1733.32 | BIRDSNEST |
| 2188.00 | 2266.47 | MAHOGANY |
| 4639.00 | 4826.36 | WASATCH |
| 7310.00 | 7497.36 | MESAVERDE |
| 9497.00 | 9684.36 | SEGO |
| 9552.00 | 9739.36 | CASTLEGATE |
| 9977.00 | 10164.36 | BLACKHAWK |

**CASING DETAILS**

| TVD | MD | Name | Size |
|---|---|---|---|
| 2638.00 | 2745.35 | 8 5/8" | 8.625 |

Plan: PLAN #1 PRELIMINARY (MORGAN STATE 921-36K4BS/OH)

Created By: RobertScott Date: 15:14, December 05 2011

RECEIVED:

API Well Number: 43047522570000

Scientific Drilling
Rocky Mountain Operations

# US ROCKIES REGION PLANNING

**UTAH - UTM (feet), NAD27, Zone 12N**
**MORGAN STATE 921-36M PAD**
**MORGAN STATE 921-36K4BS**

**OH**

**Plan: PLAN #1 PRELIMINARY**

# Standard Planning Report

**05 December, 2011**

Anadarko
Petroleum Corporation

RECEIVED: December 20, 2011

Scientific Drilling
Rocky Mountain Operations

# SDI
## Planning Report

Anadarko Petroleum Corporation

| | | | |
|---|---|---|---|
| **Database:** | EDM5000-RobertS-Local | **Local Co-ordinate Reference:** | Well MORGAN STATE 921-36K4BS |
| **Company:** | US ROCKIES REGION PLANNING | **TVD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Project:** | UTAH - UTM (feet), NAD27, Zone 12N | **MD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Site:** | MORGAN STATE 921-36M PAD | **North Reference:** | True |
| **Well:** | MORGAN STATE 921-36K4BS | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | PLAN #1 PRELIMINARY | | |

**Project** UTAH - UTM (feet), NAD27, Zone 12N

| | | | |
|---|---|---|---|
| **Map System:** | Universal Transverse Mercator (US Survey Feet) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | Zone 12N (114 W to 108 W) | | |

**Site** MORGAN STATE 921-36M PAD, SECTION 36 T9S R21E

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 14,525,506.00 usft | **Latitude:** | 39° 59' 19.950 N |
| **From:** | Lat/Long | **Easting:** | 2,059,253.25 usft | **Longitude:** | 109° 30' 17.060 W |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | 13.200 in | **Grid Convergence:** | 0.96 ° |

**Well** MORGAN STATE 921-36K4BS, 1262 FSL 1134 FWL

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 ft | **Northing:** | 14,525,506.00 usft | **Latitude:** | 39° 59' 19.950 N |
| | **+E/-W** | 0.00 ft | **Easting:** | 2,059,253.25 usft | **Longitude:** | 109° 30' 17.060 W |
| **Position Uncertainty** | | 0.00 ft | **Wellhead Elevation:** | | **Ground Level:** | 5,076.00 ft |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2010 | 2011/12/05 | 11.01 | 65.85 | 52,274 |

**Design** PLAN #1 PRELIMINARY

**Audit Notes:**

| | | | |
|---|---|---|---|
| **Version:** | **Phase:** PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 58.43 |

**Plan Sections**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,300.00 | 20.00 | 58.43 | 1,279.82 | 90.45 | 147.20 | 2.00 | 2.00 | 0.00 | 58.43 | |
| 3,737.34 | 20.00 | 58.43 | 3,570.17 | 526.90 | 857.43 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 4,737.34 | 0.00 | 0.00 | 4,549.98 | 617.35 | 1,004.63 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 10,764.36 | 0.00 | 0.00 | 10,577.00 | 617.35 | 1,004.63 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL_MORGAN STA |



RECEIVED: December 20, 2011

Scientific Drilling
Rocky Mountain Operations

# SDI
## Planning Report

Anadarko Petroleum Corporation

| | | | |
|---|---|---|---|
| **Database:** | EDM5000-RobertS-Local | **Local Co-ordinate Reference:** | Well MORGAN STATE 921-36K4BS |
| **Company:** | US ROCKIES REGION PLANNING | **TVD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Project:** | UTAH - UTM (feet), NAD27, Zone 12N | **MD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Site:** | MORGAN STATE 921-36M PAD | **North Reference:** | True |
| **Well:** | MORGAN STATE 921-36K4BS | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | PLAN #1 PRELIMINARY | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Start Build 2.00** | | | | | | | | | |
| 400.00 | 2.00 | 58.43 | 399.98 | 0.91 | 1.49 | 1.75 | 2.00 | 2.00 | 0.00 |
| 500.00 | 4.00 | 58.43 | 499.84 | 3.65 | 5.95 | 6.98 | 2.00 | 2.00 | 0.00 |
| 600.00 | 6.00 | 58.43 | 599.45 | 8.22 | 13.37 | 15.69 | 2.00 | 2.00 | 0.00 |
| 700.00 | 8.00 | 58.43 | 698.70 | 14.60 | 23.75 | 27.88 | 2.00 | 2.00 | 0.00 |
| 800.00 | 10.00 | 58.43 | 797.47 | 22.79 | 37.08 | 43.52 | 2.00 | 2.00 | 0.00 |
| 900.00 | 12.00 | 58.43 | 895.62 | 32.78 | 53.34 | 62.60 | 2.00 | 2.00 | 0.00 |
| 1,000.00 | 14.00 | 58.43 | 993.06 | 44.55 | 72.50 | 85.10 | 2.00 | 2.00 | 0.00 |
| 1,100.00 | 16.00 | 58.43 | 1,089.64 | 58.10 | 94.55 | 110.98 | 2.00 | 2.00 | 0.00 |
| 1,200.00 | 18.00 | 58.43 | 1,185.27 | 73.41 | 119.46 | 140.21 | 2.00 | 2.00 | 0.00 |
| 1,300.00 | 20.00 | 58.43 | 1,279.82 | 90.45 | 147.20 | 172.77 | 2.00 | 2.00 | 0.00 |
| **Start 2437.34 hold at 1300.00 MD** | | | | | | | | | |
| 1,400.00 | 20.00 | 58.43 | 1,373.78 | 108.36 | 176.34 | 206.97 | 0.00 | 0.00 | 0.00 |
| 1,441.73 | 20.00 | 58.43 | 1,413.00 | 115.83 | 188.50 | 221.24 | 0.00 | 0.00 | 0.00 |
| **GREENRIVER** | | | | | | | | | |
| 1,500.00 | 20.00 | 58.43 | 1,467.75 | 126.27 | 205.48 | 241.17 | 0.00 | 0.00 | 0.00 |
| 1,600.00 | 20.00 | 58.43 | 1,561.72 | 144.17 | 234.62 | 275.37 | 0.00 | 0.00 | 0.00 |
| 1,700.00 | 20.00 | 58.43 | 1,655.69 | 162.08 | 263.76 | 309.58 | 0.00 | 0.00 | 0.00 |
| 1,733.32 | 20.00 | 58.43 | 1,687.00 | 168.05 | 273.46 | 320.97 | 0.00 | 0.00 | 0.00 |
| **BIRDSNEST** | | | | | | | | | |
| 1,800.00 | 20.00 | 58.43 | 1,749.66 | 179.99 | 292.90 | 343.78 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 20.00 | 58.43 | 1,843.63 | 197.89 | 322.04 | 377.98 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 20.00 | 58.43 | 1,937.60 | 215.80 | 351.18 | 412.18 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 20.00 | 58.43 | 2,031.57 | 233.71 | 380.32 | 446.38 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 20.00 | 58.43 | 2,125.54 | 251.61 | 409.46 | 480.59 | 0.00 | 0.00 | 0.00 |
| 2,266.47 | 20.00 | 58.43 | 2,188.00 | 263.51 | 428.83 | 503.32 | 0.00 | 0.00 | 0.00 |
| **MAHOGANY** | | | | | | | | | |
| 2,300.00 | 20.00 | 58.43 | 2,219.51 | 269.52 | 438.60 | 514.79 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 20.00 | 58.43 | 2,313.48 | 287.43 | 467.74 | 548.99 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 20.00 | 58.43 | 2,407.45 | 305.33 | 496.88 | 583.19 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 20.00 | 58.43 | 2,501.42 | 323.24 | 526.02 | 617.39 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 20.00 | 58.43 | 2,595.39 | 341.15 | 555.16 | 651.60 | 0.00 | 0.00 | 0.00 |
| 2,745.35 | 20.00 | 58.43 | 2,638.00 | 349.27 | 568.37 | 667.11 | 0.00 | 0.00 | 0.00 |
| **8 5/8"** | | | | | | | | | |
| 2,800.00 | 20.00 | 58.43 | 2,689.35 | 359.05 | 584.30 | 685.80 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 20.00 | 58.43 | 2,783.32 | 376.96 | 613.43 | 720.00 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 20.00 | 58.43 | 2,877.29 | 394.87 | 642.57 | 754.20 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 20.00 | 58.43 | 2,971.26 | 412.77 | 671.71 | 788.40 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 20.00 | 58.43 | 3,065.23 | 430.68 | 700.85 | 822.61 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 20.00 | 58.43 | 3,159.20 | 448.58 | 729.99 | 856.81 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 20.00 | 58.43 | 3,253.17 | 466.49 | 759.13 | 891.01 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 20.00 | 58.43 | 3,347.14 | 484.40 | 788.27 | 925.21 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 20.00 | 58.43 | 3,441.11 | 502.30 | 817.41 | 959.41 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 20.00 | 58.43 | 3,535.08 | 520.21 | 846.55 | 993.62 | 0.00 | 0.00 | 0.00 |
| 3,737.34 | 20.00 | 58.43 | 3,570.17 | 526.90 | 857.43 | 1,006.39 | 0.00 | 0.00 | 0.00 |
| **Start Drop -2.00** | | | | | | | | | |
| 3,800.00 | 18.75 | 58.43 | 3,629.28 | 537.78 | 875.14 | 1,027.17 | 2.00 | -2.00 | 0.00 |
| 3,900.00 | 16.75 | 58.43 | 3,724.51 | 553.74 | 901.11 | 1,057.65 | 2.00 | -2.00 | 0.00 |
| 4,000.00 | 14.75 | 58.43 | 3,820.76 | 567.95 | 924.23 | 1,084.79 | 2.00 | -2.00 | 0.00 |



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Scientific Drilling
Rocky Mountain Operations

# SDI
## Planning Report

Anadarko Petroleum Corporation

| | | | |
|---|---|---|---|
| **Database:** | EDM5000-RobertS-Local | **Local Co-ordinate Reference:** | Well MORGAN STATE 921-36K4BS |
| **Company:** | US ROCKIES REGION PLANNING | **TVD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Project:** | UTAH - UTM (feet), NAD27, Zone 12N | **MD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Site:** | MORGAN STATE 921-36M PAD | **North Reference:** | True |
| **Well:** | MORGAN STATE 921-36K4BS | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | PLAN #1 PRELIMINARY | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 4,100.00 | 12.75 | 58.43 | 3,917.89 | 580.39 | 944.48 | 1,108.55 | 2.00 | -2.00 | 0.00 |
| 4,200.00 | 10.75 | 58.43 | 4,015.79 | 591.04 | 961.82 | 1,128.91 | 2.00 | -2.00 | 0.00 |
| 4,300.00 | 8.75 | 58.43 | 4,114.34 | 599.91 | 976.25 | 1,145.84 | 2.00 | -2.00 | 0.00 |
| 4,400.00 | 6.75 | 58.43 | 4,213.42 | 606.96 | 987.73 | 1,159.32 | 2.00 | -2.00 | 0.00 |
| 4,500.00 | 4.75 | 58.43 | 4,312.91 | 612.21 | 996.26 | 1,169.33 | 2.00 | -2.00 | 0.00 |
| 4,600.00 | 2.75 | 58.43 | 4,412.69 | 615.63 | 1,001.83 | 1,175.86 | 2.00 | -2.00 | 0.00 |
| 4,700.00 | 0.75 | 58.43 | 4,512.64 | 617.22 | 1,004.42 | 1,178.91 | 2.00 | -2.00 | 0.00 |
| 4,737.34 | 0.00 | 0.00 | 4,549.98 | 617.35 | 1,004.63 | 1,179.16 | 2.00 | -2.00 | 0.00 |
| **Start 6027.02 hold at 4737.34 MD** | | | | | | | | | |
| 4,800.00 | 0.00 | 0.00 | 4,612.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 4,826.36 | 0.00 | 0.00 | 4,639.00 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| **WASATCH** | | | | | | | | | |
| 4,900.00 | 0.00 | 0.00 | 4,712.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 0.00 | 0.00 | 4,812.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 0.00 | 0.00 | 4,912.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 0.00 | 0.00 | 5,012.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 0.00 | 0.00 | 5,112.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 0.00 | 0.00 | 5,212.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 0.00 | 0.00 | 5,312.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 0.00 | 0.00 | 5,412.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 0.00 | 0.00 | 5,512.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 0.00 | 0.00 | 5,612.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 0.00 | 0.00 | 5,712.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 0.00 | 0.00 | 5,812.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 0.00 | 0.00 | 5,912.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 0.00 | 0.00 | 6,012.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 0.00 | 0.00 | 6,112.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 0.00 | 0.00 | 6,212.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 0.00 | 0.00 | 6,312.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 0.00 | 0.00 | 6,412.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 0.00 | 0.00 | 6,512.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 0.00 | 0.00 | 6,612.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 6,900.00 | 0.00 | 0.00 | 6,712.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,000.00 | 0.00 | 0.00 | 6,812.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,100.00 | 0.00 | 0.00 | 6,912.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,200.00 | 0.00 | 0.00 | 7,012.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,300.00 | 0.00 | 0.00 | 7,112.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,400.00 | 0.00 | 0.00 | 7,212.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,497.36 | 0.00 | 0.00 | 7,310.00 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| **MESAVERDE** | | | | | | | | | |
| 7,500.00 | 0.00 | 0.00 | 7,312.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,600.00 | 0.00 | 0.00 | 7,412.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,700.00 | 0.00 | 0.00 | 7,512.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,800.00 | 0.00 | 0.00 | 7,612.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 7,900.00 | 0.00 | 0.00 | 7,712.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 0.00 | 0.00 | 7,812.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 0.00 | 0.00 | 7,912.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 0.00 | 0.00 | 8,012.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 0.00 | 0.00 | 8,112.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 0.00 | 0.00 | 8,212.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 0.00 | 0.00 | 8,312.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 0.00 | 0.00 | 8,412.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 0.00 | 0.00 | 8,512.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |



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Rocky Mountain Operations

# SDI
## Planning Report

Anadarko Petroleum Corporation

| | | | |
|---|---|---|---|
| **Database:** | EDM5000-RobertS-Local | **Local Co-ordinate Reference:** | Well MORGAN STATE 921-36K4BS |
| **Company:** | US ROCKIES REGION PLANNING | **TVD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Project:** | UTAH - UTM (feet), NAD27, Zone 12N | **MD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Site:** | MORGAN STATE 921-36M PAD | **North Reference:** | True |
| **Well:** | MORGAN STATE 921-36K4BS | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | PLAN #1 PRELIMINARY | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 8,800.00 | 0.00 | 0.00 | 8,612.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 0.00 | 0.00 | 8,712.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 0.00 | 0.00 | 8,812.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 0.00 | 0.00 | 8,912.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 0.00 | 0.00 | 9,012.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 0.00 | 0.00 | 9,112.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 0.00 | 0.00 | 9,212.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 0.00 | 0.00 | 9,312.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 0.00 | 0.00 | 9,412.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,684.36 | 0.00 | 0.00 | 9,497.00 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| **SEGO** | | | | | | | | | |
| 9,700.00 | 0.00 | 0.00 | 9,512.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,739.36 | 0.00 | 0.00 | 9,552.00 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| **CASTLEGATE** | | | | | | | | | |
| 9,800.00 | 0.00 | 0.00 | 9,612.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 0.00 | 0.00 | 9,712.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 0.00 | 0.00 | 9,812.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 0.00 | 0.00 | 9,912.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,164.36 | 0.00 | 0.00 | 9,977.00 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| **BLACKHAWK - BLACKHAWK_MORGAN STATE 921-36K4BS** | | | | | | | | | |
| 10,200.00 | 0.00 | 0.00 | 10,012.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 0.00 | 0.00 | 10,112.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 0.00 | 0.00 | 10,212.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 0.00 | 0.00 | 10,312.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 0.00 | 0.00 | 10,412.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 0.00 | 0.00 | 10,512.64 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| 10,764.36 | 0.00 | 0.00 | 10,577.00 | 617.35 | 1,004.63 | 1,179.16 | 0.00 | 0.00 | 0.00 |
| **TD at 10764.36 - PBHL_MORGAN STATE 921-36K4BS** | | | | | | | | | |

**Design Targets**

| Target Name<br>- hit/miss target<br>- Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| BLACKHAWK_MORGAI<br>- plan hits target center<br>- Circle (radius 25.00) | 0.00 | 0.00 | 9,977.00 | 617.35 | 1,004.63 | 14,526,140.12 | 2,060,247.38 | 39° 59' 26.052 N | 109° 30' 4.151 W |
| PBHL_MORGAN STATI<br>- plan hits target center<br>- Circle (radius 100.00) | 0.00 | 0.00 | 10,577.00 | 617.35 | 1,004.63 | 14,526,140.12 | 2,060,247.38 | 39° 59' 26.052 N | 109° 30' 4.151 W |

**Casing Points**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (in) | Hole Diameter (in) |
|---|---|---|---|---|
| 2,745.35 | 2,638.00 | 8 5/8" | 8.625 | 11.000 |



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Rocky Mountain Operations

# SDI
## Planning Report

Anadarko Petroleum Corporation

| | | | |
|---|---|---|---|
| **Database:** | EDM5000-RobertS-Local | **Local Co-ordinate Reference:** | Well MORGAN STATE 921-36K4BS |
| **Company:** | US ROCKIES REGION PLANNING | **TVD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Project:** | UTAH - UTM (feet), NAD27, Zone 12N | **MD Reference:** | GL 5076 & KB 4 @ 5080.00ft (ASSUMED) |
| **Site:** | MORGAN STATE 921-36M PAD | **North Reference:** | True |
| **Well:** | MORGAN STATE 921-36K4BS | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | PLAN #1 PRELIMINARY | | |

**Formations**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 1,441.73 | 1,413.00 | GREENRIVER | | | |
| 1,733.32 | 1,687.00 | BIRDSNEST | | | |
| 2,266.47 | 2,188.00 | MAHOGANY | | | |
| 4,826.36 | 4,639.00 | WASATCH | | | |
| 7,497.36 | 7,310.00 | MESAVERDE | | | |
| 9,684.36 | 9,497.00 | SEGO | | | |
| 9,739.36 | 9,552.00 | CASTLEGATE | | | |
| 10,164.36 | 9,977.00 | BLACKHAWK | | | |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 300.00 | 300.00 | 0.00 | 0.00 | Start Build 2.00 |
| 1,300.00 | 1,279.82 | 90.45 | 147.20 | Start 2437.34 hold at 1300.00 MD |
| 3,737.34 | 3,570.17 | 526.90 | 857.43 | Start Drop -2.00 |
| 4,737.34 | 4,549.98 | 617.35 | 1,004.63 | Start 6027.02 hold at 4737.34 MD |
| 10,764.36 | 10,577.00 | 617.35 | 1,004.63 | TD at 10764.36 |



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API Well Number: 43047522570000



**MORGAN STATE 921-36K4BS**

| | | | |
|---|---|---|---|
| Surface: | 1262 FSL / 1134 FWL | SWSW | Lot 4 |
| BHL: | 1863 FSL / 2139 FWL | NESW | Lot |

**MORGAN STATE 921-36L1BS**

| | | | |
|---|---|---|---|
| Surface: | 1272 FSL / 1136 FWL | SWSW | Lot 4 |
| BHL: | 2346 FSL / 821 FWL | NWSW | Lot |

**MORGAN STATE 921-36L1CS**

| | | | |
|---|---|---|---|
| Surface: | 1252 FSL / 1131 FWL | SWSW | Lot 4 |
| BHL: | 1997 FSL / 823 FWL | NWSW | Lot |

**MORGAN STATE 921-36M1BS**

| | | | |
|---|---|---|---|
| Surface: | 1243 FSL / 1129 FWL | SWSW | Lot 4 |
| BHL: | 1261 FSL / 828 FWL | SWSW | Lot 4 |

**MORGAN STATE 921-36M1CS**

| | | | |
|---|---|---|---|
| Surface: | 1233 FSL / 1127 FWL | SWSW | Lot 4 |
| BHL: | 937 FSL / 823 FWL | SWSW | Lot 4 |

**MORGAN STATE 921-36M4BS**

| | | | |
|---|---|---|---|
| Surface: | 1223 FSL / 1125 FWL | SWSW | Lot 4 |
| BHL: | 605 FSL / 817 FWL | SWSW | Lot 4 |

**Pad: MORGAN STATE 921-36M PAD**
Section 36 T9S R21E
Mineral Lease: ML-22265

Uintah County, Utah
Operator: Kerr-McGee Oil & Gas Onshore LP

This SUPO contains surface operating procedures for Kerr-McGee Oil & Gas Onshore LP (KMG), a wholly owned subsidiary of Anadarko Petroleum Corporation (APC) pertaining to actions that involve the State of Utah School and Institutional Trust Lands Administration (SITLA) in the development of minerals leased to APC/KMG (including but not limited to, APDs/SULAs/ROEs/ROWs and/or easements.)

See associated Utah Division of Oil, Gas, and Mining (UDOGM) Form 3(s), plats, maps, and other attachments for site-specific information on projects represented herein.

In accordance with Utah Oil & Gas Conservation Rule R649-3-11 pertaining to Directional Drilling, these wells will be directionally drilled. Refer to Topo Map A for directions to the location and Topo Maps A and B for location of access roads within a 2-mile radius.

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**A. Existing Roads:**

Existing roads consist of county and improved/unimproved lease roads. KMG will maintain existing roads in a condition that is the same as or better than before operations began and in a safe and usable condition. Maintenance of existing roads will continue until final abandonment and reclamation of well pads and/or other facilities. The road maintenance may include, but is not limited to, blading, ditching, culvert installation/cleanout, surfacing, and dust control.

Typically, roads, gathering lines and electrical distribution lines will occupy common disturbance corridors and roadways will be used as working space. All disturbances located in the same corridor will overlap each other to the maximum extent possible; in no case will the maximum disturbance width of the access road and utility corridors exceed 50', unless otherwise approved.

**B. Planned Access Roads:**

Approximately ±515' (0.1 miles) of new access road is proposed (see Topo Map B). Applicable Uintah County encroachment and/or pipeline crossing permits will be obtained prior to construction/development. No other pipelines will be crossed at this location.

If there are roads that are new or to be reconstructed, they will be located, designed, and maintained to meet the standards of SITLA and other commonly accepted Best Management Practices (BMPs). If a new road/corridor were to cross a water of the United States, KMG will adhere to the requirements of applicable Nationwide or Individual Permits of the Department of Army Corps of Engineers.

During the onsite, turnouts, major cut and fills, culverts, bridges, gates, cattle guards, low water crossings, or modifications needed to existing infrastructure/facilities were determined, as applicable, are typically shown on attached Exhibits and Topo maps.

**C. Location of Existing and Proposed Facilities:**

Production facilities (see Well Pad Design Summary and Facilities Diagram):

Production facilities will be installed on the disturbed portion of the well pad and may include bermed components (typically excluding dehy's and/or separators) that contain fluids (i.e. production tanks, produced liquids tanks). The berms will be constructed of compacted subsoil or corrugated metal, impervious, designed to hold 110% of the capacity of the largest tank, and be independent of the back cut. All permanent (on-site six months or longer) above ground structures constructed or installed, including pumping units, will be painted a flat, non-reflective, earth-tone color chosen at the onsite in coordination with SITLA.

**Gathering Facilities:**

The following pipeline transmission facilities will apply if the well is productive (see Topo D):

The total gas gathering (steel line pipe with fusion bond epoxy coating) pipeline distances from the meter to the tie in point is ±490' and the individual segments are broken up as follows:

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±120' (0.02 miles) –New 8" buried gas pipeline from the meter to the edge of the pad. Please refer to Topo D2 - Pad and Pipeline Detail.
±155' (0.03 miles) –New 8" buried gas pipeline from the edge of pad to the 921-36N intersection. Please refer to Topo D2 - Pad and Pipeline Detail.
±215' (0.4 miles) –New 12" buried gas pipeline from the 921-36N intersection to the existing buried 16" gas pipeline. Please refer to Topo D2 - Pad and Pipeline Detail.

The total liquid gathering pipeline distance from the separator to the tie in point is ±1,700'and the individual segments are broken up as follows:

±120' (0.02 miles) –New 6" buried liquid pipeline from the separator to the edge of the pad. Please refer to Topo D2 - Pad and Pipeline Detail.
±155' (0.03 miles) –New 6" buried liquid pipeline from the edge of pad to the 921-36N intersection. Please refer to Topo D2 - Pad and Pipeline Detail.
±1,425' (0.3 miles) –New 6" buried liquid pipeline from the 921-36N intersection to the existing Manifold Building. Please refer to Topo D2 - Pad and Pipeline Detail.

The liquid gathering lines will be made of polyethylene or a composite polyethylene/steel or polyethylene/fiberglass that is not subject to internal or external pipe corrosion. The content of the produced fluids to be transferred by the liquid gathering system will be approximately 92% produced water and 8% condensate. Trunk line valve connections for the water gathering system will be below ground but accessible from the surface in order to prevent freezing during winter time.

The proposed pipelines will be buried and will include gas gathering and liquid gathering pipelines in the same trench. Where the pipeline is adjacent to the road or well pad, the road and/or well pad will be utilized for construction activities and staging. KMG requests a permanent 30' right-of-way adjacent to the road for life-of-project for maintenance, repairs, and/or upgrades, no additional right-of-way will be needed beyond the 30'. Where the pipeline is not adjacent to the road or well pad, KMG requests a temporary 45' construction right-of-way 30' permanent right-of-way.

The proposed trench width for the pipeline would range from 18-48 inches and will be excavated to a depth of 48 to 60 inches of normal soil cover or 24 inches of cover in consolidated rock. During construction blasting may occur along the proposed right-of-way where trenching equipment cannot cut into the bedrock. Large debris and rocks removed from the earth during trenching and blasting that could not be returned to the trench would be distributed evenly and naturally in the project area. The proposed pipelines will be pressure tested pneumatically (depending on size) or with fluids (either fresh or produced). If fluids are used, there will be no discharge to the surface.

Pipeline signs will be installed along the right-of-way to indicate the pipeline proximity and ownership, as well as to provide emergency contact phone numbers. Above ground valves, T's, and/or cathodic protection will be installed at various locations for connection, corrosion prevention and/or for safety purposes.

**D. <u>Location and Type of Water Supply</u>:**

Water for drilling purposes will be obtained from one of the following sources:

- Dalbo Inc.'s underground well located in Ouray, Utah, Sec. 32 T4S R3E, Water User Claim number 43-8496, application number 53617.
- Price Water Pumping Inc. Green River and White River, various sources, Water Right Number 49-1659, application number: a35745.

Water will be hauled to location over the roads marked on Maps A and B.

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No water well is to be drilled on this lease.

**E. Source of Construction Materials:**

Construction operations will typically be completed with native materials found on location. If needed, construction materials that must be imported to the site (mineral material aggregate, soils or materials suitable for fill/surfacing) will be obtained from a nearby permitted source and described in subsequent Sundry requests. No construction materials will be removed from State lands without prior approval from SITLA.

**F. Methods for Handling Waste Materials:**

Should the well be productive, produced water will be contained in a water tank and will be transported by pipeline and/or truck to an approved disposal sites facilities and/or Salt Water Disposal (SWD) injection well. Currently, those facilities are:

RNI in Sec. 5 T9S R22E
Ace Oilfield in Sec. 2 T6S R20E
MC&MC in Sec. 12 T6S R19E
Pipeline Facility in Sec. 36 T9S R20E
Goat Pasture Evaporation Pond in SW/4 Sec. 16 T10S R22E
Bonanza Evaporation Pond in Sec. 2 T10S R23E
Ouray #1 SWD in Sec. 1 T9S R21E
NBU 159 SWD in Sec. 35 T9S R21E
CIGE 112D SWD in Sec. 19 T9S R21E
CIGE 114 SWD in Sec. 34 T9S R21E
NBU 921-34K SWD in Sec. 34 T9S R21E
NBU 921-33F SWD in Sec. 33 T9S R21E
NBU 921-34L SWD in Sec. 34 T9S R21E

Kerr-McGee will use either a closed loop drilling system that will require one pit and one cuttings storage area to be constructed on the drilling pad or a traditional drilling operation with one pit used for drilling and completion operations. The cuttings storage area will be used to contain only the de-watered drill cuttings and will be lined and bermed to prevent any liquid runoff. The drill cuttings will be buried in the completion pit once completion operations are completed according to traditional pit closure standards. The pit will be constructed to allow for completion operations. The completion operations pit will be lined with a synthetic material 20 mil or thicker and will be used for the completing of the wells on the pad or used as part of our Aandarko Completions Transportation System (ACTS). Using the closed loop drilling system will allow Kerr-McGee to decrease the amount of disturbance/footprint on location compared to a single large drilling/completions pit.

If Kerr-McGee does not use a closed loop drilling system, it will construct a traditional drilling/completions pit to contain drill cuttings and for use in completion operations. The pit will be lined with a synthetic material 20 mil or thicker. The drill cuttings will be buried in the pit using traditional pit closure standards.

Unless otherwise approved, no oil or other oil based drill additives, chromium/metals-based, or saline muds will be used during drilling. Only fresh water, biodegradable polymer soap, bentonite clay, and /or non-toxic additives will be used in the system.

Pits will be constructed to minimize the accumulation of surface runoff. Should fluid hydrocarbons be encountered during drilling, completions, or well testing, product will either be contained in test tanks on the well site or evacuated by vacuum

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trucks and transported to an approved disposal/sales facility. Should petroleum hydrocarbons unexpectedly be release into the pit, they will be removed as soon as practical but in no case will they remain longer than 72 hours unless an alternative is approved by SITLA. Should timely removal prove infeasible, the pit will be netted with mesh no larger than 1 inch until such time as the hydrocarbons can be removed. Hydrocarbon removal will also take place prior to the closure of the pit, unless authorization is provided for disposal via alternative pit closure methods. (e.g. solidification)

Any additional pits necessary for subsequent operations, such as temporary flare pits, or workover pits, will contained within the originally approved well pad and disturbance boundaries. Such temporary pits will be backfilled and reclaimed within 180 days of completion of the work.

For the protection of livestock and wildlife, all open pits and cellars will be fenced/covered to prevent wildlife or livestock entry. Total height of pit fencing will be at least 42 inches and corner posts will be cemented and/or braced in such a manner as to keep the fence tight at all times. Standard steel, wood, or pipe posts shall be used between the corner braces. Maximum distance between any 2 fence posts shall be no greater than 16 feet.

Pits containing drilling cuttings, mud, and/or completions fluids will be allowed to dry. Any free fluids remaining after after six (6) months from reaching total depth, date of completion, and/or determination of inactivity will be removed (as weather conditions allow) to an approved site and the pit reclaimed. Additional drying methods may include fly-ash solidification or sprinkler evaporation. Installation and operation of any sprinklers, pumps, and equipment will ensure that water spray or mist does not drift. Reserve pit liners will be cut off or folded as near to the mud surface as possible and as safety considerations allow and buried on location.

No garbage or non-exempt substances as defined by Resource Conservation and Recovery Act (RCRA) subtitle C will be placed in the reserve pit. All refuse generated during construction, drilling, completion, and well testing activities will be contained in an enclosed receptacle, removed from the drill locations promptly, and transported to an approved disposal facility.

Portable, self-contained chemical toilets and/or sewage processing facilities will be provided for human waste disposal. Upon completion of operations, or as required, the toilet holding tanks will be pumped and the contents disposed of in an approved sewage disposal facility. All applicable regulations pertaining to disposal of human and solid waste will be observed.

Any undesirable event, including accidental release of fluids, or release in excess of reportable quantities, will be managed according to the notification requirements of UDOGMs “Reporting Oil and Gas Undesirable Events” rule. Where State wells are participatory to a Federal agreement, according to NTL-3A, the appropriate Federal agencies will be notified.

**Materials Management**

Hazardous materials above reportable quantities will not be produced by drilling or completing proposed wells or constructing the pipelines/facilities. The term “hazardous materials” as used here means: (1) any substance, pollutant, or containment listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended 42 U.S.C. 9601 et seq., and the regulations issued under CERCLA; and (2) any hazardous waste as defined in RCRA of 1976, as amended. In addition, no extremely hazardous substance, as defined in 40 CFR 355, in threshold planning quantities, would be used, produced, stored, transported, or disposed of while producing any well.

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Chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act (SARA) in quantities of 10,000 pounds or more may be produced and/or stored at production facilities and may be kept in limited quantities on drilling sites and well locations for short periods of time during drilling or completion activities.

**G. Ancillary Facilities:**

None are anticipated.

**H. Well Site Layout (see Well Pad Design Summary):**

The location, orientation and aerial extent of each drill pad; reserve/completion/flare pit; access road ingress/ egress points, drilling rig, dikes/ditches, existing wells/infrastructure; proposed cuts and fills; and topsoil and spoil material stockpile locations are depicted on the exhibits for each project, where applicable. Site-specific conditions may require slight deviation in actual equipment and facility layout; however, the area of disturbance, as described in the survey, will not be exceeded.

Coordinates are provided in the National Spatial Reference System, North American Datum, 1927 (NAD27) or latest edition. Distances are depicted on each plat to the nearest two adjacent section lines.

**I. Plans for Reclamation of the Surface:**

Surface reclamation will be undertaken in two phases: interim and final. Interim reclamation is conducted following well completion and extends through the period of production. This reclamation is for the area of the well pad that is not required for production activities. Final reclamation is conducted following well plugging/conversion and/or facility abandonment processes.

Reclamation activities in both phases may include but is not limited to the re-contouring or re-configuration of topographic surfaces, restoration of drainage systems, segregation of spoils materials, minimizing surface disturbance, re-evaluating backfill requirements, pit closure, topsoil redistribution, soil treatments, seeding and weed control.

**Interim Reclamation**

Interim reclamation includes pit closure, re-contouring (where possible), soil bed preparation, topsoil placement, seeding, and/or weed control.

Interim re-contouring involves bringing all construction material from cuts and fills back onto the well pad and site and reestablishing the natural contours where desirable and practical. Fill and stockpiled spoils no longer necessary to the operation will be spread on the cut slopes and covered with stockpiled topsoil. All stockpiled top soils will be used for interim reclamation where practical to maintain soil viability. Where possible, the land surface will be left “rough” after re-contouring to ensure that the maximum surface area will be available to support the reestablishment of vegetative cover.

A reserve pit, upon being allowed to dry, will be backfilled and compacted with cover materials that are void of any topsoil, vegetation, large stones, rocks or foreign objects. Soils that are moisture laden, saturated, or partially/

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completely frozen will not be used for backfill or cover. The pit area will be mounded to allow for settling and to promote positive surface drainage away from the pit.

**Final Reclamation**

Final reclamation will be performed for newly drilled unproductive wells and/or at the end of the life of a productive well. As soon as practical after the conclusion of drilling and testing operations, unproductive drill holes will be plugged and abandoned (P&A). Site and road reclamation will commence following plugging. In no case will reclamation at non-producing locations be initiated later than six (6) months from the date a well is plugged. A joint inspection of the disturbed area to be reclaimed may be requested by KMG. The primary purpose of this inspection will be to review the existing conditions, or agree upon a revised final reclamation and abandonment plan. A Notice of Intent to Abandon will be filed for final recommendations regarding surface reclamation.

After plugging, all wellhead equipment that is no longer needed will be removed, and the well site will be reclaimed. Final contouring will blend with and follow as closely as practical the natural terrain and contours of the original site and surrounding areas. After re-contouring, final grading will be conducted over the entire surface of the well site and access road. Where practical, the area will be ripped to a depth of 18 to 24 inches on 18 to 24-inch centers and surface materials will be pitted with small depressions to form longitudinal depressions 12 to 18 inches deep perpendicular to the natural flow of water.

All unnecessary surface equipment and structures (e.g. cattle guards) and water control structures (e.g. culverts, drainage pipes) not needed to facilitate successful reclamation will be removed during final reclamation. Roads that will be reclaimed will be ripped to a depth of 18 inches where practical, re-contoured to approximate the original contour of the ground and seeded.

Upon successfully completing reclamation of a P&A location, a Final Abandonment Notice will be submitted to UDOGM.

**Seeding and Measures Common to Interim and Final Reclamation**

Reclaimed areas may be fenced to exclude grazing and encourage re-vegetation.

On slopes where severe erosion can become a problem and the use of machinery is not practical, seed will be hand broadcast and raked with twice the specified amount of seed. The slope will be stabilized using materials specifically designed to prevent erosion on steep slopes and hold seed in place so vegetation can become permanently established. These materials will include, but are not limited to, erosion control blankets and bonded fiber matrix at a rate to achieve a minimum of 80 percent soil coverage.

Seeding will occur year-round as conditions allow. Seed mixes appropriate to the native plant community as determined and specified for each project location based on the site specific soils will be used for re-vegetation. The site specific seed mix will be provided by SITLA.

**J. <u>Surface/Mineral Ownership</u>:**

SITLA
675 East 500 South, Suite 500
Salt Lake City, UT 84102

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**L. Other Information:**

None

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**M. Lessee's or Operators' Representative & Certification:**

Danielle Piernot
Regulatory Analyst II
Kerr-McGee Oil & Gas Onshore LP
PO Box 173779
Denver, CO 80217-3779
(720) 929-6156

Tommy Thompson
General Manager, Drilling
Kerr-McGee Oil & Gas Onshore LP
PO Box 173779
Denver, CO 80217-3779
(720) 929-6724

Certification: All lease and/or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, Onshore Oil and Gas Orders, the approved Plan of Operations, and any applicable Notice to Lessees.

The Operator will be fully responsible for the actions of its subcontractors. A complete copy of the approved "Application for Permit to Drill" will be furnished to the field representative(s) to ensure compliance and shall be on location during all construction and drilling operations.

Kerr-McGee Oil & Gas Onshore LP is considered to be the operator of the subject well. Kerr-McGee Oil & Gas Onshore LP agrees to be responsible under terms and conditions of the lease for the operations conducted upon leased lands.

Bond coverage for State lease activities is provided by State Surety Bond 22013542, and for applicable Federal lease activities and pursuant to 43 CFR 3104, by Bureau of Land Management Nationwide Bond WYB000291.

I hereby certify that I, or persons under my supervision, have inspected the proposed drill site and access route, that I am familiar with the conditions that currently exist; that I have full knowledge of the State and Federal laws applicable to this operation; that the statements made in this plan are, to the best of my knowledge, true and correct; and the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Danielle Piernot

December 19, 2011
Date

RECEIVED: December 20, 2011

Kerr-McGee Oil & Gas Onshore LP
PO Box 173779
Denver, CO 80217-3779

December 14, 2011

Ms. Diana Mason
Division of Oil, Gas and Mining
P.O. Box 145801
Salt Lake City, UT 84114-6100

Re: Directional Drilling R649-3-11
Morgan State 921-36K4BS
T9S-R21E
Section 36: SWSW (Surface), NESW (Bottom Hole)
Surface: 1262' FSL, 1134' FWL
Bottom Hole: 1863' FSL, 2139' FWL
Uintah County, Utah

Dear Ms. Mason:

Pursuant to the filing of Kerr-McGee Oil & Gas Onshore LP's (Kerr-McGee) Application for Permit to Drill regarding the above referenced well, we are hereby submitting this letter in accordance with Oil & Gas Conservation Rule R649-3-11 pertaining to Directional Drilling.

- Kerr-McGee is permitting this well as a directional well in order to minimize surface disturbance. Locating the well at the surface location and directionally drilling from this location, Kerr-McGee will be able to utilize the existing roads and pipelines in the area.

- Furthermore, Kerr-McGee certifies that it is the sole working interest owner within 460 feet of the entire directional well bore.

Therefore, based on the above stated information, Kerr-McGee Oil & Gas Onshore LP requests the permit be granted pursuant to R649-3-11.

Sincerely,

KERR-MCGEE OIL & GAS ONSHORE LP

Joe Matney

Joe Matney
Sr. Staff Landman

RECEIVED: December 20, 2011

**From:** Jim Davis
**To:** APD APPROVAL
**CC:** Danielle Piernot; Julie Jacobson
**Date:** 2/23/2012 3:22 PM
**Subject:** APD Approval: the Kerr McGee Morgan State wells

The following wells have been approved by SITLA including arch and paleo clearance.

| | |
|---|---|
| 4304752246 | Morgan State 921-36G4BS |
| 4304752253 | Morgan State 921-36G4CS |
| 4304752255 | Morgan State 921-36J1CS |
| 4304752256 | Morgan State 921-36J4BS |
| 4304752281 | Morgan State 921-36F1BS |
| 4304752282 | Morgan State 921-36F1CS |
| 4304752283 | Morgan State 921-36G1BS |
| 4304752284 | Morgan State 921-36G1CS |
| 4304752285 | Morgan State 921-36F4BS |
| 4304752286 | Morgan State 921-36K1BS |
| 4304752287 | Morgan State 921-36K1CS |
| 4304752247 | Morgan State 921-36P1BS |
| 4304752248 | Morgan State 921-36P1CS |
| 4304752249 | Morgan State 921-36I4BS |
| 4304752250 | Morgan State 921-36I4CS |
| 4304752252 | Morgan State 921-36P4BS |
| 4304752263 | Morgan State 921-36K4CS |
| 4304752264 | Morgan State 921-36N1BS |
| 4304752265 | Morgan State 921-36N1CS |
| 4304752266 | Morgan State 921-36N4BS |
| 4304752276 | Morgan State 921-36D4CS |
| 4304752277 | Morgan State 921-36E1BS |
| 4304752278 | Morgan State 921-36E1CS |
| 4304752279 | Morgan State 921-36E4BS |
| 4304752280 | Morgan State 921-36E4CS |
| 4304752245 | Morgan State 921-36O4CS |
| 4304752254 | Morgan State 921-36O1CS |
| 4304752267 | Morgan State 921-36O1BS |
| 4304752257 | Morgan State 921-36K4BS |
| 4304752258 | Morgan State 921-36L1BS |
| 4304752259 | Morgan State 921-36L1CS |
| 4304752260 | Morgan State 921-36M1BS |
| 4304752261 | Morgan State 921-36M1CS |
| 4304752262 | Morgan State 921-36M4BS |
| 4304752272 | Morgan State 921-36B4CS |
| 4304752273 | Morgan State 921-36C4BS |
| 4304752274 | Morgan State 921-36C4CS |
| 4304752275 | Morgan State 921-36D1CS |

There are eight more wells on two pads in this section, the 36A pad and the 36I pad, that have not yet been approved. Anadarko is gathering reclamation cost figures on pads similar to those as part of the process of acquiring adequate SITLA bonds.
-Jim

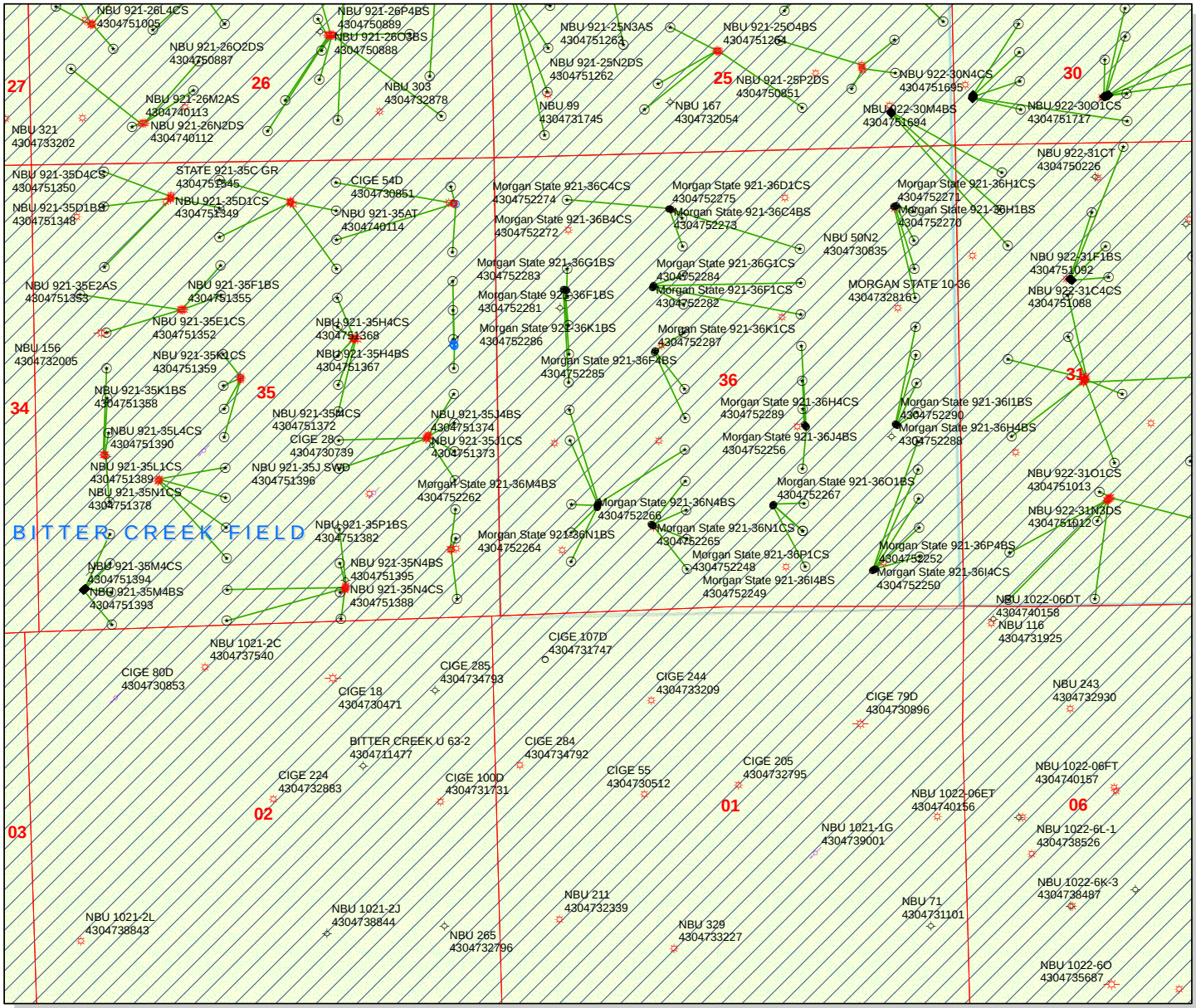
Jim Davis
Utah Trust Lands Administration
jimdavis1@utah.gov

RECEIVED: February 23, 2012

Phone: (801) 538-5156

RECEIVED: February 23, 2012

API Well Number: 43047522570000




**API Number: 4304752257**

**Well Name: Morgan State 921-36K4BS**

**Township T0.9 . Range R2.1 . Section 36**

**Meridian: SLBM**

Operator: KERR-MCGEE OIL & GAS ONSHORE, L.P.

Map Prepared:
Map Produced by Diana Mason

**Units**
**STATUS**
- ACTIVE
- EXPLORATORY
- GAS STORAGE
- NF PP OIL
- NF SECONDARY
- PI OIL
- PP GAS
- PP GEOTHERML
- PP OIL
- SECONDARY
- TERMINATED

**Fields**
**STATUS**
- Unknown
- ABANDONED
- ACTIVE
- COMBINED
- INACTIVE
- STORAGE
- TERMINATED

**Wells Query**
**Status**
- APD - Aproved Permit
- DRL - Spuded (Drilling Commenced)
- GIW - Gas Injection
- GS - Gas Storage
- LA - Location Abandoned
- LOC - New Location
- OPS - Operation Suspended
- PA - Plugged Abandoned
- PGW - Producing Gas Well
- POW - Producing Oil Well
- RET - Returned APD
- SGW - Shut-in Gas Well
- SOW - Shut-in Oil Well
- TA - Temp. Abandoned
- TW - Test Well
- WDW - Water Disposal
- WIW - Water Injection Well
- WSW - Water Supply Well

1,500 750 0 1,500 Feet

1:14,184

RECEIVED: February 24, 2012

API Well Number: 43047522570000

**BOPE REVIEW** **KERR-MCGEE OIL & GAS ONSHORE, L.P. Morgan State 921-36K4BS 43047522570000**

| | | | | |
|---|---|---|---|---|
| **Well Name** | KERR-MCGEE OIL & GAS ONSHORE, L.P. Morgan State 921-36K4BS 4 | | | |
| **String** | Surf | Prod | | |
| **Casing Size(")** | 8.625 | 4.500 | | |
| **Setting Depth (TVD)** | 2539 | 10577 | | |
| **Previous Shoe Setting Depth (TVD)** | 0 | 2539 | | |
| **Max Mud Weight (ppg)** | 8.3 | 13.0 | | |
| **BOPE Proposed (psi)** | 500 | 5000 | | |
| **Casing Internal Yield (psi)** | 3390 | 10690 | | |
| **Operators Max Anticipated Pressure (psi)** | 6981 | 12.7 | | |

| **Calculations** | **Surf String** | **8.625** | " |
|---|---|---|---|
| **Max BHP (psi)** | .052*Setting Depth*MW= | 1100 | |
| | | | **BOPE Adequate For Drilling And Setting Casing at Depth?** |
| **MASP (Gas) (psi)** | Max BHP-(0.12*Setting Depth)= | 795 | NO air drill |
| **MASP (Gas/Mud) (psi)** | Max BHP-(0.22*Setting Depth)= | 541 | NO Reasonable depth in area |
| | | | ***Can Full Expected Pressure Be Held At Previous Shoe?** |
| **Pressure At Previous Shoe** | Max BHP-.22*(Setting Depth - Previous Shoe Depth)= | 541 | NO |
| **Required Casing/BOPE Test Pressure=** | | 2373 | psi |
| ***Max Pressure Allowed @ Previous Casing Shoe=** | | 0 | psi *Assumes 1psi/ft frac gradient |

| **Calculations** | **Prod String** | **4.500** | " |
|---|---|---|---|
| **Max BHP (psi)** | .052*Setting Depth*MW= | 7150 | |
| | | | **BOPE Adequate For Drilling And Setting Casing at Depth?** |
| **MASP (Gas) (psi)** | Max BHP-(0.12*Setting Depth)= | 5881 | NO |
| **MASP (Gas/Mud) (psi)** | Max BHP-(0.22*Setting Depth)= | 4823 | YES OK |
| | | | ***Can Full Expected Pressure Be Held At Previous Shoe?** |
| **Pressure At Previous Shoe** | Max BHP-.22*(Setting Depth - Previous Shoe Depth)= | 5382 | NO Reasonable |
| **Required Casing/BOPE Test Pressure=** | | 5000 | psi |
| ***Max Pressure Allowed @ Previous Casing Shoe=** | | 2539 | psi *Assumes 1psi/ft frac gradient |

| **Calculations** | **String** | | " |
|---|---|---|---|
| **Max BHP (psi)** | .052*Setting Depth*MW= | | |
| | | | **BOPE Adequate For Drilling And Setting Casing at Depth?** |
| **MASP (Gas) (psi)** | Max BHP-(0.12*Setting Depth)= | | NO |
| **MASP (Gas/Mud) (psi)** | Max BHP-(0.22*Setting Depth)= | | NO |
| | | | ***Can Full Expected Pressure Be Held At Previous Shoe?** |
| **Pressure At Previous Shoe** | Max BHP-.22*(Setting Depth - Previous Shoe Depth)= | | NO |
| **Required Casing/BOPE Test Pressure=** | | | psi |
| ***Max Pressure Allowed @ Previous Casing Shoe=** | | | psi *Assumes 1psi/ft frac gradient |

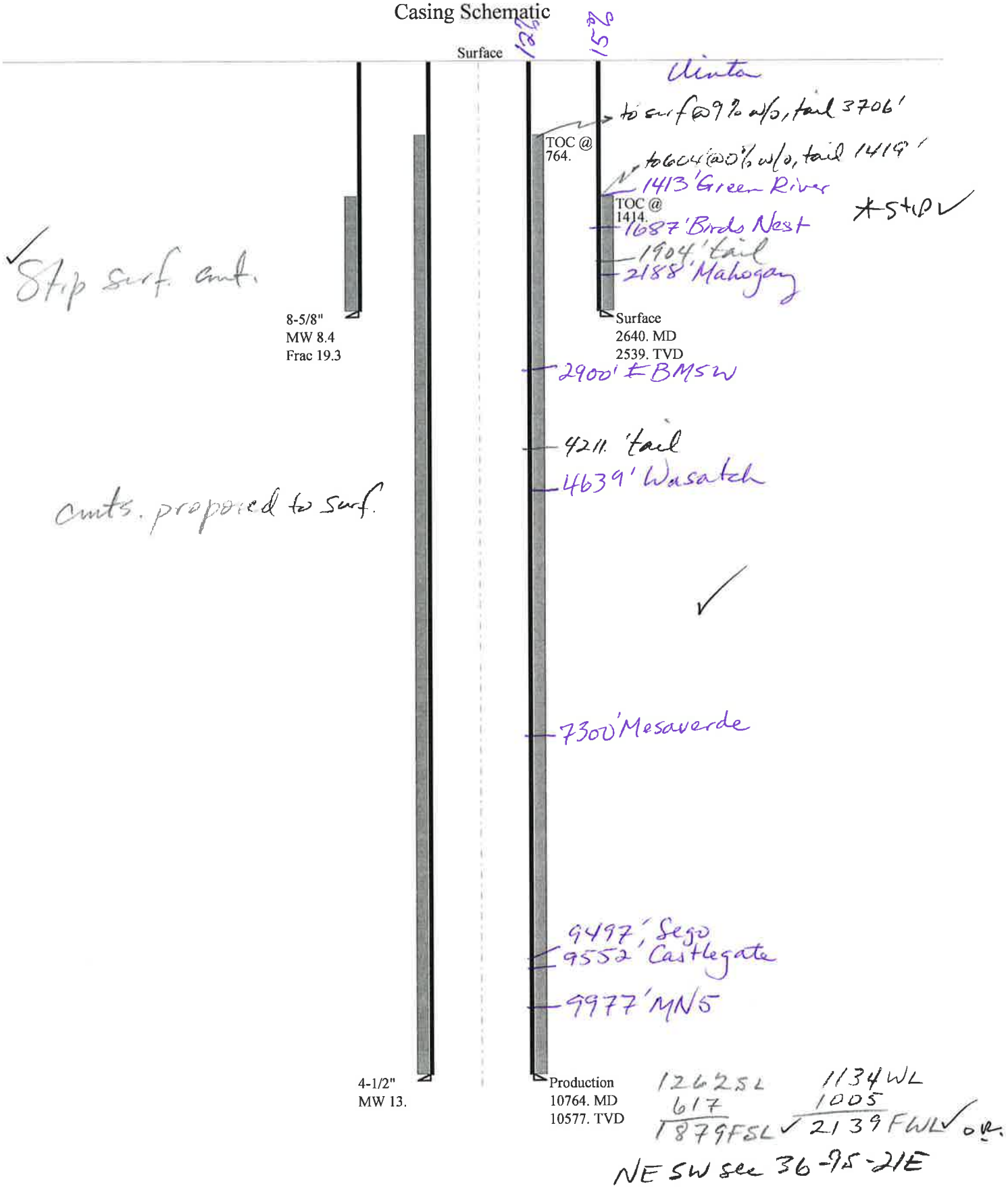
| **Calculations** | **String** | | " |
|---|---|---|---|
| **Max BHP (psi)** | .052*Setting Depth*MW= | | |
| | | | **BOPE Adequate For Drilling And Setting Casing at Depth?** |
| **MASP (Gas) (psi)** | Max BHP-(0.12*Setting Depth)= | | NO |
| **MASP (Gas/Mud) (psi)** | Max BHP-(0.22*Setting Depth)= | | NO |
| | | | ***Can Full Expected Pressure Be Held At Previous Shoe?** |
| **Pressure At Previous Shoe** | Max BHP-.22*(Setting Depth - Previous Shoe Depth)= | | NO |
| **Required Casing/BOPE Test Pressure=** | | | psi |
| ***Max Pressure Allowed @ Previous Casing Shoe=** | | | psi *Assumes 1psi/ft frac gradient |

RECEIVED: February 27, 2012

API Well Number: 43047522570000

# 43047522570000 Morgan State 921-36K4BS

Casing Schematic



API Well Number: 43047522570000

| | |
|---|---|
| Well name: | **43047522570000 Morgan State 921-36K4BS** |
| Operator: | **KERR-MCGEE OIL & GAS ONSHORE, L.P.** |
| String type: | Surface |
| Project ID: | 43-047-52257 |
| Location: | UINTAH COUNTY |

**Design parameters:**

**Collapse**

Mud weight: 8.400 ppg

Design is based on evacuated pipe.

**Burst**

Max anticipated surface pressure: 2,234 psi

Internal gradient: 0.120 psi/ft

Calculated BHP 2,539 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: | 1.70 (J) |
| Buttress: | 1.60 (J) |
| Premium: | 1.50 (J) |
| Body yield: | 1.50 (B) |

Tension is based on air weight.

Neutral point: 2,305 ft

**Environment:**

| | |
|---|---|
| H2S considered? | No |
| Surface temperature: | 74 °F |
| Bottom hole temperature: | 110 °F |
| Temperature gradient: | 1.40 °F/100ft |
| Minimum section length: | 100 ft |
| Cement top: | 1,414 ft |

**Directional Info - Build & Drop**

| | |
|---|---|
| Kick-off point | 300 ft |
| Departure at shoe: | 631 ft |
| Maximum dogleg: | 2 °/100ft |
| Inclination at shoe: | 20 ° |

**Re subsequent strings:**

| | |
|---|---|
| Next setting depth: | 10,577 ft |
| Next mud weight: | 13.000 ppg |
| Next setting BHP: | 7,143 psi |
| Fracture mud wt: | 19.250 ppg |
| Fracture depth: | 2,539 ft |
| Injection pressure: | 2,539 ft |

| 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 | 2640 | 8.625 | 28.00 | I-55 | LT&C | 2539 | 2640 | 7.892 | 104544 |

| 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 | 1108 | 1880 | 1.697 | 2539 | 3390 | 1.34 | 71.1 | 348 | 4.90 J |

Prepared by: Helen Sadik-Macdonald
Div of Oil,Gas & Mining
Phone: 801 538-5357
FAX: 801-359-3940

Date: February 24,2012
Salt Lake City, Utah

Remarks:

Collapse is based on a vertical depth of 2539 ft, a mud weight of 8.4 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.
Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a

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

API Well Number: 43047522570000

| | |
|---|---|
| Well name: | **43047522570000 Morgan State 921-36K4BS** |
| Operator: | **KERR-MCGEE OIL & GAS ONSHORE, L.P.** |
| String type: | Production |
| Project ID: | 43-047-52257 |
| Location: | UINTAH COUNTY |

**Design parameters:**

**Collapse**

Mud weight: 13.000 ppg

Design is based on evacuated pipe.

**Burst**

Max anticipated surface pressure: 4,816 psi

Internal gradient: 0.220 psi/ft

Calculated BHP 7,143 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: 8,709 ft

Estimated cost: 159,771 ($)

**Environment:**

| | |
|---|---|
| H2S considered? | No |
| Surface temperature: | 74 °F |
| Bottom hole temperature: | 222 °F |
| Temperature gradient: | 1.40 °F/100ft |
| Minimum section length: | 100 ft |
| Cement top: | Surface |

**Directional Info - Build & Drop**

| | |
|---|---|
| Kick-off point | 300 ft |
| Departure at shoe: | 1179 ft |
| Maximum dogleg: | 2 °/100ft |
| Inclination at shoe: | 0 ° |

| 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 ($) |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 5000 | 4.5 | 11.60 | HCP-110 | DQX | 4813 | 5000 | 3.875 | 132000 |
| 1 | 5764 | 4.5 | 11.60 | HCP-110 | LT&C | 10577 | 10764 | 3.875 | 27771 |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 3250 | 8106 | 2.494 | 5875 | 10690 | 1.82 | 122.7 | 367.2 | 2.99 B |
| 1 | 7143 | 8650 | 1.211 | 7143 | 10690 | 1.50 | 66.9 | 279 | 4.17 J |

Prepared by: Helen Sadik-Macdonald
Div of Oil,Gas & Mining
Phone: 801 538-5357
FAX: 801-359-3940

Date: February 24,2012
Salt Lake City, Utah

Remarks:

Collapse is based on a vertical depth of 10577 ft, a mud weight of 13 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.

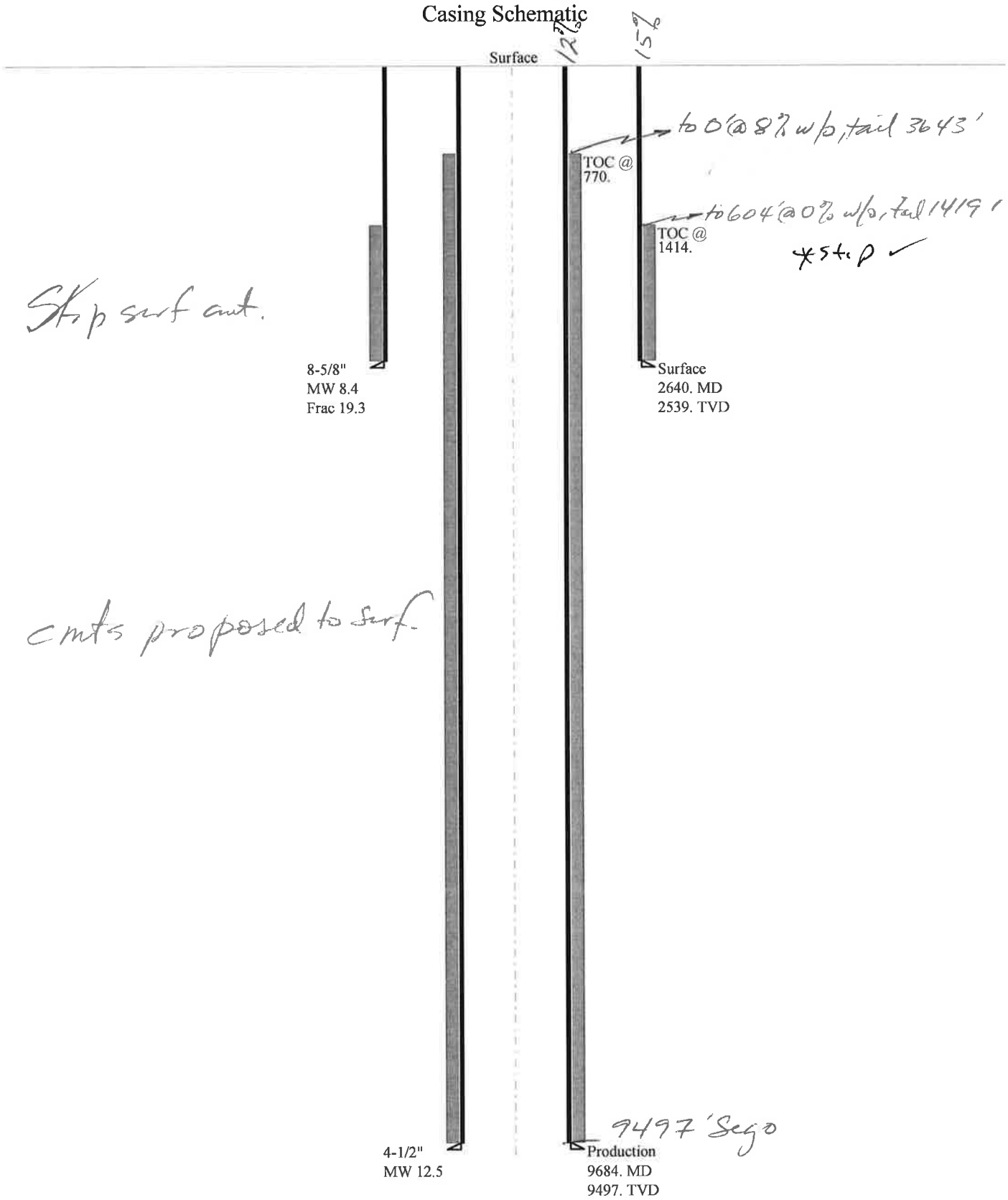
Burst strength is not adjusted for tension.
Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a

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

API Well Number: 43047522570000

# 43047522570000 Morgan State 921-36K4BS

Casing Schematic



API Well Number: 43047522570000

| | |
|---|---|
| Well name: | **43047522570000 Morgan State 921-36K4BS** |
| Operator: | **KERR-MCGEE OIL & GAS ONSHORE, L.P.** |
| String type: | Surface |
| Project ID: | 43-047-52257 |
| Location: | UINTAH COUNTY |

## Design parameters:

**Collapse**

Mud weight: 8.400 ppg

Design is based on evacuated pipe.

**Burst**

Max anticipated surface pressure: 2,234 psi

Internal gradient: 0.120 psi/ft

Calculated BHP 2,539 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: | 1.70 (J) |
| Buttress: | 1.60 (J) |
| Premium: | 1.50 (J) |
| Body yield: | 1.50 (B) |

Tension is based on air weight.

Neutral point: 2,305 ft

## Environment:

| | |
|---|---|
| H2S considered? | No |
| Surface temperature: | 74 °F |
| Bottom hole temperature: | 110 °F |
| Temperature gradient: | 1.40 °F/100ft |
| Minimum section length: | 100 ft |
| Cement top: | 1,414 ft |

**Directional Info - Build & Drop**

| | |
|---|---|
| Kick-off point | 300 ft |
| Departure at shoe: | 631 ft |
| Maximum dogleg: | 2 °/100ft |
| Inclination at shoe: | 20 ° |

**Re subsequent strings:**

| | |
|---|---|
| Next setting depth: | 9,497 ft |
| Next mud weight: | 12.500 ppg |
| Next setting BHP: | 6,167 psi |
| Fracture mud wt: | 19.250 ppg |
| Fracture depth: | 2,539 ft |
| Injection pressure: | 2,539 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 | 2640 | 8.625 | 28.00 | I-55 | LT&C | 2539 | 2640 | 7.892 | 104544 |

| 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 | 1108 | 1880 | 1.697 | 2539 | 3390 | 1.34 | 71.1 | 348 | 4.90 J |

Prepared by: Helen Sadik-Macdonald
Div of Oil,Gas & Mining
Phone: 801 538-5357
FAX: 801-359-3940

Date: February 24,2012
Salt Lake City, Utah

Remarks:

Collapse is based on a vertical depth of 2539 ft, a mud weight of 8.4 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.
Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a

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

API Well Number: 43047522570000

| | |
|---|---|
| Well name: | **43047522570000 Morgan State 921-36K4BS** |
| Operator: | **KERR-MCGEE OIL & GAS ONSHORE, L.P.** |
| String type: | Production |
| Project ID: | 43-047-52257 |
| Location: | UINTAH COUNTY |

**Design parameters:**

**Collapse**

| | |
|---|---|
| Mud weight: | 12.500 ppg |
| Internal fluid density: | 2.000 ppg |

**Burst**

| | |
|---|---|
| Max anticipated surface pressure: | 4,077 psi |
| Internal gradient: | 0.220 psi/ft |
| Calculated BHP | 6,167 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: 7,910 ft

Estimated cost: 193,829 ($)

**Environment:**

| | |
|---|---|
| H2S considered? | No |
| Surface temperature: | 74 °F |
| Bottom hole temperature: | 207 °F |
| Temperature gradient: | 1.40 °F/100ft |
| Minimum section length: | 100 ft |
| Cement top: | 770 ft |

**Directional Info - Build & Drop**

| | |
|---|---|
| Kick-off point | 300 ft |
| Departure at shoe: | 1179 ft |
| Maximum dogleg: | 2 °/100ft |
| Inclination at shoe: | 0 ° |

| 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 ($) |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 5000 | 4.5 | 11.60 | I-80 | DQX | 4813 | 5000 | 3.875 | 132000 |
| 1 | 4684 | 4.5 | 11.60 | I-80 | LT&C | 9497 | 9684 | 3.875 | 61829 |

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 2625 | 5890 | 2.244 | 5136 | 7780 | 1.51 | 110.2 | 267 | 2.42 J |
| 1 | 5180 | 6360 | 1.228 | 6167 | 7780 | 1.26 | 54.3 | 212 | 3.90 J |

Prepared by: Helen Sadik-Macdonald
Div of Oil,Gas & Mining
Phone: 801 538-5357
FAX: 801-359-3940
Date: February 24,2012
Salt Lake City, Utah

Remarks:
Collapse is based on a vertical depth of 9497 ft, a mud weight of 12.5 ppg An internal gradient of .104 psi/ft was used for collapse from TD
Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.
Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a

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

# ON-SITE PREDRILL EVALUATION
## Utah Division of Oil, Gas and Mining

**Operator** KERR-MCGEE OIL & GAS ONSHORE, L.P.
**Well Name** Morgan State 921-36K4BS
**API Number** 43047522570000 **APD No** 5084 **Field/Unit** NATURAL BUTTES
**Location: 1/4,1/4** SWSW **Sec** 36 **Tw** 9.0S **Rng** 21.0E 1262 FSL 1134 FWL
**GPS Coord (UTM)** 627599 4427590 **Surface Owner**

**Participants**

D. Piernot, S. Wopsock, C. Chase, D. Holmes, K Gathings, - Anadarko; C.Jensen, D. Hackford – DOGM; M.Batty, J. Slaugh – Timberline; A. Hansen- DWR, J. Davis - SITLA

**Regional/Local Setting & Topography**

This location is within the Natural Buttes Unit but is not part of the Natural Buttes Unit. It is approximately 14 road miles southeast of Ouray, Utah. The general area is at the head of a long unnamed wash east of Cottonwood Wash. Both washes enter the White River in the same general area, approximately six miles to the north. The area is characterized by rolling hills, which are frequently divided by somewhat gentle draws that drain northerly. This unnamed wash is an ephemeral drainage. No springs, seeps or streams exist in the area. The washes are sometimes rimmed with steep side hills, which have exposed sandstone bedrock cliffs along the rims.
six directional wells will be drilled from this location which will be served by one pad and reserve pit. Location rests on top of a butte / ridge with very steep slopes. Any spill could likey be very difficult to contain. Areas to be found below pad are existing pads to the west and a drainage to the east. Pit will require heavy fills on the West side and an irregular pad shape to keep disturbances to the steep slopes at a minimum.

**Surface Use Plan**

**Current Surface Use**
Wildlfe Habitat

| New Road Miles | Well Pad | Src Const Material | Surface Formation |
|---|---|---|---|
| 0.01 | **Width** 120 **Length** 260 | Onsite | UNTA |

**Ancillary Facilities** N

**Waste Management Plan Adequate?** Y

**Environmental Parameters**

**Affected Floodplains and/or Wetlands** N

**Flora / Fauna**

dominant vegetation;
Galletta, shadscale and rabbit brush surround the well pad.
Wildlife;
habitat contains forbs that may be suitable browse for deer, antelope and rabbits, though none were observed. Disturbed soils are not habitat for wildlife. DWR had no comment / issues

**Soil Type and Characteristics**

Very flaggy loams with clastic basalts upon exposed sandstone bedrock

**Erosion Issues** Y

This location is on top of a ridge with significant existing erosion present

**Sedimentation Issues** N

It is unlikely sediment will be transported onto location because of its elevation

**Site Stability Issues** Y

compaction will be critical as fill areas are deep

**Drainage Diverson Required?** Y

Stock piling will be sufficient

**Berm Required?** Y

Berming of the West side ( at a minimum) needed to protect very steep slopes

**Erosion Sedimentation Control Required?** Y

Berming and stockpiling to be strategically placed to help with these issues

**Paleo Survey Run?** Y **Paleo Potental Observed?** N **Cultural Survey Run?** Y **Cultural Resources?** N

## Reserve Pit

| Site-Specific Factors | | Site Ranking | |
|---|---|---|---|
| **Distance to Groundwater (feet)** | 100 to 200 | 5 | |
| **Distance to Surface Water (feet)** | >1000 | 0 | |
| **Dist. Nearest Municipal Well (ft)** | >5280 | 0 | |
| **Distance to Other Wells (feet)** | >1320 | 0 | |
| **Native Soil Type** | Mod permeability | 10 | |
| **Fluid Type** | Fresh Water | 5 | |
| **Drill Cuttings** | Normal Rock | 0 | |
| **Annual Precipitation (inches)** | 10 to 20 | 5 | |
| **Affected Populations** | | | |
| **Presence Nearby Utility Conduits** | Unknown | 10 | |
| | **Final Score** | 35 | 1 Sensitivity Level |

**Characteristics / Requirements**

Pit to be dug to a depth of 12' . Because of the likely hood of disturbance to existing sandstone bedrock and clastic basalt observed on the surface, pit underlayment is to be used to protect the liner from potential puncture. Operators representative was verbally informed of this decision and was an integral part of the decision making.

**Closed Loop Mud Required?** N **Liner Required?** Y **Liner Thickness** 20 **Pit Underlayment Required?** Y

## Other Observations / Comments

Conversation had with Sheila Wopsock on 01/16/2012 about berming the West side of location

| | |
|---|---|
| Chris Jensen | 1/11/2012 |
| **Evaluator** | **Date / Time** |

# Application for Permit to Drill
# Statement of Basis

3/20/2012 **Utah Division of Oil, Gas and Mining** Page 1

| APD No | API WellNo | Status | Well Type | Surf Owner | CBM |
|---|---|---|---|---|---|
| 5084 | 43047522570000 | SITLA | GW | S | No |
| **Operator** | KERR-MCGEE OIL & GAS ONSHORE, L.P. | | **Surface Owner-APD** | | |
| **Well Name** | Morgan State 921-36K4BS | | **Unit** | | |
| **Field** | NATURAL BUTTES | | **Type of Work** | DRILL | |
| **Location** | SWSW 36 9S 21E S 1262 FSL 1134 FWL GPS Coord (UTM) 627603E 4427577N | | | | |

## Geologic Statement of Basis

Kerr McGee proposes to set 2,640’ of surface casing at this location. The depth to the base of the moderately saline water at this location is estimated to be at a depth of 2,900'. A search of Division of Water Rights records shows one water well within a 10,000 foot radius of the center of Section 36. The well is listed as 2,640 feet deep and used for drilling water. The surface formation at this site is the Uinta Formation. The Uinta Formation is made up of interbedded shales and sandstones. The sandstones are mostly lenticular and discontinuous and should not be a significant source of useable ground water. The proposed casing and cement should adequately protect. Any usable ground water.

Brad Hill — **APD Evaluator**

2/1/2012 — **Date / Time**

## Surface Statement of Basis

Location is an existing well pad in the Morgan State unit which is within the Natural Buttes unit in southern Uintah County. There are deep drainages close to the proposed activities which are eventual tributaries to the white river. Because the soil is erodible and any spills may readily reach the dry wash, pad is to be bermed and stockpiles act as a buffer for these hydrologic features. Due to the rock within the soils and likely hood of disturbance to sandstone bedrock, the pit is to be underlined to prevent puncture. The operators representative was present and an integral part of this decision. This location is very near other disturbances previously permitted for gas recovery.

Chris Jensen — **Onsite Evaluator**

1/11/2012 — **Date / Time**

## Conditions of Approval / Application for Permit to Drill

| Category | Condition |
|---|---|
| Pits | A synthetic liner with a minimum thickness of 16 mils with a felt subliner shall be properly installed and maintained in the reserve pit. |
| Surface | The well site shall be bermed to prevent fluids from leaving the pad. |
| Surface | Drainages adjacent to the proposed pad shall be diverted around the location. |
| Surface | The reserve pit shall be fenced upon completion of drilling operations. |

RECEIVED: March 20, 2012

# WORKSHEET
# APPLICATION FOR PERMIT TO DRILL

**APD RECEIVED:** 12/20/2011 **API NO. ASSIGNED:** 43047522570000
**WELL NAME:** Morgan State 921-36K4BS
**OPERATOR:** KERR-MCGEE OIL & GAS ONSHORE, L.P. (N2995) **PHONE NUMBER:** 720 929-6156
**CONTACT:** Danielle Piernot

**PROPOSED LOCATION:** SWSW 36 090S 210E **Permit Tech Review:** ✔

**SURFACE:** 1262 FSL 1134 FWL **Engineering Review:** ✔

**BOTTOM:** 1863 FSL 2139 FWL **Geology Review:** ✔

**COUNTY:** UINTAH
**LATITUDE:** 39.98874 **LONGITUDE:** -109.50539
**UTM SURF EASTINGS:** 627603.00 **NORTHINGS:** 4427577.00
**FIELD NAME:** NATURAL BUTTES
**LEASE TYPE:** 3 - State
**LEASE NUMBER:** ML 22265 **PROPOSED PRODUCING FORMATION(S):** BLACKHAWK
**SURFACE OWNER:** 3 - State **COALBED METHANE:** NO

**RECEIVED AND/OR REVIEWED:**

- ✔ **PLAT**
- ✔ **Bond:** STATE/FEE - 22013542
- ☐ **Potash**
- ✔ **Oil Shale 190-5**
- ☐ **Oil Shale 190-3**
- ☐ **Oil Shale 190-13**
- ✔ **Water Permit:** 43-8496
- ☐ **RDCC Review:**
- ☐ **Fee Surface Agreement**
- ✔ **Intent to Commingle**

**Commingling Approved**

**LOCATION AND SITING:**

- ☐ **R649-2-3.**

**Unit:**

- ☐ **R649-3-2. General**
- ☐ **R649-3-3. Exception**
- ✔ **Drilling Unit**

**Board Cause No:** Cause 173-24
**Effective Date:** 10/5/2009
**Siting:** 460' Fr Exterior Lease Boundary

- ✔ **R649-3-11. Directional Drill**

**Comments:** Presite Completed

**Stipulations:**
3 - Commingling - ddoucet
5 - Statement of Basis - bhill
15 - Directional - dmason
17 - Oil Shale 190-5(b) - dmason
25 - Surface Casing - hmacdonald

RECEIVED: March 20, 2012

GARY R. HERBERT
*Governor*
GREGORY S. BELL
*Lieutenant Governor*

# State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
*Executive Director*
Division of Oil, Gas and Mining
JOHN R. BAZA
*Division Director*

# Permit To Drill

**********

**Well Name:** Morgan State 921-36K4BS
**API Well Number:** 43047522570000
**Lease Number:** ML 22265
**Surface Owner:** STATE
**Approval Date:** 3/20/2012

**Issued to:**
KERR-MCGEE OIL & GAS ONSHORE, L.P., P.O. Box 173779, Denver, CO 80217

**Authority:**
Pursuant to Utah Code Ann. 40-6-1 et seq., and Utah Administrative Code R649-3-1 et seq., the Utah Division of Oil, Gas and Mining issues conditions of approval, and permit to drill the listed well. This permit is issued in accordance with the requirements of Cause 173-24. The expected producing formation or pool is the BLACKHAWK Formation(s), completion into any other zones will require filing a Sundry Notice (Form 9). Completion and commingling of more than one pool will require approval in accordance with R649-3-22.

**Duration:**
This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date

**Commingle:**
In accordance with Board Cause No. 173-24, commingling of the production from the Wasatch formation and the Mesaverde formation in this well is allowed.

**General:**
Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

**Conditions of Approval:**
Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis (copy attached).

Surface casing shall be cemented to the surface.

In accordance with Utah Admin. R.649-3-11, Directional Drilling, the operator shall submit a complete angular deviation and directional survey report to the Division within 30 days following completion of the well.

In accordance with the Order in Cause No. 190-5(b) dated October 28, 1982, the operator shall comply with the requirements of Rules R649-3-31 and R649-3-27

pertaining to Designated Oil Shale Areas. Additionally, the operators shall ensure that the surface and or production casing is properly cemented over the entire oil shale section as defined by Rule R649-3-31. The Operator shall report the actual depth the oil shale is encountered to the division.

**Additional Approvals:**
The operator is required to obtain approval from the Division of Oil, Gas and mining before performing any of the following actions during the drilling of this well:

- Any changes to the approved drilling plan - contact Dustin Doucet
- Significant plug back of the well - contact Dustin Doucet
- Plug and abandonment of the well - contact Dustin Doucet

**Notification Requirements:**
The operator is required to notify the Division of Oil, Gas and Mining of the following actions during drilling of this well:

- Within 24 hours following the spudding of the well - contact Carol Daniels OR submit an electronic sundry notice (pre-registration required) via the Utah Oil & Gas website at http://oilgas.ogm.utah.gov
- 24 hours prior to testing blowout prevention equipment - contact Dan Jarvis
- 24 hours prior to cementing or testing casing - contact Dan Jarvis
- Within 24 hours of making any emergency changes to the approved drilling program - contact Dustin Doucet
- 24 hours prior to commencing operations to plug and abandon the well contact Dan Jarvis

**Contact Information:**
The following are Division of Oil, Gas and Mining contacts and their telephone numbers (please leave a voicemail message if the person is not available to take the call):

- Carol Daniels 801-538-5284 - office
- Dustin Doucet 801-538-5281 - office
  801-733-0983 - after office hours
- Dan Jarvis 801-538-5338 - office
  801-231-8956 - after office hours

**Reporting Requirements:**
All reports, forms and submittals as required by the Utah Oil and Gas Conservation General Rules will be promptly filed with the Division of Oil, Gas and Mining, including but not limited to:

- Entity Action Form (Form 6) - due within 5 days of spudding the well
- Monthly Status Report (Form 9) - due by 5th day of the following calendar month
- Requests to Change Plans (Form 9) - due prior to implementation
- Written Notice of Emergency Changes (Form 9) - due within 5 days
- Notice of Operations Suspension or Resumption (Form 9) - due prior to implementation
- Report of Water Encountered (Form 7) - due within 30 days after completion
- Well Completion Report (Form 8) - due within 30 days after completion or

plugging

**Approved By:**

For John Rogers
Associate Director, Oil & Gas

**STATE OF UTAH**
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING

**FORM 9**

**5.LEASE DESIGNATION AND SERIAL NUMBER:** ML 22265

## SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

**6. IF INDIAN, ALLOTTEE OR TRIBE NAME:**

**7.UNIT or CA AGREEMENT NAME:**

**1. TYPE OF WELL**
Gas Well

**8. WELL NAME and NUMBER:**
Morgan State 921-36K4BS

**2. NAME OF OPERATOR:**
KERR-MCGEE OIL & GAS ONSHORE, L.P.

**9. API NUMBER:**
43047522570000

**3. ADDRESS OF OPERATOR:**
P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779

**PHONE NUMBER:**
720 929-6156 Ext

**9. FIELD and POOL or WILDCAT:**
NATURAL BUTTES

**4. LOCATION OF WELL**
**FOOTAGES AT SURFACE:**
1262 FSL 1134 FWL
**QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:**
Qtr/Qtr: SWSW Section: 36 Township: 09.0S Range: 21.0E Meridian: S

**COUNTY:**
UINTAH

**STATE:**
UTAH

**11.**
CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

| TYPE OF SUBMISSION | TYPE OF ACTION | | |
|---|---|---|---|
| ✓ NOTICE OF INTENT<br>Approximate date work will start:<br>5/30/2012 | ☐ ACIDIZE | ☐ ALTER CASING | ☐ CASING REPAIR |
| | ☐ CHANGE TO PREVIOUS PLANS | ☐ CHANGE TUBING | ☐ CHANGE WELL NAME |
| | ☐ CHANGE WELL STATUS | ☐ COMMINGLE PRODUCING FORMATIONS | ☐ CONVERT WELL TYPE |
| ☐ SUBSEQUENT REPORT<br>Date of Work Completion: | ☐ DEEPEN | ☐ FRACTURE TREAT | ☐ NEW CONSTRUCTION |
| | ☐ OPERATOR CHANGE | ☐ PLUG AND ABANDON | ☐ PLUG BACK |
| | ☐ PRODUCTION START OR RESUME | ☐ RECLAMATION OF WELL SITE | ☐ RECOMPLETE DIFFERENT FORMATION |
| ☐ SPUD REPORT<br>Date of Spud: | ☐ REPERFORATE CURRENT FORMATION | ☐ SIDETRACK TO REPAIR WELL | ☐ TEMPORARY ABANDON |
| | ☐ TUBING REPAIR | ☐ VENT OR FLARE | ☐ WATER DISPOSAL |
| ☐ DRILLING REPORT<br>Report Date: | ☐ WATER SHUTOFF | ☐ SI TA STATUS EXTENSION | ☐ APD EXTENSION |
| | ☐ WILDCAT WELL DETERMINATION | ✓ OTHER | OTHER: ACTS/ Pit Refub |

**12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.**

Kerr-McGee Oil & Gas Onshore, LP is requesting to refurb the existing pit on this multi-well pad for completion operations. The refurb pit will be relined per the requirements in the COA of the APD. Upon completion of the wells on this pad, Kerr-McGee is also requesting to utilize this pit as an ACTS staging pit to be utilized for other completion operations in the area. The trucks will unload water into these tanks before the water is placed into the refurbed pit. The purpose of the frac tanks is to collect any hydro-carbons that may have been associated with the other completion operations before releasing into the pit. We plan to keep this pit open for 1 year. During this time the surrounding well location completion fluids will be recycled in this pit and utilized for other frac jobs in the surrounding sections. Thank you.

**Approved by the Utah Division of Oil, Gas and Mining**

**Date:** May 29, 2012

**By:**

| NAME (PLEASE PRINT) | PHONE NUMBER | TITLE |
|---|---|---|
| Danielle Piernot | 720 929-6156 | Regulatory Analyst |
| **SIGNATURE** | | **DATE** |
| N/A | | 5/22/2012 |

RECEIVED: May. 22, 2012

**The Utah Division of Oil, Gas, and Mining**

**- State of Utah**
**- Department of Natural Resources**

**Electronic Permitting System - Sundry Notices**

## Sundry Conditions of Approval Well Number 43047522570000

**A synthetic liner with a minimum thickness of 30 mils with a felt subliner shall be properly installed and maintained in the pit.**

RECEIVED: May. 29, 2012

FORM 9

# STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING

**5.LEASE DESIGNATION AND SERIAL NUMBER:** ML 22265

## SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

**6. IF INDIAN, ALLOTTEE OR TRIBE NAME:**

**7.UNIT or CA AGREEMENT NAME:**

**1. TYPE OF WELL**
Gas Well

**8. WELL NAME and NUMBER:**
MORGAN STATE 921-36K4BS

**2. NAME OF OPERATOR:**
KERR-MCGEE OIL & GAS ONSHORE, L.P.

**9. API NUMBER:**
43047522570000

**3. ADDRESS OF OPERATOR:**
P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779

**PHONE NUMBER:**
720 929-6515 EXT

**9. FIELD and POOL or WILDCAT:**
NATURAL BUTTES

**4. LOCATION OF WELL**
**FOOTAGES AT SURFACE:**
1262 FSL 1134 FWL
**QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:**
Qtr/Qtr: SWSW Section: 36 Township: 09.0S Range: 21.0E Meridian: S

**COUNTY:**
UINTAH

**STATE:**
UTAH

**11.**
CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

| TYPE OF SUBMISSION | TYPE OF ACTION | | |
|---|---|---|---|
| ✓ NOTICE OF INTENT<br>Approximate date work will start:<br>3/20/2013 | ☐ ACIDIZE | ☐ ALTER CASING | ☐ CASING REPAIR |
| | ☐ CHANGE TO PREVIOUS PLANS | ☐ CHANGE TUBING | ☐ CHANGE WELL NAME |
| | ☐ CHANGE WELL STATUS | ☐ COMMINGLE PRODUCING FORMATIONS | ☐ CONVERT WELL TYPE |
| ☐ SUBSEQUENT REPORT<br>Date of Work Completion: | ☐ DEEPEN | ☐ FRACTURE TREAT | ☐ NEW CONSTRUCTION |
| | ☐ OPERATOR CHANGE | ☐ PLUG AND ABANDON | ☐ PLUG BACK |
| | ☐ PRODUCTION START OR RESUME | ☐ RECLAMATION OF WELL SITE | ☐ RECOMPLETE DIFFERENT FORMATION |
| ☐ SPUD REPORT<br>Date of Spud: | ☐ REPERFORATE CURRENT FORMATION | ☐ SIDETRACK TO REPAIR WELL | ☐ TEMPORARY ABANDON |
| | ☐ TUBING REPAIR | ☐ VENT OR FLARE | ☐ WATER DISPOSAL |
| ☐ DRILLING REPORT<br>Report Date: | ☐ WATER SHUTOFF | ☐ SI TA STATUS EXTENSION | ✓ APD EXTENSION |
| | ☐ WILDCAT WELL DETERMINATION | ☐ OTHER | OTHER: |

**12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.**

Kerr-McGee Oil & Gas Onshore, L.P. (Kerr-McGee) respectfully requests an extension to this APD for the maximum time allowed. Please contact the undersigned with any questions and/or comments. Thank you.

**Approved by the Utah Division of Oil, Gas and Mining**

**Date:** February 19, 2013

**By:**

| NAME (PLEASE PRINT) | PHONE NUMBER | TITLE |
|---|---|---|
| Luke Urban | 720 929-6501 | Regulatory Specialist |

| SIGNATURE | DATE |
|---|---|
| N/A | 2/15/2013 |

RECEIVED: Feb. 15, 2013

## The Utah Division of Oil, Gas, and Mining

**- State of Utah**
**- Department of Natural Resources**

**Electronic Permitting System - Sundry Notices**

### Request for Permit Extension Validation Well Number 43047522570000

**API:** 43047522570000
**Well Name:** MORGAN STATE 921-36K4BS
**Location:** 1262 FSL 1134 FWL QTR SWSW SEC 36 TWNP 090S RNG 210E MER S
**Company Permit Issued to:** KERR-MCGEE OIL & GAS ONSHORE, L.P.
**Date Original Permit Issued:** 3/20/2012

**The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision. Following is a checklist of some items related to the application, which should be verified.**

- **If located on private land, has the ownership changed, if so, has the surface agreement been updated?** ○ **Yes** ◉ **No**
- **Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location?** ○ **Yes** ◉ **No**
- **Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well?** ○ **Yes** ◉ **No**
- **Have there been any changes to the access route including ownership, or rightof- way, which could affect the proposed location?** ○ **Yes** ◉ **No**
- **Has the approved source of water for drilling changed?** ○ **Yes** ◉ **No**
- **Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation?** ○ **Yes** ◉ **No**
- **Is bonding still in place, which covers this proposed well?** ◉ **Yes** ○ **No**

**Signature:** Luke Urban **Date:** 2/15/2013
**Title:** Regulatory Specialist **Representing:** KERR-MCGEE OIL & GAS ONSHORE, L.P.

RECEIVED: Feb. 15, 2013

# STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING

FORM 9

**5.LEASE DESIGNATION AND SERIAL NUMBER:** ML 22265

## SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

**6. IF INDIAN, ALLOTTEE OR TRIBE NAME:**

**7.UNIT or CA AGREEMENT NAME:**

**1. TYPE OF WELL**
Gas Well

**8. WELL NAME and NUMBER:**
MORGAN STATE 921-36K4BS

**2. NAME OF OPERATOR:**
KERR-MCGEE OIL & GAS ONSHORE, L.P.

**9. API NUMBER:**
43047522570000

**3. ADDRESS OF OPERATOR:**
P.O. Box 173779 1099 18th Street, Suite 600, Denver, CO, 80217 3779

**PHONE NUMBER:**
720 929-6100 EXT

**9. FIELD and POOL or WILDCAT:**
NATURAL BUTTES

**4. LOCATION OF WELL**
**FOOTAGES AT SURFACE:**
1262 FSL 1134 FWL
**QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:**
Qtr/Qtr: SWSW Section: 36 Township: 09.0S Range: 21.0E Meridian: S

**COUNTY:**
UINTAH

**STATE:**
UTAH

**11.**
CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

| TYPE OF SUBMISSION | TYPE OF ACTION | | |
|---|---|---|---|
| ✓ NOTICE OF INTENT<br>Approximate date work will start:<br>3/20/2014 | ☐ ACIDIZE | ☐ ALTER CASING | ☐ CASING REPAIR |
| | ☐ CHANGE TO PREVIOUS PLANS | ☐ CHANGE TUBING | ☐ CHANGE WELL NAME |
| | ☐ CHANGE WELL STATUS | ☐ COMMINGLE PRODUCING FORMATIONS | ☐ CONVERT WELL TYPE |
| ☐ SUBSEQUENT REPORT<br>Date of Work Completion: | ☐ DEEPEN | ☐ FRACTURE TREAT | ☐ NEW CONSTRUCTION |
| | ☐ OPERATOR CHANGE | ☐ PLUG AND ABANDON | ☐ PLUG BACK |
| | ☐ PRODUCTION START OR RESUME | ☐ RECLAMATION OF WELL SITE | ☐ RECOMPLETE DIFFERENT FORMATION |
| ☐ SPUD REPORT<br>Date of Spud: | ☐ REPERFORATE CURRENT FORMATION | ☐ SIDETRACK TO REPAIR WELL | ☐ TEMPORARY ABANDON |
| | ☐ TUBING REPAIR | ☐ VENT OR FLARE | ☐ WATER DISPOSAL |
| ☐ DRILLING REPORT<br>Report Date: | ☐ WATER SHUTOFF | ☐ SI TA STATUS EXTENSION | ✓ APD EXTENSION |
| | ☐ WILDCAT WELL DETERMINATION | ☐ OTHER | OTHER: |

**12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.**

Kerr-McGee Oil & Gas Onshore, L.P. (Kerr-McGee) respectfully requests an extension to this APD for the maximum time allowed. Please contact the undersigned with any questions and/or comments. Thank you.

**Approved by the Utah Division of Oil, Gas and Mining**

**Date:** February 12, 2014

**By:**

| NAME (PLEASE PRINT) | PHONE NUMBER | TITLE |
|---|---|---|
| Teena Paulo | 720 929-6236 | Staff Regulatory Specialist |

| SIGNATURE | DATE |
|---|---|
| N/A | 2/7/2014 |

RECEIVED: Feb. 07, 2014

## The Utah Division of Oil, Gas, and Mining

**- State of Utah**
**- Department of Natural Resources**

**Electronic Permitting System - Sundry Notices**

## Request for Permit Extension Validation Well Number 43047522570000

**API:** 43047522570000
**Well Name:** MORGAN STATE 921-36K4BS
**Location:** 1262 FSL 1134 FWL QTR SWSW SEC 36 TWNP 090S RNG 210E MER S
**Company Permit Issued to:** KERR-MCGEE OIL & GAS ONSHORE, L.P.
**Date Original Permit Issued:** 3/20/2012

**The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision. Following is a checklist of some items related to the application, which should be verified.**

- **If located on private land, has the ownership changed, if so, has the surface agreement been updated?** ○ **Yes** ◉ **No**
- **Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location?** ○ **Yes** ◉ **No**
- **Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well?** ○ **Yes** ◉ **No**
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- **Has the approved source of water for drilling changed?** ○ **Yes** ◉ **No**
- **Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation?** ○ **Yes** ◉ **No**
- **Is bonding still in place, which covers this proposed well?** ◉ **Yes** ○ **No**

**Signature:** Teena Paulo **Date:** 2/7/2014
**Title:** Staff Regulatory Specialist **Representing:** KERR-MCGEE OIL & GAS ONSHORE, L.P.

RECEIVED: Feb. 07, 2014

GARY R. HERBERT
*Governor*

SPENCER J. COX
*Lieutenant Governor*

# State of Utah

**DEPARTMENT OF NATURAL RESOURCES**

MICHAEL R. STYLER
*Executive Director*

**Division of Oil, Gas and Mining**

JOHN R. BAZA
*Division Director*

March 26, 2015

Kerr-McGee Oil & Gas Onshore, LP.
1099 18th Street, Suite 600
Denver, CO 80217

Re: APDs Rescinded Kerr-McGee Oil & Gas Onshore, LP., Uintah County

Ladies and Gentlemen:

Enclosed find the list of APDs that is being rescinded. No drilling activity at these locations has been reported to the division. Therefore, approval to drill these wells is hereby rescinded as of March 26, 2015.

A new APD must be filed with this office for approval prior to the commencement of any future work on the subject location.

If any previously unreported operations have been performed on this well location, it is imperative that you notify the Division immediately.

Sincerely,

Diana Mason
Environmental Scientist

cc: Well File
SITLA, Ed Bonner
Bureau of Land Management, Vernal

1594 West North Temple, Suite 1210, PO Box 145801, Salt Lake City, UT 84114-5801
telephone (801) 538-5340 • facsimile (801) 359-3940 • TTY (801) 538-7458 • *www.ogm.utah.gov*

UTAH DNR OIL, GAS & MINING

| | | |
|---|---|---|
| MORGAN STATE | 921-36K4BS | 43-047-52257 |
| MORGAN STATE | 921-36L1BS | 43-047-52258 |
| MORGAN STATE | 921-36L1CS | 43-047-52259 |
| MORGAN STATE | 921-36M1BS | 43-047-52260 |
| MORGAN STATE | 921-36M1CS | 43-047-52261 |
| MORGAN STATE | 921-36M4BS | 43-047-52262 |
| MORGAN STATE | 921-36K4CS | 43-047-52263 |
| MORGAN STATE | 921-36N1BS | 43-047-52264 |
| MORGAN STATE | 921-36N1CS | 43-047-52265 |
| MORGAN STATE | 921-36N4BS | 43-047-52266 |
| SRW 823-03O GR | | 43-047-53974 |
| SRW 823-13G1CS | | 43-047-53976 |
| SRW 823-22A1CS | | 43-047-53977 |