# 15-15-2-29W1 Battery

# Application for Battery Operating Permit

Pierson Field, Manitoba

October 25, 2024 Melita Resources Ltd.

#### INTRODUCTION

Melita Resources wishes to construct a Battery at 15-15-2-29W1 to deal with emissions and odors.

Please accept the included discussion and attachments as application for a Battery Operating Permit.

Melita Resources drilled the 100/14-22-2-29W1 well License number 12096 in May 2024 to target the Mission Canyon 3B reservoir. The well was successful and is currently producing as a tanked well. Melita Resources has been venting the gas and scrubbing the vapours to eliminate off lease odours. Scrubbing of the vapours is complex and costly. As such Melita Resources plans to install a combustor to effectively manage the emissions and odours in the long term. There are additional drilling prospects in the area. The construction of a battery will also allow Melita Resources to effectively manage the production of future development.

### **APPLICATION FOR BATTERY OPERATING PERMIT**

As per the Drilling and Production Regulations 75(1) the following are the details are supplied to support the application for a Battery Operating Permit at 15-15-2-29W1.

Melita Resources will submit proof of the EFT showing payment of the required fee of \$1000 as set out in Schedule A for the Application of a Battery Operating Permit.

Melita Resources performance deposit is topped up and up to date.

A digital copy of the survey is included for the location of the Battery. The survey shows the proposed battery location meets the spacing requirements set out in Appendix C of the Drilling and Production Regulations.

The names and addresses of the Landowners and Occupants within 1500 m of the Battery are included in Appendix A. There have been no objections the construction and operation of the Battery and responsible resource development in the area.

The 100/14-22-2-29W well, License # 12096 will be connected to the Proposed 15-15-2-29W1 Battery.

The estimated battery production rates are 20 m3 Oil per day, 50 m3 water per day and 500 standard m3 gas per day. The gas will be combusted in a Cube 1500 combustor to ensure a controlled and

complete deconstruction. There are no plans to vent produced gas or use for fuel.

A representative gas analysis is attached for the proposed battery.

There are no process vessels planned for the battery. As per the attached process flow diagram, the well will produce the 800 bbl Viro Tank. The tank top vapours will flow to the Cube 1500 combustor. The 12 oz capable Viro tank is enough to get the gas to the combustor for deconstruction. Equipment to be added is the Cube 1500 combustor, Flare Knock out Drum and a Propane Tank. The propane will run the combustor pilot.

A dispersion model for SO2 was created utilizing the worst can scenario, as show in Appendix B. This scenario is full flow of the combustor of 1500 standard cubic meters per day of gas flow with a 10,000 ppm H2S concentration. This is 3 times the expected rates. The result of the worst case model resulted in a of a max 1 hr SO2 concentration of 387 ug/m3 and a max 24 hr average SO2 concentration 188.3 ug/m3. These are well under the Schedule G limits of 900 ug/m3, 1hr and 300 ug/m3, 24 hr. No dispersion model was created for H2S as the combustor converts 99.96% of the H2S to SO2. As such H2S emissions are negligible.

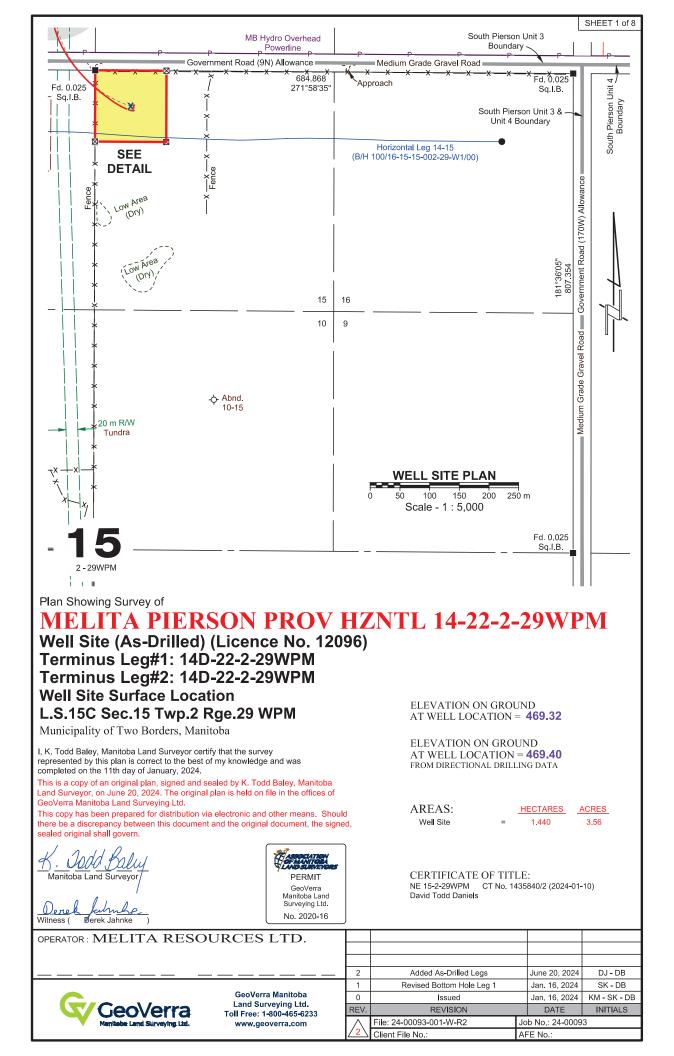
Digital Copies of the Plot Pan and process flow diagram are included. We are proposing the use of a combustor as there is no visible flame, 99.96% combustion efficiency of methane and H2S and it is a controlled process with burner management and thermal shut down. Although we are planning on meeting the spacing requirement as set out in Schedule C of the Drilling and Production regulations we have included the documentation from Clear Rush Co. stating the case for reduced spacing. The reduced spacing controls are inlet flame arrestors, a stack temperature less than the auto ignition temperature of typical gasses and a burner management controller. Also included are the P&ID and control philosophy for the Cube 1500 Combustor.

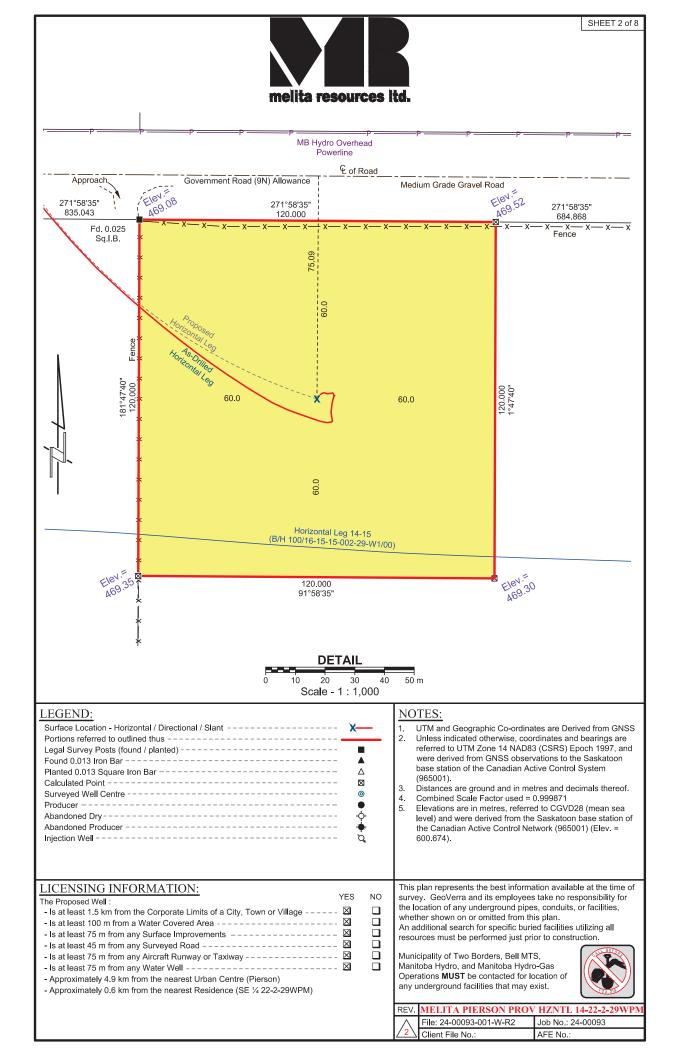
The emulsion from the proposed battery will be trucked to Melita Resources Batteries (2-29-2-28W1 or 16-33-1-28W1) for processing and water disposal.

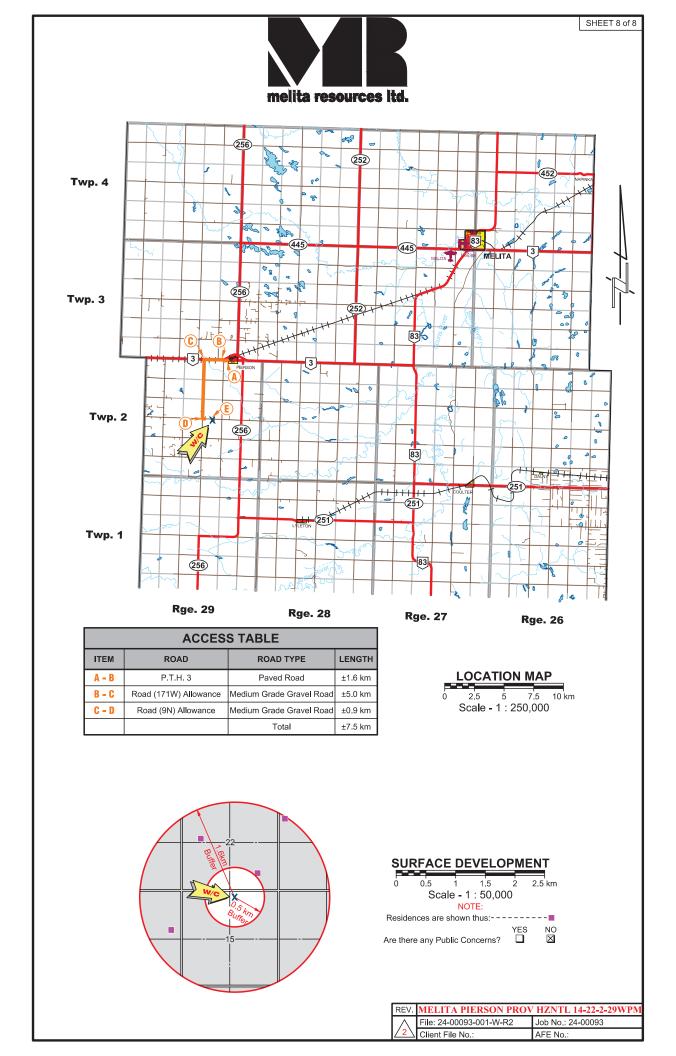
Please let us know if you have any questions. I can be reached at 306-339-7714 or <a href="mailto:bcaldwell@meltiaresources.com">bcaldwell@meltiaresources.com</a>

Sincerely

Brad Caldwell, P Eng.









**GAS ANALYSIS** 01100132A 24GS108701A AGAT WDMS Number Container Identification Sample Point Code Meter Code Previous Number Laboratory Number MELITA RESOURCES LTD WELLHEAD CASING AA/14-33-002-29W1/00 Operator Name Sampling Point Unique Well Identifier MELITA PIERSON HZNTL 14-33-2-29 12032 16-32-002-29W1/00 Well Name Well License Well Status Well Fluid Status LSD **PIERSON NOT AVAILABLE** AGAT/ESTEVAN KJ Field or Area Pool or Zone Sampler's Company Name of Sampler Test Interval (mKB) Elevation (m) Pressure (kPa) Temperature (°C) 482.30 477.10 200 170 -6 23 Test Type Test No. KB GRD Received From: To: Source Received Source Calgary - Amy Wu - Reporter Jan 08, 2024 Jan 09, 2024 Jan 15, 2024 Jan 15, 2024 Location - Approved By - Title Date Received Date/Time Sampled Date Analyzed Date Reported FIELD H2S BY TUBE = 0ppm/ LAB H2S = ND Other Information **PROPERTIES** COMPOSITION Calculated Heating Value @15 °C & 101.325 kPa (MJ/m³) **Mole Fraction** Gross Liquid Mole Fraction Air & Acid Gas 0.37 64.57 64.57 58.67 58.68 Air Free Volume Volume of Previous Component Free As As Received mL / m<sup>3</sup> Analysis Air Free as Moisture & C<sub>7</sub>+ Moisture Air Free as Moisture & Received Acid Gas Free Received Acid Gas Free Received Free  $H_2$ 0.0015 0.0015 Calculated Density He TRACE TRACE Absolute Relative  $N_2$ 0.0647 0.0647 1.077 1.077 3.659 696.2 1.319 CO<sub>2</sub> 0.0001 0.0000 Total Sample Moisture Free Moisture & Acid C<sub>7</sub>+ Moisture C<sub>7</sub>+ Density H<sub>2</sub>S 0.0000 0.0000 As Received Gas Free (kg/m³) Density (kg/m³)  $C_1$ 0.3346 0.3347 Calculated Pseudo Critical Properties  $C_2$ 0.2652 0.2652 942.4 As Sampled Acid Gas Free 0.2584 0.2584 C<sub>3</sub> 949.5 4427.6 281.0 4427.3 280.9 iC₄ 0.0231 0.0231 100.9 pPc (kPa) pTc (K) pPc (kPa) pTc (K) nC<sub>4</sub> 0.0401 0.0401 168.7 Hydrogen Sulfide (H₂S) (ppm) 0.0046 iC<sub>5</sub> 0.0046 22.5  $nC_5$ 0.0045 0.0045 21.8 Field Value Laboratory Value q/m<sup>3</sup>  $C_6$ 0.0015 0.0015 8.2 0.00 n C7+ 0.0017 0.0017 11.0 Stain Tube Other Tutweiler GC-SCD **TOTAL** 1.0000 1.0000 2225.0 Calculated Molecular Weight (Moisture Free as Received) (g/mol)

**Exceeds normal limits: N2** 

WDMS Data Verification Check



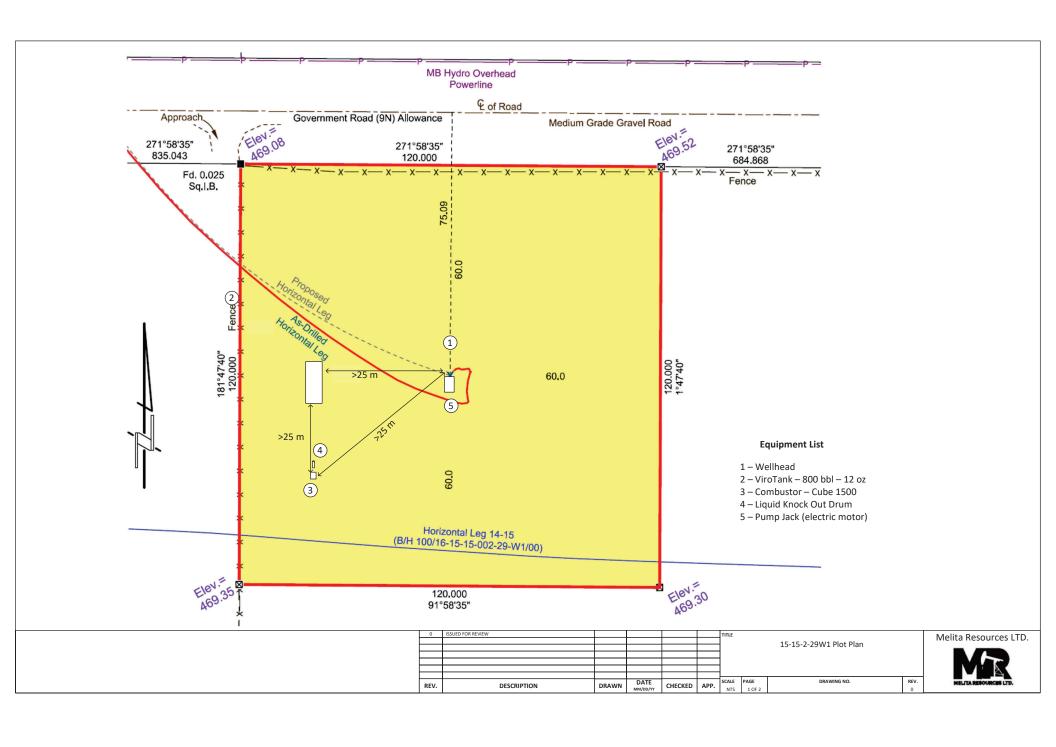
106.0

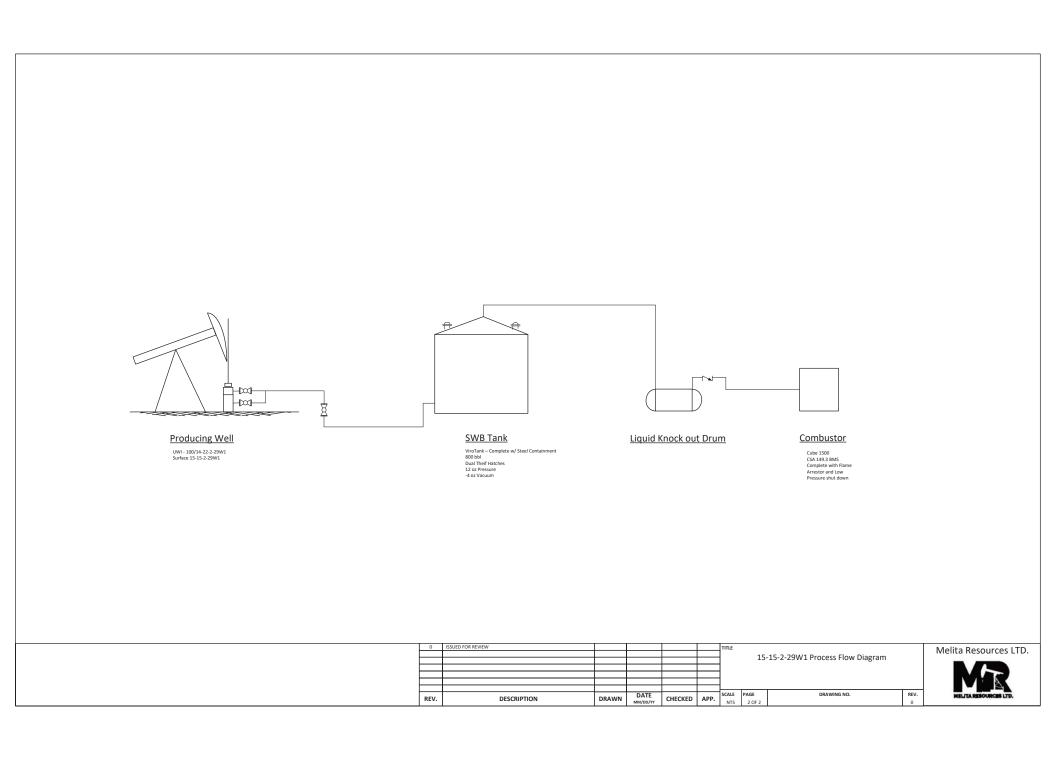
C<sub>7</sub>+ Fraction

Disclaimer: The result in this report has been confirmed by a duplicate run.

31.2

Total Sample





## **Appendix A:**

## 15-15-2-29W1 Battery Emission Modeling

Modeling Methadoligy Based on Worst Case Scenario. Full Flow of Clear Rush, Cube 1500 Combustor

- Gas Rate 1500 Standard Cubic Meters per Day
- H2S Concentration 1 % or 10,000 PPM
- 99.96% Conversion Rate of H2S to S02
- 0.501 g/s S02 Emissions
- Nil H2S Emissions

06/25/24

07:54:13

\*\*\* SCREEN3 MODEL RUN \*\*\*

\*\*\* VERSION DATED 13043 \*\*\*

16-32-2-29W1 Battery S02 Emissions

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT

EMISSION RATE (G/S) = 0.501000

STACK HEIGHT (M) = 3.1570

STK INSIDE DIAM (M) = 1.7200

STK EXIT VELOCITY (M/S)= 1.0100

STK GAS EXIT TEMP (K) = 646.1500

AMBIENT AIR TEMP (K) = 293.0000

RECEPTOR HEIGHT (M) = 0.0000

URBAN/RURAL OPTION = RURAL

BUILDING HEIGHT (M) = 0.0000

MIN HORIZ BLDG DIM (M) = 0.0000

MAX HORIZ BLDG DIM (M) = 0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.

THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 4.004 M\*\*4/S\*\*3; MOM. FLUX = 0.342 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*\*\*\*\*\*

\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*

\*\*\*\*\*\*\*\*\*

#### \*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST CONC U10M USTK MIX HT PLUME SIGMA SIGMA (M) (UG/M\*\*3) STAB (M/S) (M/S) (M) HT (M) Y (M) Z (M) DWASH

1. 0.000 1 1.0 1.0 320.0 62.11 0.84 0.75 NO 100. 188.3 4 15.0 15.0 4800.0 4.04 8.27 4.77 NO 200. 99.57 4 8.0 8.0 2560.0 7.58 15.71 8.77 NO 300. 69.64 4 5.0 5.0 1600.0 12.13 22.87 12.58 NO 400. 53.47 4.0 4.0 1280.0 15.16 29.77 15.87 NO 500. 43.45 3.0 3.0 960.0 20.21 36.60 19.19 NO 600. 36.76 3.0 3.0 960.0 20.21 43.11 21.98 NO 700. 32.08 2.5 2.5 800.0 24.26 49.67 25.01 NO 2.0 2.0 640.0 30.32 56.24 28.15 NO 800. 28.20 900. 25.52 2.0 2.0 640.0 30.32 62.49 30.71 NO 2.0 2.0 10000.0 31.08 35.03 16.54 NO 1000. 23.54 1100. 24.06 2.0 2.0 10000.0 31.08 38.02 17.28 NO 1200. 24.33 2.0 2.0 10000.0 31.08 40.99 18.00 NO 1.5 1.5 10000.0 34.53 44.14 19.15 NO 1300. 24.77 25.03 1.5 1.5 10000.0 34.53 47.07 19.84 NO 1400. 1500. 25.14 6 1.5 1.5 10000.0 34.53 50.00 20.51 NO

## MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

39. 387.0 4 20.0 20.0 6400.0 3.03 3.53 2.14 NO

