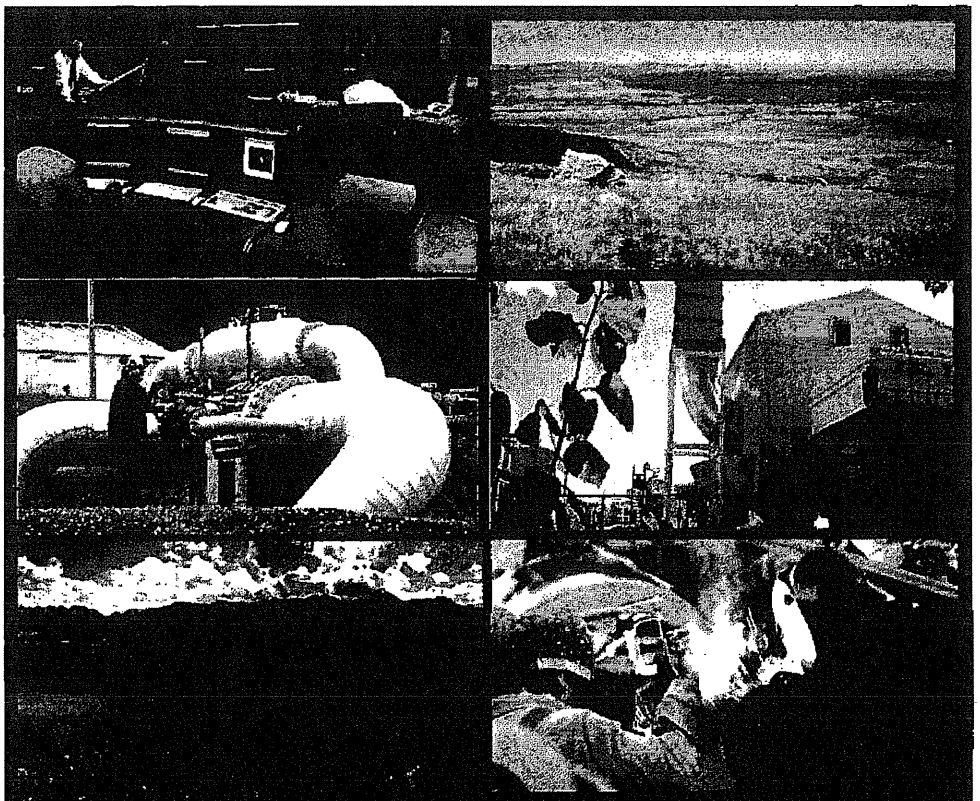

Audit of TransCanada PipeLines Limited's Management Processes for the Alberta System

FINAL REPORT
January 25, 2010

PRICEWATERHOUSECOOPERS

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1 Introduction

1.1 About TransCanada and the Alberta System

1.1.1 TransCanada

TransCanada Corporation is a leading North American energy company focused on natural gas transmission, power generation, and gas marketing services. The company operates approximately 59,000 km (36,500 miles) of wholly owned pipeline with interest in another 7800 km (4800 mi), transporting a daily volume of roughly 15 billion cubic feet within Canada, the United States, and Mexico.

TransCanada owns and operates three main pipelines in Canada:

- The Alberta System (also occasionally referred to by its historic legal name NOVA Gas Transmission Limited or NGTL)
- The Canadian Mainline
- Foothills Pipeline

The company also operates the Trans Quebec & Maritimes Pipeline.

This audit report addresses the Alberta System only and was prepared for TransCanada on behalf of NOVA Gas Transmission Limited.

1.1.2 The Alberta System

The Alberta System is a 23,500 kilometre (14,100 miles) pipeline network that gathers natural gas for use both in Alberta and for delivery to provincial border points for export to North American markets. It is one of the largest systems in North America and gathers 66 per cent of the natural gas produced in Western Canada. A map of the Alberta System is presented in Appendix 1.

1.2 Assignment Background

Prior to 2009, TransCanada's Alberta System was provincially regulated by the Alberta Utilities Commission (AUC). In June of 2008 TransCanada applied to the National Energy Board (NEB) to effect recognition that the Alberta System is by law properly within Canadian federal jurisdiction and subject to regulation by the Board as part of a single federal undertaking. On April 15, 2009, the NEB issued Certificate of Public Convenience and Necessity GC-113 (the "Certificate") for the continued operation of the Alberta System under federal jurisdiction. The Certificate was issued pursuant to the Board's determinations in Decision GH-5-2008 and was effective on April 29, 2009. The

Alberta System on that date ceased to be under provincial jurisdiction, came under federal jurisdiction, and is now subject to regulation by the Board.

Condition 10 of the Certificate required TransCanada to engage a third party auditor to undertake an audit of the Alberta System within nine months of the effective date of the Certificate. In October 2009, TransCanada engaged PricewaterhouseCoopers LLP ("PwC") as the third party auditor.

1.3 Objective

The primary objective of the audit was to evaluate the implementation and effectiveness of the compliance management processes and systems within the Alberta System designed to achieve the goals of the *Onshore Pipeline Regulations (1999)* and other NEB requirements.

1.4 Scope

1.4.1 Organizational scope

Our audit was limited to the Alberta System. The Alberta System does not include the company's natural gas storage facilities near Edson, Alberta, or the Foothills Pipeline.

1.4.2 Regulatory Compliance Scope

The audit focused on the company's management systems and processes and evaluated those systems in the context of their effectiveness in achieving compliance with the following Acts, Regulations, and other NEB related requirements:

- National Energy Board Onshore Pipeline Requirements, 1999
- National Energy Board Pipeline Crossing Regulations Part II, 1988
- National Energy Board All-company letter – Security and Emergency; Preparedness and Response Programs, dated April 24, 2002
- National Energy Board Proposed Regulatory Change 2006-1 – Pipeline; Security Management Programs, dated May 24, 2006
- Canadian Standards Association Z662-07 – Oil and Gas Pipelines
- Canada Labour Code Part II, Jan 2008
- Canada Occupational Health & Safety Regulations, 2009
- Canadian Environmental Protection Act, 1999
- Environmental Emergency Regulations, 2003
- National Fire Code, 2005

- National Building Code, 2005
- Other federal regulations as applicable
- Selected provincial requirements where applicable

1.4.3 Functional Scope

The audit covered a number of functional areas within TransCanada. Responsibility for worker performance within certain areas such as workplace safety and environmental protection often spanned numerous levels and groups within the organization, whereas managerial responsibility and accountability tended to rest with certain departments and groups both in the field and at head office. The key functional areas were:

- O&E Project Management
  - Pipeline Projects
  - Project Facilities
- Engineering and Asset Reliability
  - Asset strategy and integrity
  - Pipeline integrity
  - Employee development
  - Integrated public awareness
  - Materials and standards
  - Facilities reliability – electrical, control, mechanical, and civil engineering
- Security
  - Physical security (gas control)
  - Cyber security (SCADA environment)
- Community, Safety & Environment
  - Environmental protection
  - Workplace safety
  - Emergency preparedness and response
  - Land services
- Canadian Pipeline Operations Compliance
  - Regulatory monitoring
  - Incident management & reporting
  - Operational audits
- Regulatory services
- Business management services

1.5 Audit Criteria

Our audit criteria consisted of a combination of the following:

- The requirements set out in the ISO 14001 Standard for Environmental Management Systems. Because the scope of the audit extended beyond just

environment, the ISO requirements were adapted to be more generic and applicable to the functional areas listed in 1.4.3.

- Selected sections and clauses set out in the Acts, regulations, and codes listed in 1.4.2. Although the sections and clauses were ultimately chosen based on their relevance to TransCanada's operations and the practical constraints of the audit, an effort was made to ensure that the key requirements of the Onshore Pipeline Regulations 1999 and the recent NEB letters of notification were covered.

1.6 Methodology

Our audit was conducted in accordance with the ISO 19011 Guidelines for Auditing Management Systems. As such, our audit consisted of three main stages: planning, information collection, and reporting.

1.6.1 Planning

The planning stage of the audit consisted of several key steps, as follows:

- Introductory meeting with our TransCanada contacts to confirm the background and context of the audit, as well as the audit objectives, scope, criteria and timeline for completion
- Development of audit protocols. We developed two sets of audit protocols: an Interview and Document Review Guide for use primarily at head office, and a Site Inspection Guide for use at the field level. These protocols were submitted to the NEB for their review and comment prior to commencement of the audit as per the agreement between TransCanada and NEB.
- A one-hour kick off meeting and presentation to approximately twenty TransCanada personnel at TransCanada Corporate Office to review the audit objectives, scope, criteria and timeline.
- Assembly of the audit team and assignment of roles and responsibilities
- Scheduling of the document review, interviews, and field visits
- A meeting between representatives from the NEB, TransCanada, and PwC on November 10 to discuss the audit objectives and process, the timeline, and the final deliverables.

1.6.2 Information Collection

The information collection stage consisted of the following key steps:

- We interviewed approximately 75 TransCanada personnel at head office and at selected regional/area offices. The list of interviewees is presented in Appendix 2.

- We reviewed a large sample of TransCanada internal documents and records (both hardcopy and electronic), including but not limited to program descriptions, operating procedures, and routine performance reports. A list of these documents is presented in Appendix 3.
- We reviewed, where applicable, TransCanada's electronic databases, information repositories, reporting systems, and other intranet-enabled tools.
- We visited a sample of TransCanada field offices, operating sites, and rights of way vantage points. The field visits included a combination of interviews, document reviews, and site inspections. A summary list of the sites visited is presented in Appendix 4.
- We held daily meetings with our TransCanada Audit Project Lead to review issues and concerns identified during each day's interviews and to discuss next steps.

1.6.3 Reporting

This report contains the key observations and conclusions from our audit. We have endeavoured to provide a fair and balanced view of the areas of strength and opportunities for improvement in TransCanada's management systems and processes. Neither TransCanada nor the NEB specified a format for our report.

Several draft reports were submitted to TransCanada for review starting in late December 2009. The goal of these reviews was to ensure that the report contained no factual errors or omissions. All final conclusions and judgments based on the audit evidence collected are the responsibility of PricewaterhouseCoopers LLP.

1.7 Audit Team

The audit team comprised seven experienced PwC auditors and one external contractor retained by PwC. Team members were selected on the basis of their management systems and audit experience and familiarity with energy company operations. The team members are listed below. All are PwC staff except where noted.

- PhD, P.Biol., CEA – Project Manager and Overall Lead Auditor
- B.Sc., M.Ec., EMSLA – Audit Team Member
- B.Sc. – Audit Team Member
- s.19(1) P.Eng., M.E.Des., EMSA – Audit Team Member
- B.Comm. – Audit Team Member
- B.Sc. – Audit Team Member
- B.Sc., MBA – Audit Team Member
- P.Eng. (contractor) – Pipeline Engineering Specialist and Audit Team Member

1.8 Limitations

Although we visited a sample of TransCanada operations, we did not visit all sites. Although we believe our sample of sites to be sufficiently representative from an audit perspective, we cannot be responsible for identifying weaknesses in the management processes at operations we did not visit.

The scope and nature of our assessment, including the selection of sample sites, were defined with and agreed upon with the TransCanada Audit Project Lead. Had we performed additional procedures, visited other sites, or visited the selected sites at other times, other matters might have come to our attention. Our report has been prepared based on the information made available to us. We have not audited or verified the source documentation (e.g., documents provided to us), except as otherwise noted. We have no means to determine the completeness of the information provided to us during interviews or the impact of any undisclosed material facts on our comments.

2 Summary of Key Findings

During our assessment we had the opportunity to make many observations on TransCanada's management systems and practices relevant to the audit criteria. As such, we noted many areas of both effective management as well as areas where process enhancements could and should be made. We have condensed these to a series of *themes*, which have been grouped below into "Strengths" and "Opportunities for Improvement". A summary of our audit observations and findings is presented for each management system element in Section 3 of this report.

We have noted in Section 2.3 the areas where TransCanada has made or is in the process of making management process changes as a result of the change in regulatory authority from the AUC to the NEB.

2.1 Key Strengths

2.1.1 With very few minor exceptions, the management processes and systems used within TransCanada's Alberta System are the same processes used in the company's other NEB regulated pipeline operations.

Our interview and documented evidence indicates that, with few exceptions (see Section 2.3), TransCanada employs the same management programs and processes within its Alberta System as it does in its other pipeline operations. In particular, the TransCanada Operating Procedures (TOPs), which are relied on by management and field staff for planning and executing operational and maintenance activities, have been intentionally designed to meet the strictest regulatory requirements within their operating areas, and have been implemented across the company's entire operations. All other management processes – for example project management, pipeline integrity, and the audit program – are likewise universal rather than tailored to certain regions or operations. As a result, TransCanada management and staff have not experienced and do not anticipate any significant program changes or difficulties as a result of the change in regulatory authority from the AUC to the NEB.

2.1.2 There is a sound understanding of the regulatory requirements and standards across the company.

We noted during our interviews that management and staff had a high degree of familiarity with OPR 99 and other NEB requirements. Numerous TransCanada staff are in regular direct contact with the NEB on specific regulatory issues or are actively involved in the Canadian Energy Pipelines Association working groups which regularly meet to discuss the regulatory requirements. TransCanada's technical/engineering staff

in particular are very familiar with the CSA Z662-07 standard, with numerous interviewees indicating they were members of the technical committees that either wrote the original standard or are in the process of reviewing and updating it.

2.1.3 TransCanada's management systems and programs have been specifically designed to comply with the NEB and other regulatory requirements.

During our interviews, program managers across all the functional areas frequently pointed to specific requirements within OPR 99 and/or the CSA Z662-07 as the basis for their programs and procedures. Also, as mentioned in 2.1.1, the process for developing and maintaining the TOPs involves a review of the applicable regulations in each jurisdiction where the company operates and selecting the strictest as the basis for the procedure.

2.1.4 The company has developed an extensive inspection and audit program and culture

The company has developed a comprehensive multi-tiered program of inspections and audits for all its operations. The program is structured as follows:

Tier 4	Third party audits and inspections conducted by third parties, including regulators. Focus on regulatory compliance and management system effectiveness.	Company-wide every 3 to 5 years
Tier 3	HSE management system reviews conducted by internal TransCanada teams.	Every region and major facility every 2 to 3 years
Tier 2	Planned inspections and program reviews at operating facilities. "Major" inspections conducted at all compressor stations and exports sites; "minor" inspections conducted at a sample of smaller facilities (e.g., meter stations).	Annually
Tier 1	Various site, pre-job, construction, and equipment inspections at operating facilities by site staff.	Daily, Weekly, Monthly

Additional information on the audit and inspection program is presented in Appendix 5.

In addition to the above, in 2007 TransCanada initiated a "Consolidated Compliance Audit" program. The Consolidated Compliance Audits are extensive assessments of regulatory compliance, conformance with TOPs, and evaluation of risk management programs at major facilities every 3 to 4 years. The consolidated audits will include a verification of regulatory compliance and an assessment of the management systems at the facility level on a periodic basis.

Interviews also indicated that the company has other specialized inspection and audit programs, such as:

- Quality audit program for gas control operations
- Quality audits of materials and equipment suppliers to ensure engineering specifications are met
- Project audits and inspections

All this inspection and audit activity has resulted in a strong audit "culture", in which both management and staff rely on audits as a means of ensuring and confirming regulatory compliance and satisfactory risk management. Numerous interviewees indicated that our audit was the second or third one they participated in 2009.

2.1.5 The company has developed a comprehensive emergency preparedness and response program.

TransCanada developed comprehensive emergency management system that includes, but is not restricted to the following elements:

- assignment of responsibilities regarding emergencies (i.e. coordination, emergency call-out, media contact, perimeter control)
- process for the identification of potential emergencies
- requirements for emergency planning zones
- requirements for all phases of an emergency, including discovery and alert, evacuation of personnel, containment and post emergency analyses
- maps of fixed facilities that show the location of medical and first aid facilities and equipment, fire control equipment, evacuation routes, gathering points, location and content of hazardous materials, location of emergency operations centers
- identification of requirements for outside assistance (i.e. local fire departments, police departments, industrial co-operatives, area mapping, hospitals)
- requirements for liaison with government and other agencies
- process for establishing emergency operation centers
- information system to record emergency data
- emergency training program and process for planning and conducting exercises

The company has documented its emergency management system within an Emergency Management System Manual ("IMS Manual") that is annually updated and filed with the NEB. Site specific emergency plans are developed for TransCanada's operational regions and individual compressor stations and selected critical meter stations according to the guidance provided by the IMS Manual (Section 10 Forms and Templates). These plans include site identifiers, detailed listing of contacts (i.e. internal company emergency contacts, provincial disaster services contacts, local emergency response agencies), location of hazardous chemicals on site, list of residents in proximity, local emergency

equipment, local hazards / natural disaster assessments, and action plans developed for hazards identified (at minimum each site has evacuation plan, isolation and shut-off procedure, on site spill handling and containment plan).

2.1.6 The company has developed a comprehensive pipeline integrity program.

As part of our audit we interviewed the team responsible for the pipeline integrity program and reviewed their program documents and procedures. The goal of this program is to identify and prioritize potential areas of weakness within the pipeline system and to take effective preventative maintenance actions as appropriate. We noted that the integrity program is based on a comprehensive risk-based approach employing a combination of risk assessment software analysis and technical review by staff. Our pipeline engineering specialist indicated that the TransCanada program was one of the most thorough and comprehensive programs he has ever seen within the Calgary energy industry. An overview of the TransCanada Pipeline Integrity Program is provided in Appendix 6. As mentioned previously, the same pipeline integrity management program is used within the Alberta System as within the company's mainline operations.

2.1.7 The company has developed comprehensive processes and tools for managing projects.

TransCanada has developed a Project Management System, consisting of 13 project management guides by knowledge area (integration, cost, schedule, scope, quality, risk, procurement, communication, human resources, safety, environment, regulatory, operations), and project playbooks (compression projects, measurement projects). Collectively these support the project manager and project team in initiating, planning, executing and closing out projects.

TransCanada's approach to project management generally follows a plan-do-check-act management system. For example:

- As projects progress through a typical life cycle, stage gates serve as decision points to stop or proceed, or to ensure transition to ongoing operations. Project stage gates include deliverables and approvals.
- Predefined Project Control Levels (light, moderate, comprehensive) provide the project team with clear expectations on the standard project controls expected for each knowledge area during each project phase. With project team members drawn from various parts of the company, these processes and associated tools enhance project consistency and support understanding of how specific project controls align with key business drivers.
- Project oversight includes a variety of management reporting and checkpoints such as regular project reviews, detailed and summary level reporting, performance metric reporting, and scorecard metrics. Reporting typically

addresses lessons learned/ future opportunities and recognition/ highlights as well as project risk management.

2.1.8 The company has developed an extensive process for managing the competency and training requirements for field staff.

TransCanada's Employee Development Group has developed a comprehensive internal program and database (the "Performance Development System" or PDS) for identifying technical competency requirements for field staff, designing and delivering the training, assessing knowledge, and tracking employee training. requirements and records. Verification of training is accomplished using performance reviews and documented skills testing. Training requirements and completion is tracked in PDS for each employee and contractor, and the system allows audit reports to be created that show planned training compared to completed training. Monthly reports are created by the Regional Training Coordinator and reviewed by TransCanada management.

Approximately 15 Qualification Programs have been developed for identified high risk work. The development of these programs is completed by a team of Employee Development staff and internal/external Subject Matter Experts (SMEs) on the topic, as required.

2.1.9 The company has an effective process for monitoring and analyzing changes in regulatory requirements and modifying programs and procedures accordingly.

TransCanada has developed a process for monitoring proposed and actual changes in relevant regulations and government policies, reviewing and assessing these changes in terms of impact to the company's operations and procedures, and incorporating these changes into their programs and procedures as appropriate.

The company has established a Legislative Monitoring Team with representatives from a number of business areas including Field Operations and Engineering, Engineering and Asset Reliability, Energy Operations and Community, Safety and Environment. Through routine monitoring of applicable regulatory requirements, as well as industry best practices and other requirements, changes that may affect the company's operations are identified. Impacts of these changes are analyzed and communicated through the company using the Regulatory Requirement Analysis Statement. Any affected procedures or documentation are revised and circulated for comment as appropriate, and final revisions are completed and approved by management. Revised documentation is issued for use with appropriate personnel notified of changes.

2.2 Key Opportunities for Improvement

2.2.1 The company's site inspection program is not effective.

During our field visits we noted numerous deficiencies at the operating sites, ranging from insufficient signage to inadequate chemical and waste storage. Only at one site did we identify a relatively high risk legacy situation – the improper installation of electrical transformers in the basement of a compressor station (estimated to date back to the 1960s). See Appendix 7 for a detailed inventory of site visit findings.

Our findings suggest the company's site inspection program needs to be improved. We believe that most if not all of our findings should have been identified and addressed during the regular internal site inspections. Based on our discussions, we do not believe this weakness is a result of inadequate training or awareness of field staff; instead we believe it may be a result of one or more of the following factors:

- Inspection findings are not shared between sites
- Inspection findings are not aggregated to identify trends, patterns, and root causes
- Inadequate or out of date inspection checklists
- Site staff unable to objectively assess their own facilities, potentially resulting in shortcutting of the inspection process or continuous oversight or "acceptance" of deficiencies

Note: while our findings relate to a sample of Alberta System facilities, interviews suggest that the same planned inspection process is used across all pipeline operations.

2.2.2 TransCanada's Security Management System components does not meet all the NEB's requirements for physical security programs

TransCanada is currently in transition to fully comply with NEB Pipeline Security Change Notification (2006). For example, the Notification requires that the company implement a process of evaluating security risks to facilities and operations, including evaluating vulnerabilities of facilities and operations. TransCanada's Gas Control and Operations Planning groups completed the identification of critical infrastructure in 2002; however, vulnerability of facilities and operations (physical and IT systems) was not included at the time of assessment. TransCanada is currently establishing a new documented process for Physical Security and Incident Reporting that addresses Security Vulnerability Assessments and Security Reviews and Critical Facility Screening (DRAFT – Physical Security and Incident Reporting Procedure and Critical Facility Screening Procedure) in response to the NEB Pipeline Security Change Notification (2006).

2.2.3 *The NEB's requirements for enhancements to the cyber-security system have not yet been fully addressed.*

Interviews with representatives from the group responsible for design and management of the company's SCADA system indicated that while there are numerous programs and initiatives in place to ensure the security of the SCADA system, the group has not yet fully met all the requirements set out in the NEB's Pipeline Security Change Notification, 2006. Specifically we noted:

- There is no SCADA specific security policy
- There is no formalized process for evaluating security risk regarding SCADA and other relevant control systems implemented
- There is no comprehensive definition of what constitutes a security incident related to process control or SCADA systems
- There are no documented roles and responsibilities regarding SCADA security
- There is no formal security training defined for automation integrity staff related to their security responsibilities
- Security monitoring is fragmented and there is a risk of being incomplete
- It is not clear what cyber-security events should be tracked in IIT, the company preferred tool for managing physical security incidents, or by other means
- There are no key metrics defined to assist in summarizing and analyzing security incidents

It is important to point out that the representatives from the SCADA group did indicate that they will be embarking on an initiative in the near future to more rigorously document their cyber-security programs for TransCanada's power operations in the US, and that this program will be extended at a later date to include the company's pipeline operations.

2.2.4 *The NEB's requirements for enhancements to the emergency preparedness and response program have not yet been fully addressed.*

Interviews with representatives from TransCanada's Emergency Preparedness and Response (EPR) Group and a review of associated documents indicated that while the company has developed a comprehensive EPR program, it does not yet meet all the requirements set out in the NEB's All-company letter "Security & Emergency Preparedness and Response Programs" (2002), in particular:

- The requirement to keep up-to-date, readily accessible contact lists of all persons potentially involved in an emergency;
- The requirement to have a continuing education program for all appropriate agencies and organizations (including all potential First Responders, i.e., fire,

police, and medical services), and the public adjacent to the pipeline to inform them of the location of the pipeline and the facilities, and to inform them of potential emergency situations and emergency procedures to be followed.

- The requirement to develop, regularly review and update as required, and to submit the emergency procedures manual and any updates that are made to it to the Board.

Interviews with TransCanada personnel indicate that the reason for non-compliance with these requirements is simply one of practicality:

- A small portion of the company's pipelines are located in populated areas, such as Metro Toronto, and maintaining an up to date list of local citizens would be impractical.
- Because the company's pipelines are in proximity to so many communities across Canada, coordination of emergency response training with all possible external emergency services providers would require TransCanada to plan, coordinate, and evaluate approximately 1000 such training sessions per year.
- The company annually submits its IMS – Emergency Management System Manual to the Board. This manual provides guidance and assistance in preparing for and responding to emergencies. The document is not a comprehensive manual as defined by NEB All-company letter re: Security & EPR Programs (2002) as it does not includes site specific emergency response procedures and information, list of persons in emergency planning zones, environmental or other areas requiring special consideration, area maps etc. To complement the IMS document, TransCanada has developed regional and site specific emergency plans for all major facilities, compressor stations and critical meter stations using the "General Emergency Plan Template"; this follows the company's internal guidance (Emergency Management System Section 10). However, these additional plans are not submitted and filed with the Board because of the high number of these plans as well as confidentiality concerns around the information provided.

Audit evidence indicates that in the past TransCanada has raised these concerns with the NEB both directly and through the Canadian Energy Pipeline Association and these parties have been in discussion on the best resolution.

2.2.5 There is a relatively large backlog of outstanding issues in IIT

We noted during our field visits that there is a relatively large backlog of issues in the IIT. These items consist of follow up actions from incidents and issues raised during internal inspections and audits. We noted that some of the issues were more than twelve months old. It is our understanding that the issues tagged as "regulatory" take priority for attention before issues tagged as "best practice".

In our view, the relatively large accumulation of older issues is of concern for two reasons. First, management's tolerance of the large volume of issues, over time, sends a message that delayed action on issues is acceptable. Second, a lack of timely action on identified deficiencies can jeopardize a "due diligence" defence in the event of an issue-related incident in the future.

There are at least four potential factors that could be contributing to the large backlog of issues:

- clear guidelines for the management of the backlog, including target tolerances (quantity of issues, types of issues, and length of time outstanding), assignment of accountabilities, escalation of outstanding issues, and timely retirement of issues, have not been established
- overloading of the issue identification process because of the relatively high number of internal inspections and audits
- insufficient resources (e.g., people, budget, etc) at the field level to handle the volume of requests
- the management of change process is deficient in that accountability for action items is not transferred when there is an organizational or personnel change

We also noted that TransCanada has not established formal procedures for monitoring and management of the IIT backlog in order to help ensure items are resolved appropriately and in a timely manner. Such procedures could include guidance on management's expectations on resolving backlog issues, and escalating or removing long-standing issues.

2.2.6 Consolidation of exemptions and waivers from regulatory requirements

During our interviews we noted that TransCanada occasionally negotiates unique interpretations, exemptions, and waivers to certain regulatory requirements with the NEB and other regulatory stakeholders during projects and operational changes. It is our understanding that representatives from numerous TransCanada departments provide advice and input into the negotiations, but the final agreement is maintained with the specific project or operations file. This creates a risk that these agreements could be misplaced or forgotten during organizational changes. We suggest that copies of these

agreements be maintained in a central file in the Regulatory Services or the Legal Department to ensure they are always readily available in a timely manner.

2.3 Management Process Changes Resulting from the Shift to NEB Regulation

Although we noted that most of the company's management processes are unaffected by the change in regulatory authority from the AUC to the NEB, during our audit we noted several areas where TransCanada has modified or is in the process of modifying its management processes and procedures. The interviewees indicated that these changes have or are being addressed by the company' internal specialists through the company's regulatory change management processes.

2.3.1 Incident reporting changes

All right-of-way related incidents – e.g., unauthorized excavations by third parties, pipeline exposures, identified leaks, etc – formerly reported to the AUC will now be reported first to the Transportation Safety Board and the NEB. Interviews with relevant TransCanada personnel indicate that the changes have been made to the company's documented reporting process. Incidents involving employee injuries will still be reported to Alberta Labour, and incidents resulting in impairment to the environment will still be reported to Alberta Environment.

2.3.2 Application of "Safety Zone" in Alberta

Under the AUC regulation, TransCanada required that all third parties (including landowners) must notify the company of any cultivation deeper than 45 cm (18 inches), or any ground disturbance (excavating, digging, trenching, drilling) deeper than 30 cm, and within 30 metres of the actual pipe. Under the NEB, TransCanada must require all third parties to notify the company of all activities or ground disturbances (excavating, digging, trenching, drilling) deeper than 30 cm (1 foot),and/or blasting, on or within 30 metres (98 feet) of the edge of the pipeline right-of-way (the "safety" zone). TransCanada has initiated a program to communicate this information to all Alberta-based landowners affected by TransCanada's right-of-way.

2.3.3 Boiler safety

The Alberta Boiler Safety Association (ABSA), under authority of the Alberta government, required that all provincially regulated companies meet the ABSA Safety Code and associated requirements, including the requirement to be inspected by a qualified external inspector once per year. TransCanada's pressurized vessels specialists are in discussion with the province to see whether these requirements remain in place

now that the pipeline system is under NEB authority. TransCanada owns and operates many pressurized vessels including boilers, air compressors, and pressure relief valves.

2.3.4 Storage/process tanks

TransCanada has approximately 1500 above and underground "process tanks" installed at its meter stations in Alberta. These tanks are approx 1.2 m^3 in size and are designed to collect scrubbed liquids from the natural gas stream received from suppliers. When the Alberta System was under AUC authority, these tanks were required to meet the Energy Resources Conservation Board's (ERCB) Directive 55: Storage Requirements for the Upstream Petroleum Industry, not Alberta Environment's Waste Control Regulation 192/96. TransCanada has since determined that Waste Control Regulation 192/96 does not apply to the Alberta meter stations, because OPR 1999, Section 11(c) clearly gives federal oversight of these tanks to the NEB, as it states that a station (including meter stations) must be equipped with facilities for the containment, handling and disposal of wastes incidental to the station's operations.

3 Summary of Observations and Findings by Management Element

3.1 Our Assessment Criteria

Our prime audit objective was to evaluate the implementation and effectiveness of the management systems and TransCanada has implemented to ensure regulatory compliance within the Alberta System. For this reason, we used the ISO 14001 (2004) Standard for Environmental Management Systems as our core evaluation criteria. We chose ISO 14001 for several reasons:

- It is the foundation for TransCanada's Health, Safety and Environmental management system.
- It is the basis for the NEB's Safety and Environmental Management System.
- It is widely recognized within Canada and internationally as a robust management system standard.

The management elements within the ISO 14001standard are:

- Corporate Policy
- Aspects/Risk Identification
- Legal and Other Requirements
- Objectives, Targets and Programs
- Resources, Roles, Responsibility and Authority
- Competence, Training and Awareness
- Communication
- Documentation
- Control of Documents
- Operational Control
- Emergency Preparedness and Response
- Monitoring and Measurement
- Evaluation of Compliance
- Nonconformity, Corrective Action and Preventive Action
- Control of Records
- Internal Audit
- Management Review

We adapted the guidance set out in the ISO 14001 Standard to make it applicable to other functional areas besides environmental management.

3.2 Assessment Results

The following sections set our key audit findings and observations for each management element using the following template:

Management Element

ISO 14001 Guidance (adapted) *Adaptation of the requirements in ISO 14001 so that they apply to the other functional areas in addition to environmental management.*	
Relevant regulatory requirements considered during the audit: ▪ The specific regulations (including sections and subsections) referenced in our audit protocols and incorporated into our interviews, document reviews, and site visits	
	Auditor observations
Strengths	▪ Observations of effective management practices identified during the audit
Opportunities for improvement	▪ Areas identified during the audit where TransCanada could enhance its management practices. Where these relate to specific regulatory requirements, citations are provided; otherwise they are identified as "voluntary management practice".

3.2.1 Corporate Policy

ISO 14001 Guidance (adapted) *Top management shall define the organization's policies and ensure that, within the defined scope of its management systems, the policies* *a) are appropriate to the nature, scale and impacts of its activities, products and services,* *b) include a commitment to continual improvement and prevention of pollution,* *c) include a commitment to comply with applicable legal requirements and with other requirements to which the organization subscribes which relate to its aspects,* *d) provide a framework for setting and reviewing objectives and targets,* *e) are documented, implemented and maintained,* *f) are communicated to all persons working for or on behalf of the organization, and* *g) are available to the public.*	
Relevant regulatory requirements considered during the audit: ▪ *Canada Labour Code, Part II, Section 122.1 and 124* ▪ *NEB Pipeline Security Change Notification, 2006*	
	Auditor observations
Strengths	▪ Health, Safety, and Environmental (HS&E) policy developed and found posted in area offices. ▪ HS&E, Aboriginal Relations, and Public Safety policies (or "Commitment Statement") are publicly available on TransCanada's website. ▪ Policies appear to be comprehensive and supported by senior management.

Opportunities for improvement	▪ The company has not developed a policy relating to physical and cyber-security.

3.2.2 Risk Identification

ISO 14001 Guidance (adapted)

The organization shall establish, implement and maintain a procedure(s) to identify the environmental, safety, and other risks associated with its activities, products and services within the defined scope of the management system that it can control and those that it can influence taking into account planned or new developments, or new or modified activities, products and services.

The organization shall document this information and keep it up to date. The organization shall ensure that the significant environmental aspects are taken into account in establishing, implementing and maintaining its management system.

Relevant regulatory requirements considered during the audit:

- *NEB Pipeline Security Change Notification, 2006*
- *NEB Onshore Pipeline Regulations, 1999, Section 10(1)*
- *NEB Onshore Pipeline Regulations, 1999, Section 48*
- *Canada Labour Code, Part II, Section 122.2*
- *Canada Labour Code, Part II, Section 124*
- *CSA Z662-07, Annex B*

Auditor observations	
Strengths	▪ TransCanada uses a risk management framework consistent with CSA Z662-07, Annex B for managing pipeline integrity. ▪ Risk assessment is an element of the company's HS&E management system. ▪ TransCanada requires work authorizations and job hazard analyses (JSA) to be completed for all high risk activities, as defined in the TransCanada Occupational Health, Safety and Environmental (HS&E) Management System. As a part of the JSA and job planning process, each work team decides and documents what measures are to be taken to eliminate hazards (PPE, fall protection, securing area etc). ▪ Project management teams regularly monitor status of project-related incidents, evaluate trends and communicate lessons learned. ▪ TransCanada provides workers with required tools, equipment and guidance to ensure they have everything required as per results of JSA ▪ The company develops detailed Environmental Protection Plans for each construction project it undertakes. Monitoring and inspection activities appear appropriate. ▪ Risk registers and response plans are developed for all projects; appropriate level of risk management controls are mandatory to satisfy stage requirements to progress through the project life cycle.
Opportunities for improvement	▪ The company has not formally identified and assessed the cyber-security risks associated with its SCADA system as required in the NEB Pipeline Security Change Notification, 2006. – see Section 2.2.3.

3.2.3 Legal and Other Requirements

ISO 14001 Guidance (adapted)

The organization shall establish, implement and maintain a procedure(s)

a) to identify and have access to the applicable legal requirements and other requirements to which the organization subscribes related to its operations, and

b) to determine how these requirements apply to its operations.

The organization shall ensure that these applicable legal requirements and other requirements to which the organization subscribes are taken into account in establishing, implementing and maintaining its management systems.

Relevant regulatory requirements considered during the audit:

- *NEB Onshore Pipeline Regulations, 1999, Sections 4, 6*

	Auditor observations
Strengths	▪ TransCanada has developed a Legislative Monitoring Process that includes routine monitoring of applicable regulatory requirements or best practices. Any changes are raised in IIT or is tracked by designated representatives (i.e., CSE department "Triage" process) enabling broad communication of potential impacts on the company's operations. ▪ Any affected procedure (TOPs) or other documentation identified as part of the Regulatory Requirement Analysis Statement process is revised, circulated for comment as appropriate, finalized and approved by management. ▪ Legal and other requirements are built into individual TOPs; adherence to these requirements is monitored through the tiered inspection and audit program. ▪ The Regulatory Services group has prepared a concise process flow diagram and a filing checklist for internal use clearly outlining regulatory filing requirements to assist in guiding TransCanada's Projects or O&M managers. A designated member of the Regulatory Services group is an integral part of all Projects and O&M teams.
Opportunities for improvement	▪ Although electronic copies of correspondence with regulators is maintained for each project file, the company does not maintain a centralized consolidated file of interpretations, exemptions, and waivers from regulations as agreed upon with regulators (voluntary management practice). – see Section 2.2.6.

3.2.4 Objectives, Targets and Programs

ISO 14001 Guidance (adapted)

The organization shall establish, implement and maintain documented performance objectives and targets, at relevant functions and levels within the organization.

The objectives and targets shall be measurable, where practicable, and consistent with the corporate policies, including the commitments to prevention of pollution, to compliance with applicable legal requirements and with other requirements to which the organization subscribes, and to continual improvement.

When establishing and reviewing its objectives and targets, an organization shall take into account the legal

and other requirements to which the organization subscribes, and its significant risks and aspects. It shall also consider its technological options, its financial, operational and business requirements, and the views of interested parties. *The organization shall establish, implement and maintain a program(s) for achieving its objectives and targets. Program(s) shall include* *a) designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization, and* *b) the means and time-frame by which they are to be achieved.*
Relevant regulatory requirements considered during the audit: ▪ None identified

Auditor observations	
Strengths	▪ The company sets annual corporate performance objectives and targets. These are supported by Area-level objectives and targets.
Opportunities for improvement	▪ In some cases, performance goals or targets may have been established without regard to the underlying specific risks and without a practical means of prioritizing. As a result, some managers may have difficulty assessing whether under-achievement against targets poses a particular operational or other risk.

3.2.5 Resources, Roles, Responsibility and Authority

ISO 14001 Guidance *Management shall ensure the availability of resources essential to establish, implement, maintain and improve the management system. Resources include human resources and specialized skills, organizational infrastructure, technology and financial resources.* *Roles, responsibilities and authorities shall be defined, documented and communicated in order to facilitate effective management.*
Relevant regulatory requirements considered during the audit: ▪ *Canada Labour Code, Sections 126, 134, and 135* ▪ *NEB Pipeline Security Change Notification, 2006*

Auditor observations	
Strengths	▪ The company has assigned roles and responsibilities for HS&E, security, asset integrity, projects and other relevant areas across the company. Typically responsibilities are detailed within various management system guidance documents (e.g., playbooks, manuals, activity charts). ▪ Field related responsibilities are described in TOPs and relevant procedures are provided to contractors. Responsibilities are also communicated through orientations and training, project-specific Safety Management Plans as well as various web pages, reports and safety meetings. ▪ For all staff levels at TransCanada, RACI (responsibility, accountability, consult, inform) matrices are employed.

Opportunities for improvement	▪ Roles and responsibilities regarding SCADA security have not been documented. – see Section 2.2.3

3.2.6 Competence, Training and Awareness

ISO 14001 Guidance (adapted)

The organization shall ensure that any person(s) performing tasks for it or on its behalf that have the potential to cause a significant impact(s) identified by the organization is (are) competent on the basis of appropriate education, training or experience, and shall retain associated records.

The organization shall identify training needs associated with its risks and aspects and its management systems. It shall provide training or take other action to meet these needs, and shall retain associated records.

The organization shall establish, implement and maintain a procedure(s) to make persons working for it or on its behalf aware of

a) the importance of conformity with the corporate policies and procedures and with the requirements of the management systems,
b) the significant operations and related actual or potential impacts associated with their work, and the benefits of improved personal performance,
c) their roles and responsibilities in achieving conformity with the requirements of the management system, and
d) the potential consequences of departure from specified procedures.

Relevant regulatory requirements considered during the audit:

- *TDG Regulations, Part 6*
- *Canada Labour Code, Section 125*
- *NEB Onshore Pipeline Regulations, 1999, Section 46*
- *NEB All-company letter re: Security & EPR Programs, 2002, Section 2.1*
- *NEB Onshore Pipeline Regulations, 1999, Sections 18 (1c, 2); 29 (1c, 2), 54(2)*
- *NEB Onshore Pipeline Regulations, 1999, Section 28*

Auditor observations	
Strengths	▪ The company has a comprehensive competency and training management program which makes use of an electronic database (Performance Development System) for designing, delivering, and monitoring technical training. This system is in place for field personnel including key contractors. ▪ The company has a thorough HS&E orientation process for all contractors and consultants who visit TransCanada sites. ▪ TransCanada conducts regular emergency response training sessions across the company.
Opportunities for improvement	None identified.

3.2.7 Communication

ISO 14001 Guidance

With regard to its risks and aspects and management system, the organization shall establish, implement and maintain a procedure(s) for

a) internal communication among the various levels and functions of the organization,

b) receiving, documenting and responding to relevant communication from external interested parties.

The organization shall decide whether to communicate externally about its significant risks and aspects, and shall document its decision. If the decision is to communicate, the organization shall establish and implement a method(s) for this external communication.

Relevant regulatory requirements considered during the audit:

- *NEB Pipeline Crossing Regulation, Part II, Section 9*
- *CSA Z662-07 Clause 10.3.11*
- *Canada Labour Code, Part II, Section 122.2*

Auditor observations	
Strengths	▪ The company has developed an Integrated Public Awareness program to communicate information on TransCanada's operations to affected communities and landowners. ▪ The company has an effective process for responding to landowner inquiries and third party crossing requests. In Alberta, TransCanada directs everyone to use the province's One Call system.
Opportunities for improvement	None identified.

3.2.8 Documentation

ISO 14001 Guidance (adapted)

The management system documentation shall include

a) the relevant policies, objectives and targets,

b) description of the scope of the management systems,

c) description of the main elements of the management system and their interaction, and reference to related documents,

d) documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant risks and aspects.

Relevant regulatory requirements considered during the audit:

- *NEB Onshore Pipeline Regulations, 1999, Section 20 (1 & 2)*
- *NEB Onshore Pipeline Regulations, 1999, Section 31 (1&2), Section 27*
- *NEB Pipeline Crossing Regulation, Part II, Section 11*
- *NEB Onshore Pipeline Regulations, 1999, Sections 42, 43, 44, 45, 50*
- *CSA Z662-07 Clause 10.4*
- *CSA Z662-07 Clause 9.9*

Auditor observations

Strengths	▪ TransCanada has an extensive library of technical operation procedures (TOPs) which form the backbone of the company's management systems. ▪ TransCanada's HSE management system and associated procedures is well documented according to management system requirements. ▪ A variety of databases are used to contain information necessary to plan, operate and control TransCanada processes. Records of pipeline and facility technical data are kept with the project files. TransCanada also uses the Geofind database to keep all information regarding geographical and physical attributes of pipelines and associated facilities, including alignment drawings, plot plans, site diagrams, and pipe specifications. The IIT database contains all incident related information. The CPM Collector database stores all GPS coordinates for pipe and cathodic protection equipment with records of annual surveys and evidence of completion. Avantis is the work order system that manages maintenance work and contains inspection and pressure test reports.
Opportunities for improvement	▪ The company's cyber-security management system is currently not well documented. Interviews with relevant personnel indicate that the company will document the SCADA and cyber-security management system and associated processes over the next few years, starting with TransCanada's Power division. – see Section 2.2.3

3.2.9 Control of Documents

ISO 14001 Guidance (adapted)

Documents required by the management system shall be controlled. Records are a special type of document and shall be controlled in accordance with the requirements given in 4.5.4.

The organization shall establish, implement and maintain a procedure(s) to

a) approve documents for adequacy prior to issue,

b) review and update as necessary and re-approve documents,

c) ensure that changes and the current revision status of documents are identified,

d) ensure that relevant versions of applicable documents are available at points of use,

e) ensure that documents remain legible and readily identifiable,

f) ensure that documents of external origin determined by the organization to be necessary for the planning and operation of the management system are identified and their distribution controlled, and

g) prevent the unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose.

Relevant regulatory requirements considered during the audit:

- None identified

Auditor observations	
Strengths	▪ TransCanada has a robust information management system in place, governed by a variety of documented policies, programs, standards and schedules. TransCanada uses FileNet as their electronic document management system, and iRIMS to manage hard copy documentation and information in various physical forms. This is a decentralized system where individuals within each department have responsibilities with regards to information management. In addition to the

	enterprise-wide program elements, each department develops, implements and manages their own business-specific information management policies, procedures and guidelines. Once information is acquired or created, its information value is determined by the identified Information Owner, and it is indexed to ensure effective management, retention and retrieval. Accurate indexing ensures that retention values reflect external governance legislation, standards, industry practice and internal operational requirements. Record retention requirements are managed as a schedule by Business Information. ▪ The Records Management group conducts training and acts as a resource for the organization to ensure consistency with regards to information management. ▪ Documents are controlled effectively, as each document is assigned a unique EDMS document item identification number. There is a standard format used for each document that identifies the title, status, effective date and revision number. The EDMS system allows consistent availability of documents at points of use as necessary, for employees and contractors. ▪ FileNet provides document version control. Each version of a document is saved as it is checked in and out of the system. ▪ All information is reviewed on a regular basis to determine its currency and relevancy, to ensure that personnel has access to the most current information, and to identify documents that have outlived their operational usefulness so that they can be discarded appropriately. ▪ Company personnel were all aware that only the EDMS copy of documents such as the TOPs could be considered the "official" version. All printed versions were considered "uncontrolled" and employees were instructed not to rely on them.
Opportunities for improvement	▪ We noted during our interviews that document control practices do not always cascade down to specific desk procedures and other departmental-specific guidance and protocols beyond the scope of the relevant "official" policy and procedure documents (version numbers, dates, owners, etc.)

3.2.10 Operational Control

ISO 14001 Guidance (adapted)

The organization shall identify and plan those operations that are associated with the identified significant risks and aspects consistent with its corporate policies, objectives and targets, in order to ensure that they are carried out under specified conditions, by

a) establishing, implementing and maintaining a documented procedure(s) to control situations where their absence could lead to deviation from the policies, objectives and targets, and

b) stipulating the operating criteria in the procedure(s), and

c) establishing, implementing and maintaining procedures related to the identified significant risks and aspects of goods and services used by the organization and communicating applicable procedures and requirements to suppliers, including contractors.

Relevant regulatory requirements considered during the audit

- *NEB Onshore Pipeline Regulations, 1999, Sections 14, 15, 18, 21, 23, 24, 25, 29, 37, 47, and 48*
- *CSA Z662-07, many sections throughout*
- *NEB Act, Sections 31, 32, 52 and 58*
- *NEB All-company letter re: Security & EPR Programs, 2002, Section 2.1*
- *NEB Pipeline Security Change Notification, 2006*

- *Canadian Environmental Assessment Act, Section 16*
- *Canada Labour Code, Section 125*
- *Fisheries Act, Section 35*
- *National Fire Code & Alberta Fire Code*
- *Transportation of Dangerous Goods Regulations, Sections 3.1, 3.11, 5.1, 5.2, and 6.1*
- *Alberta Building Code (2006), Section 2.2.9*
- *Alberta Water Regulation, Section 6, 35, and 26*
- *Code of Practice for the Temporary Diversion of Water for Hydrostatic Testing (Water Act), Sections 3, 6, 7, 8, 9*
- *Code of Practice for the Release of Hydrostatic Test Water from Hydrostatic Testing of Petroleum Liquid and Gas Pipelines (AEPE Act)*
- *Code of Practice for Compressor and Pumping Stations and Sweet Gas Processing Plants (AEPE Act), Sections 2, 4, 5, 7, and 8*

Auditor observations	
Strengths	▪ TransCanada maintains an extensive library of technical operation procedures (TOPs) that are based on the strictest applicable regulatory and CSA Z662-07 requirements. ▪ The company regularly reviews and updates its operational controls through a formal process that assigns ownership and accountability for different TOPs to different TransCanada managers. The goal of this process is to ensure that each electronic TOP in the database is up to date and reflects current regulatory requirements and best management practices.
Opportunities for improvement	▪ Some interviewees indicated that occasionally there can be temporary gaps in the ownership and accountability for managing certain TOPs following organizational and staff changes. These gaps can persist for some time, depending on the schedule for review and update of the particular TOP. However, we did not see evidence suggesting that these gaps were causing undue risk to operations.

3.2.11 Emergency Preparedness and Response

ISO 14001 Guidance (adapted)

The organization shall establish, implement and maintain a procedure(s) to identify potential emergency situations and potential accidents that can have an impact(s) on the people and the environment and how it will respond to them. The organization shall respond to actual emergency situations and accidents and prevent or mitigate associated adverse impacts. The organization shall periodically review and, where necessary, revise its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations. The organization shall also periodically test such procedures where practicable.

Relevant regulatory requirements considered during the audit:

- *NEB All-company letter re: Security & EPR Programs, 2002*
- *NEB Onshore Pipeline Regulations, 1999, Section 32 (1&2), 33, 35*
- *NEB Pipeline Crossing Regulation, Part II, Section 4 (1)*
- *CSA Z662-07 Clause 10.3.2*
- *Canada Occupational Health and Safety Regulation, 17.4*
- *CEPA 1999, Section 95*

- *Environmental Emergency Regulations (CEPA), Section 3, Schedule 2*
- *Alberta Occupational Heath & Safety Act, Section 18*
- *Alberta Fire Code, 2006, Sections 3.1.2.6 and 3.2.2.5*

	Auditor observations
Strengths	▪ TransCanada Emergency Management Team host an annual meeting with the Regional Emergency Preparedness Coordinators and the Support Departments to discuss changes to the emergency management system (EMS) process and procedures and emergency preparedness and response activities. ▪ TransCanada has comprehensive training program that includes several training modules. Core modules are EMS overview, first response and incident command, communication protocol, virtual emergency operation command, emergency exercise design. This training is supplemented by conducting three levels of exercises: table top (annually in each Area in a Region), external field (annually in each Region) and corporate emergency exercises (annually in selected Region). ▪ TransCanada has an Integrated Public Awareness (IPA) program that informs the public and emergency responders of pipeline locations, potential emergency situations and safety procedures in case of an emergency. As part of the IPA, every 2 years pipeline safety brochures are sent to the affected public and landowners adjacent to and just beyond the pipeline. This baseline program is completed across the entire TransCanada pipeline system. Individual regions extend this with supplemental and enhancement public awareness and safety programs to cater specifically to their required audience (e.g., open house information sessions).
Opportunities for improvement	▪ There is an opportunity to enhance the annual review process (EMS Manual, Section 1.7) for site specific emergency response plans. We noted during the site visits that the emergency response plans at several Compressor stations were partially out of date or incomplete. See Appendix 7 for details. ▪ The effectiveness of the IPA program is currently monitored through initiatives such as assessing feedback received from information mail-outs and surveys as well as quarterly tracking of the number of unauthorized crossings. Separate groups track the number of requests for crossing agreements and the number processed. The IPA program can be further enhanced by including these statistics as part of its review.

3.2.12 Monitoring and Measurement

ISO 14001 Guidance (adapted)

The organization shall establish, implement and maintain a procedure(s) to monitor and measure, on a regular basis, the key characteristics of its operations that can have a significant risk or impact. The procedure(s) shall include the documenting of information to monitor performance, applicable operational controls and conformity with the organization's performance objectives and targets.

The organization shall ensure that calibrated or verified monitoring and measurement equipment is used and maintained and shall retain associated records.

Relevant regulatory requirements:
▪ *NEB Onshore Pipeline Regulations, 1999, Section 36, 39, 40* ▪ *NEB Pipeline Crossing Regulation, Part II, Section 10 (a & b)* ▪ *CSA Z662-07 Clauses 9.1, 9.3, 9.9, 9.10, 10.6, 10.14* ▪ *Canada Occupational Health and Safety Regulation, 5.10 and subsequent clauses*

	Auditor observations
Strengths	▪ The company utilizes a comprehensive risk-based pipeline integrity program to identify, assess, and prioritize areas of risk. ▪ The company utilizes a program of regular (daily, weekly, and monthly) site inspections at its compressor stations and meter stations to identify areas of concern.
Opportunities for Improvement	▪ We identified numerous deficiencies at the sites during the site inspection component of our audit, suggesting that the company's site inspection process is not effective. These are discussed in Section 2.2.1 and again in Appendix 7.

3.2.13 Evaluation of Compliance

ISO 14001 Guidance (adapted)

Consistent with its commitment to compliance, the organization shall establish, implement and maintain a procedure(s) for periodically evaluating compliance with applicable legal requirements. The organization shall keep records of the results of the periodic evaluations.

The organization shall evaluate compliance with other requirements to which it subscribes. The organization may wish to combine this evaluation with the evaluation of legal compliance referred to in 4.5.2.1 or to establish a separate procedure(s). The organization shall keep records of the results of the periodic evaluations.

Relevant regulatory requirements considered during the audit
▪ *NEB Onshore Pipeline Regulations, 1999, Sections 53 (1), 54(1 & 2)* ▪ *Canada Labour Code, Part 2* ▪ *Alberta Occupational Health and Safety Act, Regulation and Code* ▪ *Alberta Fire Code, 2006*

	Auditor observations
Strengths	▪ The company regularly reviews and updates its TOPs to ensure they comply with the strictest regulatory and CSA requirements. ▪ The company utilizes a comprehensive multi-tiered audit and inspection program to periodically assess regulatory compliance at its operating facilities.
Opportunities for Improvement	▪ We identified numerous deficiencies at the sites during the site inspection component of our audit, suggesting that the company's site-level compliance evaluation processes are not effective. These are discussed in Section 2.2.1 and again in Appendix 7.

3.2.14 Nonconformity, Corrective Action and Preventive Action

ISO 14001 Guidance (adapted)

The organization shall establish, implement and maintain a procedure(s) for dealing with actual and potential nonconformity(ies) and for taking corrective action and preventive action. The procedure(s) shall define requirements for

a) identifying and correcting nonconformity(ies) and taking action(s) to mitigate their impacts,
b) investigating nonconformity(ies), determining their cause(s) and taking actions in order to avoid their recurrence,
c) evaluating the need for action(s) to prevent nonconformity(ies) and implementing appropriate actions designed to avoid their occurrence,
d) recording the results of corrective action(s) and preventive action(s) taken, and
e) reviewing the effectiveness of corrective action(s) and preventive action(s) taken.

Actions taken shall be appropriate to the magnitude of the problems and the impacts encountered. The organization shall ensure that any necessary changes are made to management system documentation.

Relevant regulatory requirements considered during the audit

- *NEB Onshore Pipeline Regulations, 1999, Section 41 (1)*
- *CSA Z662-07 Clause 9.1.7, 9.9.5*
- *NEB Onshore Pipeline Regulations, 1999, Section 52 (1)*
- *CEPA 1999, Section 95*
- *Canada Labour Code, Part II, Section 122.2*
- *NEB Pipeline Security Change Notification, 2006*

	Auditor observations
Strengths	▪ The company utilizes an extensive incident reporting and investigation process. ▪ The company utilizes its IIT and Avantis programs to manage and track findings from inspections, audits, and incident investigations.
Opportunities for improvement	▪ We noted during our site inspections that there were a relatively large backlog of issues and items in the IIT system. This is discussed further in Section 2.2.5.

3.2.15 Control of Records

ISO 14001 Guidance (adapted)

The organization shall establish and maintain records as necessary to demonstrate conformity to the requirements of its management system and the results achieved.

The organization shall establish, implement and maintain a procedure(s) for the identification, storage, protection, retrieval, retention and disposal of records. Records shall be and remain legible, identifiable and traceable.

Relevant regulatory requirements:

- *NEB Onshore Pipeline Regulations, 1999, Section 56*
- *NEB Pipeline Security Change Notification, 2006*
- *TDG Regulations, Part 6*
- *Alberta Occupational Health & Safety Code, Section 406*

▪ *Canada Labour Code, Section 125* ▪ *Canada Occupational Health and Safety Regulation, Sections 5.17 and 5.18*

Auditor observations	
Strengths	See comments for control of documents in Section 3.2.9.
Opportunities for improvement	▪ TransCanada should consider enhancing its record keeping process for hard copies of records required to be kept at compressor stations. We noted during the site visits that certain records required to be kept on sites were not available for inspection. See Appendix 7 for details.

3.2.16 Internal Audit

ISO 14001 Guidance (adapted)

The organization shall ensure that internal audits of the management systems are conducted at planned intervals to

a) determine whether the management systems

1) conforms to planned arrangements for environmental management including the requirements of the company specific standards, and

2) has been properly implemented and is maintained, and

b) provide information on the results of audits to management.

Audit program (s) shall be planned, established, implemented and maintained by the organization, taking into consideration the risks associated with the operation(s) concerned and the results of previous audits.

Audit procedure(s) shall be established, implemented and maintained that address
— the responsibilities and requirements for planning and conducting audits, reporting results and retaining associated records,
— the determination of audit criteria, scope, frequency and methods.

Selection of auditors and conduct of audits shall ensure objectivity and the impartiality of the audit process.

Relevant regulatory requirements considered during the audit:

- *NEB Onshore Pipeline Regulations, 1999, Section 55 (1)*
- *NEB Pipeline Crossing Regulation, Part II, Section 4 (2)*
- *NEB Pipeline Security Change Notification, 2006*

Auditor observations	
Strengths	▪ The company has implemented a comprehensive multi-tiered audit and inspection program and culture. See Section 2.1.4.
Opportunities for improvement	▪ Although we have identified weaknesses in the company's site inspection program, we have not identified specific opportunities for improvement in the overall internal audit processes.

3.2.17 Management Review

ISO 14001 Guidance (adapted)

Top management shall review the organization's management systems, at planned intervals, to ensure their continuing suitability, adequacy and effectiveness. Reviews shall include assessing opportunities for improvement and the need for changes to the management system, including the corporate policy and performance objectives and targets. Records of the management reviews shall be retained.

Input to management reviews shall include

a) results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organization subscribes,
b) communication(s) from external interested parties, including complaints,
c) the performance of the organization,
d) the extent to which objectives and targets have been met,
e) status of corrective and preventive actions,
f) follow-up actions from previous management reviews,
g) changing circumstances, including developments in legal and other requirements related to its risks and aspects, and
h) recommendations for improvement.

The outputs from management reviews shall include any decisions and actions related to possible changes to the corporate policies, objectives, targets and other elements of the management systems, consistent with the commitment to continual improvement.

Relevant regulatory requirements considered during the audit:

- None identified

Auditor observations	
Strengths	▪ TransCanada management meets monthly to review HSE, security, and other performance areas and incidents. Status of audit findings – including HSE management system audits - may also be discussed at these meetings depending on the nature and significance of the findings.
Opportunities for improvement	None identified.

3.3 Summary of compliance management system OFIs

A summary of the opportunities for improvement (OFIs) identified during the audit is presented in the following table. We have categorized these OFIs under three classifications:

- **High** – significant deviation from regulatory requirements, company standards, or other practices of a substantial nature leading to significant requirements or concepts not addressed in implementation or TransCanada's documentation. This can include absence of required programs, management systems or processes; ineffective implementation or maintenance of a key requirement or procedure; potential liability issues; or repeat findings from previous audits.
- **Moderate** – moderate deviations from regulatory requirements, company standards or other practices leading to noticeable differences in structure and implementation or depth of coverage, but general alignment of main requirements and concepts. This can include gaps in formal programs, incomplete implementation of programs, lack of awareness of some requirements, or informality of management systems.
- **Low** – minor deviations from regulatory requirements, company standards or other practices in an otherwise good program leading to slight but noticeable differences in implementation. This includes opportunities to strengthen or fine-tune the management systems or processes, or can indicate potential for escalation in the future if not addressed.

Element	Opportunities for Improvement	Classification
Corporate Policy	▪ The company has not developed a policy relating to physical and cyber-security.	Moderate
Risk Identification	▪ The company has not formally identified and assessed the cyber-security risks associated with its SCADA system as required in the NEB Pipeline Security Change Notification, 2006. – see Section 2.2.3	Moderate
Legal and Other Requirements	▪ Although electronic copies of correspondence with regulators is maintained for each project or operations file, the company does not maintain a centralized consolidated file of interpretations, exemptions, and waivers from regulations as agreed upon with regulators (voluntary management practice). – see Section 2.2.6	Low
Objectives, Targets and Programs	▪ In some cases, performance goals or targets may have been established without regard to the underlying specific risks and without a practical means of prioritizing. As a result, some managers may have difficulty assessing whether under-achievement against targets poses a particular operational or other risk.	Low

Element	Opportunities for Improvement	Classification
Resources, Roles, Responsibility and Authority	▪ Roles and responsibilities regarding SCADA security have not been documented. – see Section 2.2.3	Moderate
Competence, Training and Awareness	▪ None identified	Not applicable
Communication	▪ None identified	Not applicable
Documentation	▪ The company's cyber-security management system is currently not well documented. Interviews with relevant personnel indicate that the company will document the SCADA and cyber-security management system and associated processes over the next few years, starting with TransCanada's Power division. – see Section 2.2.3	Moderate
Control of Documents	▪ We noted during our interviews that document control practices do not always cascade down to specific desk procedures and other departmental-specific guidance and protocols beyond the scope of the relevant "official" policy and procedure documents (version numbers, dates, owners, etc.)	Low
Operational Control	▪ Some interviewees indicated that occasionally there can be temporary gaps in the ownership and accountability for managing certain TOPs following organizational and staff changes. These gaps can persist for some time, depending on the schedule for review and update of the particular TOP. However, we did not see evidence suggesting that these gaps were causing undue risk to operations.	Low
Emergency Preparedness and Response	▪ There is an opportunity to enhance the annual review process (EMS Manual, Section 1.7) for site specific emergency response plans. We noted during the site visits that the emergency response plans at several Compressor stations were partially out of date or incomplete. See Appendix 7 for details. ▪ The effectiveness of the IPA program is currently monitored through initiatives such as assessing feedback received from information mail-outs and surveys as well as quarterly tracking of the number of unauthorized crossings. Separate groups track the number of requests for crossing agreements and the number processed. The IPA program can be further enhanced by including these statistics as part of its review.	Moderate Low
Monitoring and Measurement	▪ We identified numerous deficiencies at the sites during the site inspection component of our audit, suggesting that the company's site inspection process is not effective. These are discussed in Section 2.2.1 and again in Appendix 7.	High

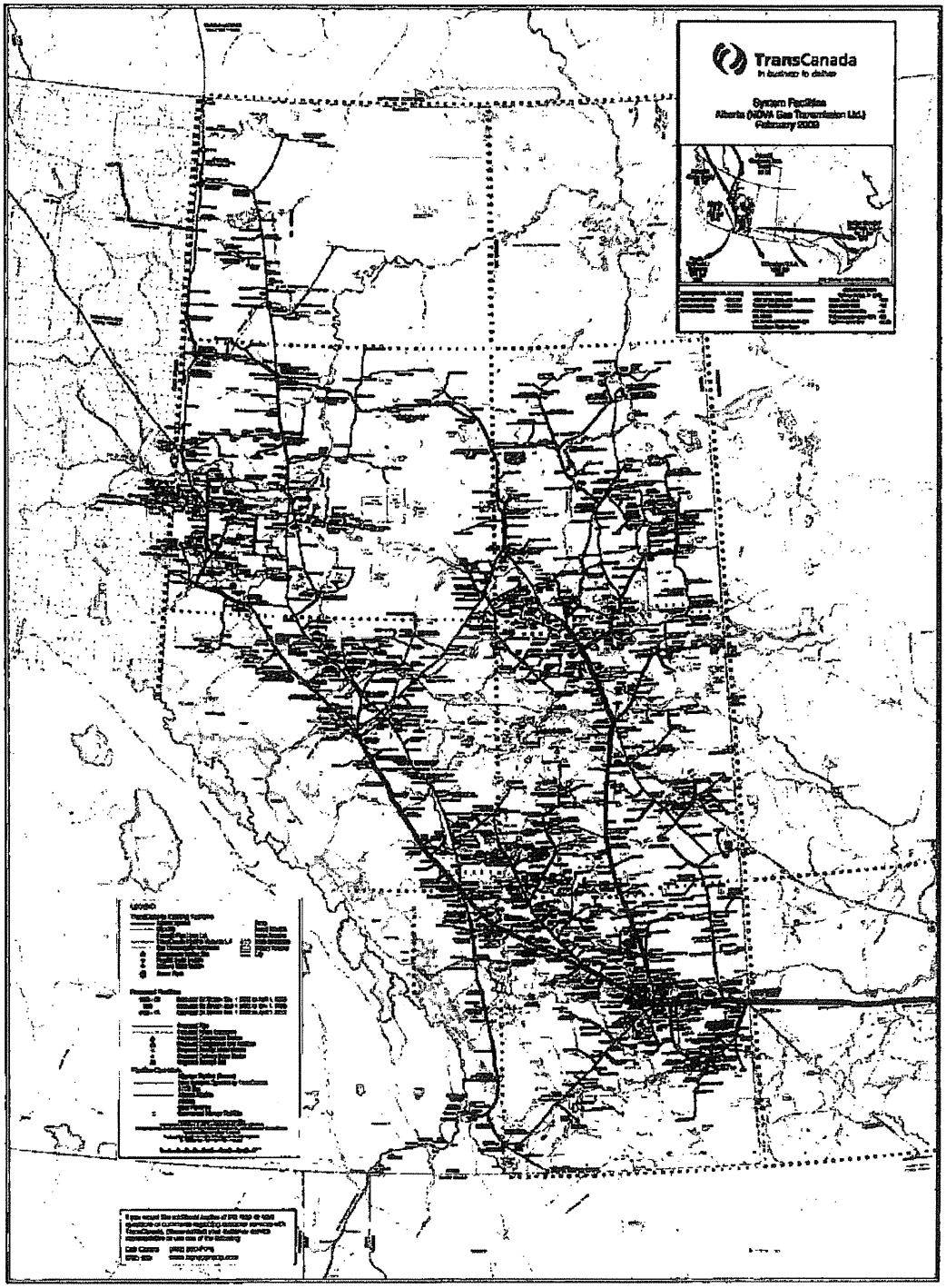
Element	Opportunities for Improvement	Classification
Evaluation of Compliance	▪ We identified numerous deficiencies at the sites during the site inspection component of our audit, suggesting that the company's site-level compliance evaluation processes are not effective. These are discussed in Section 2.2.1 and again in Appendix 7.	High
Nonconformity, Corrective Action and Preventive Action	▪ We noted during our site inspections that there were a relatively large backlog of issues and items in the IIT system. This is discussed further in Section 2.2.5.	Moderate
Control of Records	▪ TransCanada should consider enhancing its record keeping process for hard copies of records required to be kept at compressor stations. We noted during the site visits that certain records required to be kept on sites were not available for inspection. See Appendix 7 for details.	Moderate
Internal Audit	▪ Although we have identified weaknesses in the company's site inspection program, we have not identified specific opportunities for improvement in the overall internal audit processes.	Not applicable
Management Review	▪ None identified.	Not applicable

4 Conclusion

The audit identified numerous areas of strength as well as opportunities for improvement in the company's management processes. These can be summarized into the following three overarching conclusions:

1. The regulatory management processes implemented within the Alberta System are largely the same processes implemented by TransCanada in its other NEB regulated operations. For this reason, the shift of regulatory authority from AUC to NEB has a relatively minor impact on the design and implementation of the programs and processes within the Alberta System.
2. TransCanada program managers have a high degree of awareness and familiarity with the NEB regulations, requirements, and associated standards, and a concerted effort is made to ensure the company's management programs and processes meet those regulations, requirements, and standards.
3. Notwithstanding the above, opportunities were identified to enhance the management systems and processes at head office, in particular with respect to greater formalization of the cyber-security program. We also noted numerous deficiencies at the compressor stations and meter stations, suggesting there are weaknesses in the company's site inspection process. However, based on the information gathered, none of the deficiencies identified in the audit would be characterized as "high risk" from a pipeline integrity or public safety standpoint.

Appendix 1: Map of TransCanada's Alberta System



Appendix 2: List of Interviewees

TransCanada personnel interviewed during the audit, listed by date:

Name	Title	Department	Date of Interview
s.19(1)	Senior Emergency Management Specialist	Community, Safety & Environment	November 17, 2009
	Manager – Environment	Community, Safety & Environment	November 19, 2009
	Operations and Acquisitions Lead – Environment	Community, Safety & Environment	November 19, 2009
	Manager – Climate Change and Air Emissions	Community, Safety & Environment	November 19, 2009
	Environmental Engineer	Civil & Environmental Engineering	November 19, 2009
	Project Manager	Civil & Environmental Engineering	November 19, 2009
	Manager – Compliance	Canadian Pipeline Operations	November 19, 2009
	Manager	Gas Control	November 20, 2009
	Manager	Compression Projects	November 23, 2009
	Senior Regulatory Compliance Specialist	Canadian Pipeline Operations – Compliance	November 23, 2009
	Regulatory Compliance Specialist	Canadian Pipeline Operations – Compliance	November 23, 2009
	Director	Corporate Security	November 23, 2009
	Automation Engineer	Automation Integrity	November 24, 2009
	Director	Pipeline Integrity	November 24, 2009
	Manager, Program Planning	Pipeline Integrity, Engineering	November 24, 2009
	Manager – Safety	Community, Safety & Environment	November 24, 2009
	Senior Occupational Health & Safety Specialist	Community, Safety & Environment	November 24, 2009
	Manager	Mechanical & Civil Engineering	November 25, 2009
	Mechanical Engineer	Mechanical Engineering	November 25, 2009
	Measurement Specialist	Engineering	November 25, 2009
	Electrical Engineer	Measurement Engineering	November 25, 2009
	Manager - Land Services	Community, Safety & Environment	November 25, 2009
	Manager – Land Administration	Community, Safety & Environment	November 25, 2009
	Vice President	Canadian Pipeline Operations	November 26, 2009
	Vice President	Native American/ Aboriginal & Community Relations, Environment, Land Services, HSE Governance, Health & Safety	November 26, 2009
	Manager, Environmental Planning & Permitting	Community, Safety & Environment	November 27, 2009
	Senior Environmental Advisor	Community, Safety & Environment	November 27, 2009
	Senior Environmental Advisor	Community, Safety & Environment	November 27, 2009
	Vice President	Engineering and Asset Reliability	November 27, 2009
	Director	Pipeline Projects	November 27, 2009
	Project Manager	Pipelines Projects Management	November 27, 2009

Name	Title	Department	Date of Interview
s.19(1)	Consultant Project Manager	Pipeline Projects	November 27, 2009
	Operational Lead, Information Management	Policy & Program, Business Information	November 27, 2009
	Information Analyst, Information Management	Policy & Program, Business Information	November 27, 2009
	Director	Asset Strategy and Integrity	November 30, 2009
	Manager	Automation Integrity, Engineering	November 30, 2009
	Director	Project Facilities	December 1, 2009
	Manager	Alberta Measurement Projects	December 1, 2009
	Senior Compliance Specialist	Canadian Pipeline Operations	December 2, 2009
	Manager	Engineering – Electrical & Controls	December 2, 2009
	Senior Engineer	Engineering – Electrical & Controls	December 2, 2009
	Senior Engineer	Engineering – Electrical & Controls	December 2, 2009
	Manager	Integrity Services and Support	December 2, 2009
	HS&E Coordinator	Wildrose Region	December 2, 2009
	Technician, Knight Compressor Station	Wildrose Region	December 2, 2009
	Manager, Edson Area Operations	Wildrose Region	December 2, 2009
	HS&E Coordinator	Wildrose Region	December 2, 2009
	Corrosion Engineer	Engineering – Corrosion Prevention	December 3, 2009
	Manager	Materials Engineering Governance & Quality	December 3, 2009
	Senior Materials Engineer	Materials Engineering Governance & Quality	December 3, 2009
	Senior Engineer	Materials Engineering Governance & Quality	December 3, 2009
	Manager, Employee Development	Engineering and Asset Reliability	December 3, 2009
	Analyst, Employee Development	Engineering and Asset Reliability	December 3, 2009
	Program Manager	Engineering	December 3, 2009
	Maintenance Scheduler	Wildrose Region	December 3, 2009
	Pipeline Technician	Wildrose Region	December 3, 2009
	Technician, Swartz Compressor Station	Wildrose Region	December 3, 2009
	Director, Field Operations	Wildrose Region	December 4, 2009
	Joint Health, Safety & Environment Committee Lead	Wildrose Region	December 4, 2009
	Regional Asset Reliability Manager	Wildrose Region	December 4, 2009
	Manager	Asset Management Improvement	December 4, 2009
	Director	Regulatory Services	December 4, 2009
	Regulatory Project Manager	Applications and Compliance Facilities	December 4, 2009
	Regulatory Project Manager	Regulatory Services	December 4, 2009

s.19(1)

Name	Title	Department	Date of Interview
	Manager, Vegreville Area	Wildrose Region	December 4, 2009
	Manager, Palliser Area	Central Region	December 7, 2009
	Pipeline/Measurement Technician	Central Region – Palliser Area	December 7, 2009
	Field Land Representative	Central Region – Regional Compliance	December 7, 2009
	Regional HSE Coordinator	Central Region	December 8, 2009
	Regional Asset Reliability Manager (Acting)	Rocky Mountain Region	December 9, 2009
	Manager, Airdrie South	Rocky Mountain Region	December 9, 2009
	Senior Field Representative	Land, Community and Aboriginal Relations, Rocky Mountain Region	December 9, 2009
	Joint Health, Safety & Environment Committee Lead	Rocky Mountain Region	December 9, 2009
	Controls Technician	Rocky Mountain Region	December 10, 2009
	H&S Coordinator	Regional Compliance, Rocky Mountain Region	December 10, 2009
	Director	Rocky Mountain Region	December 11, 2009

Appendix 3: List of Documents Reviewed

TransCanada documents reviewed during the audit:

	Document name	Document date and revision #
1	Regulatory Compliance Incident Response Manual	11-Dec-08
2	Regulatory Compliance Incident Response Manual – Incident Management Classification Guide	31-Mar-09
3	Regulatory Compliance Incident Response Manual – Alberta Regulatory Reporting Requirements, EDMS #004269635	17-Jul-09
4	Regulatory Compliance Incident Response Manual – Regulatory Reporting Requirements for NEB Regulated Pipelines, EDMS #003834161	17-Jul-09
5	Incident reporting process, EDMS #003721577	1-Dec-08
6	Regulatory Compliance Incident Response Manual – IIT Regulatory Compliance Checklist EDMS #005767466	06-Nov-09
7	IMS – Emergency Management System Manual, EDMS #003671823	Nov 2008, Revision 11
8	IMS – Emergency Management System Manual, EDMS #003671823 – Section 10.18 Emergency Event Analyses	Nov 2008, Revision 11
9	IMS – Emergency Management System Manual, EDMS #003671823 – Section 3.5.6 Sensitive Areas / HCA	Nov 2008, Revision 11
10	Information Management and Security Policy, EDMS #003726541	2003/09/01
11	Corporate Security Policy	2007/05/31
12	Appendix 2d, Critical infrastructure – Criteria Ranking by Station	n/a
13	Crisis Management Plan Policy	2007/05/31
14	Incident Reporting and Management Program, EDMS #003721950	Rev 1, 2001/05/18
15	Physical Security and Incident Reporting (TOP), EDMS #003693114	Rev 3, 2007/06/01, OP01,
16	Emergency Management System (EMS) Maintenance EDMS #003849406	Rev 3, 2009/06/23
17	Foreign Crossing Procedures and 3rd party crossing request process	Not clearly controlled document
18	Crossing Agreement	September 2007
19	Major Project Work, Meter Station Work and PMP Work Process descriptions	Not clearly controlled document
20	Fish and Wildlife Protection Procedure (Canada)	Rev 00, 2009/05/28
21	Pre-Job / Planning procedure EDMS #003834914	Rev 3, 2009/03/10
21	Job Safety Analyses, EDMS #003773898	Rev 0, 2003/05/07

	Document name	Document date and revision #
22	TOP – Critical Facility Screening Procedure DRAFT	Rev 01, 2008/08/01
23	Integrity Plans – Guidelines and Expectations, EDMS #004786600	Jan-09
24	Plant Integrity Management Process	Rev 1, 2005/12/01
25	Occupational Health, Safety and Environment Management System, EDMS #003721961, Manual	Rev 4, 2007/12/31
26	Waste and Hazardous Materials, Management Manual, EDMS #005486462	September 2009
27	Mainline and BC System Environmental Design Standard	Rev 0, 2003/08/15
28	Environmental Field Procedures Guide	Rev 1, Dec 19, 2003
29	HS&E Commitment Statement Guiding Principle	Last revision: 2009/07/31
30	SCADA & Automation Systems Security	3/14/2008, confidential document
31	Post construction reclamation and monitoring, EDMS #005300885	9-Apr-09
32	Vegetation Management and Control Procedure, EDMS #005518537	Rev 00, 2009/05/28
33	Wetland, Watercourse and Waterbody Protection Procedure, EDMS #005518290	Rev 00, 2009/06/12
34	Soil Management Procedure, EDMS #005518536	Rev 00, 2009/06/01
35	Charter of the Health, Safety and Environmental Committee	Approved Feb 2, 2009
36	Joint Health, Safety & Environment Committee (JHSEC) Roles & Responsibilities	Last revision: 2004/03/22
37	TransCanada Corporate HS&E Committee Meeting	July 29, 2009
38	Contractor Safety Management Program EDMS #003800125	Last revision: 2005/10/31
39	Smokey River Expansion (Shady Oak Section) Project # 2078735, Project Specific Safety Management Plant	29-Oct-09
40	Contractor Safety Handbook, EDMS #003798354	2008 Canadian Edition
41	Gas Controller (Calgary) Development and Qualification Program, EDMS #004504739	Rev 4, 2009/07/06
42	Gas Control Emergency Preparedness Plan, EDMS #003726869	Rev 25, 2009/10/09
43	Emergency Task Assignment Guidelines, EDMS #003741733	Rev 07, 2009/06/22
44	TransCanada Tower Operations Centre Evacuation Checklist, EDMS #003726586	Rev 09, 2009/06/09
45	TransCanada Tower Operations Centre Evacuation Procedure, EDMS #003726581	Rev 06, 2009/06/22
46	Alberta and Foothills System Overpressure Procedure, EDMS #003723302	Rev 12, 2009/08/26
47	Alberta and Foothills System, System Leak or Line Break Procedure, EDMS #003724014	Rev 09, 2009/08/26
48	TransCanada Integrity Management Process for Pipelines	Rev 2, 2009/11/6

	Document name	Document date and revision #
49	Operations and engineering – Project Management System	Revision #3
49.1	Operations and engineering – Project Management System Section: Safety Guide, EDMS #003948267	April 17, 2006 Revision #1
49.2	Operations and engineering – Project Management System Section: Quality Guide, EDMS #003887967	March 27, 2006 Revision #1
49.3	Operations and engineering – Project Management System Section: Regulatory Guide, EDMS #003948260	April 12, 2006 Revision #1
49.4	Operations and engineering – Project Management System Section: Environment Guide, EDMS #003948124	May 26, 2006 Revision #1
50	Electrical Quality Management Plan	Aug. 17, 2009 Version#2
51	Field Operations and Engineering Practices and Procedures, EDMS #003696970	10/1/2007, Revision #2
52	Legislative Monitoring Process, EDMS #004238605	26-Jun-09
53	Management of Change Process, EDMS #004238604	Feb. 29, 2008 Revision #8
54	Consolidated Compliance Field Audit Procedure (TOP), EDMS #005364423	2009/10/02 Revision #3
55	Integrated Public Awareness Program (TOP), EDMS #003860909	2009/06/24 Revision #4
56	Integrated Public Awareness Program - Reference Manual	Date unknown
57	Design Basis Memorandum, EDMS #005595124 V2	11/03/09 Revision #0
58	Project Execution Plan, EDMS #005595178	11/03/09 Revision #0
59	Control System Software Control Procedure (TOP), EDMS #003671951	2009/08/12 Revision#7
60	Control System Software Modification Form (TOP), EMDS #003696227	2009/08/12 Revision#5
61	Explosive Blasting near TransCanada Facilities (TOP), EMDS #005376913	2009/07/08 Revision#1
62	Pipeline Crossing and Encroachment Procedure (TOP), EDMS #003674617	2009/06/30 Revision#9
63	One-Call/ Locating and Marking Procedures (TOP), EDMS #003671859	2009/06/26 Revision#3
64	Pipeline Right-of-Way (ROW) Procedures (TOP), EDMS #003672613	2009/03/25 Revision #2
65	Natural Gas Leak Detection Inspection (TOP), EDMS #003676665	2009/01/29 Revision#1
66	Deactivation or Abandonment of Pipeline Procedures (TOP), EDMS #003864117	2009/05/05 Revision#3
67	Brush Control Procedures (TOP), EDMS #003858592	2009/06/30 Revision#1
68	Aerial Pipeline Control (TOP), EDMS #003672387	2009/06/19 Revision#9
69	Excavation Procedure (TOP), EDMS #003672343	2009/06/25 Revision#14
70	Crane and Rigging Use Procedure (TOP), EDMS #003671305	2009/03/25 Revision#7

	Document name	Document date and revision #
71	Rigging Device Inspection (TOP), EDMS #004123561	2009/04/07 Revision#2
72	Facility Overhead Door Inspection (TOP), EDMS #004122181	2009/03/16 Revision#2
73	Tower Inspections (TOP), EDMS #003841265	2009/04/17 Revision#5
74	Facility Roof Inspections (TOP), EDMS #004122182	2009/03/17 Revision#3
75	Fall Protection Procedures (Canada) (TOP), EDMS #003780165	2009/05/20 Revision#3
76	Pile Driving and Screw Piling Procedure (TOP), EDMS #003864111	2009/05/28 Revision#3
77	National Energy Board Filing Manual	2004
78	NEB Regulated Facility Filings Check List	May 2009, Revision No. 3
90	Agreement No. 6993, Schedule "L" TransCanada Operating Procedure (TOP) Schedule	Bid issued April 2009
91	Agreement No. 5080, Schedule "N" TransCanada Operating Procedure (TOP) Schedule	Contract issued January 2008
92	Agreement No. 5080, Schedule "M" Specification Schedule	Contract issued March 2008
93	Alberta Regulatory Change Training Package	Presented May 6 - May 27, 2009
94	Field Performance Development System (FPDS) Program Guide	Date unknown
95	Product/Chemical Approval and Handling Procedure (TOP)	June 18, 2009 Revision #3
96	Chemical Inventory Inspection (TOP Task Package)	Date unknown
97	Information Management Policy, Program, Performance Standards, and Records Classification System and Retention Schedule	Policy: 2003/09/01 Rev 2.0 Program: 2003/09/01 Rev 1.0 Perf Standards: April 10, 2008 (no rev #) Records Classification System and Retention Schedule: various dates
98	PDS Regional Training Matrix for Emergency Management	Date unknown
99	Management/ Business Continuity Webpage	Printed 11/17/2009
100	Emergency Response Process	Created 11/17/2009, not controlled document
101	EMS- Core Emergency Exercise Design, Implementation and Debriefing	Date unknown
102	TransCanada Emergency Notification Directory	Date unknown
103	EMS Support Department List	2009/10/16

	Document name	Document date and revision #
104	Calgary EOC Debrief Discussion - Linked to Incident #156550	2006/04/01
105	Retirement Review for 2009 Budget	2008/06/16
106	Project Decision Summary - 2009 Meter station and Lateral Retirement Program	2008/07/17 Version #0
107	Environmental Inspector's Daily Report (Example report for Nevis-Gadsby Project)	Sept. 28th, 2009
108	Decommissioning & Reclamation of Meter Stations & Lateral Pipelines Across Alberta and Saskatchewan - Project# TR8611-001	2009/11/01
109	Agreement No. 6059 between TCPL and Biogenie SRDC Inc. for 2008 Meter Station and Lateral Requirements	Date unknown
110	TCE Construction Assessment - Meikle River Compressor Station (Internal audit report on Meikle River Compressor Station construction.)	Date unknown
111	RFP - Meikle River and Woodenhouse	Date unknown
112	Compressor Project Example - Woodenhouse - Environment, Health, and Safety Execution Plan	Date unknown
113	Compressor Project Examples - Commissioning - Internal Leave to Open (ILTO) - Commissioning checklists (multiple for each component, signed (Examples viewed: Unit Mechanical/Instrument, Station controls, Unitl Controls, Safety and Environment permits)	Various examples
114	Guiding Principles for Land Services	Desk Procedures
115	Land Services - Document Support	Desk Procedures
116	Land Services - What to watch for when reviewing other company's agreements (grant of right-of-way, lease)	Desk Procedures
117	Land Services RACIs - Major Projects work, Meter Stations Work, PMP Work, 3rd party crossings	Desk Procedures
118	Land Services - Template for Lease	Desk Procedures
119	Land Services - Template fro Crossing Agreement	Desk Procedures
120	Land Services - Foreign Crossing procedures	Desk Procedures
121	Land Services - Temporary Agreements Checklist	Desk Procedures
122	Environment - Mainline Design Standard Binder	Desk Procedures
123	Professional Engineering Management Plan	EDMS - General
124	Project Leave to Open Procedure	EDMS - General
125	Primary Test Specification for Hydrostatic Testing	EDMS - General
126	Hydrostatic Testing Specification	EDMS - General
127	Engineer in charge listing	EDMS - General
128	Gas Control System and Operations Overview - presentation slides	Date unknown

	Document name	Document date and revision #
129	Screen print of Gas Control home page	Printed 11/20/2009
130	Gas Control 2009 Internal Audit Report	2009 Report
131	Wildrose JHSEC Board posting guide	Date unknown
132	TransCanada's Occupational Health, Safety and Environmental (HS&E) Management System - training presentation	Date unknown
133	Audit Scoring Form EDMS #005401595	Date unknown
134	Contractor Safety Pre-Qualification Scoring Sheet, EDMS #003798363	Date unknown
135	Motor Vehicle Operation TOP - Published Document, EDMS #003721956	Date unknown
136	Regulatory Requirements Analysis Statement, Operations and Maintenance Manuals, EDMS #005378580	Date unknown
137	Organizational chart for CSE Committees (re-viewed onscreen)	Accessed on 11/24/2009
138	CSE Homepage: viewed Performance Statistics, which included contractors	Accessed on 11/24/2009
139	Drafting Records Management Procedure for New Original Drawings, EDMS # 003778593	Date unknown
140	Drafting Records Drawing QA, EDMS # 003775836	Date unknown
141	ISRC Project Process Document: Interim Process – Add User to FileNet and/or Group	Feb 9, 2009 Version 1.1.
142	TransCanada's Canadian Hardcopy Records Disposition Process, EDMS # 003768941	Date unknown
143	Regulatory Requirements Analysis Statement (RRAS) - Electronic vs Hard Copy O&M Manuals	Date unknown
144	Edson Area Team Meeting - October 20, 2009. (Minutes from weekly meeting attended by all Edson Team Members, reviewing action items, incident reviews, etc.)	October 20, 2009
145	Alberta One-Call - Daily Audit of Tickets	Date unknown
146	Field Gas Analysis Report sheets (Generic template)	Date unknown
147	Emergency Plan - Knight Compressor Station Critical Site	2009 version
148	Contractor Profile Form for LEDCOR Industrial Maintenance Ltd. (feedback form used to rate contractors after completion of project)	Date unknown
149	Potable Water Cistern and Well Maintenance Program (TOP), EDMS #003951142	Date unknown
150	Instructions for Posting Information at TransCanada Facilities (Regionally-specific list for items to be posted, length of posting time, and location (i.e.. Hazard advisories, JHSEC members, etc.)	Not controlled
151	Operations and Engineering Q3, Board of Directors Update – 5 Oct 2009	Oct 5, 2009
152	Letter of notification of amendments to the Industrial Waste Water information, Beiseker Compressor Station, Reg # 9967-02-01 (23 June 2008) sent by TransCanada to AENV.	2008/06/23
153	Registration form from AENV re: Code of Practice for Compressor and Pumping Stations and Sweet Gas Processing Plants Princess Sweet Compressor Station - Groundwater Monitoring	Date unknown

	Document name	Document date and revision #
	Change NE 13-20-12-W4M	
154	DRAFT Field Operations Compliance Management Program	2009/11/03 Revision #1
155	TOP Procedure: Consolidated Compliance Field Audit Procedure, EDMS #005364423	2009/10/02 Revision #3
156	TOP Task Package: Consolidated Compliance Field Audit Tasks, EDMS #005364400	2009/10/02 Revision #3
157	Field Operations Consolidated Audit Eastern Region Station 148 Les Cedres, Oct 13 - 16, 2009, FINAL Report	n/a
158	Field Operations Compliance Audit Rocky Mountain Region PM Regulatory, Sep 11 - 29, 2006, FINAL Audit Report	n/a
159	Field Operations Consolidated Audit Wildrose Region Wolf Lake, Swartz Creek & Area, Jul 7 - 11, 2008, FINAL Report	n/a
160	A Tier 3 Assessment of Field Operations - Rocky Mountain Region, July 6 - 24, 2009, IIT 188317	n/a
161	Safety Management Plan - North Central Corridor: Northstar 2071686 & Red Earth 2077584; 17 Aug 2009	n/a
162	Louisbourg Pipelines Project Specific Safety Plan: TransCanada Pipelines Limited NPS 42" Pipe Wooden House Compressor Station to Shell access road 10-29-086-01W5 to 09-7-91-14W5, Rev 10	n/a
163	Audit/ Evaluation of Prime/ General Contractor (Louisbourg Pipelines) Project/ Site Specific Safety Plan (NCC North Star Pipeline Construction), 19 Jan 2009, conducted by Dorothy Lutzak	n/a
164	North Central Corridor Pipeline - North Star 2071686; Red Earth 2077584 - Phase Plan (Implementation)	October 2007
165	Dryden Creek 2009 Planned Inspection Form, 21 October 2009 Didsbury Compressor Station Planned Inspection Form, 26 May 2009 Swartz Creek Compressor Station Planned Inspection Form, 30 June 2009 Clearwater C/S Planned Inspection Form, 29 April 2009 Oakland Compressor Station Planned Inspection Form, 10 March 2009	Examples from work order system - Avantis
166	Capital Project Environmental Binder: Demmitt Area Expansion - Albright North Mainline 19.0 km X NPS 20 Project #2093934	Date unknown
167	Red Earth Nova Gas Transmission Ltd. North Central Corridor (File #2071686-TA410) Crossing Agreements (4 of 4 binders); prepared by Roy Northern Land and Environmental	October 2007
168	NCC – Red Earth Environmental Construction Project Binder 1, Nov 2009	November 2009
169	NCC – Red Earth Environmental Construction Project Binder 2, Nov 2009	November 2009
170	Pipeline Projects, Pipeline Committee Monthly Update, 30 October 2009	2009/10/30
171	NCC Red Earth Implementation Scorecard, 27 Nov 2009	2009/11/27

	Document name	Document date and revision #
172	NCC Daily Pipeline Construction Summary, 9 Dec 2009	2009/12/09
173	Letter re: NPS 42 North Central Corridor Pipeline Aboriginal Consultation Summary from ASRD to Heather Bishop, 10 Jul 2008	2008/07/10
174	Letter re: NPS 42 North Central Corridor Pipeline Deliverables Review from ASRD to Heather Bishop, 30 Sep 2008	2008/09/30
175	Excerpt from NCC Meikle River Compressor Station Units C3 and C4 plan, 20 Nov 2007 - sections 11.1 General Public Consultation, 11.2 Aboriginal Consultation, 11.3 Industry Consultation, 11.4 Industry Concerns	2007/11/20
176	Aboriginal Consultation Tracking Sheet - NCC Project	Date unknown
177	NPS 42 North Central Corridor Pipeline Frac-Out Response Plan for the Horizontal Directional Drill of the Loon River, Sep 2009; prepared by TERA Environmental Consultants	September 2009
178	NPS 42 North Central Corridor Pipeline Water Quality Monitoring Plan for the Loon River Horizontal Directional Drill Watercourse Crossing, Sep 2009; prepared by TERA Environmental Consultants	September 2009
179	NCC daily mud monitoring report for the Little Cadotte River Crossing	Date unknown
180	Horizontal Directional Drilling: Gel Chemical Drilling Waste Management; Peace River Crossing Waste Disposal Plan; Nov 2008	November 2008
181	NCC Water Quality Monitoring of the Horizontal Directional Drill Crossing of the Peace River, June 2009, prepared by TERA Environmental Consultants	June 2009
182	Doe-Henderson project schedule	Reviewed on 12/1/2009
183	Louisbourg / TransCanada Meeting Minutes, 27 May 2009	2009/05/27
184	STEP 2007 & 2008 Summary of Project Learnings	Date unknown
185	NCC NorthStar 2071686 30 Day Compliance Binder	Date unknown
186	Compression Projects Project Management Playbook	Date unknown
187	Leave to Open Document: NCC NorthStar Section (140 km of NPS 42 Pipeline) Meikle River Compressor Station to Hunt Creek Lateral, Project #2071686, ILTO #012-2009, AUC File #1551990, Approval #19611	Date unknown
188	Measurement Projects Construction Binder - template version	Date unknown
189	Measurement Projects Management Operating System, 27 October 2008	2008/10/27
190	Measurement Projects Playbook - draft document - 27 Nov 2009	2009/11/27
191	templates: Measurement Project Final Clean-up Sign-Off Measurement Project Quality Assurance Sign-Off Measurement Project Closeout Sign-Off	Various dates

	Document name	Document date and revision #
192	Doe Creek #2 Meter Station Expansion: a) Meter Station Expansion Commitment List, 21 Oct 2009 (last rev) b) 30 day Compliance Tracking c) At-a-glance Scorecard, 9 Nov 2009	Various dates and versions
193	Asset Management System Framework, EDMS #004102169	Date unknown
194	Control System Software Control Procedure (TOP), EDMS #003671951	Date unknown
195	TES-CORR-PMP Corrosion Pipeline Maintenance Plan Development (TOP)	Date unknown
196	TER-RISK-SWR System Wide Risk Assessment	Date unknown
197	TER-COR-RISK Risk Models for Corrosion using ILI Data	Date unknown
198	TER-RISK-CON Consequence Models within PRIME	Date unknown
199	NEB Reference Dox Binder for Pressure Equipment	Date unknown
200	Org Charts for the Canadian Pipeline Operations and Engineering Asset and Reliability business units	Date unknown
201	TransCanada Operating Procedures Management System (TOP MS) – Framework document	Date unknown
202	Asset Reliability Plant Integrity Management Process	Date unknown
203	Integrity Management Process for Pipelines	Date unknown

Appendix 4: List of Operational Sites Visited

1. Wildrose Region: Vegreville and Edson Areas, December 2 – 4, 2009

Office	▪ Regional head office, Spruce Grove ▪ Area office, Vegreville ▪ Area office, Edson
Compressor Stations	▪ Ben's Lake ▪ Smoky Lake ▪ Hanmore ▪ Knight ▪ Swartz Creek
Meter Stations	▪ Vegreville Sales ▪ Royal Park ▪ Hairy Hill ▪ Willington ▪ Andrew ▪ Pioneer ▪ Ansel ▪ Edson
Water crossings	▪ North Saskatchewan River crossing at Flat Lake ▪ North Saskatchewan River crossing south of Lodgepole

2. Rocky Mountain Region: South Airdrie, North Airdrie, and Rocky Mountain House Areas, December 9 – 11, 2009

Office	Regional head office, Airdrie
Compressor Stations	▪ Beiseker ▪ Hussar ▪ Schrader Creek ▪ Winchell Lake
Meter Stations	▪ Severn Creek ▪ Hussar North ▪ South Elkton – Harmatton Delivery
Water crossings	Bow River crossing in the town of Cochrane

3. Central Region: Palliser Area, December 7 - 8, 2009

Office	Area office, Medicine Hat
Compressor Stations	Cavendish
Meter Stations	▪ Dunmore ▪ Medicine Hat East ▪ Empress East Sales ▪ McNeil
Water crossings	South Saskatchewan River crossing

Appendix 5: Description of TransCanada's multi-tiered audit program

Below are excerpts from TransCanada's internal documentation describing the multi-tiered audit program

The Health, Safety and Environment Management System (HSE MS) has been developed to provide the company with a systematic and organized approach to ensure TransCanada's health, safety and environmental governance and the achievement of its HSE Commitment Statement. It enables the company to work towards defined HSE expectations and objectives. The management system sets an effective, well-defined structure which emphasizes the importance of continuous HSE improvement. Implementation of the management system is achieved via ongoing HSE programs, practices and procedures. The effectiveness and adequacy of implementation is assessed through 4 levels of governance activities that evaluate HSE performance.

Tier 1 Activities are the foundation of HSE governance. All activities that are driven from regulatory requirements, internal risk analysis and best practices are identified, planned and routinely conducted. They are proactive in nature and when well managed, minimize or eliminate the causes for findings in higher tiers. All of these activities are included in TransCanada's planned maintenance program and are scheduled through AVANTIS. Tier 1 activities can occur daily, weekly or monthly and are conducted on 100% of facilities, processes and activities. The purpose is to assess physical conditions and to ensure compliance to regulatory and procedural requirements. Tier 1 activities are planned, scheduled and tasked through Avantis. Progress is tracked by the Regional Manager and Director.

Tier 2: Planned Inspections include formal workplace and facility inspections in TransCanada Field Operations' Regions to identify hazards and findings that are corrected to eliminate and/or minimize injuries, property damage and substandard practices and conditions. Planned inspections are conducted on 50% of facilities, processes or activities on an annual basis.

- "Major" Planned Inspections are conducted on all compressor stations and export sites every year. Findings are tracked via Avantis, and work orders created by priority (low, medium and high). Outstanding action items not completed within the scheduled time frame are entered into IIT to ensure follow up.

- "Minor" Planned Inspection includes a sample of the listed facilities (valve sites and meter stations) in accordance with Tier 2 guidelines.

Tier 3 Audits (internal) are biennial to triennial internal assessments on the effectiveness and adequacy of TransCanada's HSE Management System. Tier 3 audits allow TransCanada to identify, assess, and communicate HSE risks and opportunities and then implement appropriate corrective action(s) to ensure the effectiveness, adequacy and continuous improvement of the HSE MS and its enabling tools (i.e., TransCanada HSE policies, programs, practices and procedures). Tier 3 audits are conducted utilizing recognized audit principles and company developed protocols. Tier 3 audits occur on 25% of facilities, processes or activities on an annual basis.

Tier 4 audits are audits and inspections conducted by third parties, including those procured by TransCanada as well as regulatory inspections. Tier 4 audits focus on regulatory compliance, HSE management system effectiveness and adequacy and due diligence. TransCanada conducts Tier 4 audits every 3 years as mandated by the HSE Committee of the Board. External (regulatory) inspections and audits occur on an infrequent and unplanned basis and are categorized as Tier 4.

Appendix 6: TransCanada's Pipeline Integrity Program

Below are excerpts from TransCanada's internal documentation describing the integrity management process for pipelines

OVERVIEW

TransCanada's overall approach to pipeline integrity management utilizes state-of-the-art advanced inspection and mitigation technologies applied within a comprehensive risk-based methodology. Risk assessment is used to identify potential integrity threats for initiation of inspection/mitigation activities, while results from advanced inspections for known or suspected integrity threats are used to develop specific integrity maintenance activities. The Integrity Management Process for Pipelines (IMPP) provides the basis for developing the annual Pipeline Maintenance Plan (PMP). In addition to projects initiated through risk assessment, the PMP also incorporates prescriptive provisions of applicable codes, regulations, special permit and waiver conditions, and projects initiated from input from the Regional Offices. The annual PMP summarizes the individual programs and activities planned for management of the major pipeline hazards and also ensures regulatory/code compliance.

The Pipe Integrity Group of the Engineering and Asset Reliability (E&AR) Department within Operations and Engineering (O&E) is responsible for developing the IMPP and producing the annual PMP. The IMPP document is aligned with the high level TransCanada Integrity Management System document (EDMS 3747299), which applies to management of integrity of all assets (pipeline and facilities) managed by O&E.

The scope of this IMPP includes all high pressure piping outside of the packaged equipment flanges, but is not intended to cover pressure vessels or associated pressure piping located within station structures. Management of integrity issues associated with packaged equipment within compressor stations, meter stations and controls facilities resides with the Asset Strategy & Integrity and Facilities Integrity within the E&AR Department.

The application of the IMPP addresses the entire life cycle of the pipeline system, from design, construction, and operation through to retirement.

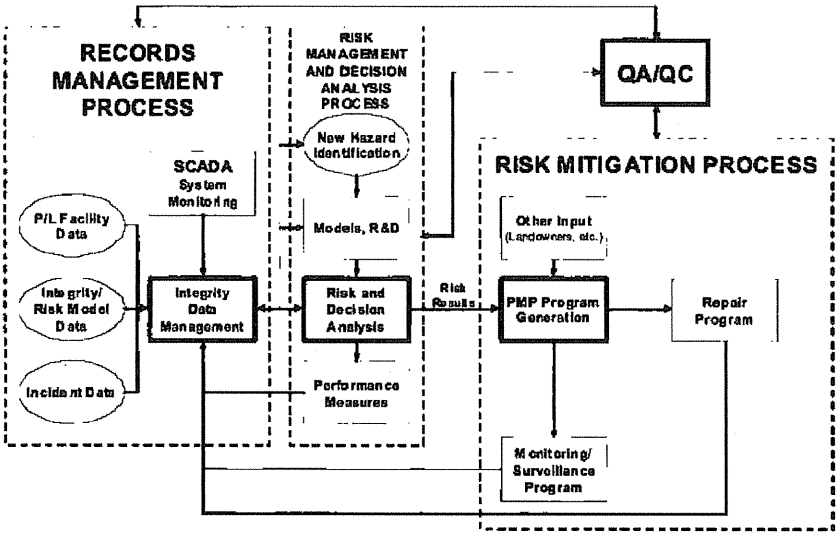
The Integrity Management Program for Pipelines is risk-based and "process focused." The IMPP document is the written process to provide consistent implementation, accountability, documentation, and program performance measurement.

A process flow diagram for management of integrity of the TransCanada's pipeline systems is presented below. The pipeline integrity management process essentially consists of four key elements:

1. Data and Records Management
2. Risk Management and Decision analysis
3. Risk Mitigation
4. Quality Assurance/Quality Control

Details of the processes are contained in subsequent chapters of the IMPP.

Integrity Management Process



TransCanada recognizes that optimal integrity management is best achieved from a pipeline life-cycle perspective. Optimisation of pipeline integrity management is achieved through consideration of the holistic interaction of the design, construction, operation and maintenance, and retirement stages of the pipeline life-cycle. The IMPP implicitly assumes that the pipeline system has been designed, constructed and operated according to all applicable codes (principally the appropriate edition of CSA Z184 or Z662, Oil and Gas Pipeline Systems (for Canadian based pipelines) or 49 CFR Parts 191, 192 and 195 (for US based pipelines)). While design and construction is grandfathered to the applicable code edition (dependent on year of construction), the pipeline system is operated, maintained and ultimately retired according to the most recent standards. The IMPP specifically addresses pipeline integrity related operation and maintenance activities, but through the continuous review, feedback and performance measure monitoring inherent in the process, it is also used to influence the design, construction and retirement of pipeline facilities.

In addition to satisfying regulatory requirements, the IMPP conforms to all pertinent TransCanada Operating Procedures (TOPs); Engineering Standards (TESs); Engineering Procedures (TEPs); and continuation of ongoing programs and inputs from other key stakeholders (i.e. Regions, etc).

Implicit in the execution of the IMPP are process controls (i.e. checks and balances) to ensure that processes and activities are implemented according to the IMPP and that key decision and process "milestones" are signed-off by the appropriate level of authority. The corporate engineering report TER-IMPP-Roles and Responsibilities summarizes the key integrity processes and activities correlated to the responsible individual (by position title). These roles, responsibilities and approvals are also summarized within the Roles, Responsibilities subsection of each section of the IMPP document. In addition, Chapter 11 of the IMPP (Quality Assurance Process) summarizes QA/QC processes utilized to ensure conformance to TransCanada's quality management system controls.

Documentation of specific PMP activities used to mitigate identified risks is through the Decision Summary Process (DECSUMM). Individual decision summaries for all work in the current year's program are also documented on this site as well as in a central hard copy file maintained by the Pipe Integrity group in E&AR.

The DECSUMM process provides a common framework for evaluating potential mitigation options for individual risk situations and provides a rigorous and consistent methodology for support and justification of integrity projects. The individual program decision summaries are the primary documentation used by E&AR Department management to support decision analysis and document activities contained in the annual PMP.

Following roll-up of the individual integrity projects proposed for the annual PMP, the annual pipeline integrity/maintenance budget is prepared and documented in the annual PMP presentation.

COMMUNICATION AND IMPLEMENTATION

Critical to achieving the goals and objectives of the IMPP is timely and content-appropriate communication to the various departments and individuals affected by the IMPP results. All departments or individuals directly affected by the IMPP, or those responsible for executing programs developed by the IMPP, are informed and where appropriate, directly involved in the IMPP development process.

All TransCanada employees have access to the IMPP on the E&AR Homepage and the Corporate Policy Webpage. The IMPP is further communicated through specific presentations to senior management and field personnel.

The following reports are generated and distributed through the execution of the IMPP:

- Pipeline Maintenance Plan (PMP)
- Monthly PMP update
- Year end PMP report
- Residual risk report
- Quarterly non-compliance report
- Performance measures report
- Bi-weekly integrity activity report

These reports are reviewed by the management of E&AR, and where appropriate, senior management. Whereas the reports all support the preparation of the budget to varying extents, they are technical reports in nature and as such address issues beyond purely budgetary considerations.

Communication of the PMP is provided in detail, as required for internal TransCanada process conformance and external regulatory compliance. Land owners receive appropriate communication of the PMP and participate in its programs through the various liaison and public awareness initiatives contained within TransCanada's Integrated Public Awareness Program (IPA).

Appendix 7: Inventory of Audit Findings from Field Visits

Region: Wildrose
Date of Audit: December 2nd and 3rd, 2009
Audit Team: s.19(1)

TransCanada Liaison: (Edson)
(Vegreville)

REGION	AREA	FACILITY	FINDINGS & CITATIONS
Wildrose	Vegreville	Ben's Lake Compressor Station	o We noted that no signage indicating storage of dangerous good (TDG Class 3) were posted at the entrance to barrel dock used for storage of oil and diesel [*OPR(99), S.4(2)]*. o No TransCanada signage on perimeters of the compressor stations [*OPR(99), S.32(1), CSA Z662-07 s.10.3.9.2*]
Wildrose	Vegreville	Smoky Lake Compressor Station	o We noted that no signage indicating storage of dangerous good (*TDG Class 3)* were posted at the entrance to barrel dock used for storage of oil and diesel [*OPR(99), S.4(2)]*. o No TransCanada signage on perimeters of the compressor stations [*OPR(99), S.32(1), CSA Z662-07 s.10.3.9.2*]
Wildrose	Vegreville	Hanmore Compressor Station	o We noted that no signs indicating storage of dangerous goods (*TDG Class 3*) were posted at the entrance to barrel dock used for storage of oil and diesel [*OPR(99), S.4(2)]*. o No TransCanada signage on perimeters of the compressor stations [*OPR(99), S.32(1), CSA Z662-07 s.10.3.9.2]*
Wildrose	Edson	Knight Compressor Station	o Staff at the compressor station regularly test quality of well water (every 6 months) and sample analysis reports from an accredited laboratory, but the staff are unable to interpret the details of the sample results [*OPR(99), S.56*] o The Chemical Inventory form, kept on-site in the Compliance Cabinet, did not have any evidence of review in 2007 and 2008 (the 2006 inventory record was copied and placed in the cabinet for 2007 and 2008). The pipeline technician at the compressor station had recently reviewed the chemical inventory, but had not filed the inventory record sheet (in the cabinet or in electronic form). Staff were unsure what the inventory record should have been for 2007 and 2008 [*OPR(99), S.56*].
Wildrose	Edson	Swartz Creek Compressor Station	o Staff reported that they regularly (every 6 months) submit water samples to an accredited laboratory for testing of quality, yet do not receive the results of the sample analyses to keep on site [*OPR(99), S.56*] o A fire extinguisher located within the Compressor Building was noted to have had its last annual inspection performed in 2008, rather than in 2009 (at the same time as other fire extinguishers) [*OPR(99), S.39*] o We noted that the Compressor Station did not have any

REGION	AREA	FACILITY	FINDINGS & CITATIONS
			hearing protection signage/ placards on one of the entrances *[OPR(99), S.30(a)]*. o We noted that chains surrounding a platform used for operational work to be conducted on blow-down valves, and acting as a fall-arrest system, were not engaged *[OPR(99), S.30(a)]*
Wildrose	Vegreville	Vegreville Sales Meter Station	o No issues observed
Wildrose	Vegreville	Royal Park Meter Station	o No issues observed
Wildrose	Vegreville	Hairy Hill Meter Station	o No issues observed
Wildrose	Vegreville	Willington Meter Station	o No issues observed
Wildrose	Vegreville	Andrew Meter Station	o No issues observed
Wildrose	Edson	Pioneer Meter Station	o No issues observed
Wildrose	Edson	Ansel Meter Station	o Fencing surrounding the meter station was noted to have been damaged in multiple areas. The damage was reportedly caused by fallen trees surrounding the station, which occurred during a storm event in the first week of August, 2009. *[OPR(99), S.11(b)]*
Wildrose	Edson	Edson Meter Station	o TransCanada staff advised us that hearing protection be worn upon entry to the Valve Control Hut, yet there was no signage/ placards on the entrances to the building indicating that hearing protection be necessary *[OPR(99), S.30(a)]*
Wildrose	Vegreville	North Saskatchewan River crossing at Flat Lake	o No issues observed
Wildrose	Edson	North Saskatchewan River crossing (south of Lodgepole)	o Signage at the north riverbank was observed to be somewhat obscured by vegetative growth *[OPR(99), S.4(2)]*

Region: Central
Date of Audit: December 8th, 2009
Audit Team: s.19(1)

TransCanada Liaison:

REGION	AREA	FACILITY	FINDINGS & CITATIONS
Central	Palliser	Cavendish Compressor Station	o The Fire-proof cabinet storing chemicals was noted to be blocked by its abutment to an electrical panel [*OPR(99), S.30(a)*] o The "Meter Station Local Procedures Manual" has not been updated since June, 2006. There are no indications that the manual has since been updated, or reviewed to ensure that no changes to the manual are necessary. [*OPR(99), S.32(1)*] o The "Meter Station Local Procedures Manual" does not contain facility schematics, facility access map, side valve access outside, producer index files, or an isolation plan, all of which are noted in the Table of Contents of the manual [*OPR(99), S.32(1)*]
Central	Palliser	o Dunmore Meter Station o Medicine Hat East Meter Station o Empress East Sales & McNeil Meter Stations	o No TransCanada signage on perimeters of the meter station – [*OPR(99), S.36(f), CSA Z662-07 s.10.3.9.2*] o Emergency gates not marked with any signage or marker that would allow easier visibility of the gate location [*OPR(99), S.30(a)*] o "Meter Station Local Procedures Manuals" were all last updated in June, 2006. There are no indications that the manuals has since been updated, or reviewed to ensure that no changes to the manual are necessary [*OPR(99), S.32(1)*]
Central	Palliser	South Saskatchewan River crossing	o We noted a fixed ladder leading from ground at edge of riverbank to top of pipes on crossing (excess of 30 feet in height) did not have a surrounding safety-cage [*OPR(99), S.30(a)*]

Region: Rocky Mountain
Date of Audit: December 9th and 10th, 2009
Audit Team: s.19(1)

TransCanada Liaison: (East Loop)
(West Loop)

REGION	AREA	FACILITY	FINDINGS & CITATIONS
Rocky Mountain	East Loop	Beiseker Compressor Station	o We noted no legible TDG Class 2.1 pictorial at Beiseker Compressor Station Main Entrance *[OPR(99), S.4(2)]*. o We noted that the warm storage area was used for storage of hazardous materials (three full oil barrels, ten full 25L containers of oil and hazardous chemicals within the storage cabinets) o There was no indication of such by the posting of signs identifying the stored products on the entrances to the warm storage building *[OPR(99), S.4(2)]* o Barrels of oil and 25L containers where not stored at least above 100 mm above the floor level *[OPR(99), S.13(c)]* o One Fire-proof cabinet vent in the Warm Storage Building was noted to be open and venting inside the building *[OPR(99), S.30(a)]*. o No TransCanada signage on perimeters of the compressor stations *[OPR(99), S.32(1), CSA Z662-07 s.10.3.9.2]*
Rocky Mountain	East Loop	Hussar Compressor Station	o Site inspection discovered a total of four Westinghouse transformers (range 45kVA and 300kVA) located in the basement of main building. Basement has no adequate protection against water seepage during summer months (observed water marks and stain on floor). This situation poses constant safety and equipment integrity hazard. *[OPR(99), S.13(a)]* o Site has two high pressure boilers that have to be inspected by ABSA accredited inspector at interval deems appropriate by inspector. There were no records available in hard or electronic form confirming that Vessel (B) inspection was completed *[OPR(99), S.56]* o We noted that obsolete version of *Segregation Chart for Dangerous Goods and Hazardous Material* was posted at Barrel dock (outside storage area). In addition the poisonous material (Roundup) was stored together with flammable material (oil) in contravention to internal TC and TDG regulatory requirement *[OPR(99), S.4(2)]* o We noted several fire extinguishers with no annual inspection tags present *[OPR(99), S.39]* o We noted that station Emergency Response Plan does not contain residence lists as per TC requirement *[OPR(99),*

REGION	AREA	FACILITY	FINDINGS & CITATIONS
			S.32(1)] o We noted that no signage indicating storage of dangerous goods (*TDG Class 3*) were posted at the entrance to barrel dock used for storage of oil and diesel [*OPR(99), S.4(2)]*. o No TransCanada signage on perimeters of the compressor stations [*OPR(99), S.32(1), CSA Z662-07 s.10.3.9.2]*
Rocky Mountain	West Loop	Schrader Creek Compressor Station	o Signage – There did not appear to be adequate High Pressure Warning signage on the perimeter fence [*OPR(99), S.4(2)*] o Signage – There did not appear to be adequate dangerous goods storage signage at the entrance to barrel dock used for storage of oil and diesel [*OPR(99), S.4(2)*].
Rocky Mountain	West Loop	Winchell Lake Compressor Station	o Signage – There did not appear to be adequate High Pressure Warning signage on the perimeter fence [*OPR(99), S.4(2)*] o Signage – There did not appear to be adequate dangerous goods storage signage at two of the three entrances to the warm storage area. [*OPR(99), S.4(2)*]. o ERP – contact names not listed in the ERP. Only a reference to another online document is provided [*OPR(99), S.32(1)*]
Rocky Mountain	East Loop	Severn Creek Meter Station	o We noted three high pressure helium cylinders stored in a position not protecting them against valve damage (not securely fastened) [*OPR(99), S.30(a)*]. o No TransCanada signage on perimeter fencing [*OPR(99), S.32(1), CSA Z662-07 s.10.3.9.2*]
Rocky Mountain	West Loop	South Elkton – Harmattan Delivery Meter Station	o We noted an H_2S warning sign on the entrance gate, however no H_2S gas present in the line. According to Darrel Sayer, Regional Asset Reliability Manager, Rocky Mountain Region, the sign was originally installed when the South Elkton station was a receipt point and not subsequently removed [*OPR(99), S.4(2)]*
Rocky Mountain	East Loop	Hussar North Meter Station	o No TransCanada signage on perimeter fencing [*OPR(99), S.32(1)]*
Rocky Mountain	West Loop	River Crossing – Cochrane Bow River	o Signage – There appeared to be inadequate high pressure pipeline warning signage at the Cochrane Bow River crossing. Only the pipeline markers were in place. Mitch Starke, HS&E Coordinator, advised us that the sign was removed due to the difficulty of maintaining the sign at the river crossing, but that the sign will be replaced [*OPR(99), S.4(2)]*.

Certificate GC-113 Condition 11

2010 Alberta System Audit

Opportunities for Improvement and Corrective Action Plan

2010 Alberta System Audit – Opportunities for Improvement / Corrective Action Plan

Element	Opportunities for Improvement ("OFI")	Classification	Corrective Action	Target Completion Date	Department Accountable	Person Responsible
Corporate Policy	▪ The company has not developed a policy relating to physical security.	Moderate	TransCanada Corporate Security acknowledges this OFI, however at the time of the audit, the following documents were in the internal document review process and have been subsequently approved and issued: o Updated Corporate Security Policy o Updated Physical Security & Incident Reporting TOP o New Security Threats TOP o New Physical Security for Construction Sites TOP	Completed		
			The draft Critical Facilities Identification TOP is currently working through final approvals and will be issued this quarter.	Q1, 2010	Corporate Security	[redacted]
	▪ The company has not developed a policy relating to cyber-security.		TransCanada's Information Management and Security Policy is intended to cover cyber security for all information technology and SCADA systems. TransCanada is undertaking a review of the policy and will make any necessary changes to ensure SCADA systems are adequately addressed.	Q3, 2010	Governance & Security	[redacted]
Risk Identification	▪ The company has not formally identified and assessed the cyber-security risks associated with its SCADA system as required in the NEB Pipeline Security Change Notification, 2006. – see Section 2.2.3	Moderate	TransCanada recognizes that NOPRC 2009-01 supersedes PRC 2006-01. NOPRC 2009-01 proposes to incorporate CSA Z246.1, by reference into OPR-99. TransCanada will undertake to assess its current cyber security risk assessment processes to identify any gaps with respect to section 5 (Security Risk Management) of CSA Z246.1-09, TransCanada will undertake to remediate any gaps that are identified as a result of this assessment.	Q4, 2010 to Q1, 2011	Facilities Reliability IS Governance & Security	[redacted] [redacted]

s.19(1)

2010 Alberta System Audit – Opportunities for Improvement / Corrective Action Plan

Element	Opportunities for Improvement ("OFI")	Classification	Corrective Action	Target Completion Date	Department Accountable	Person Responsible
Legal and Other Requirements	▪ Although electronic copies of correspondence with regulators is maintained for each project or operations file, the company does not maintain a centralized consolidated file of interpretations, exemptions, and waivers from regulations as agreed upon with regulators (voluntary management practice). – see Section 2.2.6	Low	TransCanada will create and maintain a centralized consolidated file that contains records relating to interpretations, exemptions and waivers from regulations as agreed upon with regulators. This will include a review of projects completed under NEB jurisdiction since April 2009. On a prospective basis, a new management process will be implemented whereby regulatory project managers will note any interpretations, exemptions and waivers from regulations and record these and any associated documents in a centralized file maintained by Regulatory Services. TransCanada will create and maintain a centralized consolidated file to contain the records relating to interpretations, exemptions and waivers from regulations occurring during operations.	Q1, 2010 Q1, 2010	Regulatory Services Canadian Pipeline Operations - Compliance	[redacted] s.19(1) [redacted]
Objectives, Targets and Programs	▪ In some cases, performance goals or targets may have been established without regard to the underlying specific risks and without a practical means of prioritizing. As a result, some managers may have difficulty assessing whether under-achievement against targets poses a particular operational or other risk.	Low	TransCanada is undertaking a review of the process for setting its performance goals and/or targets relating to regulatory and/or compliance requirements and will communicate more explicitly the rationale and consequences of not meeting the objectives.	Q2, 2010	All	[redacted] s.19(1)
Resources, Roles, Responsibilities and Authority	▪ Roles and responsibilities regarding SCADA security have not been documented. – see Section 2.2.3	Moderate	TransCanada is in the process of reviewing the RACI (Responsibility, Accountability, Consult and Inform) matrix for cyber security. We will validate existing documentation and incorporate roles and responsibilities for SCADA security into the overall RACI matrix.	Q2, 2010	Facilities Reliability IS Governance & Security	[redacted]
Competence, Training	▪ Security Awareness Poster campaign	Low	A Security Awareness poster regarding	Q2, 2010	Corporate	G. Reierson

2010 Alberta System Audit – Opportunities for Improvement / Corrective Action Plan

Element	Opportunities for Improvement ("OFI")	Classification	Corrective Action	Target Completion Date	Department Accountable	Person Responsible
and Awareness			suspicious activities, persons and objects has been developed. Field implementation of the poster has begun. Security awareness considerations will be included as part of regular site orientations.		Security	
Communication	▪ None identified	Not applicable	Not applicable	n/a	Not applicable	Not applicable
Documentation	▪ The company's cyber-security management system is currently not well documented. Interviews with relevant personnel indicate that the company will document the SCADA and cyber-security management system and associated processes over the next few years, starting with TransCanada's Power division. – see Section 2.2.3	Moderate	TransCanada has completed a significant effort to document cyber security policies and procedures. These policies and procedures are specific to NERC CIP compliance within TransCanada's Power division. TransCanada will undertake to assess the cyber- security policies and procedures for applicability to all SCADA environments.	Q4, 2010 to Q1, 2011	Facilities Reliability IS Governance & Security	
Control of Documents	▪ We noted during our interviews that document control practices do not always cascade down to specific desk procedures and other departmental-specific guidance and protocols beyond the scope of the relevant "official" policy and procedure documents (version numbers, dates, owners, etc.)	Low	Engineering and Operations will undertake a review of its current document control practices to ensure corporate requirements are being met.	Q4, 2010	Engineering & Operations	
Operational Control	▪ Some interviewees indicated that occasionally there can be temporary gaps in the ownership and accountability for managing certain TOPs following organizational and staff changes. These gaps can persist for some time, depending on the schedule for review and update of the particular TOP. However, we did not see evidence suggesting that these gaps were causing undue risk to operations.	Low	TransCanada will incorporate a Management of Change process into the TOPs management system to address changes in functional responsibility through attrition, promotions, and re-organizations.	Q2, 2010	Asset Management Improvement	
Emergency Preparedness and Response	▪ There is an opportunity to enhance the annual review process (EMS Manual, Section 1.7) for site specific emergency response plans. We noted during the site visits that the emergency response plans at several Compressor stations were partially out of date or incomplete. See Appendix 7 for details.	Moderate	TransCanada will undertake to review and update the site specific response plans at compressor stations in 2010. This update will be added as a yearly task to the compressor station compliance calendars to ensure an annual review of the document is completed	Q4, 2010	Regions	

2010 Alberta System Audit – Opportunities for Improvement / Corrective Action Plan

Element	Opportunities for Improvement ("OFI")	Classification	Corrective Action	Target Completion Date	Department Accountable	Person Responsible
	▪ The effectiveness of the IPA program is currently monitored through initiatives such as assessing feedback received from information mail-outs and surveys as well as quarterly tracking of the number of unauthorized crossings. Separate groups track the number of requests for crossing agreements and the number processed. The IPA program can be further enhanced by including these statistics as part of its review.	Low	each year. The statistics and trends related to unauthorized crossings will be included as part of the annual review of IPA program effectiveness commencing in 2010.	Q4, 2010	Integrity Services and Support	[redacted]
Monitoring and Measurement	▪ We identified numerous deficiencies at the sites during the site inspection component of our audit, suggesting that the company's site inspection process is not effective. These are discussed in Section 2.2.1 and again in Appendix 7.	High	TransCanada will conduct a review of its Planned Inspection Program and the accompanying Pocket Guide in 2010 to ensure it provides sufficient guidance to Field Staff conducting the planned inspections. TransCanada will undertake a review of the site inspection process in 2010 to determine if the identified skill sets required to complete the inspections are adequate. TransCanada will reinforce the expectations of the site inspections with its Field personnel.	Q2, 2010 Q2, 2010 Q2, 2010	Canadian Pipeline Operations – Compliance Canadian Pipeline Operations – Compliance Regions	[redacted]
Evaluation of Compliance	▪ We identified numerous deficiencies at the sites during the site inspection component of our audit, suggesting that the company's site-level compliance evaluation processes are not effective. These are discussed in Section 2.2.1 and again in Appendix 7.	High	TransCanada will undertake a review of its Planned Inspection Program and the accompanying Pocket Guide in 2010 to ensure it provides sufficient guidance to Field Staff conducting the planned inspections. TransCanada will undertake a review of the site inspection process in 2010 to determine if the identified skill sets required to complete the inspections are adequate. TransCanada will reinforce the expectations of the site inspections with its Field personnel.	Q2, 2010 Q2, 2010 Q2, 2010	Canadian Pipeline Operations – Compliance Canadian Pipeline Operations - Compliance Regions	[redacted]

s.19(1)

2010 Alberta System Audit – Opportunities for Improvement / Corrective Action Plan

Element	Opportunities for Improvement ("OFI")	Classification	Corrective Action	Target Completion Date	Department Accountable	Person Responsible
						[redacted]
Nonconformity, Corrective Action and Preventive Action	▪ We noted during our site inspections that there were a relatively large backlog of issues and items in the IIT system. This is discussed further in Section 2.2.5.	Moderate	TransCanada will undertake a review of the IIT management process in 2010 to assess and if necessary, reduce the backlog of outstanding issues moving forward with a single prioritization model.	Q2, 2010	Wildrose Region	C. Pezoulas
Control of Records	▪ TransCanada should consider enhancing its record keeping process for hard copies of records required to be kept at compressor stations. We noted during the site visits that certain records required to be kept on sites were not available for inspection. See Appendix 7 for details.	Moderate	Hard copy inspection records related to boilers are held centrally as ABSA jurisdiction does not require the documents to be held at site. TransCanada will undertake to add hard copies of boiler inspection records to the site specific compliance files in 2010. Likewise, hard copies of water sample test results will be kept on site.	Q4, 2010	Regions	[redacted]
Internal Audit	▪ Although we have identified weaknesses in the company's site inspection program, we have not identified specific opportunities for improvement in the overall internal audit processes.	Not applicable	Not applicable	n/a	Not applicable	Not applicable
Management Review	▪ None identified.	Not applicable	Not applicable	n/a	Not applicable	Not applicable

s.19(1)

2010 Alberta System Audit – Opportunities for Improvement / Corrective Action Plan

A summary of the opportunities for improvement identified during the audit is presented in the following table. PwC has categorized the OFIs under three classifications:

Classification	Description
High	Significant deviation from regulatory requirements, company standards, or other practices of a substantial nature leading to significant requirements or concepts not addressed in implementation or TransCanada's documentation. This can include absence of required programs, management systems or processes; ineffective implementation or maintenance of a key requirement or procedure; potential liability issues; or repeat findings from previous audits.
Moderate	Moderate deviations from regulatory requirements, company standards or other practices leading to noticeable differences in structure and implementation or depth of coverage, but general alignment of main requirements and concepts. This can include gaps in formal programs, incomplete implementation of programs, lack of awareness of some requirements, or informality of management systems.
Low	Minor deviations from regulatory requirements, company standards or other practices in an otherwise good program leading to slight but noticeable differences in implementation. This includes opportunities to strengthen or fine-tune the management systems or processes, or can indicate potential for escalation in the future if not addressed.