TUNDRA
OIL & GAS PARTNERSHIP

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August 25, 2011

Attn Allan Gervin:

RE: Battery Application for Birdtail 8-30-16-27 W1M

Tundra Oil & Gas Partnership would like to propose the construction of a battery at location 8-30-16-27 W1M. Tundra will comply with all the regulations set out by the Manitoba Science, Technology, Energy and Mines. Please review the following application.

75 (1) Battery start-up is scheduled for: March 15, 2012

a) A cheque for $1000 is attached.

b) Tundra Oil & Gas Partnership has been operating in the province for 25 years and should be in good standing with the government. Therefore, there should not be a requirement for a performance deposit.

c) Two copies of the survey plan of the battery location are attached.

c.1) The names and addresses of all landowners and occupants within 1.5km of the proposed site are shown in an attached document. A sample consultation letter is also attached. A summary of the consultations will be submitted upon completion.

d) The wells that will be tied into the battery are as follows:

3-29-16-27hz	2-30-16-27hz	3-25-16-28hz
7-30-16-27hz	6-30-16-27hz	9-29-16-27hz
11-29-16-27hz	9-30-16-27	11-30-16-27hz
14-29-16-27hz	16-25-16-28hz	2-31-16-27hz
3-31-1627hz	2-36-16-28hz	7-31-16-27hz
6-36-16-28hz	9-36-16-28hz	5D-4-16-27
12-4-16-27	8-5-16-27	9-5-16-27
15-5-16-27	16-5-16-27	8-4-16-27hz
16-4-16-27hz	16-18-16-27	1-19-16-27

6-19-16-27hz	7-19-16-27	7-19-16-27hz
8-19-16-27	3-20-16-27	5-20-16-27
6-20-16-27		

i) We will be drilling wells up until the battery construction is complete and our best estimate is that we will have 5-10 more wells drilled by battery start-up. These wells will also be tied into the battery.

e) An estimate of the production rates for oil, water and gas are as follows:

Estimated Oil Production	Estimated Water Production	Estimated Gas Production
250m3/day	250m3/day	100m3/day

Tundra did PVT testing in the Birdtail area in order to develop an accurate GOR for the field. A copy of the PVT test report is included with this application. The testing showed that the GOR for the Birdtail field is 0.4. This GOR was used in all calculations required for this application.

An estimate of the allocation of the gas volumes are as follows:

Used for fuel	Flared	Vented
0%	0%	100%

e.1) Copies of a representative gas analysis and drager H_2S tests from wells in the area are attached. These tests show that the wells in the area range from 0.0015% and 0.1% H_2S. An average of 0.04% from the drager H_2S tests was used in the Screen 3 analysis. The gas analysis for this area shows that the nitrogen content makes up over 80% of the gas.

f) The specifications of the process vessels to be used are as follows:

Equipment	Dimensions	Min. Flow	Max Flow	AOP	AOT
Group Treater	6' x 20'	100m3	500m3	25 psi	95 F
2-Fiberglass water tanks	400bbl each		1000m3		
3-Steel Bolted Oil tanks	1000bbl each		635m3		
Disposal pump	1-55 Hp Gardner Denver	130 m3/day	260 m3/day	1000 psi	

Charge pump	Grundfos	144m3/day	384m3/day	15 psi	
Recycle Pump	1 ½ " Moyno	25m3/day	200m3/day	25 psi	
Vent Stack	3" x 40'				
Pop Tank	100 bbl		16m3/day		

The following information is not yet available because we have just ordered it: name of manufacturer and CRN. This information will be forwarded to the Petroleum Branch as it becomes available.

g) Well testing will not be done at the battery site. It will be done in the field at specific locations through portable metering. Each well will be tested for a minimum 24 hour period at least once every three months, in order to comply with well testing regulations.

g.1) At this time Tundra proposes to install a vent stack.

g.2) Tundra will be collecting the gases off the tanks and running them up a 40' vent stack. The ESD valve will be used if the battery ever upsets & floods the vent knock out vessel. In the event of an ESD, the valve would close & only the gas in the lines & tank would be vented (very minimal gas).

i) Tundra is not flaring the gas as the field has a 0.4 GOR and the gas composition is comprised of over 80% nitrogen, which makes it difficult to burn.

ii) Tundra is not doing any specific actions to minimize the volume of gas being vented, as we are not anticipating large volumes of gas being vented. This is because the GOR of the field is 0.4.

iii) Tundra is using a tall vent stack to help disperse any gas that is vented. This will help to control any off-lease odours.

g.3) A copy of the Screen 3 air dispersion modeling is attached. The worst case scenario is the dispersion model using the tanks as the point source. The modeling showed that the H_2S is over acceptable levels: 389.7µg/m3 x 0.706=275.1 parts per billion (acceptable levels are 11.0 parts per billion). This concentration would only happen if something blocked off the gas line to the vent stack and the tanks experienced back pressure, causing the thief hatches to open. Since the gas lines will all be heat traced and insulated, this is very unlikely to happen, and would be an emergency situation. The alarms inside the tank farm would alert the operator to the

problem, who would respond immediately to the call out. The failure would be corrected immediately or the facility would be isolated.
Since Tundra plans on venting all gas, there will be no SO_2 produced, and therefore released, at the site.

h) Two copies of a preliminary plot drawing showing the location of each vessel, tank, salt water disposal facility, dyke, vent line, pop tank or any other equipment is attached. Once construction is complete, a surveyed As-built plot plan will be forwarded to the Petroleum Branch.

i) Two copies of a proposed schematic process flow are attached.

j) Repealed

k) The plans for disposal are as follows: Tundra has submitted a salt water disposal application for the 2-32-16-27 well and plans to use this well as the disposal well for the facility.

l) We anticipate that the Petroleum Branch will be requesting additional information which can be submitted as an addendum to this application.

If you have any additional questions, comments, or concerns please contact Ashleigh Poppel in the Virden office at (204)748-4440.

Sincerely,

Ashleigh Poppel

Ashleigh Poppel, E.I.T.
Production & Facilities Engineer