UIC Permit Application Powertech (USA) Inc. March 2010

## 2.M CONSTRUCTION DETAILS

Submit schematic or other appropriate drawings of the surface and subsurface construction details of the well.

## RESPONSE

Figure M-1 presents a schematic of the proposed subsurface construction details of Dewey-Burdock Disposal Well No. 1 (DW No. 1) to be completed in the Minnelusa Formation. Figure M-2 presents the proposed construction of DW No. 2 to be completed in the Deadwood and granite wash. Figure M-3 presents the proposed construction of DW No. 3 to be completed in the Minnelusa Formation. Figure M-4 presents the proposed construction of DW No. 4 to be completed in the Deadwood and granite wash. Figures M-5 and K-1 present details regarding the wellhead and the surface facilities associated with the wells.

### **Subsurface Well Construction Details**

The proposed DW No. 1 will likely be drilled, tested and completed during the year 2011. Drilling of subsequent wells has not been scheduled, but will likely occur in 2011 and following years. Details regarding proposed well construction are presented in Response 2.L.

#### **Surface Well Construction Details**

Each proposed wellhead will consist of a standard 7" SOW x 11" 3M or 5  $\frac{1}{2}$ " SOW x 7 1/16" 3M casing head or suitable equivalent. The wellhead will include a landing joint with a 2 7/8" slips and pack-off which will act as the upper seal to the 7" x 2 7/8" annulus. There will be two 2" flanged outlets with ball valves or suitable equivalents for access to the annulus. One outlet is to be connected to the annulus fluid system, and the second is to be accessible for annulus fluid sampling and annulus pressure tests. Figure M-5 is a diagram of the proposed wellhead assembly.

#### Annulus Monitoring System

The proposed annulus monitoring system will consist of an annulus fluid tank with a level indicator or site glass, pressure transducers and gauges, a nitrogen regulator and a nitrogen supply cylinder. The systems will be installed on the wellhead, in the wellhouse building, or in the adjacent facilities building.

1. In addition to the annulus pressure operating and monitoring requirements, an interlock system will be installed to prevent the well from being operated if permit conditions are exceeded or if unsafe conditions exist. Several operating systems will have preset limits, which can be adjusted depending upon specific

Annulus pressure in this system will be maintained with a nitrogen blanket supplied from pressurized nitrogen cylinders. In the event of power failure, positive pressure can still be maintained on the annulus.

A data acquisition system will be used to monitor injection rate, injection pressure, annulus pressure and simultaneous differential pressure. Maximum, minimum and average values for each of the four parameters along with total volume will be recorded at least once every fifteen minutes. Pressure transducers located near the wellhead and downstream of any pumping devices will be used to measure pressures. Flow rate is to be measured utilizing an inline turbine meter and totalizer or equivalent. In the case of a manned operation, well operators will be required to visually

UIC Permit Application Powertech (USA) Inc. March 2010

inspect the recorder and computer on a weekly basis when injection occurs to verify proper operation. The annulus tank level and any annulus fluid added to the system will be recorded by the well operators.

A backup power source (battery) will be used to ensure continuous collection of operating and well alarm data for up a minimum of 30 minutes should power failure occur. In the event that a power failure persists past the ability of the battery systems to allow power, the well will be shut-in, and upon discovery of the shut-in readings will be recorded a minimum of once every day until power is restored to the monitoring equipment.

The annulus tank will have sufficient reservoir capacity to accommodate double the anticipated volume fluctuations due to temperature and pressure limitations. Pressure will be maintained through the use of high-pressure nitrogen cylinders. The cylinders will be replaced and recharged as required. The annulus tank is to be equipped with a level indicator or a full length armored reflex sight glass, a pressure relief valve, and an independent liquid fill nozzle.

In the event that any of the permit conditions are exceeded, including injection pressure or differential pressure a visual alarm light will be illuminated at the well building. In addition, the computerized data acquisition system will be coupled to a telephone autodialer that will send a page to the operator to ensure that the condition is communicated. Upon an alarm condition, injection will be stopped by the operator until the problem is identified, corrected, and the system manually restarted.

#### **Mechanical Integrity**

Part I and Part II mechanical integrity demonstrations will be conducted as discussed in Response 2.L and 2.P of this document.











· ·

. , , . . . .

· · ·

UIC Permit Application Powertech (USA) Inc. March 2010

# 2.N CHANGES IN INJECTED FLUID

For Class III wells (Not Applicable to this Application)

2-40