

Investigation Summary Report

2017-018: ATCO Gas and Pipelines Ltd.

Affected Licence 19685-56

August 13, 2018

Investigation number:	2017-018
Regulated party:	ATCO Gas and Pipelines Ltd., BA code 0144
Field centre of origin:	Drayton Valley
Incident location (nearest town):	LSD 13-28-048-07W5M, about 18 kilometres south of Drayton Valley
Contravention date:	April 25, 2017
FIS incident number:	20171344
Authorization numbers and relevant legislation, regulations, and rules:	Affected licence: 19685-56 (Pembina Pipeline Corporation) <i>Pipeline Act, Pipeline Rules</i>

Alberta Energy Regulator

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Summary of Facts

Company Overview

ATCO Gas and Pipelines Ltd. owns and operates natural gas transmission facilities throughout Alberta, including 9400 kilometres (km) of pipelines. ATCO is a diversified global corporation with delivery services in structures and logistics, electricity, pipelines and liquids, and retail energy. The company's main offices in Alberta are located in Edmonton and Calgary, with smaller facilities throughout the province.

Incident Overview

On April 25, 2017, ATCO contacted the Government of Alberta Coordination and Information Centre (CIC) to report a pipeline strike by Parkland Construction of a 10-inch steel condensate pipeline owned by Pembina Pipeline Corporation (licence 19685-56). The strike occurred during excavation work for a pipeline expansion project by ATCO at its Lobstick Control Station to tie in a new 8-inch pipeline to a new 24-inch pipeline. ATCO contracted Parkland to carry out the excavation work within the pipeline right-of-way at Legal Subdivision (LSD) 13, Section 28, Township 48, Range 7, West of the 5th Meridian, about 18 km south of Drayton Valley.

At the time of the strike, site conditions were extremely wet, making working conditions challenging. Trench dewatering was being used to expose underground pipelines to complete the tie-in.

Both ATCO and Parkland had ground disturbance (GD) policies and procedures, as well as safety checks, in place for excavation work. Both companies had staff on site, including safety personnel and inspectors.

Safe work permits and GD permits were issued on the morning of the pipeline strike. However, the AER investigation determined that some sections of the permit checklists were not followed. GD procedures and ground markings were either obscured or no longer in place. There were no injuries or condensate released as a result of the pipeline strike. The coating of the pipeline was damaged, but the line was shut in immediately after the strike and repaired.

AER inspectors guided ATCO through a revision of its GD policies and procedures, including new training programs for all ATCO staff and contractors. The AER closed the incident after ATCO submitted a final version of its updated GD policies and procedures.

Investigation Findings and Potential Contraventions

Failure Analysis

AER inspectors triaged the incident on May 1, 2017, due to concerns that the incident occurred because ATCO did not follow GD procedures as required by the *Pipeline Rules*, and this resulted in the incident occurring. Under these rules, GD procedures must be followed when any type of operation or excavation occurs that results in the displacement of soil or ground cover, such as during trenching, drilling, and excavating. AER inspectors noted that two other incidents caused by GD procedure not being followed occurred within the last year at other ATCO sites.

ATCO submitted its six-page GD procedures document, *Manual OP06-8 Ground Disturbance*, as part of the AER's investigation information request. The relevant provisions of the document are as follows:

Prior to Excavation

1. *Buried Facilities to be Located and Marked*
 - *Call Alberta One Call*
2. *Conduct a Hazard Assessment, Refer to SA02-1 Hazard Assessment*
 - *An initial site assessment must be performed to define the limits of the excavation*
3. *Confirm All Internal and Third Party Facilities Are Located and Marked*
 - *Mechanical excavation cannot occur within 30 metres on each side of a facility until a Crossing Agreement or Controlled Area Access Permit has been obtained and the location of the facility is confirmed.*
4. *Ensure Proper Site Preparation*
 - *protect the facility with fencing, rig mats etc.*
5. *Ensure Consideration Has Been Made For Pipeline Support*
 - *pipeline braces or supports must be used*
6. *Hand Expose or Hydrovac Facilities, refer to OP06-2 Daylighting Procedures*
 - *Where a ground disturbance parallels an existing foreign facility and is within 5 metres of that facility, the facility must be hand-exposed or hydrovaced for the entire length unless approved by the facility owner/operator in writing. The facility owner/operator should be present during the ground disturbance.*
 - *Where a ground disturbance parallels an existing foreign facility and is within 0.6 m of that facility, the facility must be hand-exposed or hydrovaced 0.6 m surrounding the pipe. The facility owner/operator MUST be present during the ground disturbance.*
7. *Proceed Carefully with Mechanical Excavation, Refer to OP06-3 Trenching and Shoring*
 - *After a facility has been hand-exposed, mechanical excavation is permitted to within 0.6 m of the facility.*

8. *Stop Work Immediately in the Event of Equipment Contact with Facility*
 - *contact is made with any pipeline during excavation, which results in a puncture of or crack in the pipeline; a scratch, gouge, flattening or dent on the surface of the pipeline; or damage to the pipeline's protective coating*

The GD procedures manual also shows a typical excavation plan around a pipeline, indicating the zones where mechanical excavation is restricted (see figure 1).

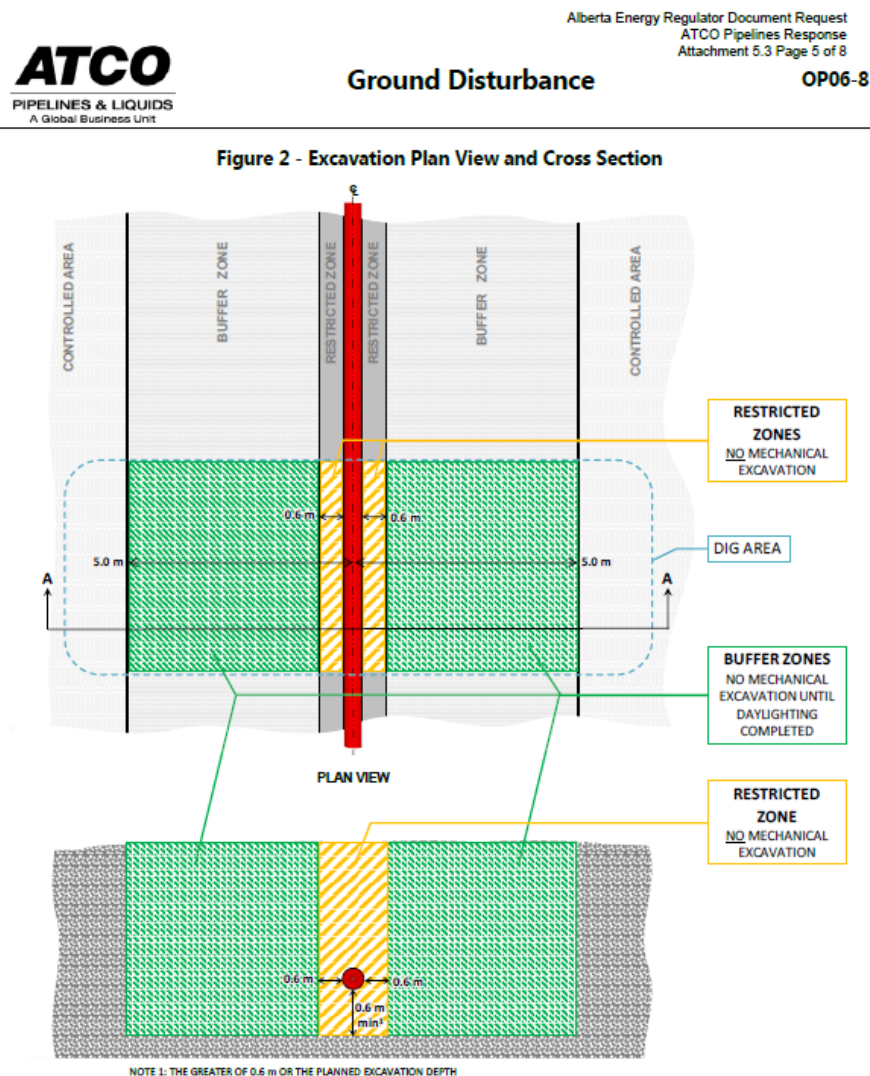


Figure 1. Example of an excavation plan from ATCO's ground disturbance procedures manual, *Manual OP06-8 Ground Disturbance*.

ATCO is the project pipeline owner and retained Parkland as the main contractor. ATCO also had staff and contractors on site to oversee the work. Although ATCO stated in witness statements that Parkland was responsible for all GD procedures and site safety, ATCO had the ability to shut down the site at any time if there was a safety concern or GD procedures were not being followed.

In a letter to the AER dated July 7, 2017, the senior manager of construction at ATCO said the following:

...the direct cause of the incident was failure to ensure established GD (ground disturbance) procedures were followed. Both AP's (ATCO Pipelines) and Parkland's GD procedures required maintaining valid locates, visual markings and/or site holes for all facilities within the working area. Following either GD procedure would have prevented the incident.

ATCO's incident investigation report, titled *Incident Investigation Report Pembina Expansion Project – Pembina Pipelines Facility Damage*, attached to this letter said that Parkland's GD procedures were not followed, and markings of underground facilities by Alberta One-Call were covered up. The report also said that ATCO's site inspector did not correct the deficiencies due to a "general sense of complacency in regards to buried facilities."

The company 3-D Line Locating Ltd. (3-D) on behalf of Alberta One-Call last visited the site on March 2, 2017, and marked out facilities, including underground pipelines, with flagging tape, spray paint, and flags. This visit was 54 days before excavation. Section 60(2) of the *Pipeline Rules* requires line locates for underground facilities to be completed at least 2 days and not more than 10 days before excavation occurs. The schematic in figure 2, which was prepared by 3-D for the site visit, shows all facilities and pipelines located inside and outside of the work area, including the Pembina pipeline that was struck.

Client: *Parkland Pipeline*

Location: *NW-28-48-07-w5m*

Date: *March 2, 2017*

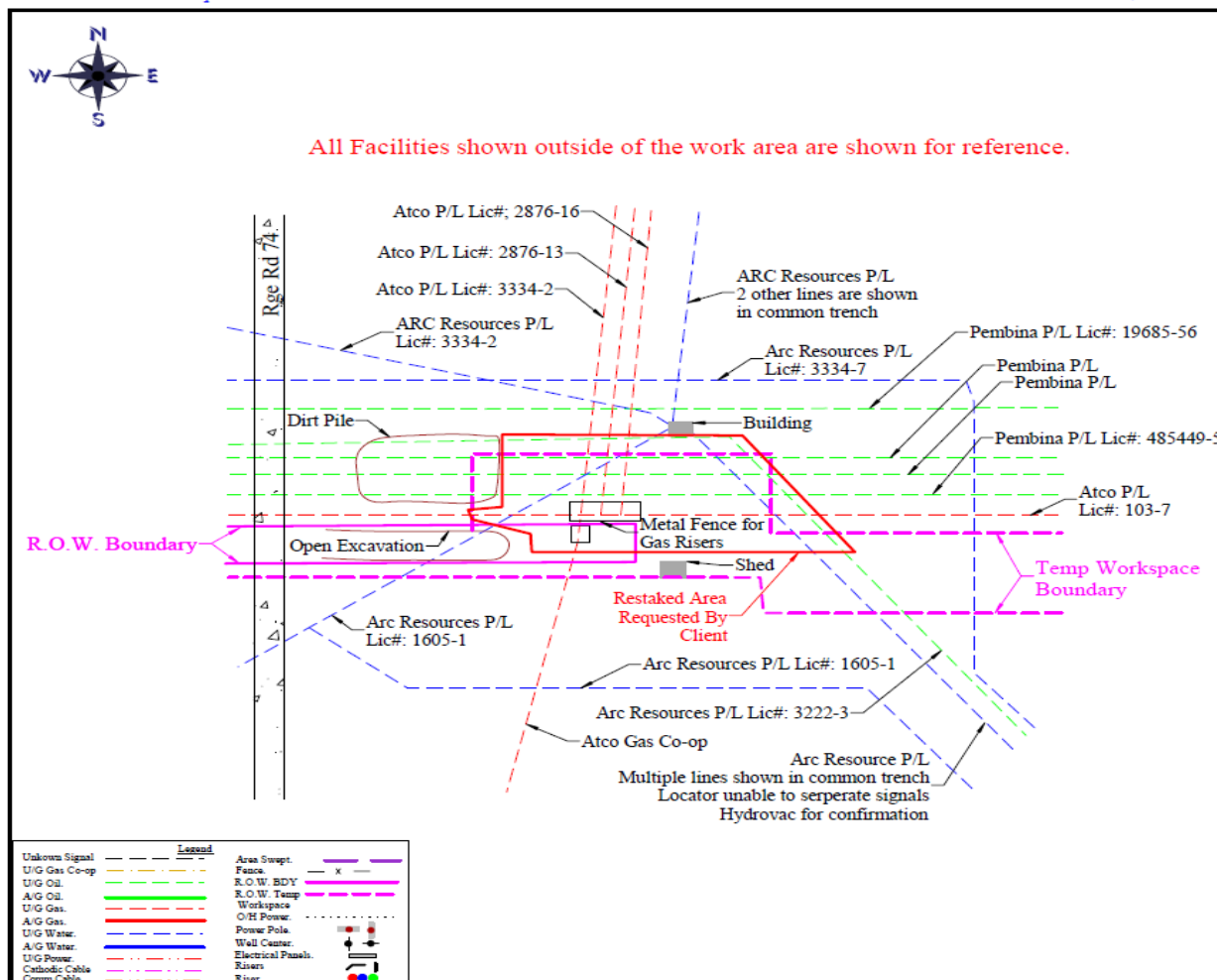


Figure 2. Schematic showing the location of underground facilities in the work area for ATCO's pipeline expansion project. Prepared by 3-D Line Locating Ltd. for Alberta One-Call on March 2, 2017. Pembina's pipeline licence 19685-56 is shown in the upper-right corner and marked in green.

The AER sent an investigation information request to ATCO on October 3, 2017. On November 3 and 9, 2017, ATCO provided many documents, including the following:

- ATCO and Parkland GD policies and procedures
- safety and GD permits issued on the day of the incident
- training and safety certificates for ATCO and Parkland staff and consultants
- ATCO's master service agreement for contract work with Parkland

Under Parkland's GD policies, a safe work permit and a GD permit were issued on the day of the incident for the excavation for ATCO's pipeline tie-in. The Parkland site supervisor issued the GD permit, and it was signed by the ATCO inspector. Both companies agreed that all requirements for GD were satisfied

based on Parkland and ATCO policies. However, the AER investigation found evidence that sections of the GD permit checklist were filled out but not followed as required by the *Pipeline Rules*.

Parkland's excavator operator struck Pembina's pipeline with the backhoe bucket while excavating within the 0.6 m dig area (i.e., the area where mechanical digging is prohibited around buried facilities). He later wrote to ATCO stating that he was unaware of the existence of the Pembina pipeline in the trench.

If GD procedures were followed, the 0.6 m dig area would have been either uncovered by hand digging or using a hydro vac. ATCO was supposed to do safety audits of Parkland procedures, but this did not happen.

According to the master service agreement between ATCO and Parkland, Parkland was responsible for safety and GD work. ATCO was the project site owner and was overseeing all work. ATCO had staff on site, including a safety inspector, site inspector, general inspector, field engineer, and a contracted assistant construction manager. All of these individuals had current GD training and construction safety training certificates. During witness interviews with ATCO staff, it was revealed that any ATCO staff member or contractor could stop work at any time if site conditions were felt to be unsafe.

ATCO retained Parkland to do similar work on other projects. ATCO staff, in submitted documents and witness statements, said that the main factor in Parkland's failure to complete GD procedures during the excavation work was familiarity and complacency while working with ATCO. ATCO failed to separate its supervisory field role from the construction work while overseeing that the work was done safely according to GD policy.

The AER interviewed the assistant construction manager on February 23, 2018. He was the main representative on site for ATCO's pipeline construction group and liaised with the senior manager of projects construction and the senior engineer of pipelines. He completed an incident summary of the Pembina line strike, which included the following information:

- He had concerns with wet site conditions and safety.
- The site was marked, but due to continuous wet conditions, rig mats were moved around the site, covering up painted lines, flagging, and offset lines for the pipeline right-of-way.
- Sections of the permit checklists were not followed, and ATCO and Parkland staff were just "going through the motions" and not adhering to GD policies and procedures.
- The three main contributing conditions to the line strike were negligence, complacency, and site conditions.

ATCO's senior engineer of pipelines and senior manager of projects construction were interviewed on March 23, 2018. Both were involved with the pipeline expansion project and had management oversight. The following information was revealed in these interviews:

- Both employees admitted that GD procedures were not followed.
- Both employees said that ATCO had veto powers over Parkland safety and GD procedures.
- Two weeks before the incident, ATCO shut down the site for one week because of poor working conditions.
- Everyone on site had the power to stop the work if conditions were felt to be unsafe.
- GD markings were observed a few weeks before the incident, but site conditions were wet, difficult to work in, and did not change.
- No new line locates and GD markings were made, so the backhoe operator did not know that the Pembina pipeline existed in the dig area.

The ATCO solicitor submitted a letter to the AER investigator on May 28, 2018, to clarify witness statements. The letter discussed a contradiction in the statements between the assistant construction manager, the senior engineer of pipelines, and senior manager of projects construction. The contradiction was about the roles of ATCO's pipelines construction group and ATCO's pipelines operations group. The ATCO solicitor stated the following:

To be clear, ATCO Pipelines Operations had no role or responsibilities pertaining to the relevant work leading up to or at the time of the incident.

The letter also discussed financial matters with project expenses and timelines.

After reviewing this letter, the AER investigator determined that the witness statement contradiction does not affect the contraventions noted in this report.

Contraventions

The investigation has uncovered contraventions of legislation under the jurisdiction of the AER. The following contraventions are also offences:

Contravention 1

Legislation/guideline name	Section	Citation
<i>Pipeline Act</i>	32(1)(a)	A person proposing to undertake or undertaking a ground disturbance shall, before commencing any work, operation or activity, (a) take all precautions reasonably necessary (i) to ascertain whether a pipeline exists within (A) the area in which the person proposes to undertake or undertakes the ground disturbance, and (B) the distance, prescribed in the rules, from the area referred to in paragraph (A),
<i>Pipeline Act</i>	52(2)(a)	A person who (a) whether as a principal or otherwise, contravenes any provision of this Act or of the rules or of any order, direction or licence under this Act, is guilty of an offence.

Findings for Contravention 1

ATCO and Parkland had GD policies and procedures in place, and according to the master service agreement, Parkland was responsible for onsite safety. ATCO had various staff on site to oversee the work by Parkland and could shut down the site for unsafe work conditions. ATCO failed to follow GD policy and procedures, and therefore did not take all precautions reasonable, contravening the *Pipeline Act*.

Safety permits and GD permits were issued and signed by both ATCO and Parkland on the day of the incident. The AER investigation determined that sections of the GD permit checklists were filled out but not followed by either ATCO or Parkland. This was verified by ATCO documents and witness statements.

The site was marked on March 2, 2017, with flagging tape, spray paint, and flags to show buried pipelines. These markings would have shown where the Pembina pipeline was located and where the backhoe could not be used due to underground pipeline hazards. However, on the day of the incident, site conditions were wet and muddy, causing rig mats to be moved around the site and cover these markings. This prevented ATCO and Parkland staff and contractors, who were familiar with these markings and trained in GD procedures and site safety, from being aware of the location of the Pembina pipeline and where the backhoe could not be used. This was the main cause for the Parkland backhoe operator striking the Pembina pipeline.

Elements of the Offence

<i>A person</i>	ATCO Gas and Pipelines Ltd.
<i>undertake or undertaking a ground disturbance</i>	Excavate to displace soil to expose a pipeline
<i>take all precautions to ascertain whether a pipeline exists within (A) ...; and (B) ...</i>	Failed to carry out ground disturbance procedures

Supporting Evidence for Contravention 1

- ATCO's *Incident Investigation Report Pembina Expansion Project – Pembina Pipelines Facility Damage*
- witness statements
- Parkland's GD permit issued on the day of the incident (April 25, 2017)
- ATCO's staff notes and photos
- ATCO's *Manual OP06-8 Ground Disturbance*

Contravention 2

Legislation/guideline name	Section	Citation
<i>Pipeline Rules</i>	60(2)	A person proposing to undertake a ground disturbance within the controlled area of a pipeline shall notify the licensee of the pipeline and Alberta One-Call at least 2 days and not more than 10 days, excluding Saturdays, Sundays and holidays, prior to commencing the ground disturbance so that Alberta One-Call may notify the licensee of any buried pipeline of the intent to disturb the ground and request that the licensee identify and mark the location of the pipeline.
<i>Pipeline Act</i>	52(2)(a)	A person who (a) whether as a principal or otherwise, contravenes any provision of this Act or of the rules or of any order, direction or licence under this Act, is guilty of an offence.

Findings for Contravention 2

On March 2, 2017, 3-D, on behalf of Alberta One-Call, marked out the work site, including the location of the Pembina pipeline, with flagging tape, spray paint, and flags to show the buried pipelines. The *Pipeline Rules* indicate that the work site must be marked between 2 and 10 days before a GD occurs. The markings on March 2 were made 54 days before the excavation work occurred. Therefore, ATCO did not notify Pembina and Alberta One-Call within the specified time period, which contributed to the pipeline strike. This finding was confirmed by ATCO witnesses and documents submitted by ATCO, including the 3-D schematic prepared for the March 2, 2017, site visit (figure 2).

Elements of the Offence

<i>A person</i>	ATCO Gas and Pipelines Ltd.
<i>proposing to undertake a ground disturbance</i>	Excavate soil to expose a pipeline
<i>notify the licensee of the pipeline and Alberta One-Call</i>	Failed to notify Pembina and Alberta One-Call
<i>at least 2 days and not more than 10 days, ... prior to commencing the ground disturbance</i>	Site marked outside of the required 2- and 10-day time period
<i>request that the licensee identify and mark the location of the pipeline</i>	

Supporting Evidence for Contravention 2

- witness statements
- 3-D's site schematic prepared on March 2, 2017
- Parkland's GD permit issued on April 25, 2017
- ATCO's *Manual OP06-8 Ground Disturbance*
- ATCO's *Incident Investigation Report Pembina Expansion Project – Pembina Pipelines Facility Damage*

Contravention 3

Legislation/guideline name	Section	Citation
<i>Pipeline Rules</i>	65(3)	A person proposing to undertake a ground disturbance that will cross or be carried out within 5 metres of an existing pipeline shall, before commencing any mechanical excavation, locate and expose the existing pipeline by hand excavation.
<i>Pipeline Act</i>	52(2)(a)	A person who (a) whether as a principal or otherwise, contravenes any provision of this Act or of the rules or of any order, direction or licence under this Act, is guilty of an offence.

Findings for Contravention 3

The *Pipeline Rules* and ATCO's GD policy state that within the 5 m dig area, a pipeline must be exposed by hand excavation or using other nonmechanical means, such as a hydro vac, due to the risk of striking the pipeline. The AER investigation determined that this did not happen, resulting in a backhoe striking the Pembina pipeline.

The AER investigation discovered that the Parkland foreman responsible for overseeing GD procedures was replaced two days before the line strike. Witnesses stated that information about pipeline locates previously marked by 3-D on March 2, 2017, was not disclosed to the new foreman. Poor site conditions

and the moving of rig mats obscured previously marked pipelines. ATCO did not get involved or intervene because it relied on Parkland to carry out GD procedures.

Parkland's excavator operator confirmed that he was not informed of the Pembina pipeline location in the dig area and therefore was unaware that the excavator could not be used in that part of the work site, resulting in the pipeline strike. The AER investigation identified the cause of the Pembina pipeline strike as complacency and negligence due to not following GD procedures, as supported by ATCO documents and witness statements.

Elements of the Offence

<i>A person</i>	ATCO Gas and Pipelines Ltd.
<i>undertake a ground disturbance</i>	Excavate soil to expose a pipeline
<i>within 5 metres of an existing pipeline</i>	Did not follow GD policies and procedures
<i>before commencing any mechanical excavation</i>	Did not follow GD policies and procedures
<i>expose the existing pipeline by hand excavation</i>	Pembina pipeline struck with a backhoe bucket within the 5 m dig area

Supporting Evidence for Contravention 3

- witness statements
- 3-D's site schematic prepared on March 2, 2017
- Parkland's GD permit issued on April 25, 2017
- *ATCO Manual OP06-8 Ground Disturbance*
- *ATCO's Incident Investigation Report Pembina Expansion Project – Pembina Pipelines Facility Damage*

Due Diligence

The *Pipeline Act* (section 54(2)) provides a defence to certain offences. The defence requires the AER to consider whether a regulated party can establish on a balance of probabilities that the regulated party took all reasonable steps to prevent the commission of contraventions that are offences. This is known as "due diligence." Having established the contraventions above, the AER considers whether the evidence establishes a defence.

After reviewing all the available information, the investigator concludes that the regulated party has not taken all reasonable steps to prevent the commission of the contraventions based on the following.

ATCO had all the correct staff and policies in place to prevent the incident from occurring; however, these policies were not followed by ATCO and Parkland staff and contractors, as confirmed by statements made in corporate documents and by witnesses. Even on the morning of the incident, a safety permit was issued with a GD permit and was signed off by ATCO, despite not carrying out these safety procedures. ATCO's good working history with Parkland on other projects resulted in complacency between the two companies, which caused the incident.

The wet site created difficult working conditions. Water and mud forced ATCO to move rig mats so that heavy equipment would not sink into the mud. This caused GD markings to be covered up or obscured from plain sight. If workers cannot establish where underground pipelines and facilities are located, then the hazard is created that something will be hit or damaged during excavation.

ATCO admitted through corporate documents and witness statements that it did not follow its own GD procedures. ATCO also admitted to signing off on GD and safety permits completed by Parkland while not carrying out these same procedures when the work actually occurred. ATCO complacency and company negligence caused the Pembina 10-inch steel condensate pipeline strike. The investigator concludes that ATCO did not take all reasonable steps to prevent the commission of the contraventions.

Compliance History

Between 2013 and 2018, ATCO reported four high-risk pipeline incidents.

Conclusion and Recommended Counts

The investigation into the pipeline strike of Pembina's condensate pipeline reported on April 25, 2017, has identified three potential contraventions of the *Pipeline Act* and *Pipeline Rules*.

Mitigating Factors

- The site was shut down immediately, and the CIC was informed of the incident.
- ATCO revised its GD policies and procedures after the incident.

Aggravating Factors

Two other pipeline strikes occurred at different ATCO sites in 2017; GD procedures were not followed in both cases:

March 26, 2017

- A third-party contractor hit and punctured an ATCO gas line, releasing 49 000 cubic metres of natural gas.
- ATCO staff member was on site but at another location at the time of the incident.

- ATCO inspector did not verify that the third-party contractor followed GD procedures set out in the permit.
- ATCO determined that the incident was caused by not following GD procedures.
- ATCO said that it would review its GD procedures.

April 7, 2017

- A third-party contractor hit an ATCO gas pipeline and damaged its coating.
- ATCO staff were on site but did not have the GD permit on hand.
- ATCO determined that the incident was caused by not following GD procedures.
- ATCO said that it would review its GD procedures.

The following counts are recommendations for the statutory decision maker. These are not final and may change upon review and further evaluation of the investigation findings.

Count 1

On or about April 25, 2017, in the province of Alberta, ATCO Gas and Pipelines Ltd. did fail to take all precautions reasonably necessary while undertaking a ground disturbance located at LSD 13-28-048-07W5M, contrary to section 32(1) of the *Pipeline Act*, which is an offence under section 52(2) of the *Pipeline Act*.

Count 2

On or about April 25, 2017, in the province of Alberta, ATCO Gas and Pipelines Ltd. did fail to notify the licensee of pipeline licence 19685-56 and Alberta One-Call at least 2 days and not more than 10 days before undertaking a ground disturbance, located at LSD 13-28-048-07W5M, contrary to section 60(2) of the *Pipeline Rules*, which is an offence under section 52(2) of the *Pipeline Act*.

Count 3

On or about April 25, 2017, in the province of Alberta, ATCO Gas and Pipelines Ltd. did fail to locate and expose pipeline licence 19685-56 by hand excavation before undertaking a ground disturbance, located at LSD 13-28-048-07W5M, contrary to section 65(3) of the *Pipeline Rules*, which is an offence under section 52(2) of the *Pipeline Act*.