

Workplace Health and Safety Fatality Report



WORKER KILLED IN EXPLOSION

Type of Incident: Fatality

Date of Incident: February 3, 2008

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SECTION 1.0 DATE AND TIME OF INCIDENT

- 1.1 The incident occurred on February 3, 2008 at approximately 7:20 p.m.

SECTION 2.0 NAME AND ADDRESS OF PRINCIPAL PARTIES

2.1 Owner(s)

- 2.1.1 M & L Trucking Ltd. (479215 Alberta Ltd.)
Box 43
Altario, Alberta
T0C 0E0

2.2 Employer(s)

- 2.2.1 M & L Trucking Ltd. (479215 Alberta Ltd.)
Box 43
Altario, Alberta
T0C 0E0

2.3 Worker(s)

- 2.3.1 co-owner

2.3.2 worker

(Names and personal details were removed before distribution of this report)

SECTION 3.0 DESCRIPTION OF PRINCIPAL PARTIES

- 3.1 M & L Trucking Ltd. provides trucking services to the oil and gas industry, primarily in central eastern Alberta, and central western Saskatchewan. The company employs approximately 13-15 workers and transports oil products and water for a variety of clients.
- 3.2 The co-owner had approximately 20 years experience in the oilfield trucking industry.
- 3.3 The worker had been employed with M & L Trucking Ltd. for approximately 2 years. He had approximately 6-7 years of experience in the oilfield trucking industry.

SECTION 4.0 LOCATION OF INCIDENT

- 4.1 The incident occurred in the Employer's shop located at NW 12-33-02-W4M (Refer to Attachment A – Map).

SECTION 5.0 EQUIPMENT, MATERIAL AND OBSERVATIONS

5.1 Equipment and Material

- 5.1.1 The incident occurred in a metal clad heated building measuring approximately 30.0 metres in length, 15.0 metres in width, and 6.5 metres in height (Refer to Attachment B – Photograph 1).
- 5.1.2 An elliptically shaped steel three baffle highway transport vessel, measuring approximately 2.65 metres in width, 1.5 metres in height and 5.3 metres in length exploded during the incident. The four compartments had a 16,275 litre capacity. The diameter of the top access hatch was measured as approximately 0.40 metres. The highway transport vessel was mounted on a triple axle gooseneck trailer (Refer to Attachment B – Photographs 2 and 3 and Attachment C – Vessel Specifications).
- 5.1.3 A standard utility trouble light with an approximate 6.0 metre long extension cord was used to inspect the inside of the highway transport vessel. The utility trouble light was not explosion proof rated. The caution label on the trouble light indicated “do not use in the proximity of vehicles or equipment, when there is a risk of flammable liquids coming into contact with the handlamp” (Refer to Attachment B – Photographs 4 and 5).
- 5.1.4 The Material Safety Data Sheet for previously hauled petroleum oil products (produced water), UN product identification number (UN pin) 1267, indicated that the produced water was flammable (Refer to Attachment D – Material Safety Data Sheets (MSDS)).
- 5.1.5 Transportation of Dangerous Goods (TDG), de-classification procedures, recommended that in order to de-classify any transport vessel as a dangerous good, 4 to 8 hours of proper steam cleaning is required.

5.2 Observations

- 5.2.1 The outside temperature at the time of the incident was cold and was not a factor. The shop had proper lighting.
- 5.2.2 The RCMP and Emergency Medical Services (EMS) entered the building to remove the fatally injured co-owner. Workplace Health and Safety Compliance (WHSC) officers deemed the building unsafe to enter due to severe structural damage. The building was cordoned off and photographs were taken through the doorway and window openings (Refer to Attachment B – Photograph 6).

- 5.2.3 On February 6, 2008 the employer's insurance adjuster hired a professional engineer to assess the building damage. He concurred that the building was unsafe to enter. The building was subsequently demolished (Refer to Attachment B – Photograph 7).

SECTION 6.0 NARRATIVE DESCRIPTION OF THE INCIDENT

- 6.1 Prior to the incident, the co-owners noticed a crack and small leak on the front end cap of the highway transport vessel. They made the decision to steam clean the vessel for transport on February 4, 2008, to Collville, Saskatchewan for repair.
- 6.2 On February 3, 2008 at approximately 4:45 p.m. a steam cleaner from NOR-VET Trucking arrived at the shop. He steam cleaned the highway transport vessel from approximately 5:30 p.m. to 7:00 p.m. for a total time of about 1.5 hours as instructed by the co-owner.
- 6.3 At approximately 7:00 p.m., the worker from M & L Trucking Ltd. hooked up a suction hose to the highway transport vessel to drain the water and residue into his vacuum truck.
- 6.4 At approximately 7:20 p.m. the co-owner entered the highway transport vessel through the hatch with a trouble light to inspect the crack. The worker was on top of the highway transport vessel to assist the co-owner. An explosion occurred. The worker was blown off the vessel. The co-owner was found several metres away from the highway transport vessel.
- 6.5 The co-owner's spouse called 911. EMS and RCMP from the Town of Consort responded to the scene.
- 6.6 The co-owner died at the scene. The worker was transported to the Consort Hospital, treated and released the following morning on February 4, 2008.

SECTION 7.0 ANALYSIS

7.1 Direct Cause

- 7.1.1 The co-owner received fatal injuries and the worker received non-life threatening injuries when an explosion occurred in the highway transport vessel.

7.2 Contributing Factors

- 7.2.1 The highway transport vessel was steam cleaned for approximately 1.5 hours to eliminate flammable hydrocarbon residues. TDG de-classification procedures required 4 to 8 hours of steam cleaning. The highway transport vessel was not adequately steam cleaned.

- 7.2.2 Air quality monitoring was not conducted prior to entering into the highway transport vessel.
- 7.2.3 When the co-owner entered the highway transport vessel with a trouble light that was not approved for use in hazardous locations, the flammable hydrocarbons ignited and exploded.
- 7.2.4 M & L Trucking Ltd. did not have a confined space entry code of practice in place at the time of the incident.

SECTION 8.0 FOLLOW-UP/ ACTION TAKEN

8.1 Employment and Immigration; Workplace Health and Safety Compliance

- 8.1.1 Workplace Health and Safety Compliance (WHSC) received an incident notification on February 3, 2008 at approximately 7:30 p.m. and commenced an incident investigation.
- 8.1.2 WHSC issued the following orders:

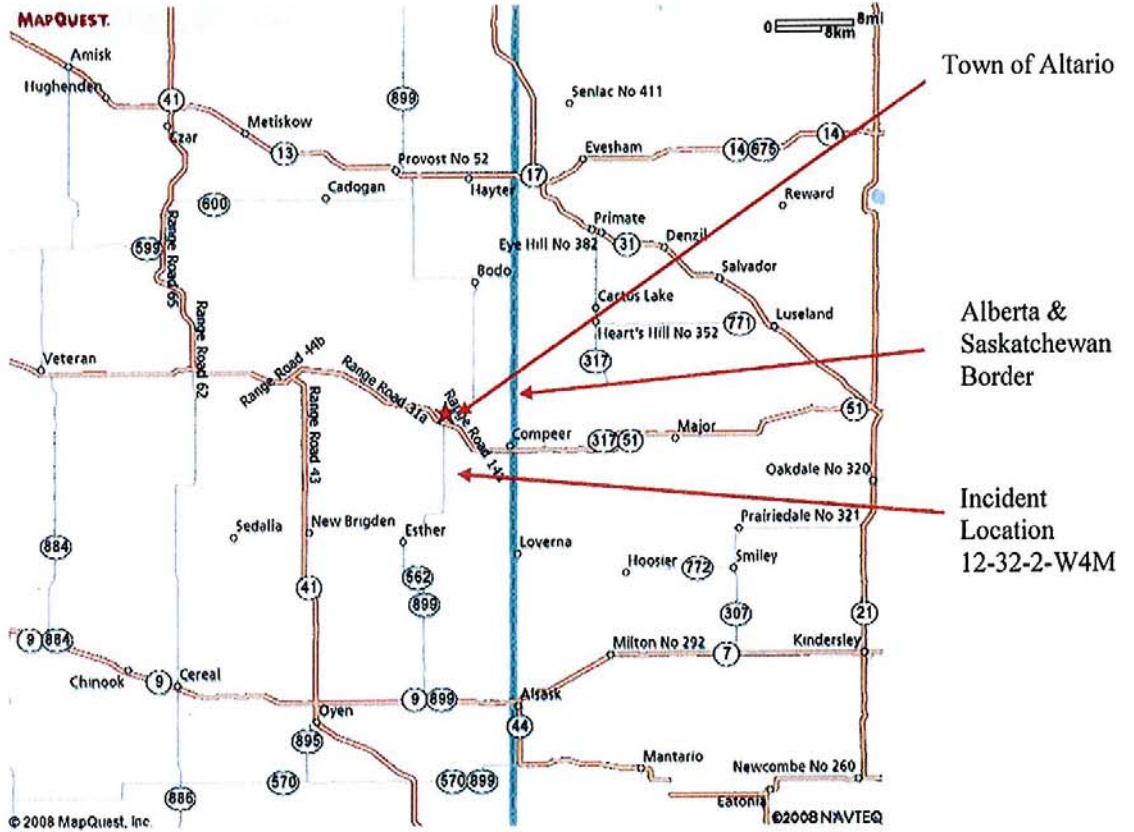
A Stop Work Order to M & L Trucking Ltd. on all confined space entry.

An order was issued to M & L Trucking Ltd. to conduct an incident investigation and prepare a report.

Additional orders regarding fire and explosion hazards and protective procedures for hazardous locations were issued to M & L Trucking Ltd.

8.2 Industry

- 8.2.1 The employer, M & L Trucking Ltd. permanently suspended any confined space entry operations company wide.
- 8.2.2 The employer, M & L Trucking Ltd. investigated the incident and submitted the incident investigation report to WHSC for review.
- 8.2.3 The employer, M & L Trucking Ltd. is currently undergoing a peer audit for their COR.
- 8.2.4 The employer, M & L Trucking Ltd. complied with all orders issued by WHSC.





1

Photograph 1 – Shows the building in which the incident occurred.

1. Barrier tape placed to prevent access into the structurally damaged building



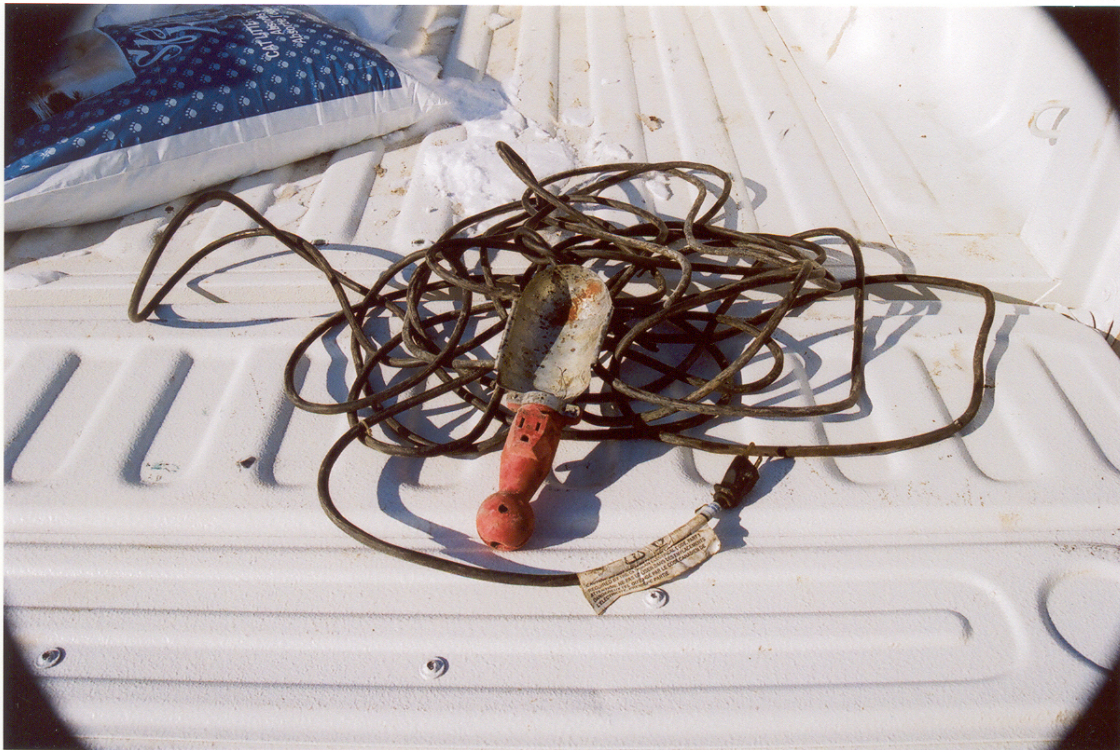
Photograph 2 – Shows the highway transport vessel involved in the incident.

1. Top hatch used to gain access into the highway transport vessel by the co-owner.



Photograph 3 – Shows an end view of the highway transport vessel.

1. As a result of the internal explosion, the three baffles and end cap of the highway transport vessel blew outward.



Photograph 4 – Shows the trouble light that was used by the co-owner when he entered the highway transport vessel.



Photograph 5 – Shows the label on the trouble light that was used by the co-owner when he entered the highway transport vessel.



Photograph 6 – Shows the damaged highway transport vessel following the explosion in the building. The picture was taken through a window opening.

1. Roof and building structural damage as a result of the explosion.



Photograph 7 - Shows the building following demolition.

Attachment C

Highway Transport Vessel Specification Sheet



Certificate of Compliance

200-53016
1 Highway 60
Acheson, Alberta
T7X 5A7

This certifies that the new Jasper Tank identified below was designed, constructed, and tested in accordance with CSA Standard B620 Highway Tanks and Portable Tanks for the Transportation of Dangerous Goods Specification No. TC 406 AL

Serial Number 2J9JT17374S031008 Date Manufactured 02/04
Registration Number 25-078 Capacity 16275 L
TCRN/MBIN JT6202A

Vent Manhole Capacity 8078 SCMH Set to discharge pressure 25 KPA
Vent Capacity Set to discharge pressure

Original Test Date 02/04 Certification Date 02/04
MAWP 23 KPA Test Pressure 34 KPA

Density 1.0 KG/L Payload 16275 KG Notes:
Design Temperature Range -29C to 38C
Shell Material 5454 H32
Minimum Shell Thickness 3.94/5.33 mm Head Material 5454 0
Manufactured Shell Thickness 4.76/6.35 mm Minimum Head Thickness 3.56 mm
Weld Material ER 5356 Exposed Surface 4.76 mm
Maximum Loading Rate 2000 LPM Maximum Unloading Rate 1500 LPM

Tank Tester
Name: Andrew Foisy
Address: 200-53016
Highway 60
Acheson, Alberta T7X 5A7

(Signature)

Compliance Officer
Name: Erick Liebl
Address: 200-53016
Highway 60

Acheson, Alberta T7X 5A7

(Signature)