Alberta Energy Regulator

Follow-Up to the 2014 Plains Midstream Canada Audit

September 10, 2018

Acknowledgement

Plains Midstream Canada acknowledges that the findings within the report are correct and representative of current conditions.

The AER recognizes the company's cooperation in providing supporting documentation, participating in interviews, and sharing lessons learned.

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Alberta Energy Regulator
Suite 1000, 250 – 5 Street SW
Calgary, Alberta
T2P 0R4

Inquiries: 1-855-297-8311
Email: inquiries@aer.ca
Website: www.aer.ca

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1 Background

On July 4, 2013, the Alberta Energy Regulator (AER) issued an order under section 22 of the *Oil and Gas Conservation Act*. In the order, the AER committed to conducting a full audit of the operations of Plains Midstream Canada (PMC) to determine the ability of the company to operate within the AER's rules and requirements. The AER issued the order due to a significant number of noncompliances that were identified as a result of pipeline incidents and AER compliance assurance activities between January 1, 2011, and July 4, 2013.

The audit was completed by the AER in 2014 and assessed 112 criteria. These criteria were derived from several sources, including legislation, industry standards, and industry best practices. The results indicated that 47 criteria were partially met and 7 were not met.

In 2016, the AER conducted an interim review to confirm that PMC was making progress on meeting the 54 outstanding criteria. The review determined that PMC had made progress on each of the outstanding criteria and was working towards fully meeting them by 2018.

2 Objective and Scope

The 54 outstanding criteria from 2014 fell within the following five areas:

- risk management,
- emergency preparedness and response,
- regulatory reporting and administration,
- operations management programs, and
- management oversight and internal controls.

The objective of this 2018 review was to verify that all outstanding criteria from the 2014 audit report have been met. The scope was limited to ensuring that processes and documentation are in place that demonstrate that PMC has addressed the outstanding criteria.

3 Methodology

On February 2, 2018, the AER held a meeting with PMC to discuss the scope and implementation of the review. Prior to the meeting, the AER clarified what would be required in order to have a criterion designated as being met.

The review involved assessing PMC documents relating to the corrective actions and, during visits to PMC's offices on March 13–15, 2018, interviewing subject matter experts and viewing evidence of PMC's business processes and controls. Information gathered during the 2016 interim review was also used to assess criteria status.

4 Findings and Conclusion

The AER has found that all outstanding criteria from the 2014 audit have been met. The detailed findings are in appendix 1, which also provides the 2014 audit findings for each of the 54 partially met or not met criteria.

Although many of the corrective actions taken by PMC are multiyear initiatives, the AER has confirmed that the associated programs and processes have been developed and implemented. The AER has also determined that there are appropriate processes and management oversight to encourage program maturation and enhancements.

The AER has concluded its review of the 2014 audit and requires no further follow-up.

Appendix 1 Detailed Findings

1.0 Operations Resource Management

1.1 Staff Training and Competency

Audit Criteria:

1.1.1 Organizational structure enables the organization to effectively communicate the roles, responsibilities, and authority of all management and staff. Audit criterion is based on general concepts from *CSA Z662-11* clauses 3.1.2, A.4.4.1, and A.5.2.1 and is not a direct quote from these sources.

1.1.2 Individuals are trained and sufficient to ensure that the organization can design, construct, operate, and abandon its facilities in a manner that fosters safety and environmental protection. Audit criterion is based on general concepts from *CSA Z662-11* clauses 3.1.2(c), A.5.2.1, E.5.1, and N.7.1 and is not a direct quote from these sources.

1.1.3 Training programs and requirements are in place to ensure that staff has the appropriate competencies to fulfill their duties on an ongoing basis. Audit criterion is based on general concepts from *CSA Z662-11* clauses 3.1.2(c), A.5.2.1, N.7.1, N.7.2, and N.7.3 and is not a direct quote from these sources.

Reference Year	Assessment	Has the criteria been met?
1.1.1		
2014	Changes to organizational structure are ongoing, though communication of those changes is not always distributed through the organization. Training and competency requirements were not defined in the job descriptions provided. Accountabilities are not defined (e.g., the change of a MOP decision was taken without a formal sign-off and communication).	Partially met
2018	PMC has a management of change (MOC) program and dedicated software system to manage and disseminate information about organizational change across the company. Organizational change is a dedicated type of change within the MOC process. A process exists to develop role-specific job descriptions. These descriptions identify the responsibilities, accountabilities, and training requirements of the role. The development of role descriptions across the organization is ongoing.	Met

1.1.2		
2014	Control centre procedures are complete, implemented, and supported by training. In the field and office there are some guidelines and procedures and a review process in place and experienced people, but there is a lack of standard procedures to train people to. Mentorship, supervised work and hands-on training provided by senior pipeline operators/ supervisors are the primary training methods. Supervisors assess competency and identify gaps in training/competency (for supplementation with courses, workshops, etc.) based on the supervisor's experience and in conjunction with the individual's input. Quarterly performance assessment is a grading of soft skills only; therefore, competency at specific tasks could not be assessed for office and field personnel. Development plans are reviewed annually. (A training and competency program is in place, but it is not a structured program. At this point there is not a good industry system for training and competency for operations – this is a work in progress for many organizations).	Met (control centre) Partially met (office) Partially met (field)
2018	Role-specific competency standards have been established and captured within observation checklists. These checklists are used by direct leaders in conjunction with a formal competency assessment procedure to assess employee competency. Identified training gaps are then used to design an employee-specific action plan to document relevant training and mentorship, as required.	Met
1.1.3		
2014	The training program is more formally developed for control centre personnel than for office or field personnel. No formal matrix for technical competency requirements for the office and field engineering was found in place at the time of the audit. The control centre has current, complete, documented, and accessible industry-leading processes for start-up and shutdown. While groups interviewed are aware of the existence of Standard Operating Procedures (SOPs), a sampling of procedures reveals that they are no up-to-date (e.g., referencing outdated CSA versions, incorrect, incomplete). Many training and competency programs are newly implemented or in early stages of implementation. Interviewees gave the sense that there is a good understanding of roles and responsibilities, processes, and handoffs between PMC groups.	Met (control centre) Not met (office) Not met (field)

2018	Role descriptions that identify accountabilities, responsibilities, and training requirements are in development for the entire organization. A number of role descriptions within operations have been completed and approved by senior leadership, while descriptions for remaining roles have been prioritized and are in development. These role descriptions, in addition to a competency assessment process and observation checklists, are used by PMC's leadership to assess employee competency. PMC has a learning management system (LMS) that develops role-specific learning profiles for employees based on role descriptions. These profiles standardize training across the control centre and field and office environments by specifying the training required of employees based on the role that they occupy within the organization. Required training identified in the learning profile is assigned, tracked, and monitored within the LMS.	Met

2.0 Operational Controls

2.1 Corrosion Control

Audit Criteria:

2.1.1 *CSA Z662-11* clause 9.1.3: Operating companies shall establish and maintain the procedures necessary to satisfy the requirements of Clause 9, except when an engineering assessment determines that specific corrosion control practices are not necessary. Corrosion control procedures shall be included in the operating company's operating and maintenance manuals.

2.1.3 *CSA Z662-11* clause 9.3.2: Coatings shall be applied in accordance with documented procedures and an appropriate quality program. Such procedures, as applicable, shall address

(a) personnel qualification;
(b) material quality assurance (coating and abrasives);
(c) environmental controls and monitoring (ambient temperature, steel temperature, humidity, etc.);
(d) surface preparation techniques and controls;
(e) application techniques and controls;
(f) curing;
(g) finished coating inspection and testing;
(h) repair techniques; and
(i) record-keeping.

2.1.5 *CSA Z662-11* clause 9.9.2: Operating companies shall establish, by means of surveys that their cathodically protected pipeline systems meet the criteria selected for cathodic protection. Such a satisfactory state of cathodic protection shall be verified at regular intervals and the operating company shall take remedial action to correct any deficiencies found in such surveys.

2.1.7 *CSA Z662-11* clause 9.7: Tests shall be carried out to determine the presence or absence of stray direct currents. Where stray direct currents are present, measures shall be taken to prevent external corrosion and other detrimental effects…

2.1.8 Documented procedures are available for preservation of material and handling of piping during installation and commissioning and include preservation of stock items. Audit criterion is based on general concepts from *CSA Z662-11* clause 10.11.3(c) and is not a direct quote from this source.

2.1.9 *CSA Z662-11* annex D.7: The operating company shall, using the inspection report provided by the inspection contractor, identify those corrosion imperfections whose reported dimensions would make them defects (see clause 10.10.2), taking into account allowances for errors in the reported dimensions based upon the expected inspection performance. The excavations of such reported imperfections shall be prioritized, taking into account their relative severity, their accessibility, and the potential consequences of failure.

Reference Year	Assessment	Has the criteria been met?
2.1.1		
2014	PMC does not maintain corrosion control procedures (except one procedure for sampling) as part of the SOPs. PMC has stated that their O&M manual is the SOP manual.	Not met
2018	An SOP for corrosion control has been developed.	Met
2.1.3		
2014	Between two PMC procedures: Painting & Coating and Replacing Pipeline Coatings, all the requirements of *CSA Z662-11* are met; however, the two procedures do not cross-reference on another of could be combined into once procedure to ensure that all key points are addressed.	Partially met
2018	The SOP for painting and coating and the SOP for replacing pipeline coatings have been updated to cross reference one another.	Met

2.1.5		
2014	The regular inspection/monitoring frequency for pipe to soil potential surveys, rectifier readings, bond current survey, and stray current survey are in line with the Canadian Gas Association (CGA) Recommended Practice OCC-1-2013. However, frequencies notes as “when applicable” or “as required” leave room for individual discretion. Malfunctioning rectifiers are not addressed in the procedure.	Partially met
2018	The SOP for pipeline cathodic protection monitoring has been updated; “when applicable” or “as required” statements have been removed. Malfunctioning rectifiers are appropriately addressed within the procedure.	Met
2.1.7		
2014	There are some gaps identified in direct current (DC) and alternating current (AC) interferences. Some of the recommendations to address cathodic protection deficiencies have not been addressed and continue to reoccur as noted in the annual cathodic protection surveys.	Partially met
2018	The SOP for pipeline cathodic protection monitoring has been updated to address recommendations for annual cathodic protection surveys.	Met
2.1.8		
2014	PMC does not maintain a pipe storage procedure and uses instead a Shaw pipe protection preservation procedure. Although the procedure addresses preservation of pipe at site, it does not address elements of preservation such as preservation of stock item or standby, etc.	Partially met
2018	An SOP for storage of steel pipe has been developed.	Met
2.1.9		
2014	Documentation provided for review shows the ILI report identified defects were addressed based on likelihood, and digs were executed. The basis for prioritization of digs, accounting for their relative severity, their accessibility, and the potential consequences of failure, have not been addressed in any document made available for review.	Partially met
2018	A dig prioritization process has been developed.	Met

2.0 Operational Controls

2.3 Installations

Audit Criteria:

2.3.2 *CSA Z662-11* clause 10.11.4.1: Repair sleeves may be used as permanent repairs, provided that the following is applicable:
(ii) design compatibility of repair sleeves and piping materials;

2.3.3 *CSA Z662-11* clause 6.2.6.2: Ditch depths shall be sufficient to ensure that the applicable depth of cover specified in clause 4.11 can be achieved.

Reference Year	Assessment	Has the criteria been met?
2.3.2		
2014	"Installation of Sleeves" SOP document number 6.46, page 2, section "Installation Planning Guidelines" considers design compatibility of repair sleeves and piping material. However, this SOP refers to *CSA Z662-03* instead of the *CSA Z662-11*.	Partially met
2018	PMC reviewed the SOP for installation of sleeves and determined it to be obsolete. As sleeve installation is specific to the type of sleeve and the specific material properties of a pipeline, for sleeve installation mitigation a unique sleeve installation will be developed in consultation with PMC engineering. As this SOP no longer exists, the 2014 audit finding is no longer relevant.	Met
2.3.3		
2014	Ditch depths are identified in the excavating and trenching procedure; however, the procedure does not address depths of cover required for different scenarios.	Partially met
2018	The pipeline construction document reviewed provides specifications for depth of cover.	Met

2.0 Operational Controls

2.4 Materials

Audit Criteria:

2.4.3 *CSA Z662-11*, clause 3.1.2(f): The safety and loss management systems shall include the following elements: (f) operational controls, including the development of procedures for… design and material selection…

2.4.4 *CSA Z662-11* clause 5.2.5.1: Steel fittings, flanges and valves shall be made to a standard or specification given in Table 5.3; with the acceptable materials and limitations indicated…

Reference Year	Assessment	Has the criteria been met?
2.4.3		
2014	No documentation related to the selection of suitable materials (field purchases such as small parts) was made available for review during the office or field interviews. Experienced operators are selecting small parts based on their experience with the system.	Partially met
2018	The piping material documents reviewed provide specifications for the selection of suitable materials.	Met
2.4.4		
2014	Valve data provided meets the requirements of *CSA Z662-11*. No documentation on the standard or spec to which fittings and flanges were made was available for review.	Partially met
2018	The piping material documents reviewed provide specifications regarding fittings and flanges.	Met

3.0 Operations Change Management

3.1 Management of Change

Audit Criteria:

3.1.1 Operator should have a documented change management process with accountabilities defined and the process supported by training. Audit criterion is based on general concepts from *CSA Z662-11* clauses 3.1.2 (g), A.3.4, and N.6.1 and is not a direct quote from these sources.

3.1.2 Changes in a specification, standard, procedure, or company organizational structure are evaluated and actively managed to limit adverse and unintended operational impacts. Audit criterion is based on general concepts from *CSA Z662-11* clauses A.3.4.1, and N.6.1 and is not a direct quote from these sources.

3.1.3 Procedures for internal and external communications are in place to ensure that employees and stakeholders receive the information they need regarding operational changes to ensure safe operations and environmental protection. Audit criterion is based on general concepts from *CSA Z662-11* clauses A.3.4.2, and A.4.3.2 and is not a direct quote from these sources.

3.1.4 If imperfections are found in operating assets, evaluations are made to determine the suitability of that asset and similar assets for continued service. Audit criterion is based on general concepts from *CSA Z662-11* clauses 10.10.1.1, and N.13.1 and is not a direct quote from these sources.

Reference Year	Assessment	Has the criteria been met?
3.1.1		
2014	There is a documented MOC process and formal training program in the Calgary office and field locations to evaluate and manage changes in specification, standards, and procedures. Additionally, Crude Operations has a specific documented process to support the general MOC procedure. The MOC software is not used for organizational changes, although PMC documents indicate explicitly that this type of change is within MOC scope. Management documents state that PMC follows *CSA Z662-11* annex N, which requires implementation of an organizational change program. The organizational change process in use at the time of the audit is informal. Access to the MOC software and procedures are available to employees on the PMC intranet, and although there are visual reminders throughout PMC offices and field offices, MOC use is not evaluated as part of the individual performance assessments.	Partially met

2018	A formal and documented MOC process exists and is supported by a dedicated software system. The MOC process accommodates organizational, technical, and administrative changes.	Met
3.1.2		
2014	Risk evaluation workflow is managed through the MOC software; it requires an assigned coordinator and assignment of a subject matter expert (SME) who must comment on the implication of the change on their area of expertise and/or complete template checklists of pre-identified considerations. There is provision in the software to generate custom checklists. A sampling of procedures owned by the office and field, which PMC defines as “critical”, were found to be nonconforming with respect to review frequency requirements as outlined in PMC’s pipeline maintenance manual. PMC tracks, trends, and reports to upper management on the number of overdue MOC. There was no evidence that there is trending of MOC data—e.g., recurring types of MOC.	Met (control centre) Partially met (office) Partially met (field)
2018	Existing SOPs have been reviewed and updated when required. A document control procedure has been developed to ensure that documents are reviewed and updated within their associated review timelines. Documents are assigned to individual owners who are responsible for the document review and updates. Document owners are notified of an approaching document review deadline via the MOC process. Reporting of MOC key performance indicators (KPI) is completed monthly and communicated to leadership and operational groups. The reports detail information on efficiency metrics and performance indicators, such as the types of MOC per location and associated status (i.e., overdue).	Met
3.1.3		
2014	When a user provides updates within a particular MOC file, the MOC software automatically and immediately sends an e-mail to notify all of the SME identified in that MOC. Throughout PMC, changes are communicated verbally, via mass e-mails, and via intranet announcements. In a sampling of MOC reviewed, supporting documents were on occasion not attached to the MOC file.	Partially met

2018	MOC action items are assigned to representatives within the work groups affected by the proposed change. Action items are assigned, communicated, and managed using dedicated MOC software. The representatives complete checklists to ensure that the required actions and information are complete. A designated employee of higher authority provides a final review of the MOC action item to ensure that all checklist steps have been completed and the required documentation attached prior to the MOC action item being finalized.	Met
3.1.4		
2014	At the time of the audit, the PMC risk assessment process was undergoing changes. There was no formal evaluation process available for review for change management purposes. Data reviewed provided an overview of an MOC used to generate an MOP reduction due to a crack feature identified by the ILI tool (15.5 km downstream of Mitsue-24” Rainbow pipeline); the process presented via e-mails indicated good handling of the situation form the time the feature was identified until the validation dig and repair was performed, and another MOC was used to remove the pressure restriction.	Partially met
2018	An operational risk management (ORM) matrix and associated guidance document have been developed. Upon the initiation of an MOC action item, a health and safety assessment of the proposed change is completed using the ORM matrix. KPIs for the MOC program have been developed and are being used to monitor the progress of MOC action items. Reporting of MOC KPIs is completed monthly and communicated to leadership and operational groups. The reports include information on performance indicators, such as the types of MOC action items per location and associated status (e.g., overdue).	Met

3.0 Operations Change Management

3.2 Acquisitions

Audit Criteria:

3.2.3 Operator should develop an asset-specific Integrity Management Plan (IMP) or ensure that the asset is included in an existing IMP. Audit criterion is based on general concepts from *CSA Z662-11* clauses 3.2, 3.3.3, N.2, and the Center for Chemical Process Safety's Guidelines for Acquisition Evaluation and Post Merger Integration and is not a direct quote from these sources.

3.2.4 Operator should carry out necessary remedial work prior to placing the asset in operation. Audit criterion is based on general concepts from *CSA Z662-11* clause N.11.4 and the Center for Chemical Process Safety's Guidelines for Acquisition Evaluation and Post Merger Integration and is not a direct quote from these sources.

Reference Year	Assessment	Has the criteria been met?
3.2.3		
2014	The risk assessment process for pipeline safety is informal. It is based on gathered working knowledge and operating procedures that are housed in PMC's intranet. At the time of the audit, an IMP was in place but not updated as required. Documents were not provided as evidence of use of the PMC risk matrix to demonstrate that PMC takes into account the results of risk assessments and engineering assessments.	Partially met
2018	The documented pipeline risk assessment process and associated risk matrix demonstrate the consideration of risk assessment and engineering assessment results. The pipeline integrity management program is currently under review and is expected to be approved in the second quarter of 2018. A document control procedure has been developed to ensure that documents are reviewed and updated within their associated review timelines. Documents are assigned to individual owners who are responsible for document review and updates. Document owners are notified of an approaching document review deadline via the MOC process.	Met

3.2.4		
2014	A report of pipeline integrity recommendations for acquisitions sampled was not provided at the time of the audit. A due diligence report sampled provides evidence of consideration of and budgeting for integrity activity. Inspection activity (e.g. ILI) for acquisitions sampled was carried out within the timeframe required under PMC's Pipeline Integrity Management Manual (PIMM). No evidence was provided at the time of the audit that other issues identified in the due diligence of sampled acquisitions were followed up on (e.g., sleeve excavation and inspection, depth of cover rectification, aerial inspection program re-evaluation, etc.). Interviews indicated that there is a process to evaluate integrity prior to acquisition and budget for follow-up remediation.	Partially met
2018	The PIMM meets the criteria. Due diligence reports are created at the time of asset acquisition and include a section on integrity. Reports are developed by SMEs and reviewed by senior management.	Met
4.0 Operations Continuous Improvement **Audit Criteria:** 4.0.4 Quality, integrity, and safety and loss management programs are reviewed at planned intervals to ensure their continuing suitability, adequacy, and effectiveness. Audit criterion is based on general concepts from *CSA Z662-11* clauses 3.1.2(h)(i) and (iii), N.15.1, and N.15.2 and is not a direct quote from these sources.		
Reference Year	**Assessment**	**Has the criteria been met?**
4.0.4		
2014	PMC's *PIMM* section 1.3.11 (page 20) states "The Plains Pipeline Integrity Management Program shall be reviewed at least once a year by the Director, Asset Integrity and Vice President, Crude Oil Operations. The review shall address the effectiveness of the Pipeline Integrity Program." There was no evidence that the PIMM was reviewed. Asset integrity interviews identified that development is in progress with a target of June 2014. It is unclear whether PMC's internal audit program is aligned with outputs of the risk management program because program development is in process. No documents related to targets or outputs were seen at the time of the audit. Critical procedures are to be updated annually, according to PMC standard document 10.02 Document Control Guideline, dated 01-Oct-2013 – "Critical Safe Operating Procedures are subject to a scheduled review process once a year." Document tested do not conform to PMC's requirements.	Not met

2018	A document control procedure has been developed to ensure documents are reviewed and updated within their associated review timelines. Documents are assigned to individual owners who are responsible for document review and updates. Document owners are notified of an approaching document review deadline via the MOC process. The pipeline integrity management program is currently under review and is expected to be approved in the second quarter of 2018. PMC's ORM program and associated ORM matrix have been developed and implemented. The Operations Assurance Framework outlines annual and 6-year risk-based assurance plans that are approved by PMC's operational leadership team. PMC's operational assurance program has been developed to include all operations under one process. Asset Integrity KPIs have been developed and are being used to measure progress in achieving specific business targets. A structured KPI reporting process exists that includes multiple report types and timelines and involves internal stakeholders, including senior management. The information in these reports is fed into PMC's annual reporting process.	Met

5.0 Risk Assessment and Mitigation Practices

5.1 Integrated Risk Management

Audit Criteria:

5.1.3 Risk management policy in place, appropriately communicated, and clearly states objectives, accountabilities, and responsibilities (ISO 31000 section 4.3.2)

5.1.4 Internal and external context of the organization is understood and accounted for in the design of the risk management program (ISO 31000 sections 4.3.1 and 5.3)

5.1.6 Risk management is embedded into the policy development, business and strategic planning and review, and change management processes (ISO 31000 section 4.3.4)

Reference Year	Assessment	Has the criteria been met?
5.1.3		
2014	The current risk management framework has been ad hoc, and there has been a lack of consistency. PMC has identified this as an issue, and it is being addressed via the Operations Management System (OMS) and its associated ORM Policy. The emerging issue/risk of operating under multiple operating management systems was identified by PMC in April 2013. The ORM policy currently being implemented by PMC includes ensuring that risk management practices are embedded and integrated throughout the organization. Progress has also been made in the last year with regards to developing a risk assessment process specific to pipeline asset integrity. However, these programs are major organizational undertakings and are not fully implemented at this time, nor are they aligned with each other. A draft RACI chart has been created that identifies the accountabilities for the various elements and sub-elements of the OMS and is primarily composed of EVPs, VPs, and directors. The EVP of Operations is accountable for risk assessment and management. Directors will be responsible for monitoring and mitigating risk, while executives will have the ultimate accountability for how well risk management practices are carried out under OMS.	Partially met
2018	The OMS and associated RACI chart have been developed and implemented, ensuring that all operational programs are integrated and aligned throughout the organization. The ORM program has been implemented and is being used to standardize the approach to risk management activities across the organization. The pipeline risk assessment process is aligned with the OMS and the ORM program.	Met

5.1.4		
2014	Workshops with staff were conducted in 2013 to gain a better understanding of how PMC operates and included an assessment of risk management practices. Risk management practices are currently varied between field areas, but the OMS implementation is underway to achieve alignment; in particular between LPG and crude oil operations. Alignment of current and new procedures is in progress and will be completed on a priority basis as part of the OMS Capability Transfer Process. For example, the Critical Task Inventory and Analysis Procedure was a draft and not finalized prior to the decision to implement OMS. However, PMC is currently working towards adapting those practices within OMS elements. The PAA SWOT exercise identified threats which are related to risk management practices. In order to achieve alignment in pipeline asset integrity practices, staff from PAA meet with PMC staff and this activity is reported to the PMC Executive and PAA Chief Executive Officer (CEO) and Chief Operating Officer. PMC's approach to risk management for asset integrity is in a state of flux as the Asset Integrity department is still developing their new process and has yet to align it with OMS risk management practices which are also still under development. Some risk assessment processes are designed with specific desired outcomes and changing them directly to align with a broader framework without allowing for flexibility could have unintended consequences. Principles and commitments are identified for the Stakeholder Relations Framework, including a commitment to minimizing and mitigating environmental impacts. Additionally, PMC's Environmental, Health, And Safety (EH&S) policies govern all activities. These corporate policy statements articulate the company's expectations to ensure all activities are conducted to protect the health and safety of its personnel and the public as well as the environment and that their activities shall be complaint with applicable regulations and standards.	Partially met

2018	The OMS consolidated rollout plan facilitated the complete integration and alignment of PMC's current processes into the OMS. The OMS is used to guide and standardize operational activities to ensure compliance with requirements and proper management of operational risks. The Asset Integrity team has developed and implemented a pipeline risk assessment process to assess and manage risks to its pipelines. The risk assessment process has been aligned with the OMS.	Met
5.1.6		
2014	The OMS is being implemented for the purpose of acting as a bridge between corporate strategy and operational execution in addition to helping identify specific areas at risk for facilitating effective decision making. However, specific risk tolerance levels still need to be determined as there may be varying perspectives on what the priorities are. If the amount of risk the organization is willing and able to accept in pursuit of value is not defined clearly, it becomes more challenging to determine where best to allocate resources and mitigate risks. The Organizational Change Management Communication and Engagement Plan (preliminary draft) is in place and identifies the audiences, communication purpose, frequency, and type of communication being used for the OMS implementation. Goals and key initiatives are established annually for the Operations and 5.1.6) EHSL&R Departments. The PAA SWOT list (threats and risks) is reviewed three times a year during strategy sessions (including operations) with subsequent policy development occurring to address risks. Given the changes to PMC in the last three years (e.g., closure of a $1.67 billion BP asset acquisition in April 2012), the frequency with which IHAs are conducted is not in accordance with what is prescribed in the Environmental Safety and Management System (ESMS), which has been in place since July 2010. Using the ORM policy, PMC's plan is to replace this process through the development of risk registries by operational area and functional group.	Partially met

	The PIMM requires that the risk assessment and a review of issues, trends, pipeline age, type of service, environment, inspection and monitoring results, and proximity to personnel or other third-party facilities are part of the annual pipeline analysis that results in an annual integrity plan and budget. Entering all Alberta pipeline data into the new risk model is identified in the Pipeline Asset Integrity Management Strategic Plan with a target completion date of June 1, 2014.	
2018	The OMS is being used to guide and standardize operational activities to ensure compliance with requirements and proper management of risks. The ORM program identifies and defines risk tolerance levels (low, medium, high, and very high) to facilitate effective decision making and determine the appropriate level of risk mitigation activities. PMC has replaced the industry hazard analysis (IHA) process with risk registries developed for all operational areas and functional groups. These risk registries are updated annually as identified by the ORM program. The pipeline risk assessment process is aligned with the ORM program to ensure a standardized risk assessment process. All PMC pipelines within Alberta have been entered into the new risk assessment process. The risk assessment results are then incorporated into the annual planning process.	Met

5.0 Risk Assessment and Mitigation Practices

5.2 Risk Assessment and Evaluation

Audit Criteria:

5.2.2 Risk evaluation methodologies and criteria are defined and reflect the organization's objectives and operations (ISO 31000 section 5.3.5).

5.2.3 Identified risks are categorized and associated with operational and regulatory objectives with a consideration of interdependencies and cumulative effects (ISO 31000 section 5.4.2).

5.2.4 Risk analysis and evaluation methodologies account for differences in corporate and field-level environments (ISO 31000 section 5.3.4).

Reference Year	Assessment	Has the criteria been met?
5.2.2		
2014	A general risk assessment matrix is in place, documented, approved by the EVP of Operations and the Director of Health & Safety (effective Oct. 8, 2013). This risk assessment matrix is used to evaluate the hazards associated with the company's core business activities and includes criteria for "potential severity of hazard" and for "probability of occurrence." Even though documentation was provided that indicates the existence of a process for assessing asset integrity risk, it straddles current and future methodologies. There currently appears to be more attention paid to weighting and understanding the likelihood part of the risk assessment in comparison with weighting and understanding the consequence. The higher the consequences, the more effort and resources could be spent understanding and mitigating likelihood for failure. In the absence of a clear understanding the consequence. The higher the consequences, the more effort and resources could be spent understanding and mitigating likelihood of failure. In the absence of a clear understanding of risk across the pipeline systems, it is difficult to move away from the traditional and reactive method of managing pipeline integrity in response to the ILI data only, and move towards being able to proactively understand and manage integrity. Consequently, it is not possible at this time to clearly demonstrate a uniform end-to-end asset integrity risk assessment process that is aligned with other PMC risk assessment processes. PMC's plan is to address this by June 2014. Based on the documents reviewed and office/field interviews, it appears that the process of identifying risk, re-evaluating risk, and developing action plans for risk reduction is not a coordinated effort between field operations and asset integrity groups. PMC is currently using ISNetworld (ISN) to monitor service contractor qualifications. A SIPM system is being implemented to scorecard vendors. Phase 2 of SIPM is a CMS project that began in 2013. SCM guidelines have been implemented, and a deviation process is in place.	Partially met

2018	The Asset Integrity team has developed and implemented a pipeline risk assessment process that assesses and manages risks to the company's pipelines. The process is aligned with the ORM program and is an end-to-end process in which risks are identified, assessed, mitigated, and reassessed in order to ensure appropriate responses. Developing corrective actions in response to a specific risk may involve a number of processes, people, or business groups. There is a clear assessment process and communication channels to ensure that the required individuals are involved in developing any corrective action plans.	Met
5.2.3		
2014	The ESMS risk assessment matrix is not consistently applied for each of the hazards in the industry hazard analysis for crude oil pipelines and there is a gap in information evidencing the final risk rating. Risk levels (low, medium, high, very high) are identified for each of the potential consequences (i.e. health, reputation), but the matrix does not provide any direction on how to use the results to determine a risk treatment nor is there a reference to a document that provides such direction. Given the changes to PMC in the last three years (e.g., closure of $1.67 billion BP asset acquisition in April 2012), the frequency with which IHAs are conducted is not in accordance with what is prescribed in the ESMS, which has been in place since July 2010. Using the ORM policy, PMC's plan is to replace this process through the development of risk registries by operational area and functional group. High-risk HazIDs are currently entered into the KMI system while medium and low risk HazIDs are still recorded on paper. However, a project is underway to enable entry of all HazIDs into KMI. In regards to the new asset integrity risk assessment process, the methodology of how to segment the results from the risk matrix according to risk levels (i.e., high, medium, low) is not complete as asset integrity is waiting for implementation of OMS in order to ensure alignment. See 5.1.4.	Not met

2018	PMC has developed and implemented an ORM program, along with an associated risk matrix. The matrix is used to standardize and consistently assess risks and assign risk ratings (low, medium, high, and very high). The matrix guides staff on how to use the risk ratings to determine the appropriate risk treatment options. PMC replaced the IHA process with risk registries developed for all operational areas and functional groups. The risk registries are updated annually as identified by the ORM program. Improvements have been made to PMC's tracking and monitoring programs. The use of a dedicated software program has allowed PMC to collect and monitor various regulatory, stakeholder, and compliance information, including information on hazards, incidents, corrective actions, noncompliances, and action items from meetings. The Asset Integrity team has developed a pipeline integrity assessment process and aligned it with the ORM program. The pipeline risk assessment process outlines a method to develop risk mitigation activities in response to different assessed risk levels (low, medium, high, and very high).	Met
5.2.4		
2014	In accordance with ESMS manual, several processes have been developed and implemented for the identification, assessment, and communication of safety and environmental hazards. These processes target workplace hazards at several levels. Ensuring that CSA standards are maintained is considered the minimum level for corrective action regardless of what the OMS risk assessment results may be. For example, needing to ensure that a standard is adhered to may require elevating an existing "low" using the OMS method to a "high". There is merit to having some flexibility in the alignment of risk assessment processes if a risk assessment result from the OMS process needs to be adjusted based on other factors, such as ensuring minimum CSA standards are met for pipeline integrity.	Partially met
2018	The ESMS has been replaced by the OMS to guide and standardize operational activities to ensure compliance with requirements and proper management of risks. The ORM program is used to identify the minimum level of	Met

	risk response required; however, there are several other programs that identify regulatory requirements that must be maintained. In a situation where the regulatory requirements exceed the level of response identified by the risk assessment process, the regulatory requirements will determine the minimum standard.	

5.0 Risk Assessment and Mitigation Practices

5.3 Risk Communication

Audit Criteria:

5.3.2 External communication and reporting mechanisms are in place that supports the exchange of risk information and achievement of regulatory compliance (ISO 31000 sections 4.3.7 and 5.2).

5.3.3 Systems and practices are in place to ensure that risk information is recorded and readily accessible (ISO 31000 sections 4.3.6, 4.3.7, 5.7, and A.3.4).

5.3.4 Stakeholder expectations are identified so that outcomes of risk management activities are communicated appropriately internally and externally (ISO 31000 sections 4.3.6, 4.3.7, and 5.2).

Reference Year	Assessment	Has the criteria been met?
5.3.2		
2014	PMC has established processes for issuing safe work permits and conducting pre job safety meetings. Project managers use the safe work permitting process to engage and train contractors early to establish plans, and they also notify land administration. The safe work permit process has recently been streamlined, and as part of the implementation, awareness and training sessions for PMC staff will be conducted. PMC and PAA websites are used to communicate information externally about risks, environmental protection, and regulatory compliance; for example, information about major spills communicated during PAA quarterly conference calls, included in quarterly reports, and in the 2011 chairman and president's letter.	Partially met

	Brochures and communications plans for all of the pipeline systems are not complete at this time, but PMC provided examples of the types of documentation that will be completed. The Stakeholder Relations Framework and Public Awareness (PA) program are still under review and have not been completely implemented. The information provided in the PMC EH&S section of the website is not as comprehensive when compared to PAA's website in the following areas: pipeline safety, emergency response, and public safety and awareness.	
2018	The PA program has been implemented and the Stakeholder Relations Framework is being used to guide how risk information is shared externally with stakeholders. Improvements to the PMC website have contributed to an increase in community relations and risk information being communicated externally, including information related to health and safety, and the environment. The pipeline and facility brochures are complete and highlight various risks to the public.	Met
5.3.3		
2014	The stakeholder information management system project draft business requirements acknowledge the lack of integration between systems with stakeholder-related information. Issues with data alignment and access may persist if the single-system project doesn't go ahead. However, part of this project is completing a gap analysis and exploring the need for compensating controls if the project is shelved. Two key technology-based control systems are KMI, alternatively referred to as PINS, and EAM. KMI/PINS is a key risk management system and is used to document incidents, HazIDs, near misses, and information that may be on interest in addressing risk and preventing incidents. The EAM is a work order system used to document and track physical corrective actions that need to be undertaken. Although safe work permits are documented, they are not archived electronically for many of the field offices and are kept in hard copy only. There is no evident method of analyzing the information centrally for trending and performance against what are required safe work permit procedures. The testing revealed a total of seven different safe work permit formats currently in use.	Partially met

2018	PMC currently has an established process for collecting, analyzing, and communicating stakeholder information. Although stakeholder information is currently collected and stored in multiple data systems, there is acknowledgment and a commitment to integrate these systems into one. Authorization-to-work permits are being issued and have replaced the use of safe work permits. As part of the permit process, work activity risks are assessed and mitigated. Although hard copies of the permits are stored at the local field office, they are audited and reviewed annually by PMC operations assurance staff to ensure compliance with established processes and to determine Authorization to Work program effectiveness.	Met
5.3.4		
2014	The PA strategy was designed in the fall of 2013 and is intended to evolve and change relative to stakeholder input, stakeholder needs, measurement results, and business realities. Roles and responsibilities are identified for the PA program, including the “area land agent” role whose position is to integrate land and public awareness into the field operations process. However, the Stakeholder Relations Framework and associated PA program are major organizational undertaking and are not fully implemented at this time. PMC is involved in various synergy groups, and attendees are usually Operations staff. The goals are to exchange information, conduct training, and complete emergency exercises. PMC staff will regularly attend seminars to monitor changes in subjects related to pipelines and regulations. Senior management will also periodically meet with peers, competitors, and customers to gather information and possibly collaborate.	Partially met
2018	PMC has developed and implemented its PA program. The Stakeholder Relations Framework is being used to guide how risk information is communicated and how staff interact with external stakeholders. Monitoring the PA program and information provided by stakeholders allows PMC to adjust its communication strategy in order to meet the needs of its stakeholders.	Met

5.0 Risk Assessment and Mitigation Practices

5.4 Risk Treatment & Monitoring

Audit Criteria:

5.4.1 Decisions on risk treatment options are made in accordance with regulatory requirements and include consideration of the risks borne by stakeholders other than the organization that could benefit from the risk (ISO 31000 sections 5.4.4 and 5.5.2).

5.4.2 Results from risk management activities should be recorded, monitored, periodically reviewed and reported internally and externally as appropriate (ISO 31000 sections 5.6 and 5.7).

Reference Year	Assessment	Has the criteria been met?
5.4.1		
2014	Meeting the *CSA Z662* standards dictates the minimum response required for risk treatment. The message from management is to not take risks with unclear data-if in doubt, shut it down, excavate, and repair. Due to some recent incidents, more funds have been made available to complete additional pipeline integrity work. A script has been created for communicating information to stakeholders, including outlining the hazards of the pipeline and concerns regarding public safety. PMC also participates in regional meetings that are jointly held with the AER and local pipeline operators, and any concerns raised within these meetings are addressed accordingly. Environmental protection zone notifications also involve communication of risk. See sections 6.1.7, 6.2.2, and 6.3.4.	Partially met
2018	The OMS is used to guide and standardize operational activities to ensure that activities are in compliance with requirements and that risks are properly managed. The ORM program is used to identify a minimum level of risk response required; however, there are several other programs that identify regulatory requirements that must be	Met

	maintained. In a situation where the regulatory requirements exceed the level of response identified in a risk assessment process, the regulatory requirements will determine the minimum standard. PMC's ability to identify and address stakeholder risks and concerns has been enhanced through creating multiple handouts and brochures to communicate risks associated with facilities and pipelines, participating in various association and regional meetings, and holding emergency response plan (ERP) training exercises.	
5.4.2		
2014	The AER's review of PMC's systems noted that they provide the ability to ensure that risk information is recorded, readily accessible, monitored, periodically reviewed and reported internally and externally as appropriate. For example, the EHSL&R Department monthly report includes high-risk incidents, regulatory matters such as noncompliances, progress on projects, and status of the environmental program. However, there are some areas where controls could be strengthened. It is recognized that standardized controls and risk reduction options are not always selected due to site-specific circumstances, and there is no documented method for managing pipeline risk at this time. However, not documenting site-specific risk reduction decisions could make it more difficult to duplicate successful risk mitigation options in the future or avoid those options that are not as successful. There is also the benefit of knowledge transfer should there be turnover of experienced staff over time. It is also not clear how the risk scoring is used to trigger mitigation decisions in relation with mitigation and monitoring programs data. The audit team understood that the ILI is used exclusively to trigger mitigation decisions. Although interviews with PMC staff and a review of obtained minutes for some meetings indicated risks and issues are being discussed, the action items and follow-up on progress are not being recorded in a formal manner in all cases. The KMI system is used to record incident and hazard data, but there is a gap that allows information to be excluded for an "Incident" entry that would normally be required. Alignment of workflow tracking information from	Partially met

	incident to corrective action is not consistent, and there is a lack of clarity for staff so they can differentiate between “corrective action” and “lessons learned.” If corrective action deadlines are not tracked consistently and clearly, it becomes more difficult to measure performance and ensure correction action are being completed in a timely manner.	
2018	PMC has made several improvements to its tracking and monitoring programs, which have allowed it to collect and monitor meeting minute action items, in addition to details on various regulatory, stakeholder, and compliance items, such as hazard identifications, incidents, corrective actions, and noncompliances. The Asset Integrity team has developed a formal process to manage pipeline risks. The new pipeline risk assessment process describes how pipeline risks are identified, screened, and assessed and how corrective actions are developed. A risk rating process is used to identify when to use monitoring and inspection programs to further understand the risk or to mitigate the threats and consequences. PMC has standardized how corrective actions are developed, tracked, defined, and monitored, including differentiation of lessons learned from corrective actions. A software tracking system has enabled PMC to monitor and track corrective actions from development through to completion.	Met

5.0 Risk Assessment and Mitigation Practices

5.5 Business Continuity Planning

Audit Criteria:

5.5.1 CSA Z1600.08 clause 6.10: The entity shall develop and implement business continuity strategies to continue critical operations following an emergency. The business continuity strategies shall be based on the results of the business impact analysis described in clause 5.1.3. The business continuity strategies shall include the identification of time-sensitive critical functions and applications, associated resource requirements, and interdependencies. The business continuity plans shall be developed based on the business continuity strategies.

Reference Year	Assessment	Has the criteria been met?
5.5.1		
2014	Currently, there is no business continuity program at PMC; however, there are components of business continuity practices within PMC, such as disaster recovery plans. PMC has indicated that there have been preliminary discussions about the development of a Business Continuity Plan (BCP).	Not met
2018	Business continuity is a subelement of the PMC OMS program. PMC has developed a draft BCP that is scheduled to be implemented in 2019. The annual management review of OMS subelements will ensure management oversight of the BCP implementation. In the interim, PMC will follow the BCP of PAA.	Met

6.0 Regulatory Reporting Processes

6.1 Non-Compliance and Enforcement Management Practices

Audit Criteria:

6.1.1 The operating company shall establish and maintain procedures for defining responsibility and authority for handling and investigating non-conformances, taking action to mitigate any impacts, and for initiating and completing corrective and preventive actions (CSA Z662-11, clause N.15.5).

6.1.2 …a continual improvement process including; performance monitoring for the ongoing assessment of conformance with the requirements of the Safety and Loss Management System, and the mechanisms for taking corrective and preventive measures in the event of non-conformance… (CSA Z662-11, clause 3.1.2(h)(i)).

6.1.3 Non-compliances and subsequent enforcement action are managed in a manner that fosters a sustained improvement in compliance performance. Non-compliances are resolved within timeframes established by the AER with management and protection programs updated as appropriate (developed from Directive 019 sections 4 and 6 and ISO 10002:2004 (E) 8.5.2).

6.1.4 Non-compliances corrected in the normal course of work are recorded and documented. This data provides valuable information for a continuous improvement process (ISO 9004:2004(E) 8.3.1).

6.1.7 Non-compliance information is accurate, accessible and available along with the details of the actions taken (ISO 10002:2004(E) 4.3).

6.1.8 The noncompliance review should be inputted to the management review process for performance evaluations and for consideration of resource needs (ISO 9004:2004(E) 8.3.2).

Reference Year	Assessment	Has the criteria been met?
6.1.1		
2014	ESMS is the governing document for regulatory matters, but it is not consistently followed. OMS is to be the governing management system document when it is implemented.	Partially met
2018	PMC has implemented the OMS, which replaced the ESMS. The OMS is used to guide and standardize operational activities to ensure that risks and compliance are properly managed.	Met
6.1.2		
2014	There is limited indication of developmental programs or associated staff assessment programs that are directed towards AER regulatory compliance (corporate or operational). Voluntary self-disclosures, incidents, and releases that were originally identified through the MOC and PINS/KMI systems reported to the AER are confirmed on the tracking sheets. Time frames in addressing noncompliance established by PMC and AER are tracked and monitored through the various tracking sheets. Review of voluntary self-disclosures received by the AER via PMC-verified noncompliance deadlines and corrective actions are tracked for progress. Evidence of deadlines established by the AER being met by PMC for 15 enforcement actions that have been resolved with the AER are documented as “response received” or “action plan accepted”.	Partially met

	PMC's dispute-tracking sheet potentially could identify a noncompliance regarding public notification issues. The Land Complaints & Dispute Tracking Sheet includes information starting in mid-2013. Effectiveness of this process could not be determined.	
2018	PMC conducts annual reviews and audits of its OMS and operational programs to verify procedures are being properly performed. Identified noncompliances, corrective actions, and audit results are incorporated into annual planning cycles as part of a continuous improvement process.	Met
6.1.3		
2014	Many tracking tools have been put in place for compliance management, with varying levels of formal and informal procedures (meetings, spreadsheets, MOC systems, scoping documents, PINS/KMI, SOPs) to capture and monitor regulatory noncompliance (and potential noncompliance) and corrective actions. The capturing of AER low risk noncompliance information (identification, deadline, and follow-up) is not noted in the applicable compliance tracking spreadsheets. Increases in dedicated and knowledgeable compliance and monitoring staff since mid-2013 have augmented the frequency of identifying, communicating, and reporting of noncompliance. The results are increased oversight and scrutiny of PMC's senior management on regulatory matters.	Partially met
2018	PMC has made several improvements to its tracking and monitoring programs, including using a dedicated software system to collect and monitor various regulatory, stakeholder, and compliance details. AER low-risk noncompliances, hazard identifications, incidents, and corrective actions are captured within the tracking and monitoring programs.	Met

6.1.4		
2014	Audit programs such as the audit of PMC's Joarcam system are positive steps to identify licensing gaps between the AER's licensing information and PMC's operation information to determine compliance with regulations. Integrating other audit or inspection programs may also be a good source of reviewing information to determine compliance with AER regulations. While there has been significant effort to build more rigour in these processes (within the last year), many of these processes (within the last year), many of these processes can be considered "reactionary" as tools to track, inform, and communicate regulatory compliance matters at this time. Further monitoring, review, and development (and refinement) is needed to refine its contribution to a compliance management system – to better utilize quality information for analysis, trending, staff developmental purposes, etc., and move towards proactively mitigating compliance risk. There is limited indication of developmental programs or associated staff assessment programs that are directed towards AER regulatory compliance (corporate or operational).	Partially met
2018	PMC conducts annual reviews and audits of its OMS and its operational programs to verify procedures are being properly performed. Documenting and monitoring noncompliances and corrective actions contribute to the development of assessment programs geared at regulatory compliance, in addition to contributing to an enhanced compliance management program.	Met
6.1.7		
2014	There is no evidence indicating the use of AER manuals as a training tools (specific noncompliance listed), or other AER directives. PMC staff typically rely on their colleagues' expertise and experience, as well as knowledge that information can be found within their SOPs, other documents located in the OpsLibrary (eStream portal area), or on the AER website. PMC's use of MOC systems (P2 and Maximo) and PINS/KMI contribute to consistent, visible, and traceable management and progress of the corrective actions associated with a noncompliance. These systems also	Partially met

	contribute to visible and clear responsibility across divisions in addressing corrective actions. Use of these systems and other mechanisms engage the Regulatory Compliance Team to determine whether an MOC or incident is identified as a noncompliance.	
2018	The development of the Corrective Actions Management Program (CAMP) has standardized the design, implementation, evaluation, and communication of corrective actions. Corrective actions could involve the retraining of individuals on existing programs, processes, or procedures for complying with the AER's regulatory submission and notification requirements.	Met
6.1.8		
2014	The designation of a single and visible member of management to ensure responsibility and authority in 2010 was recognized in the ESMS regarding established processes and communications needed for compliance management and stakeholder reporting. Although this position was recognized in 2010, no visible assignment was given until 2012. The designation of a single, visible vice president in 2012 has launched PMC into frequent and consistent reporting of compliance management throughout the organization.	Partially met
2018	The OMS has been implemented, with ownership assigned to the EVP of Operations, who has the authority to establish processes required for compliance management and stakeholder reporting.	Met

6.0 Regulatory Reporting Processes

6.2 Regulatory Change Monitoring and Administration

Audit Criteria:

6.2.1 The operating company shall develop, document, and implement a change management process for changes that might affect the integrity of the pipeline system or the ability to manage the integrity of that system. This shall include the following types of change, as appropriate for the type of pipeline system:

- (b) those that are not initiated and not controlled by the operating company, such as changes in…
- (i) technical requirements (e.g., industry standards, industry recommended practices and regulations);

(*CSA Z662-11*, clause N.6.1)

6.2.2 The change management process shall have procedures in place to address and document the following, as appropriate for the type of pipeline system:

- the method of monitoring to identify anticipated and actual changes that could affect the integrity of the pipeline system;
- identification of responsibilities for approving and implementing changes;
- reasons for the changes;
- analysis of implications and effects of the changes;
- the method of communicating changes to affected parties; and
- the timing of changes (e.g., dates of approvals and completions).

(*CSA Z662-11*, clause N.6.2)

6.2.4 Regulatory changes are identified, collected and disseminated throughout the organization in an appropriate timeframe (ISO 9004:2004(E) 8.3.10).

6.2.5 The management of change process shall include:

- the identification of changes that could affect the safety and loss management system;
- setting responsibilities and authorities for the review, approval, and implementation of changes;
- documentation of reasons for the changes;
- analysis of implications and effects of the changes;
- communication of changes to affected parties; and
- the timing of changes.

(*CSA Z662-11*, clause A.3.4.2)

Reference Year	Assessment	Has the criteria been met?
6.2.1		
2014	There are no formal screening criteria, checklists, or record of the relevancy of a change to PMC business. The responsibility to identify and determine whether a regulatory change affects PMC operations and the relevancy to the organization are left to experience and expertise of regulatory affairs staff. Confirmation that a regulatory change may generate an initiator of change to an existing or required SOP through to Document Control is not clear. SOP 10.02 Document Control – Workflow Management indicates that 'documentation initiation' can be raised as a result of a regulatory change. It is not clear if there is a connection between any regulatory changes identified by the regulatory coordinator (as change initiators) through to Document Control.	Not met
2018	PMC has implemented a legal requirements program in order to identify and track regulatory changes that can affect operations. Once a regulatory change has been identified, the change is sent to a SME to assess and record the potential impact. For those changes that impact the organization, an established MOC process is used to document the analyses and implications of the changes. The MOC process has been completed and identifies separate procedures to follow depending on the type of change identified. For example, a change to a facility or process or documented design follows a technical MOC process, whereas a change to a policy, process, procedure or form follows an administrative MOC process.	Met
6.2.2		
2014	Senior PMC management recognized the need to allocate resources to regulatory monitoring by hiring a regulatory coordinator in January 2014 who directly reports to the Director of Environment and Regulatory Affairs (and indirectly to related managers). This role's responsibility is to focus on identifying, capturing (on the regulatory monitoring tracking sheet), and communicating regulatory change for the organization. This dedicated	Partially met

	resource could improve PMC's ability to identify and capture regulatory change, but this role has only been in place for a short period.	
2018	PMC hired a regulatory coordinator in 2014 who is responsible for identifying regulatory change, capturing it within the regulatory monitoring tracking sheet, and communicating the change to the organization.	Met
6.2.4		
2014	A review of the regulatory monitoring tracking sheet identified the comprehensive capturing of a variety of jurisdictional regulatory changes affecting PMC. However, several AER regulatory changes since 2013 were not captured in this spreadsheet.	Partially met
2018	The Regulatory Affairs group monitors changes to regulatory requirements as part of the legal requirements program. Identified regulatory changes are documented using the regulatory tracking sheet and a dedicated software program. Once identified, a change is reviewed and confirmed by management. The change is then documented, assessed, implemented, and communicated using the MOC process.	Met
6.2.5		
2014	Regulatory scoping memos for new projects or MOCs are used to identify regulatory requirements by the regulatory team, identifying risks and potential for noncompliance and required monitoring and reporting actions with regards to these activities. Recommendations are made to appropriate personnel on regulatory matters. There are no formal screening criteria, checklists, or records of the relevancy of the changes to PMC business. The responsibility to identify and determine whether there are regulatory impacts of operational changes and the relevancy to the organization are left to the experience and expertise of staff. Once aware of regulatory change information, the regulatory coordinator is required to forward this information to applicable groups. This is done primarily by e-mail or verbal communication. An assessment or presence of a feedback loop to ensure receipt of messaging and its impact on the business has not been seen. While an	Partially met

	exception resulted from a recent Limited Liability Rating change, this notification and resulting assessment were initiated after an AER request of March 31, 2014.	
2018	PMC has implemented a legal requirements program in order to identify and track regulatory changes that can affect operations. Once a regulatory change has been identified, the change is sent to a SME to assess and record the potential impact through the MOC process. The MOC process is used to document the analysis and implications of the change.	Met

6.0 Regulatory Reporting Processes

6.3 Regulatory Reporting Monitoring and Administration

Audit Criteria:

6.3.1 A process is in place to ensure AER information submission requirements are met, including but not limited to the following regulatory requirements:

- Notice of maintenance activity (Pipeline Rules, section 57)
- Commencement of construction (Pipeline Rules, section 6)
- Notice to regulator of pressure test (Pipeline Rules, section 24)

6.3.4 The handling process of non-compliances is easy to understand and use within the organization, including the regulator and other interested parties (receive complaints or non-compliances through regulators and stakeholders (ISO 10002:2004(E) 4.4).

6.3.5 The organization should ensure that accountability for actions and decisions with respect reporting non-compliances and enforcement handling is clearly established (ISO 10002:2004(E) 4.4).

Reference Year	Assessment	Has the criteria been met?
6.3.1		
2014	The development and implementation of capturing submission information through various submission tracking sheets has improved the organization's ability to manage regulatory information. Staff within various divisions is aware of and have access to the tracking sheet process. This practice was generated through senior management as a commitment to have visible submission and reporting tracking throughout the organization after the section 22 order was in place. Tracking sheets identified within PMC for regulatory affairs are as follows: • Regulatory Submissions Tracking Sheet (2013) • Regulatory Submissions Tracking Sheet (2014) • Environment Submissions Tracking Sheet • Regulatory Deadline Tracking Sheet • Regulatory Monitoring Tracking Sheet • Land Complaints & Dispute Tracking Sheet • Noncompliance Tracking Sheet	Partially met
2018	PMC captures regulatory-related information such as submission requirements, regulatory deadlines, and noncompliances, which are documented and stored within multiple dedicated software tracking programs. The development of operational programs to standardize regulatory, incident reporting, and corrective action processes has increased accessibility to compliance information.	Met

6.3.4		
2014	An increase in voluntary self-disclosures to the AER since mid-2013 demonstrates PMC's commitment to communicate with its Alberta regulator the state of compliance with AER requirements. All PMC voluntary self-disclosure timelines to submit and deadlines met for corrective actions documented by the AER matched the obligations tracker information. A single source of tracking and monitoring data managed by dedicated resources has contributed to the success of these deadlines being met and the accuracy of information. There is no evidence indicating the use of "AER Manuals" of SOPs (which do not exist) as a training tool specific to submission processes for, DDS notifications, or other submission requirements. Staff typically rely on their colleagues' expertise and experience. There is a commitment to perform an administrative review of PMC systems to identify licensing gaps between the AER's licensing information and PMC's operation information to determine compliance with regulations (e.g., *Manual 005,* referencing the *Pipeline Act, Pipeline Rules, Directive 056, Directive 071, etc.).* The review of the Joarcam system is an example of using review information to further reinforce and improve PMC's application submission process.	Partially met
2018	Standardizing the corrective action process and using a dedicated software program enable the collection and monitoring of corrective actions. Corrective actions could involve retraining individuals on existing programs, processes, or procedures for complying with the AER's regulatory submission and notification requirements. PMC is in the process of an administrative review to identify applicable regulatory requirements for all its operational activities.	Met
6.3.5		
2014	Formalized feedback processes and communications are not in place regarding reasons for closures *of Directive 056* submissions. Cross-divisional communications on submission performance are more informal, although increase in usage of systems, tools, and engagement by regulatory staff has been a compensating mechanism. There was no formal tracking system form a single source (regulatory projects) on the submission and progress of applications observed.	Partially met

	Generally, all *Directive 056* applications from August 2013 to January 2014 had adequate success rates in meeting AER requirements. There was improvement after the global refer where applications went from 83 per cent acceptance rate to 15 per cent acceptance rate in less than a few months. Currently, PMC is maintaining and acceptable closure rate. Contribution to this success is attributed to an increase in staff and expertise related to application submission requirements. The practice of reconfirming information on application checklists prior to AER submission may also be contributing to the success rate.	
2018	PMC has made several improvements to its compliance monitoring programs, increasing the company's ability to collect and monitor details of various submissions. The development of a single tracking system to monitor information for regulatory projects allows for project status updates to be documented and communicated within the organization.	Met

7.0 Emergency Planning and Response

7.1 Emergency Management Program Roles, Training and Competency

Audit Criteria:

7.1.4 Training programs are in place and are directed towards proactively identifying risks that could jeopardize public safety and the environment (ISO 31000-4.3.5 and 4.4.1, Directive 071 – section 14.9).

Reference Year	Assessment	Has the criteria been met?
7.1.4		
2014	ICS and PINs training is emphasized at PMC; however, training and exercise schedules are currently not being monitored with relation to emergency planning, although attendance lists and sign-offs are in place at individual	Partially met

	exercise and training events. The AER tested ICS training of 72 ERP-named positions. One responder identified in ERP 2445 had not received ICS training. During the period between request and receipt of training records for individuals, two responders identified in ERP 2237 received training. A component of PMS's 2014 CI plan sections identifies requirements for developing a training matrix to identify courses required to become competent responders as well as training materials, plans, and schedules.	
2018	A formal emergency management program is documented and indicates that personnel are to have competency-based training to ensure that they are appropriately trained to fulfil their emergency-response-related responsibilities. PMC staff regularly conduct and participate in training and exercises on emergency preparedness and response. Schedules exist for training and exercises related to emergency preparedness and response and are monitored by an assigned individual.	Met

7.0 Emergency Planning and Response

7.2 Emergency Response Plans: Updates, Exercises and Communications of Results

Audit Criteria:

7.2.3 ERP exercise results are communicated to all relevant internal and external stakeholders (CSA Z731-K2.5, Directive 071- section14.11).

Reference Year	Assessment	Has the criteria been met?
7.2.3		
2014	PMC ESMS identifies *Directive 071* exercise requirements; although no formal tracking system is currently in place. Exercise results are documented; however, there is no tracking process in place to monitor the exercise was insufficient and has identified this as a requirement of the 2014 continuous improvement plan. It appears that there is a lack of organizational clarity with regards to roles and responsibilities to schedule and monitor exercises.	Partially met

2018	PMC's Stakeholder Relations & Emergency Management group develops and maintains annual ERP exercise schedules, which are managed by an assigned individual. PMC has developed an SOP for lessons learned from emergency management exercises and incidents. This SOP identifies roles and responsibilities, outlines a 12-step process for capturing and disseminating lessons learned from exercises and incidents, and provides a process map, which includes preparing a final report to be shared with the regulator.	Met

7.0 Emergency Planning and Response

7.3 Lessons Learned

Audit Criteria:

7.3.1 Lessons learned from previous incidents are shared throughout PMC and with other stakeholders (ISO 31000-5.6).

7.3.2 A formal process exists for incorporating lessons learned into existing ERPs and operations (ISO 31000-5.6, *Directive 071*- section 14.11).

7.3.3 Areas for improvement identified through ERP exercises are implemented in the areas of greatest risk (*CSA Z1600*-A.7).

Reference Year	Assessment	Has the criteria been met?
7.3.1		
2014	Lessons learned from incidents and exercises are discussed and documented; however, action items are not always created and assigned to personnel.	Partially met
2018	Lessons learned are captured within a dedicated software program that assigns and tracks corrective actions, which are completed by accountable process owners.	Met

7.3.2		
2014	A formal process for conducting lessons-learned reviews, documenting and tracking lessons learned, or creating and tracking related action plans and incorporating them into ERPs is not in place.	Not met
2018	Lessons learned from incidents and exercises are identified through a formal debrief and actioned in accordance with a formal Emergency Management Lessons Learned process. Guidance on the creation of effective corrective action plans is documented and lessons learned are captured and tracked within a dedicated software program.	Met
7.3.3		
2014	ESMS requires that findings and lessons learned are to be identified along with corrective action recommendations as part of each table-top or full-scale exercise. It also requires recording of lessons learned from risks and incidents within and outside the organization and distribution of related safety alert bulletins.	Partially met
2018	The CAMP is applied and prioritized by the ORM program, which takes into account the significance, criticality, sensitivity, risk, and impact of nonconformances to the safety of workers, the public, the company (including to its operations), shareholders, and the environment. The lessons learned SOP identified steps for capturing and disseminating lessons learned from emergency management exercises and incidents. Lessons learned are entered into and tracked within a dedicated software program and managed within the CAMP.	Met

7.0 Emergency Planning and Response

7.5 Stakeholder Relations and Communications

Audit Criteria:

7.5.1 Public awareness program is in place and executed at least every two years (Directive 071- section14.6). Communicated documentation should include relevant plans and procedures (ISO 31000-5.2).

7.5.4 External communication and reporting mechanisms are in place which supports the exchange of risk information and achievement of regulatory compliance (ISO 31000-4.3.7, 5.2).

Reference Year	Assessment	Has the criteria been met?
7.5.1		
2014	Records indicated that public awareness campaigns have occurred on all AER-regulated pipelines prior to developing new ERPs. PMC's process is that records of residents' concerns are developed, addressed internally, and then resolved with the resident. Public information packages have operational-specific information related to the areas where they were distributed. The PMC stakeholder framework and PA program describe mechanisms such as the dispute tracking issues as a viable avenue to ensure engagement with local communities and their concerns. Capturing and managing any major issues with the external stakeholders, such as landowners, is through the PINS/KMI. The PINS/KMI system contributes to consistent, visible, and traceable management and progress of the corrective actions associated with an issue. This system also contributes to visible and clear responsibility across divisions in addressing corrective actions including reporting and communicating with the external stakeholders. The public awareness program and dispute tracking is in its infancy, therefore its effectiveness was not observed. Stakeholder meetings and resident consultation is included as a component of the continuous improvement plan. However, interviews indicate that no PA schedule is currently in place.	Partially met
2018	PMC has developed PA schedules. These schedules detail which ERPs will have a PA program, including date ranges and estimated ERP timeframes.	Met

7.5.4		
2014	CERP outlines external communications procedures, including contact information. PMC has developed a Stakeholder Relations Framework, PA ambassador training, and a PA and education program and is in the process of implementing these programs.	Partially met
2018	PMC's PA program, which includes the stakeholder relations framework, has been developed and implemented.	Met

8.0 Management Oversight and Internal Controls

8.2 Internal Communications

Audit Criteria:

8.2.1 Internal communication and reporting mechanisms are in place which supports and encourage accountability and ownership of risk (ISO 31000- 4.3.6 and 5.2).

8.2.2 Results of risk management processes are documented and provided to affected personnel. (ISO 31000-4.5 and 4.6).

Reference Year	Assessment	Has the criteria been met?
8.2.1		
2014	PMC is a very dynamic organization with ongoing organizational changes. Organizational changes are not following a formal management of change program, which can affect the successful execution of various programs. There appears to be little communication and follow-up between the field and office personnel. It appears to be more of a linear process involving the passing of information & data, but no follow-up discussions, reviews, or sharing of learnings after that.	Partially met

	Several meetings are held (formal and informal) with various levels of the organization to raise awareness and determine status of regulatory matters. The amount of regulatory information reported in meeting minutes has significantly increased in late 2013, consistent with PMC's increase in ability to capture, understand, and communicate compliance and noncompliance matters. PMC follows a "when in doubt, report" philosophy. The senior managers (directors and vice presidents) across all divisions receive information and performance data through the formal communication process. Cross-divisional communications on compliance performance and regulatory matters are more informal, although increase in usage of systems, tools, and engagement by regulatory staff has been a compensating mechanism. Formalization of the cross-divisional procedures and communications are currently being refined or created and implemented (e.g., draft regulatory SOPs). Tracking sheets for regulatory reporting requirements are not readily accessible and visible to the organization. MOC systems (P2 and Maximo) and PINS/KMI are compensating mechanisms as well as the biweekly reporting to the divisions to create visibility of compliance information. Biweekly reporting to the divisions to create visibility of compliance information is a compensating control. The organization does not have a visible and accessible source to see all the regulatory changes that impact the organization. It is the responsibility of all workers to communicate any observed unsafe work condition or action, safety concern, or inability on their part to understand safe work procedures or processes to their supervisor. In the event that an employee identifies an unsafe condition or action and is uncomfortable communicating using normal channels fearing repercussions, the employee may report the unsafe condition or action anonymously using the Whistle Blower Hotline. PMC staff holds many meetings at all levels to communicate risks and the corrective actions being taken to address them. Many of these meetings are cross-functional to ensure that information and perspectives are shared between groups that don't necessarily work together daily. PMC also uses several reporting processes to communicate risks and the actions being taken to address them.	

	PMC has established processes for issuing safe work permits and conducting pre job safety meetings. Project managers use the safe work permitting process to engage and train contractors early to establish plans, and they also notify Land Administration. The safe work permit process has been recently streamlined and as part of the implementation, awareness and training sessions that will be delivered to PMC staff.	
2018	PMC has developed and implemented an MOC process that is used to document, assess, and communicate organizational changes. Through the development of various programs and initiatives that span all operational areas, such as the OMS, multiple planning and communication documents were created and used to deliver key messaging and program deliverables. Standardizing the corrective action process has enabled an increase in information being shared between field and office personnel, not only through the development of corrective actions but through the integration of a process to capture and share organizational lessons learned. Tracking sheet improvements and dedicated software programs have allowed for more detailed and comprehensive regulatory and compliance information to be collected. Although various types of regulatory and compliance information are reported internally, the dedicated software programs only permit access to assigned individuals.	Met
8.2.2		
2014	The AER's review of PMC's various management and IT systems noted that they provide the ability to ensure that risk information is recorded, readily accessible, monitored, periodically reviewed and reported internally and externally as appropriate, and relatively effective. For example, the Environment, Health, Safety, Land and Regulatory Department monthly report includes high risk incidents, regulatory matters such as noncompliances, progress on projects, and status of the environment program. However, controls could be strengthened in some areas. The systems that govern PMC incident and risk reporting and communications mechanisms, including	Partially met

	identification of roles and responsibilities, primarily are ESMS, MOC, HazIDs/HazOPs, KMI/PINS, CERP, and safety bulletins. PMC uses KMI/PINS to report incidents and make necessary notifications internally. Through quarterly, biweekly, and weekly management meetings as well as safety meetings, reports, KMI/PINS, and an open-door communication culture, staff is encouraged to share and report identified hazards or risks. The AER tested the sharing of risk information at the field level through monthly safety meeting minutes. Although there is inconsistency in meeting format, this test found that hazards and risks are regularly discussed, and bring aware of hazards and risks appears to be a part of the workplace culture. Asset integrity anomalies are funneled to emergency management through HazIDs and HazOps. ESMS requires records to be maintained for all incidents of emergencies level I to level III and requires transfer of information, knowledge, and experiences acquired as a result of the incident. AER interviews with PMC staff and incident documents indicated that ICS forms have been used for incident reporting. PMC has a number of systems and protocols under development or newly developed to exchange risk information, including the OMS, crisis communication plan, Stakeholder Relations Framework, public awareness and education program, public ambassador training programs, and the 2014 emergency management CI plan. It is recognized that standardized controls and risk reduction options are not always selected due to site-specific circumstances. However, not documenting site-specific risk reduction decisions could make it more difficult to duplicate successful risk mitigation options in the future or avoid those options that were not as successful. There is also the benefit of knowledge transfer should experienced staff turn over time. Although interviews with PMC staff and a review of obtained minutes for some meetings indicated risks and issues are being discussed, the action items and follow-up on progress are not being recorded in a formal manner in all cases. The KMI system is used to record incident and hazard date, but there is a gap that allows information to be excluded for an “Incident” entry that would normally be required. Alignment of workflow tracking information from	

	incident to corrective action is not consistent, and there is a lack of clarity for staff so they can differentiate between “corrective action” and “lessons learned.” If corrective action deadlines are not tracked consistently and clearly, it becomes more difficult to measure performance and ensure that correction action are being completed in a timely manner.	
2018	The ORM program standardized how risks are identified, assessed, and mitigated across the organization. In the development of a corrective action process, PMC has standardized how corrective actions are designed, implemented, evaluated, and communicated, including the differentiation of lessons learned from corrective actions. Use of a tracking software system has contributed to the ability of PMC to monitor and track corrective actions from development through to completion. PMC has made several improvements to its tracking and monitoring programs, which have allowed it to collect and monitor meeting minute action items, in addition to details on various regulatory, stakeholder, and compliance items, such as hazard identifications, incidents, corrective actions, and noncompliances.	Met

Appendix 2 Abbreviations

AC	alternating current
AER	Alberta Energy Regulator
BCP	business continuity plan
BP	British Petroleum
CEO	chief executive officer
CERP	corporate emergency response plan
CGA	Canadian Gas Association
CI	continuous improvement
CP	cathodic protection
CSA	Canadian Standards Association
CMS	contract management system
DC	direct current
DDS	Digital Data Submission
EAM	enterprise asset management
EHSL&R	Environmental, Health, Safety, Land and Regulatory Department
EH&S	environmental, health and safety
ERP	emergency response plan
ESMS	PMC's Environmental Safety and Management System v1, 05/07/2010
EVP	executive vice president
HazIDs	hazard identifications
HazOps	hazard and operability study
ICS	incident command system
IHA	industry hazard analysis
ILI	in line inspection
IMP	integrity management plan
IT	information technology
KMI	PMC's incident notification system
KPI	key performance indicator
LPG	liquefied petroleum gas
MOC	management of change
MOP	maximum operating pressure
O&M	operations and maintenance
OMS	operations management system
ORM	operational risk management
PA	public awareness
PAA	Plains All American
PIMM	Pipeline Integrity Management Manual
PINS	PMC's incident notification system
PMC	Plains Midstream Canada
QC	quality control
RACI	responsible-accountable-consulted-informed

SIPM	supplier information performance system
SME	subject matter expert
SCM	supply chain management
SOP	standard operating procedures
SWOT	strengths-weaknesses-opportunities-threats