

Attachment F
Typical Surface Use Plan of Operations
Drilling Plans

JONAH ENERGY LLC

SURFACE USE PLAN JONAH FIELD

1) EXISTING ROADS

- (a) Driving directions for individual well pads (xxx miles turn right, travel xxx miles to the SHB xx-x).
- (b) Existing access and proposed roads are shown on attached vicinity and area maps.
- (c) Road right-of-way will not be required.
- (d) Existing access roads will not require upgrade. Maintenance will be provided by Jonah Energy LLC. Existing access roads will be maintained in accordance with the existing BLM operating agreement.
- (e) Existing roads will be water sprayed if necessary to enhance compaction and dust control.
- (f) Jonah Energy LLC. shall maintain all existing access roads in compliance with the Standards set forth in Section 9113(Roads) of the BLM Manual and the "Gold Book", Oil and Gas Surface Operating Standards for Oil and Gas Exploration and Development, Fourth Edition – Revised 2007.

2) ACCESS ROADS TO BE CONSTRUCTED

- (a) The new access will be constructed as a single lane BLM resource road. A resource road will be built with a 14' minimum travelway and surfaced with a 6" course of 2" minus pit run gravel or crushed gravel. Road will measure approximately '.
- (b) Topsoil will be spread over the cut and fill slopes and barrow ditches if well is productive.
- (c) New access roads will be water sprayed if necessary to enhance compaction and dust control during construction, drilling and completion activities.
- (d) New road construction and associated drainage structures will be in accordance with BLM guidelines as stated in the BLM/USFS publication: Surface Standards for Oil and Gas Exploration and Development, Fourth Edition – Revised 2007. Construction is to be monitored by a qualified individual. Subgrade will be compacted to a density greater than the surrounding subsurface during construction.
- (e) Culverts will be installed as determined necessary along proposed route as well as wing ditches.

3) LOCATION OF EXISTING WELLS

There are approximately ___ wells within a one-mile radius of the proposed well.

4) LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

- (a) Production facilities will not be installed on this proposed location. All production facilities will be centralized at an existing CDP pad. Overview Map that includes location of buried flowlines and CDP pad for production is attached.
- (b) Produced water will be separated and stored in production facilities at CDP pad. Disposal will be into an approved injection well or disposal pit. Disposal will be in compliance with Onshore Operating Order No. 7 and all DEQ/EPA requirements, laws and regulations.

- (c) All above ground permanent structures not subject to safety requirements shall be painted by Jonah Energy LLC. The paint color to be applied is Carlsbad Canyon, Shale Green, or as specified by BLM authorized officer.

5) WATER SUPPLY

- (a) Water for drilling, completing and operating these wells will be obtained from an existing subsurface water well. The _____WW will be used. It will either be pumped through a temporary surface line or trucked to the location. Fresh water will be used to drill the surface and production string. It is estimated that 60,000 barrels of water will be required for drilling and completion.

6) CONSTRUCTION MATERIALS

- (a) 2" road base, if needed, for surfacing will be obtained from the BLM approved Rosetta Pit owned by Basic Energy.

7) METHODS FOR HANDLING WASTE DISPOSAL

- (a) Drill cuttings will be separated from the drilling mud at the shale shaker and dropped into a bin. Cuttings and excess cement will be placed in a cuttings vault onsite, and tested prior to the reclamation process.

Drilling mud is dewatered, solids are stripped from fluid and placed in cuttings vault. Excess water is hauled to Section 36 water facility. If oil is introduced to the mud it is hauled offsite to an approved disposal facility.

- (b) Drilling fluids will be water based and contained in a vault or stored in tanks. The vault will be backfilled immediately to prevent any liquids accumulating in order reduce the risk of harm to migratory bird or wildlife. If a closed circulating system is utilized, drilling fluids will be contained in the mud tanks and storage tanks. Remaining drill fluids will be stored for future use or disposed of in an approved disposal facility.

- (c) Fracing will be done from a central frac site or from the approved pad. Fracing is proposed within the 2 mile buffer of greater sage-grouse leks. Flow back fluids will be gathered at either the central frac site location or on the new pad and disposed of in an approved manner. Completion fluids will be transported to a water treatment facility.

- (d) Jonah Energy LLC. will be responsible for recognizing and handling hazardous materials. All spills of reportable quantity will be contained, reported and cleaned up in accordance with State and Federal regulations. (DEQ/EPA)

- (e) NonTypical Services & Logistics LLC will manage all sewage collection and storage on location. They will also transport all waste to a DEQ approval disposal facility. The system is made up of strictly holding tanks and nothing will be discharged into the field.

- (f) Trash will be contained in a portable trash cage and emptied in a DEQ approved sanitary landfill.

- (g) Spill containment systems will be installed under the rig substructure.

- (h) Absorbent materials will be available and utilized when necessary. Disposal of said materials will be in accordance with DEQ requirements.

8) ANCILLARY FACILITIES

- (a) No ancillary facilities will be necessary.

9) **WELLSITE LAYOUT**

- (a) A plat depicting the proposed drill pad and its approximate location with respect to topographic features is attached. Cut and fill is shown on the survey work. A professional land surveyor surveyed this proposed location.
- (b) All equipment and vehicles will be confined to the access road, pad, CDP pad, Central Frac site pad, spoil and topsoil storage areas.

10) **RECLAMATION /SOIL COMPACTION / VEGETATION**

- (a) Drill cutting vault closure will be handled in accordance to existing vault closing procedure approved in 2008. Drill cuttings on a closed loop location will be stock piled on location and covered by subsoil at a depth of 2 feet plus the topsoil where topography allows. Cuttings will be mixed 50:50 with subsoil to help solidify and stabilize the vault. If the location is such that there is not sufficient subsoil to mix with cutting or area for burying, then the cuttings will be hauled off location and stockpiled on locations that allow for the two foot of cover.
- (b) All reclamation shall be in accordance with guidelines set forth in the Fourth Edition of BLM/USFS Surface Operating Standards for Oil and Gas Exploration and Development.
- (c) Unused areas of the well pad will be recontoured, ripped, spread with topsoil, disked and seeded.
- (d) Amendments and fertilizers used to enhance vegetative response will be added only after soil testing has been completed. Amendments applied will be incorporated into the surface during or after application.
- (e) Seeding will be done with a grass drill that allows for the application of seed to be drilled or broadcast on the site. Seedbeds will be prepared rough and seeding rates will be adjusted to achieve objectives of the mix of grass, forbs and shrubs on location. At a minimum grass will be seeded at a rate of 20 seeds per square foot and forbs and shrub mix at a rate of 40 seeds per square foot. Grass and large forbs and shrub seeds will be drilled into location and the smaller forb and shrub seed will be broadcast onto the location.
- (f) The seed mixture will be seeded using a combination of a broadcaster and a Truax no till drill. The seed mixture rate will be doubled for broadcasting. Plugs/transplants may be used to help fill in areas of poor seed germination. They will be planted by hand.
- (g) The seed mixture will be seeded in one of two times: **A)** soil dry out to May 15; **B)** September 15-Heavy snow. The seed mixture rate will be determined after vegetation analysis for the location determines the dominance of the different species. The following species will be used; however, some may be removed due to seed availability. All removals will be noted in a subsequent report:

| GRASSES | FORBS | SHRUBS |
|---|---|--|
| Bottlebrush Squirreltail (<i>Elymus elymoides</i>) | Sulfer flower (<i>Eriogonum umbellatum</i>) | Winterfat (<i>Krascheninnikoia lanata</i>) |
| Indian Ricegrass (<i>Oryzopsis hymenoides</i>) | Early Indian Paintbrush (<i>Castilleja applegatei</i>) | Wyoming Big Sage (<i>Artemisia tridentate wyomingensis</i>) |
| Western Wheatgrass (<i>Pascopyrum smithii</i>) | Scarlet globemallow (<i>Sphaeralcea coccinea</i>) | Rubber rabbitbrush (<i>Chrysothamnus nauseosus</i>) |
| Thickspike Wheatgrass (<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>) | Great Basin Penstemon (<i>Penstemon subglaber</i>) | Gardner' Saltbush (<i>Atriplex gardneri</i>) |

| | | |
|---|--|---|
| Sandberg Bluegrass (<i>Poa secunda</i>) | Pacific aster (<i>Aster chilensis</i>) | Four-wing Saltbush (<i>Atriplex canescens</i>) |
| Needle-and-Thread (<i>Stipa comata</i>) | American Vetch (<i>Vicia Americana</i>) | Spiny hopsage (<i>Graia spinosa</i>) |
| Alkaligrass (<i>Puccinellia distans</i>) | Western Yarrow (<i>Achillea millefolium</i>) | Basin Big Sagebrush (<i>Artemisia tridentate tridentate</i>) |
| Sheep fescue (<i>Festuca ovina</i>) | Munro globemallow (<i>Sphaeralcea munroana</i>) | Shadscale (<i>Atriplex confertifolia</i>) |
| Slender Wheat Grass (<i>Elymus tracycalus</i>) | Munroe Flax (<i>Lenium lewisi</i>) | Horse Brush (<i>Tetradymia sp.</i>) |
| | Rocky Mtn. Bee Plant (<i>Cleome serrulata</i>) | |

- (h) Mulch or a cover crop may be used to help retain moisture. If mulch is used, it will be either native grass straw or certified weed free barley straw or other comparable grain straw, all will hold a weed free certification. It will be applied at 1.5 – 2.0 tons/acre and crimped into the soil.
- (i) If cover crops are used they will either be a native grass (P7 bluebunch wheatgrass or slender wheatgrass) or a sterile crop variety such as barley, wheat or rye.
- (j) Planting time A will only be irrigated if spring moisture is not available. The water will either be trucked to tanks on the location of moved thru pipe along side of the road ROW. All irrigated sites will be monitored weekly for moisture, salt movement, and germination.
- (k) Fencing may occur on location in two forms: Electric fencing and small woven wire fencing. The electric fencing will only be placed when the location is irrigated and/or cattle pressures require it to be implemented in order to achieve reclamation criteria. It will be in place for 2 months. The woven wire fencing will be constructed with t-posts and will also be of a temporary nature. It will only be placed around the areas containing the forb and shrub, and will not enclose the entire pad. The woven wire will be small enough to preclude most rabbit sized animals, and will be 4 feet in height. It would be monitored for condition on a monthly basis. This fencing will be on location for no more than several years. All fencing will be located within existing disturbance.
- (l) Weed control will be completed on the location to control noxious and invasive weeds according to BLM approved weed control plan and pesticide use plans.
- (m) A reclamation report or "As-built" will be submitted in a subsequent report sundry by March of the following year.

11) SURFACE OWNERSHIP

Surface and minerals at the well site are owned by the Federal Government.

12) OTHER INFORMATION

PIPELINES

1. All design, material, and construction and practices should be in accordance with safe and proven engineering practice and Federal compliance standards, right of way grants, APD's and/or POD's as applicable.
2. Jonah Energy LLC will provide 72 hour notice prior to pipeline installation.
3. Jonah Energy LLC will conduct a "kick-off" meeting anytime new pipeline contractors are hired.

Procedure for installing 3" to 8" buried steel pipeline includes a 1" or 2" poly dry gas line to be installed in same trench as steel pipeline. See attached pipeline map. (Footages are indicated on Figure 1.)

1. There will be minimal disturbance of 15' or 30' on ROW with no stripping of topsoil. The cat or trencher will not be allowed to turn around in the sagebrush and will need to travel to the nearest location to turnaround. ROW's crossing hills or ravines may need to be stripped to allow equipment access.
2. ROW will be staked as per best route (utilize existing disturbance, combine multiple flow lines and consolidation lines where possible and use least disturbance paths as per EIS documents).
3. Run brush hog if necessary (this will only be necessary if brush is too tall to work in).
4. Run water truck, if needed, to eliminate fire hazard thereby soaking ROW.
5. String pipe and skids on ditch line (semi and side boom).
6. Weld pipe and lay off to edge of ditch line using side boom and welding truck.
7. Trenching or excavating will follow pipeline right of way.
8. Lower in and jeep line by using a side boom.
9. Pick up pipe skids and debris by truck.
10. Backfill and clean up using a dozer or grader.
11. All tie-ins and welding on fabrication will be done on the locations at each end of the line.
 - a) Exception - If a point of intersect is designated in pipeline right of way is steeper than a bend and requires a fitting a bellhole will be excavated and tie in performed on ROW this will be kept to a minimum but within OSHA standards for safety.
12. **ALL CONTRACTORS WILL BE INSTRUCTED NOT TO TURN AROUND ON THE ROW** (travel will be from location to location **ONLY**).
13. The trench will be backfilled and remediation will be taken to replace the natural habitat in disturbed trench line.
14. The narrowest bucket possible will be used on the trencher or excavator to allow the pipe to be installed.

SURFACE FRAC LINE INSTALLATION PROCEDURE:

1. Frac equipment will be located on a centralized location in this section and fracs will be pumped through the 4-1/2 inch casing laid on the surface of the ground to wells on other locations in the section. This will provide a staging point for fracing equipment and eliminates the need to move equipment from location to location.
2. Frac lines are proposed to be laid on the surface of the ground on the proposed pipeline, frac line routes, and road routes shown on the attached maps.
3. The line will be buried and cased where it crosses roads.
4. All welds will be x-rayed and the line will be pressure tested before use.

5. The line will be pigged before it is removed.

FUEL GAS SUPPLY LINE:

Jonah Energy LLC. intends to use as many natural gas rigs as possible in the Jonah Infill Project. Fuel gas supply lines will follow existing roads and/or approved pipelines and frac line routes as established. Welded steel pipe will be used as noted in procedure below.

- a. Fuel gas line equipment will be located on a centralized location in this section and fuel gas will flow through 3 inch surface pipeline laid on the surface of the ground to wells on other locations in the section. This will provide a staging point for fuel gas line equipment and eliminates the need to move equipment from location to location.
- b. Fuel gas lines are proposed to be laid on the surface of the ground on the proposed pipeline, frac line routes, and roads shown on the attached maps.
- c. Fuel gas lines will be surface line made up of HDPE Poly Pipe, FlexSteel, or welded steel pipe. The medium being used for the surface line will be pulled/dragged or laid out using a rubber tire vehicle and trailer (if needed). The medium will be pulled/dragged/laid following the proposed route.
 - a) Weld Pipe: Three joints of pipe will be welded together on an existing location and a rubber tire vehicle will pull or drag the pipe toward the opposite location following the proposed routes (see attached map).
 - b) HDPE Poly Pipe and FlexSteel: Will be on spool/reels on a trailer. The rubber tire vehicle pulling trailer will lay pipe while driving route. Or it will be pulled/dragged by rubber tire vehicle.
- d. The line will be buried and cased where it crosses roads.
- e. When drilling operations are over depending on medium the pipe will be removed.
 - c) Weld Pipe: the rubber tire vehicle will set up on either existing location and pull the pipe onto said location, where the welds are to be cut and the pipe will be used again on another project.
 - d) HDPE Poly Pipe and FlexSteel: Respoiled on trailer to be used again and taken to next project.
- f. One trip will be made following the route depicted on the attached map. There may be instance where a second trip is required.

A Class III Cultural Resource Inventory of the section has been completed by Current Archaeological Research, Inc. or Western Archaeological Services. A copy of the report has been submitted to the Bureau of Land Management office for their review and approval.

If archaeological, historical or vertebrate fossil materials are discovered during the course of well pad construction, Jonah Energy LLC. will suspend all operations that further disturb such materials and immediately contact the BLM Authorized Officer. Operations in the area of discovery will not resume until written authorization to proceed has been issued by the BLM.

Verbal notification will be given to the Natural Resource Specialist at least 48 hours in advance of well pad construction, seeding, and the initiation of reclamation.

All undesirable events (fires, blowouts, spills, and discharges) will be reported to the BLM in Pinedale within 24 hours in accordance with NLT3A standards. A written report will follow within 15 days.

Construction, reclamation, and/or maintenance will not be done with frozen material except in cases where the activity and/or construction method is approved by the Authorized Officer from the BLM.

CATHODIC PROTECTION

Cathodic protection (CP) shall be installed to protect against external corrosion of the well casing of said well. The CP system will consist of installation of a deep anode ground bed, and a solar or fuel cell powered controller unit. CP construction activity will be performed on existing disturbance.

1. A CP skid will be installed consisting of steel skid, solar panels, battery boxes, or a fuel cell unit mounted on gravel pad with associated wiring and controller boxes, at a minimum distance of 15' from the well hut.
2. A CP ground bed will be installed at edge of previously disturbed well pad, at a minimum distance of 150' from the well head.
3. Buried DC cables will be installed from each well head to the CP skid or fuel cell, and from the ground bed to CP skid or fuel cell.

Note: For multiple well CP systems, and depending on optimum location, the CP skid or fuel cell may be located at a central well site, with only a buried cable to outlying well pads.

4. Exact placement is not known at this time, however, an as-built diagram will be submitted within 60 days of installation.

We will continue to learn and modify our working plan to reduce impacts to the area when at all possible. Jonah Energy LLC will use common sense practice for areas with two track-roads, cow tracks, fence lines, slopes, drainages, road crossings, pipeline crossings, etc. Jonah Energy LLC welcomes any comments or suggestions regarding these procedures.

OPERATOR CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that 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 the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this _____ day of _____, 2015.

Karen Olsen
, Regulatory Analyst, (307)537-6055

Jonah Energy LLC.
P.O. Box 2060
Pinedale, WY 82941

Field representative (if not above signatory)

Address (if different from above) _____
Telephone (if different from above) _____
E-mail (optional) _____

SURFACE USE PLAN

Company Name: **Linn Operating, Inc.**

Lease Number: **WYW**_____

Location: **Section __ T__ R__ (1/4 1/4)**

_____ Pad (Wells: __, __, __, etc.)

1. **General Access:**

Existing roads and the general access are shown on Exhibit 4. General access to the ___ well pad is from Highway 191, West onto the Luman Road at M.P.67.

Existing Roads:

The existing road, as a loop road, will be maintained as a double lane 20' sub-grade and main roads (i.e. Luman Road) will be maintained as a single lane with 16' sub-grade and inter-visible turnouts at a minimum of 1000' intervals.

2. **Access Roads to be Constructed:**

Approximately ___ feet of new access road will be constructed as shown on Exhibit 4.

Maintenance:

Operator shall regularly maintain the road in a safe, stable condition. A regular maintenance program shall include, but is not limited to, blading, ditching, culvert installation, drainage installation, surfacing, and cattle guards as needed. Design, construction, and maintenance of the road will be in compliance with the standards contained in BLM manual, Section 9113 (Roads), and in the "Gold Book," Oil and Gas Surface Operating Standards for Oil and Gas Exploration and Development, Third Edition.

3. **Location of Existing Wells:**

All wells within a 1-mile radius or in the area and field surrounding this well are shown on attachment Area Map Exhibit 5. The exact status of these wells is estimated from limited available data (x = P/A well, □ = Production, ◇ = Proposed location).

4. **Location of Existing and/or Proposed Production Facilities**

Prior to installing any production facilities, the operator will have an approved sundry notice with a topographic overview of the approved well pad at a 1" – 60' scale which shows the proposed production facility layout, the areas of the well pad not required for production to be reclaimed, and the topsoil source that will be available for final reclamation when the well is abandoned. If a tank battery is constructed on this lease, it will be surrounded by a berm made of material consistent with that required by current Spill Prevention Control and Countermeasures (SPCC) regulation and designed to contain one hundred and ten percent of the capacity of the largest tank.

All above ground permanent structures (permanent means on-site for longer than 90 days) not subject to safety requirements shall be painted by the Operator to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental colors" designated by the Rocky Mountain Five-State Interagency Committee. The color for this well will be Carlsbad Canyon 2.5y 6/2 or Shale Green as determined by the Bureau of Land Management.

The above referenced well will be drilled as an "S" type directional well. All above ground structures and/or facilities will be placed on the well pad.

New production facilities will be painted a non-contrasting color which is harmonious with the surrounding landscape (i.e. shale green, unless otherwise specified by BLM on a case-by-case basis); existing production facilities would be painted that color at the earliest opportunity, and no later than when facilities are due for routine repainting.

All new production facilities construction which has open-vent exhaust stacks will be equipped to prevent bird and bat entry or perching on the stack.

All secondary containment structures specifically used for methanol containment shall be designed so as to prevent bird, animal, or livestock entry.

5. **Location and Type of Water Supply**

All water for drilling and completion will be permitted through the State Engineers Office. It is estimated that 20,000 barrels (bbl) of water will be required for drilling and 65,000 bbls of water will be required for completion of a single well. The primary water wells for the drilling and completion of this well will be the ___ and ___ water wells. However, Linn may use any other permitted water wells as necessary. The water will be piped and/or trucked to the well pad. If piped, Linn will use temporary 3" high density polyethylene pipes. The polyethylene pipes will be laid in the borrow ditches of existing roadways and will not require new surface disturbance. Please reference the attached waterline maps titled "Temporary Fresh Water Line" for further details.

The water wells and any tanks, pumps, hoses, pipes or other associated connections shall include check valves, backflow preventers or other devices that secure the well against discharge of fluids into the well.

All freshwater used for the drilling of the surface casing must comply with all requirements concerning water quality as set forth by the WY Oil and Gas Commission Regulations.

6. **Construction Materials**

All construction materials (sand, gravel, stone, soils, or topsoil) will be derived from within the proposed location and access road boundaries as shown on Exhibits 2-5. Surfacing material will come from existing permitted or private sources.

7. Methods of Handling Waste Disposal

Trash will be contained in a portable trash cage. The trash cage will be emptied in the State of Wyoming Department of Environmental Quality approved sanitary landfill. **See Appendix C of the Final EIS** for the Jonah Infill Development Project Area.

Any pits with harmful fluids in them shall be maintained in a manner to prevent migratory bird mortality.

Water accumulation that results from cementing the surface casing and from the cement contractor washing its trucks will be handled in one of two ways. If there is a large amount of water, the water will be pooled in a bermed area on location until it is hauled off to the R360 disposal pit in LaBarge. If the amount of water is minimal, the water and any leftover materials will be mixed in with the drill cuttings on location.

Containment dikes of impervious material shall be constructed and maintained around all storage facilities. Operator shall implement Storm Water Prevention and Control Countermeasure Plans if liquid petroleum products or other hazardous materials are stored on-site in sufficient quantities, in accordance with 40 CFR 112.

Produced water will either be recycled or trucked from the pad location to the existing Jonah WDW 1, Jonah WDW 3, or NFX WDW #1. Produced water may also be transported via disposal lines to the Jonah WDW 1 disposal facility. Please reference the attached waterline map for further details.

Methods of Handling Hazardous Materials

“Hazardous materials” meaning: any substance, pollutant, or contaminate that is listed as hazardous under the Comprehensive Environmental Response Liability Act of 1980, as amended, 2 U.S.C. 9601 et seq. and its regulations. The definition of hazardous substances under CERCLA includes any “hazardous waste” as defined in the Resource Conservation and Recovery Act of 1976 (RCRA) amended 42 U.S.C. 6901. et seq. and its regulations. The term “hazardous materials” also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101 (14), 42 U.S.C. 9601 (14), nor does the term include natural gas.

- Hazardous material specifically listed as a hazardous material or that demonstrates characteristics of a hazardous material may be used, produced, transported, or stored on or with the well site, access, right-of-way or right-of-way facilities, or used in the construction, operation, maintenance, or termination of the right-of-way and/or its facilities.
- All hazardous material, as defined above, will be handled, transported, and/or utilized in a manner consistent with Local, State, and/or Federal regulations
- If hazardous materials are present, MSDS sheets will be kept on site until hazardous materials are properly disposed of or removed from the site.

8. Ancillary Facilities

None anticipated at this time.

9. **Well Site Layout**

Well site layout is shown on **Exhibit 2** (location diagram) and **Exhibit 3** (location cross-sections diagram).

All equipment and vehicles will be confined to the access road, pad, and spoil and topsoil storage areas. If the well pad is dry during construction, drilling, and completion activities, it will be watered to minimize soil loss due to blowing dust. Strip 6 inches of topsoil (cubic yards, shown on location cross-sections diagram) from the well pad and spoil storage area prior to any other construction activity.

The fill section of the pad that supports the drill rig and other heavy equipment will be compacted to 95% maximum density as determined by AASHOT test T39.

The cuttings and excess cement will be stacked on the surface of the well pad. If a cuttings pit is needed, Linn will submit a sundry notifying the BLM. The results from chemical analyses of the cuttings and cement will be provided to the BLM before reclamation or before cuttings or frac sand are used elsewhere or for other purposes. If reclaimed, the cuttings and cement will be covered with clean fill and buried a minimum of 2 feet below topsoil.

Fracing will occur on the drilling pad and may occur simultaneously with drilling on the same well pad. Fracing is proposed within the 2 mile buffer of greater sage-grouse leks.

Flagging and Staking

Slope, grade, and other construction control stakes (e.g., exterior boundary centerline, etc.) shall be placed, as necessary, to ensure construction in accordance with the surface use plan. The cut and fill slopes and soil storage areas shall be marked with a stake and/or lath at 200' intervals. The tops of the stakes or laths shall be painted or flagged in a distinctive color. All boundary stakes and/or laths shall be maintained in place until final construction cleanup is completed. If stakes are disturbed, they shall be replaced before proceeding with construction.

Reserve Pits

No reserve pit or flare pit will be built on this location.

10. **Plans for Reclamation of the Surface**

Rat and mouse holes shall be filled and compacted from bottom to top immediately upon release of the drilling rig from the location.

Producing Well

Spread topsoil from the berms and/or storage piles along the road's cut and fill slopes. Do not block drainage ditches or culverts with topsoil and associated organic matter. Seed the topsoiled areas as stated below.

Re-contour the unused area of the pad, spread topsoil six inches deep, and rip the area on the contour 1-ft deep using ripper teeth set on 1-ft centers. See the reclaimed areas of the well pad and the access road cut and fill slopes as stated below.

Abandoned Well

Prior to abandonment reclamation work, the operator shall submit a sundry notice describing the proposed reclamation plans.

The operator shall re-contour all disturbed areas by removing embankments, backfilling excavations, and grading to re-establish the approximate original contours of the land in the road and location.

Seeding

Seeding will be done using a no-till rangeland drill in the late fall. Typically a late fall seeding is recommended to insure that any applied seed does not take in water and germinate in the fall season. The seeding window for fall application in the arid west is slightly longer due to the low water environment. If the soil temperatures are too high, seeding can occur as long as soil moisture is not available to cause seed germination. Seeding in the fall also allows for periods of cold stratification that many cool-season species need for proper germination in the spring.

All seed utilized will be tested prior to application to ensure specifications for PLS (Pure Live Seed), purity, noxious weeds, etc. have been met. Seed tags will be provided to LINN Energy for submittal to land managing agencies. Seed tags will be labeled with date seeded, site location seeded, and how many acres and bags of seed were applied and/or any other requests specified by LINN Energy. Species that are included in the seed mix are listed below and include: grasses, forbs and shrubs.

| Mix A | | |
|--|--------------------------|---------------------|
| Scientific Name | Common Name | PLS lbs/acre |
| <i>Achillea millefolium</i> | common yarrow | 0.01 |
| <i>Achnatherum hymenoides</i> | Indian ricegrass | 2.50 |
| <i>Artemisia tridentata</i> spp. <i>Wyomingensis</i> | Wyoming big sagebrush | 0.50 |
| <i>Atriplex canescens</i> | four-wing saltbush | 0.25 |
| <i>Atriplex confertifolia</i> | shadscale | 0.25 |
| <i>Castilleja applegatei</i> | early Indian paintbrush | 0.10 |
| <i>Cleome serrulata</i> | Rocky Mountain beeplant | 0.75 |
| <i>Elymus elymoides</i> | bottlebrush squirreltail | 2.00 |
| <i>Elymus trachycaulus</i> | slender wheatgrass | 2.00 |
| <i>Hesperostipa comata</i> | needle-and-thread | 0.50 |
| <i>Krascheninnikovia lanata</i> | winterfat | 0.50 |
| <i>Leymus cinereus</i> | basin wildrye | 2.00 |
| <i>Linum lewisii</i> | Lewis blue flax | 0.25 |
| <i>Lomatium dissectum</i> | fernleaf biscuitroot | 0.25 |
| <i>Oenothera pallida</i> | pale evening-primrose | 0.25 |
| <i>Penstemon eatonii</i> | Firecracker penstemon | 0.25 |
| <i>Penstemon palmeri</i> | Palmer's penstemon | 0.25 |
| <i>Poa secunda</i> | Sandberg's bluegrass | 0.25 |
| <i>Sphaeralcea coccinea</i> | scarlet globemallow | 0.15 |
| Total PLS lbs/acre: | | 13.01 |

Organic fertilizer is applied in the spring and the fall each year until a location meets reclamation requirements. This fertilizer consists of compost extract (32 gallons/acre), liquid fish (4 gallons/acre), and humic acid (4 gallons/acre). The liquid fertilizer is applied using truck or tractor mounted spray tanks. Organic soil amendments build soil and provide a solution to poor soil conditions, because they provide a time-released nitrogen boost, increase the soil microbial life, and darken soils by adding organic material.

Water Bars

The operator shall construct water bars on all disturbed areas to the spacing and design specified by the authorized officer. Water bars are to be constructed to: 1) simulate the imaginary contour lines of the slope (ideally with a grade of one or two percent); 2) drain away from the disturbed area; and 3) begin and end in vegetation or rock whenever possible.

Water bars will be constructed on all disturbed slopes. General guidelines for installation of water bars are: less than 5% grade normally none; 5% to 15% grade, approximately 3200' intervals. A certain degree of latitude is allowed in the water bar interval spacing. Erosive soils may require a closer spacing, whereas the spacing may be greater on less erosive soil or rock. A conservative (close) interval spacing is the general recommendation. A channel grade of 2% is recommended from the water break to the natural ground elevation. The water bars should be constructed so they follow the horizontal contour and divert downhill runoff into nearby vegetation.

Reclamation Compaction/Vegetation

Final reclamation shall be in conformance with the criteria established by the JIO.

Additional pit reclamation procedures:

If any of the following scenarios occur during the life of the cuttings pit, the cuttings pit will be tested for Diesel Range Organics (DRO), Gasoline Range Organics (GRO), Sodium Absorption Ratio (SAR), and Total Petroleum Hydrocarbons (TPH), and results submitted via sundry notice for authorization before pit closure.

1. Oil used down hole for relief of differential sticking during drilling operation is released into the pit.
2. Locations remaining open 30 days past the rig release date of the first well drilled on location.
3. Cuttings pits are located within 500 feet of a water well or Sand Draw

For cuttings pits where the above scenarios are determined not to be applicable, closure of the pit may commence without prior authorization. Samples of each pit must be taken and results provided to the Pinedale Field Office within 30 days of closure. If results are determined to be above expectable levels, reclamation of the site will not continue until the pit has been remediated.

Any mulch and mineral material (sand and gravel) used must be certified weed free and free from mold or fungi. Mulch may include native hay, small grain straw, wood fiber, live mulch,

cotton, jute, synthetic netting, and rock. Straw mulch should contain fibers long enough to facilitate crimping and provide the greatest cover.

11. Surface Ownership

All: United States of America
Contact: Bureau of Land Management
Pinedale Field Office
P.O. Box 768
Pinedale, WY 82941

12. Other, if applicable

The operator shall be responsible for weed control on disturbed areas within the exterior limits of the permit. The operator is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods.

A "Pesticide Use Proposal" (Form WY-04-9222-1) and pesticide label must be submitted by the operator to the Surface Management Office no later than December 1st for the following spring/summer use.

The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately notify the authorized officer. Within five working days, the authorized officer will inform the operator as to the following:

For required archaeological construction monitors

A certified archaeologist will be on site at all times during well pad/access road/pipeline construction. Any cultural materials located during construction will be reported to the authorized officer. Procedures for determining significance and or effect will be established at that time. Cost of any further cultural work will be borne by the operator/grantee.

-whether the materials appear eligible for the National Register of Historic Places.-

The mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary): and, a time frame for the authorized officer to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Office, that the findings of the authorized officer are correct and that mitigation is appropriate.

Within five (5) working days, the Authorized Officer will evaluate the discovery and inform the operator of actions that will be necessary to prevent loss of significant cultural or scientific values.

If hazardous materials are present, MSD sheets will be kept on site until hazardous materials are properly disposed of or removed from the site.

Cultural resources potentially affected by these undertakings will be managed in accordance with the Jonah Gas Field Programmatic Agreement (PA) and its Management Plan. The NRHP Eligibility criteria for cultural resources will be evaluated in accordance with the Jonah PA Research Design.

If cultural or paleontological resources are located within frozen soils or sediments precluding the ability to adequately record or evaluate the find, work will cease and that site will be protected for the duration of frozen soil conditions. Following natural thaw, recordation, evaluation, and recommendations concerning further management will be made to the authorized officer, who will consult with affected parties. Construction work will be suspended until management of the threatened site has been finalized.

Construction shall be prohibited if environmental conditions adverse to performing standard archaeological investigations are in place.

The operator is responsible for informing all persons associated with this project that they shall be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects on site. If archaeological, historical, or vertebrate fossil materials are discovered, the operator is to suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations are not to resume until written authorization to proceed is issued by the Authorized Officer.

Linn Operating, Inc. will track surface disturbance acreage and provide BLM and the JIO (Jonah Interagency Office) with Federal Geographic Data Committee (FGDC) compliant metadata and geographic information system (GIS)/global positioning system (GPS) location data for all newly developed facilities and reclaimed areas within 30 days of completion of disturbance and/or reclamation activities.

By January 31 each year, Linn Operating, Inc. will provide the JIO and Authorized Officer annual operating plans that include the following information:

All previous year activity to include number of wells drilled, total new surface disturbance by well pads, roads and pipelines, and current status of all reclamation activity.

A plan of development for the upcoming year to include planned number of wells to be drilled and an estimate of new surface disturbance and reclamation activity.

No well pad, road, or other construction shall be conducted in or with frozen materials, or during periods when the soil is saturated, or when watershed damage is likely to occur.

Operators will provide BLM with information on their drill rigs, including drilling days, horsepower, load factors, and emission factors within 10 days of the completion of drilling operations for each well.

Flowline Installation

- a) Linn will install **1** flowline for each well on the ___ pad.
- b) Each flowline will be 3" flexsteel.

- c) The flowlines will run for approximately 250' from the wellhead to the production units on the ___ pad.
- d) Fuel supply to operate the automated valves will come from the production units on the ___ location.
- e) All construction will be contained within the approved disturbance as shown on the ___ plats included with the APD submittal.

13. Operator's Representative and Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that 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 the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for filing false statements.

Executed this _____ day of _____, 2016.

Name: _____

Daniel Busch
 Regulatory Compliance Advisor
 600 Travis, Suite 5100
 Houston, Texas
 77002

Field Representative: Adele Legerski
 81 Luman Road
 Boulder, Wyoming
 82923
 Office: 307-537-9634
 Cell: 307-749-0620

Jonah Energy LLC

Wells in the Jonah Field

Sections 2, 3, 4, 5, E/2 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, E/2 18, E/2 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, E/2 & SW/4 30, 31, 32, 33, 34, 35, 36 T29N, R108W

Sections 17, 18, 19, 20, 28, 29, 30, N/2 31, T29N, R107W

Sections 1, E/2 2, E/2 11, 12, 13, E/2 & SW/4 14, T28N, R109W

Sections 3, 4, 5, 6, 7, N/2 8, NW/4 9, W/2 18, T28N, R108W

Sublette County, Wyoming

MASTER DRILLING PLAN Revision - May 2014

1. ESTIMATED FORMATION TOPS:

| <u>Formation</u> | <u>Depth</u> |
|--------------------------------|--|
| Top Fort Union | 3,000' to 5,000' |
| Base Fort Union | 7,100' to 8,800' |
| "Lance Shale" | 7,600' to 9,200' |
| Top Upper Lance (overpressure) | 7,900' to 9,500' |
| Middle Lance | 8,500' to 10,900' |
| Top Jonah | 8,900' to 11,300' |
| Top Yellow Point | 9,100' to 11,600' |
| Wardell | 9,300' to 11,800' |
| Total Depth | 9,500' to 13,650' * (see #3 Operator's specifications) |

In general, the formations are shallowest at the southwest corner of the field (Yellow Point area) and dip down and get deeper as you move to the northeast corner of the field (Cabrito and Sag areas).

All fresh water and prospectively valuable minerals encountered during drilling will be recorded by depth and protected.

2. ESTIMATED DEPTHS OF ANTICIPATED WATER, OIL, GAS BEARING FORMATIONS:

| | |
|---------------------------|----------------|
| Surface to Base Ft. Union | Water |
| Base Ft. Union to TD | Gas/Condensate |

3. OPERATOR'S MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL:

Option I - 5,000 psi BOPE systems to a maximum depth of 13,100 ft.

Option II - 10,000 psi BOPE systems below 13,100 ft.

BOP's and choke manifold will be installed and pressure tested before drilling out of surface casing (subsequent pressure test will be performed whenever pressure seals are broken), and then will be checked daily as to mechanical operating condition. BOP's will be pressure tested at least once every 30 days. Ram type preventers and related pressure control equipment will be pressure tested to related working pressure of the stack with a test plug. Annular type preventers will be pressure tested to 50% of their working pressure. All casing strings will be pressure tested to 0.22 psi/ft or 1,500 psi, whichever is greater, not to exceed 70% of the internal yield. The casing shoe will be tested by drilling 5-20' out from under the shoe and pressure tested to a maximum expected mud weight equivalent as shown in the mud program listed below. A manual locking device (i.e. hand wheels) or automatic locking devices shall be installed on the BOP stack. Remote controls capable of both opening and closing all preventers shall be readily accessible to the driller.

The choke manifold and accumulator will meet or exceed Onshore order No. 2 standards. The BOP equipment will be tested after any repairs to the equipment. Pipe rams, blind rams and annular preventor will be activated on each trip and weekly BOP drills will be conducted with each crew. All tests, maintenance, and BOP drills will be documented on rig "tower sheets".

Option I

5,000 psi System (See Attachment: *blowout prevention diagram and manifold*).

Pressure control equipment shall consist of but not be limited to the following:

- Rotating Head
- 5M Annular preventer
- 1 - Hydraulic pipe ram
- 1 - Hydraulic blind ram
- Drilling spool with two side outlets
- 3" diameter choke line
- HCR choke line valve
- Manual choke line valve
- Two 2" minimum kill line valves and check valve
- Choke manifold consisting of one manual choke and one remote controlled choke with full opening block valves for component isolation
- Upper kelly cock or top drive valve with handle available
- Lower kelly cock or top drive valve with handle
- Safety valve and subs to fit all drill string connections in use
- Inside BOP and float sub available
- Appropriately sized accumulator for BOP system
- Remote control panel for BOP stack located on rig floor
- Remote control panel for hydraulic choke located on rig floor
- PVT
- Stroke Counter
- Flow Sensor
- Wear Ring
- 5M lb SOW "A" section

Option II

10,000 psi System (See Attachment: *blowout prevention diagram and manifold*).

- Rotating Head
- 10M Annular Preventer
- 2 – Hydraulic pipe rams
- 1 – Hydraulic blind ram.
- Drilling spool with 2 side outlets or blowout preventer with 2 side outlets (choke side 3" diameter and kill line side 2" diameter).
- 3" diameter choke line
- 2" kill line with check valve
- HCR choke line valve
- 2" remote kill line, unobstructed, to the outer edge of the rig substructure.
- 3" manual and hydraulic choke line valves.
- 3 chokes, one remotely controlled
- Pressure gage on manifold
- Upper Kelly cock; lower Kelly cock with handles available.
- Safety Valves and subs to fit all drill string connections in use.
- Inside BOP or stabbing valve with handle (available on rig floor)
- Sized accumulator for 10M lb BOP system.
- Fill up line above the upper most preventer.
- Gas detection equipment.
- Remote control panel for BOP stack located on rig floor
- Remote control panel for hydraulic choke located on rig floor.
- PVT system
- Stroke counter.
- Flow sensor.
- Wear ring.
- 10M lb SOW "A" section.

4. CASING AND CEMENTING PROGRAM:

All casing strings below the conductor shall be pressure tested to 0.22 psi/ft or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield of the casing.

All casing run and set will be new.

A. SURFACE HOLE INTERVAL:

CASING

- Depth 2500' ±
- Hole Size 12-1/4"
- 9-5/8" nominal OD
- Weight & Grade
 - Option I**
 - Top joint 40 ppf, N-80 (0' – 40' +/-)
 - Remainder (40' – 2500') 36 ppf, nominal weight (0.352" wall)
 - J or K chemistry
 - 55 ksi minimum yield strength
 - Option II**
 - Top joint 43.5 ppf, N-80 (0' – 40' +/-)
 - Remainder (40' – 2500') 40 ppf, nominal weight (0.395" wall)
 - J or K chemistry
 - 55 ksi minimum yield strength
- Thread LT&C and/or ST&C.
- API or non API (meet or exceed API standard) specifications.

Casing Dimensions and Minimum Performance Properties:

Option I

- 36 ppf, J-55, Collapse Resistance – 2020 psi, Internal Yield -3520 psi, Joint Strength - 394 M lbs ST&C (min) and/or LT&C, Drift - 8.765"
- 40 ppf, N-80, Collapse Resistance – 3090 psi, Internal Yield -5750 psi, Joint Strength - 737 M lbs, Drift – 8.75"

Option II

- 40 ppf, J-55, Collapse Resistance – 2570 psi, Internal Yield -3950 psi, Joint Strength - 452 M lbs, ST&C (min) and/or LT&C, Drift – 8.75"
- 43.5 ppf, N-80, Collapse Resistance – 3810 psi, Internal Yield -6330 psi, Joint Strength - 825 M lbs LT&C (min), Drift - 8.625"

- ERW acceptable

CEMENT

Lead Slurry: 575 sacks (minimum) 35:65: Poz:G + 6% D020 (Extender), 3% S001 (accelerator), 0.125 lb/sack D130 (Lost circ). Mixed 12.5 ppg, 1.89 ft³/sack yield, Water requirement 10.231 gallons/sack.

Tail Slurry: 150 sacks G, 0.125 lb/sack D130 (Lost circ), mixed at 15.8 ppg, 1.15 ft³/sack yield, Water requirement 4.977 gallons/sack.

CENTRALIZERS

5 centralizers (12-1/4" x 9 5/8") will be run – one on the shoe joint, one on the next two joints, and one on every other joint after that until all 5 are used.

B. PRODUCTION HOLE INTERVAL:

CASING

- Depending on TD, the production casing will consist of 4-1/2", 11.6 ppf, HCP-110, LT&C and /or 13.5 ppf, P-110, LT&C.
- Hole Size 7-7/8" or 8-1/2"
- API or non API (meet or exceed API standard) specifications.

Casing Dimensions and Minimum Performance Properties

- 11.6 ppf, HCP-110, Collapse Resistance – 8,650 psi, Internal Yield -10,690 psi, Joint Strength - 279 M lbs, Drift - 3.875"

- 13.5 ppf, P-110, Collapse Resistance – 10,680 psi, Internal Yield -12,410 psi, Joint Strength - 338 M lbs, Drift - 3.795"
- ERW acceptable.

CEMENT

Cathodic protection will be installed to protect the production casing opposite of the conductive/corrosive interval.

Lead Slurry: Volume is calculated using average hole size + 15% from 1500' above the top of over pressure to 4000'.
 Class G Scavenger Slurry 12.8 ppg, 1.94 ft³/sack yield, Water requirement 10.909 gallons/sack. Slurry additive concentrations may vary slightly depending on lab testing.
 Slurry Additives: Class G, 0.25% D208 viscosifier, 0.2% D046 antifoam, 0.15% D065 dispersant, 0.125% D130 lost circulation material.

Tail Slurry: Volume is calculated using average hole size + 15% from TD to 1500' above the top of over pressure.
 Note: Tail slurry consists of 2 different types: 14.2 ppg & 14.5 ppg. Slurry is dependent on depth & temperature. Slurry additive concentrations may vary slightly depending on lab testing.
14.2 ppg Slurry (1.32 ft³/sack yield, Water requirement 6.043 gallons/sack): 35:65 Poz:G + 0.20% D198 (Retarder), 0.30% D065 (Dispersant), 0.2% D046 (Antifoam), 2.0% D020 (Extender), 2.0% D154 (Extender), 0.725% D112 (Fluid Loss), 0.125 lb/sack D130 (Lost circ).
14.5 ppg Slurry (1.88 ft³/sack yield, Water requirement 8.746 gallons/sack): Class G + 0.30% D198 (Retarder), 0.10% D065 (Dispersant), 0.2% D046 (Antifoam), 3.0% D020 (Extender), 0.725% D112 (Fluid Loss), 35% D066 (Silica), 0.125 lb/sack D130 (Lost circ) mixed at 14.5 ppg,

NOTE: The actual cement volumes will be based on offset well average hole size plus 15%. Average hole size is determined by comparing cement volumes pumped versus actual top of cement. Actual top of cement is determined from CBL (cement bond log).

CENTRALIZERS

Centralizers will be run in the middle of the shoe joint, and one will be run every other one to 1500 feet above the top of overpressure and then every third through the conductive/corrosive interval.

5. DRILLING MUD PROGRAM:

- A. A low solids non-dispersed mud and/or a weighted dispersed mud will be utilized. Mud will be fresh for surface thru the Base Ft. Union. Mud from the Base Ft. Union thru TD will be fresh water based. Adequate stocks of supportive agents and other materials will be stored on site during the drilling operation. Barite will be used for weighting material.

The anticipated fluid/mud requirements with respect to interval follows:

| | |
|--------------------------------|--|
| Surface thru Base Ft. Union | Fresh water with gel sweeps as required. Light gel mud up may be required as hole conditions dictate. No weighting material such as barite will be required as no gas or water flows are expected. |
| Base Ft. Union- Thru TD | Fresh water based mud will be low solids non-dispersed mud and/or weighted dispersed mud. Gas is expected through this interval. Weighting up with barite will be required for pressure control. |

Option I

Mud Weight: 9.0 to 12.8 ppg (*final MW will vary depending on what part of the field. Final MW is approximately 0.2 ppg above pore pressure to compensate for overpressured Shale / tectonics*).
 Viscosity: 25 to 50 seconds API
 Water Loss: 15 cc maximum

Option II
Mud Weight: 9.0 to 13.5 ppg

NOTE: The casing shoe will be tested by drilling 5-20' out from under the shoe and pressure tested to a Maximum expected mud weight equivalent as shown in the mud program listed below.

6. TESTING, LOGGING AND CEMENTING PROGRAM:

- A. The primary objective is the Jonah Sand interval.
- B. No DST is anticipated; however, an unexpected show of interest may dictate otherwise. Jonah Energy LLC will inform the authorized official of any DST.
- C. The anticipated electric logging schedule is as follows:
Openhole or Cased hole logging program:

Open hole Logging Program:

Dual Induction Log/Gamma Ray
Density/Neutron/Caliper

Surface Casing Shoe to TD
Zones of interest –
Above Base of Ft. Union to TD

Cased Hole Logging Program:

Pulse Neutron/Gamma Ray/CCL

Zones of interest –
Above Base of Ft. Union to TD

7. ABNORMAL PRESSURE OR TEMPERATURE:

- A. No abnormal temperature is anticipated.
- B. Anticipated bottom hole pressure at TD: **Option 1:** 5,700 to 7,800 psi. **Option II:** 7,800 to 8,175 psi. We expect to see the overpressure approx. at the reported "Top of Upper Lance".
- C. Hydrogen Sulfide gas is not expected. While drilling offset wells that penetrated objective horizons, no potential hazards were encountered.

8. OTHER INFORMATION:

- A. Anticipated starting date will be upon approval. The drilling and completion operations should be completed within 60 days after spudding the well.
- B. Core samples will be taken on an as needed basis.

Cabrito 23-13

Section 13 T29N R108W

Sublette, Wyoming

The drilling operations for this well will be conducted in accordance with the Onshore Oil and Gas Order #2 as provided for in 43 CFR 3164.1. This includes the well control equipment and its testing, the mud system and associated equipment, and the casing and cementing.

- 1) Estimated depths at which anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered:

| ZONE | Depth (MD) | Depth (TVD) | CONTENTS |
|---------------|------------|-------------|-------------|
| WASATCH | SURFACE | SURFACE | WATER |
| Fort Union | 5726 | 5726 | WATER & GAS |
| Unnamed Tert. | 7972 | 7972 | WATER & GAS |
| Bois Marker | 8356 | 8356 | WATER & GAS |
| Top Perfs | 8406 | 8406 | WATER & GAS |
| Lance | 8911 | 8911 | WATER & GAS |
| Sustained Gas | 9241 | 9241 | WATER & GAS |
| Yellow Point | 11725 | 11725 | WATER & GAS |
| Mesaverde | 12158 | 12158 | WATER & GAS |
| Base Perfs | 13924 | 13924 | WATER & GAS |
| Ericson | 13944 | 13944 | WATER & GAS |
| TD | 14044 | 14044 | WATER & GAS |

- 2) Casing and cementing will be done to protect potentially productive hydrocarbons, fresh water zones, abnormal pressure zones, and prospectively valuable mineral deposits.
- A) The surface casing cement will be circulated to surface. If the cement falls or is not circulated to surface a top out job will be performed.
 - B) The estimated top of cement for the production casing will be brought back to the previous casing shoe covering all the open hole.
 - C) Casinghead: 9 5/8" SOW X 11" X 10M. Initial BOP test to 10,000 psi
 - D) Tubinghead: 11" 10M x 2 1/16" 10M
 - E) Minimum Specified Pressure Control Equipment
 - i) Test BOP, Choke Valves, IBOPs, Flare Valves, and Stand Pipe Valve to 250 psi low and 10000 psi high for ten minutes each.
 - ii) Test the Annular Preventer to 250 psi low and 5000 high for 10 minutes each.
 - iii) Test BOP, Choke Valves, IBOPs, Flare Valves, and Stand Pipe Valve to 250 psi low and 10,000 psi high for ten minutes each.
 - iv) Test the check valves and down stream choke valves to 250 psi low and 10,000 psi high for 10 minutes each.
Thereafter, the BOP will be checked daily for mechanical operations & will be recorded.

- 3) Cementing Program: *Type, Amount of Cement, and Interval to be Cemented*

| Surface: | |
|------------------|---|
| 0'-2,000' MD | 450 sx 12.5 ppg, 2.11 ft ³ /sx Class 'G' Cement + 2.0% Sodium Metasilicate bwob + 0.6% Calcium Lignosulfonate bwob + 0.2% Anti-Foam bwob + 0.25 lb/sk Cellofane Flake bwob |
| 2,000'-2,500' MD | 210 sx 15.8 ppg, 1.16 ft ³ /sx Class 'G' Cement + 0.3% Calcium Lignosulfonate bwob + 0.2% Anti-Foam bwob + 0.25 lb/sk Cellofane Flake bwob |

| | |
|-------------------|--|
| Production: | |
| 2,500'-8,300' MD | 1,790 sx 13.5 ppg, 1.29 ft3/sx (65:35) Class 'G' Cement + 0.1% Scavenger Plus bwob + 0.1% Mid-Temp Retarder bwob + 0.3% Dispersant bwob + 0.2% Anti-Foam bwob + 0.25 lb/sk Cellofane Flake wbwob + 49 lb/sk Pozzolan Extender wbwob |
| 8,300'-14,044' MD | 1,550 sx 14.0 ppg, 1.48 ft3/sx (50:50) Class 'G' Cement + 20.1% Silica bwob + 0.02% Scavenger Plus bwob + 0.12% Mid-Temp Retarder bwob + 0.2% Dispersant bwob + 0.2% Anti-Foam bwob + 0.25 lb/sk Cellofane Flake wbwob + 0.3% Fluid Loss B477 + 1.7% Bentonite bwob + 35 lb/sk Pozzolan Extender wbwob |

4) Stimulation Program: Evaluate logs to determine interval to perforate. Perforate selected intervals of the Lance. A completion program will be based upon evaluation of the logs and formation parameters.

5) Bottom hole pressure is anticipated to be 8300 psi at 13000' TVD

6) Auxiliary Equipment:

| | |
|----|---|
| A) | Upper and lower Kelly cock |
| B) | Full opening floor safety valve with subs |
| C) | 3" x 4" choke manifold with remote control choked |
| D) | Monitor system on pit level, audio and visual |
| E) | Gas Buster |

7) Proposed Operations:

| | | |
|----|-------------------------|-----|
| A) | Pad Location: | YES |
| B) | Directional Plan: | YES |
| C) | KOP: | 500 |
| D) | Build Rate: | 1.5 |
| E) | Drop Rate: | 1.5 |
| F) | Departure from Surface: | 94 |

**Cabrito 23-13
Sublette, Wyoming
Jonah Field**



| | | |
|--|---------------------|---|
| Legal Name: Cabrito 23-13 API Number: SAP Code: Section: 13 | WELL SUMMARY | Township: 29 Range: 108 SHL : 414 FNL 1209 FWL BHL : 407 FNL 1302 FWL |
|--|---------------------|---|

| DIR | Hole Size/Bit | Formation | DEPTH, RKB | | MW | MUD INFO | CEMENTING INFO | |
|---|-------------------|---------------|------------------------------|---------|----------------------------|--|--|-----|
| | | | MD | TVD | | | | |
| N/A | 24" | N/A | 80' | 80' | N/A | N/A | N/A | N/A |
| KOP at 500' Build to 0.63° at 1.5°/100' at 84.70° AZ Hold Tangent | 12-1/4 in. PDC | N/A | 2,500' | 2,500' | 8.4 ppg | Fresh Water with Gel Sweeps | Lead: 450 sx 12.5 ppg, 2.11 ft3/sx Class 'G' Cement + 2.0% Sodium Metasilicate bwob + 0.6% Calcium Lignosulfonate bwob + 0.2% Anti- Foam bwob + 0.25 lb/sk Cellofane Flake bwob Tail: 210 sx 15.8 ppg, 1.16 ft3/sx Class 'G' Cement + 0.3% Calcium Lignosulfonate bwob + 0.2% Anti-Foam bwob + 0.25 lb/sk Cellofane Flake bwob | |
| | | | Conductor: 16" at 80' | | | | | |
| Hold tangent to 9458' MD, drop at 1.5°/100' Vertical by 9500' MD | 8-1/2 in. PDC | Fort Union | 5,726' | 5,726' | 8.4-9.0 ppg | WB/M | Lead: 1,790 sx 13.5 ppg, 1.29 ft3/sx (65:35) Class 'G' Cement + 0.1% Scavenger Plus bwob + 0.1% Mid-Temp Retarder bwob + 0.3% Dispersant bwob + 0.2% Anti-Foam bwob + 0.25 lb/sk Cellofane Flake bwob + 49 lb/sk Pozzolan Extender bwob Tail: 1,550 sx 14.0 ppg, 1.48 ft3/sx (50:50) Class 'G' Cement + 20.1% Silica bwob + 0.02% Scavenger Plus bwob + 0.12% Mid-Temp Retarder bwob + 0.2% Dispersant bwob + 0.2% Anti-Foam bwob + 0.25 lb/sk Cellofane Flake bwob + 0.3% Fluid Loss B477 + 1.7% Bentonite bwob + 35 lb/sk Pozzolan Extender bwob | |
| | | Unnamed Tert. | 7,972' | 7,972' | 9.0-9.8 PPG | | | |
| | | Bois Marker | 8,356' | 8,356' | | | | |
| | | Top Perfs | 8,406' | 8,406' | | | | |
| | | Lance | 8,911' | 8,911' | 9.8-10.8 PPG | | | |
| | | Sustained Gas | 9,241' | 9,241' | | | | |
| | | Yellow Point | 11,725' | 11,725' | 10.8- 11.5 PPG | | | |
| | | Mesaverde | 12,158' | 12,158' | | | | |
| | | Base Perfs | 13,924' | 13,924' | 11.5 - 12.0 PPG | | | |
| | | Ericson | 13,944' | 13,944' | | | | |
| TD | 14,044' | 14,044' | | | | | | |
| | | | | | 12.0 - 13.0 PPG | WB/GEL Mud with additions of Bio-Diesel (3% by volume) beginning at 8000' | | |
| | | | | | 4-1/2" 13.5 ppg P-110 LT&C | | | |

Lease: Cabrito
County: Sublette Co. Wy
API No.:

Well No.: 23-13
Location: 414' FNL 1,209' FWL Sec. 13, T 29 N, R 108 W
BHLOC: 407' FNL 1,302' FWL Sec. 13, T 29 N, R 108 W

Field: Jonah

| | | | | | |
|---|------------------------|--|---|--------------------------------------|-----------------------------------|
| OBJECTIVE: Drill a 14,044' MD test of the Lance formation | | | | | |
| METHOD OF DRILLING | | | APPROXIMATE DEPTHS OF GEOLOGICAL MARKERS | | |
| TYPE OF TOOLS | | DEPTH OF DRILLING | Estimated GL: 7,225' | | Estimated KB: 7,255' |
| Rotary | | Surface to TD | Marker | SUBSEA | TVD |
| LOG PROGRAM | | | WASATCH | 7,225' | SURFACE |
| Cased hole pulse neutron logging suite GR, sigma, counts & count ratio, & correction curves No open hole logs are planned | | | Fort Union | 1,529' | 5,726' |
| | | | Unnamed Tert. | -717' | 7,972' |
| | | | Bois Marker | -1,101' | 8,356' |
| | | | Top Perfs | -1,151' | 8,406' |
| | | | Lance | -1,656' | 8,911' |
| | | | Sustained Gas | -1,986' | 9,241' |
| | | | Yellow Point | -4,470' | 11,725' |
| | | | Mesaverde | -4,903' | 12,158' |
| | | | Base Perfs | -6,669' | 13,924' |
| | | | Ericson | -6,689' | 13,944' |
| | | | TD | -6,789' | 14,044' |
| | | | REMARKS: Pulse Neutron Log (Cased Hole) | | |
| SPECIAL TESTS | | | DRILL CUTTING SAMPLES | | DRILLING TIME |
| | | | TYPE No Cores or DST's | | |
| REMARKS: | | | | | |
| MUD PROGRAM: | | | | | |
| Approx. Interval | Mud Type | Weight (ppg) | Vis, sec/qt | WL, cc/30 min | Other Specifications |
| 0' to 2,500' | Native | 8.4 - 9.0 | 35-45 | No Control | |
| 2,500' to TD | Water / Gel Chemical | 8.4 - 13.0 | 35-50 | < 10 cc / 30 min | Additions of 3%Bio-Diesel at 8000 |
| REMARKS: (1) Viscosity as needed for adequate hole cleaning and wellbore stability. | | | | | |
| CASING PROGRAM: Note: Top three (3) joints in surface hole are 40# casing | | | | | |
| | | Casing | | | |
| Casing String | Estimated Depth | Size | Hole Size | Cement, Etc. | Remarks |
| Conductor | 80' | 16" | 24" | Ready Mix | 65 ppf H-40 Used STC |
| Surface Casing | 0'-2,000' | 9-5/8" | 12-1/4" | Class G | 36-40 PPF J 55 BT&C NEW |
| | 2,000'-2,500' | 9-5/8" | 12-1/4" | Class G | 36-40 PPF J 55 BT&C NEW |
| Production Casing | 0 -2,500' | 4-1/2" | 8-1/2" | | 13.5 PPF P110 LT&C NEW |
| | 2,500' - 8,300' | 4-1/2" | 8-1/2" | 65:35 Class G | 13.5 PPF P110 LT&C NEW |
| | 8,300' - 14,044' | 4-1/2" | 8-1/2" | 50:50 Class G | 13.5 PPF P110 LT&C NEW |
| REMARKS: (1) Top of tail cement to be brought up to just above the Bois Marker and planned top perfs.]] (2) Top of lead cement to be brought up above corrosive zone. | | | | | |
| CORING PROGRAM: None | | | | | |
| COMPLETION PROGRAM:]] A completion program will be designed based upon results of the cased hole logs and formation parameters.]] | | | | | |
| GENERAL REMARKS: SAP# | | | | | |
| Form 46 Reviewed by: | | | Logging program reviewed by: | | |
| PREPARED BY: Spencer Morgan | | APPROVED: For Drilling Dept. | | DATE: For Production Dept. | |
| Form 46 7-84bw | | | | | |