Assertion by Management of the Government of Alberta, Software Delivery

We are responsible for designing, implementing, operating, and maintaining effective controls within the Government of Alberta, Department of Energy's (Alberta Energy and Minerals) Petrinex System (Petrinex or System) throughout the period April 1, 2023, to March 31, 2024, to provide reasonable assurance that Alberta Energy and Minerals' service commitments and system requirements were achieved based on the trust services criteria relevant to security, availability, processing integrity, and confidentiality (applicable trust services criteria) set forth in TSP section 100, *2017 Trust Services Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy*, in AICPA *Trust Services Criteria*. Our description of the boundaries ofthe system is presented in Attachment A and identifies the aspects of the system covered by our assertion.

We have performed an evaluation of the effectiveness of the controls within the system throughout the period April 1, 2023, to March 31, 2024, to provide reasonable assurance that Alberta Energy and Minerals' service commitments and system requirements were achieved based on the applicable trust services criteria. Alberta Energy and Minerals' objectives for the system in applying the applicable trust services criteria are embodied in its service commitments and system requirements relevant to the applicable trust services criteria. The principal service commitments and system requirements related to the applicable trust services criteria are presented in Attachment B.

There are inherent limitations in any system of internal control, including the possibility of human error and the circumvention of controls. Because of these inherent limitations, a service organization may achieve reasonable, but not absolute, assurance that its service commitments and system requirements are achieved.

We assert that the controls within the system were effective throughout the period April 1, 2023, to March 31, 2024, to provide reasonable assurance that Alberta Energy and Minerals' service commitments and system requirements were achieved based on the applicable trust services criteria.

Government of Alberta, Software Delivery

Donald.Jessop

Digitally signed by Donald.Jessop
Date: 2024.05.22 10:04:25 -06'00'

Signed on behalf of Ting Zuge

Ting Zuge
Executive Director, Software Delivery
Digital Design and Delivery

May 17, 2024

Independent Service Auditors

To: The Government of Alberta, Software Delivery

Scope

We have examined the Government of Alberta (GoA) accompanying assertion titled "Assertion by Management of the Government of Alberta, Software Delivery" (assertion), that the controls within the Petrinex System (Petrinex or System) were effective throughout the period April 1, 2023, to March 31, 2024, to provide reasonable assurance that GoA's principal service commitments and system requirements were achieved based on the criteria relevant to security, availability, processing integrity, and confidentiality (applicable trust services criteria) set forth in TSP section 100, 2017 Trust Services Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy, in AICPA, Trust Services Criteria.

Service organization's responsibilities

GoA is responsible for its service commitments and system requirements and for designing, implementing, and operating effective controls within the system to provide reasonable assurance that GoA's service commitments and system requirements were achieved. GoA has also provided the accompanying assertion about the effectiveness of controls within the system. When preparing its assertion, GoA is responsible for selecting, and identifying in its assertion, the applicable trust services criteria and for having a reasonable basis for its assertion by performing an assessment of the effectiveness of the controls within the system.

Service auditor's responsibilities

Our responsibility is to express an opinion, based on our examination, on management's assertion that controls within the system were effective throughout the period to provide reasonable assurance that the service organization's service commitments and system requirements were achieved based on the applicable trust services criteria. Our examination was conducted in accordance with attestation standards established by the AICPA. Those standards require that we plan and perform our examination to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects. We believe that the evidence we obtained is sufficient to provide a reasonable basis for our opinion.

We are required to be independent and to meet our other ethical responsibilities in accordance with relevant ethical requirements relating to the engagement.

Our examination included:

- Obtaining an understanding of the system and the service organization's service commitments and system requirements;

- Assessing the risks that controls were not effective to achieve GoA's service commitments and system requirements based on the applicable trust services criteria; and

- Performing procedures to obtain evidence about whether controls within the system were effective to achieve GoA's service commitments and system requirements based on the applicable trust services criteria.

Our examination also included performing such other procedures as we considered necessary in the circumstances.

Inherent Limitations

There are inherent limitations in the effectiveness of any system of internal control, including the possibility of human error and the circumvention of controls.

Because of their nature, controls may not always operate effectively to provide reasonable assurance that the service organization's service commitments and system requirements were achieved based on the applicable trust services criteria. Also, the projection to the future of any conclusions about the effectiveness of controls is subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies and procedures may deteriorate.

Opinion

In our opinion, management's assertion that the controls within Alberta Energy and Minerals' Petrinex system were effective throughout the period April 1, 2023, to March 31, 2024, to provide reasonable assurance that GoA's service commitments and system requirements were achieved based on the applicable trust services criteria is fairly stated, in all material respects.

GRANT THORNTON LLP

Grant Thornton LLP

Chartered Professional Accountants
Edmonton, AB
May 17, 2024

Attachment A:

Alberta Energy and Minerals' Description of the Boundaries of Petrinex

Services Provided

Petrinex is a centralized, repository of volumetric, infrastructure and other petroleum information related to Alberta's, British Columbia's, Manitoba's, Saskatchewan's and Indian Oil and Gas Canada's (IOGC) upstream, midstream and downstream oil and gas industry that is used to assess and calculate royalties owed to the Crown and enforce compliance with regulatory requirements.

Petrinex serves three distinct functions:

- It is a central database for all of the royalty, regulatory, volumetric and infrastructure data related to Alberta's, British Columbia's, Manitoba's, Saskatchewan's and IOGC's upstream, midstream and downstream oil and gas industry;
- It is a communication tool enabling the Government of Alberta, the Government of British Columbia, the Government of Manitoba, the Government of Saskatchewan, IOGC and Industry stakeholders to exchange and analyze accurate information quickly and efficiently; and
- It is an analysis tool. As an analysis tool, Petrinex avoids common mathematical errors by saving the information in its most basic form and then performing calculations as required to ensure the entire system remains in balance and business/regulatory rules are applied correctly for each jurisdiction.

The following is a brief summary of some of the activities that can be performed on Petrinex (whether it be online, batch or both):
- Volumetric Reporting
- Stream Allocation/Owner Allocation Reporting
- Pipeline Split and Transportation Allowance Reporting
- Infrastructure Reporting (Wells, Facilities, Business Associates, Production Entity, etc.)
- Raw Gas Allocations Reporting
- Allowable Cost Reporting
- Crude By Rail Reporting
- Alberta Petroleum Marketing Commission (APMC) Reporting (Shipper's Balance, Tariff, Equalization)
- Oil Forecast Tool
- Drilling and Completion Cost Reporting
- Report requests on dozens of pre-defined reports
- Download Ministry Statements and Reports
- Information Download capabilities (Bulletin Board, Public Data)
- Changes to user profiles by the respective User Security Administrator
- Valuation (Oil, NGL, and Gas)
- Producer Cost of Service
- Royalty Tax Attributes

- Royalty Tax Payer
- Enhanced Production Audit Program (EPAP)
- Enhanced Production Valuation Program (EVAP)
- Production Allocation Discrepancy (PAD)

Petrinex facilitates the activities outlined above by means of data uploads, downloads, and e-mail. Petrinex provides the tools and data primary users need for two-way communication with governments and regulators, working-interest owners, pipeline companies, shippers, purchasers, and other business associates.

Petrinex is accepted as the single, authoritative petroleum-related data source and the data it houses is considered the "data-of-record" for all stakeholders. All data is available in one place. Since all stakeholders have access to Petrinex data, and since the same data can be used for a variety of purposes, there is no need for multiple or duplicative submissions to multiple stakeholders.

Infrastructure

Petrinex is a secured web application. The Petrinex web application uses an Active Directory Service (ADS) for authentication. There are three separate environments for Development, Acceptance Testing and Production. All security zones related to the Development, Acceptance Testing and Production environments are isolated from one another.

Software

Petrinex uses a web-based system for its automated business functions and processes that facilitate fast, standardized, safe and accurate management/exchange of key volumetric, royalty and commercial information associated with the upstream petroleum sector.

Petrinex interacts with Ministry and Industry business systems through system interfaces. It makes data available through Internet access via browsers, lookup tools, and reports. Petrinex's web-based interface provides users with online access to information.

People

Petrinex is a joint strategic organization supporting Canada's upstream, midstream and downstream oil and gas industry, and streamlines the way petroleum companies exchange information with the Alberta Energy Regulator (AER), the Alberta Ministry of Energy and Minerals (AEM), the British Columbia Ministries of Finance (FIN) and of Energy, Mines and Low Carbon Innovation (EMLI), the British Columbia Energy Regulator (BCER), the Saskatchewan Ministry of Energy and Resources

(SER), the Manitoba Ministry of Economic Development, Investment, Trade and Natural Resources (EDIT), and Indian Oil and Gas Canada (IOGC) and Industry partners.

Petrinex is composed of several key functional units tightly integrated to enable quality performance from the Petrinex application and the needs of Petrinex's vast stakeholders to be continually met. The Petrinex team consists of dedicated Government of Alberta/Alberta Energy and Minerals Regulator employees (management/operations, learning/communications, change management), and Government of Alberta Contractors (AMS, Business Desk).

Overseeing the entire operations of Petrinex is the Petrinex Chief Executive Officer, who is responsible to ensure not only that the immediate operational needs of Petrinex stakeholders are continually being met, but also that the strategic direction of Petrinex as set by the Petrinex Executive Board and Petrinex Steering Committee is followed and adhered to within the respective functional units of Petrinex.

The following is a brief summary of the distinct functional units within Petrinex:

- **Petrinex Business Desk:**
  - Headed by the Business Desk Team Lead, the Business Desk is the first-point-of-contact for Industry, AER, AEM and the Governments of British Columbia, Manitoba, Saskatchewan, and IOGC regarding the use of Petrinex.
  - All incidents submitted by Industry, AER, AEM and the Governments of British Columbia, Manitoba, Saskatchewan and IOGC users are recorded within the ServiceNow system.
  - Incidents requiring functionality changes are prioritized based upon their business impact as defined in the Petrinex Business Change Management Process.
  - The Business Desk attempts to resolve the majority of incidents themselves.
  - A Knowledge Database is collectively maintained by the Petrinex Business Desk team and the Petrinex Subject Matter Experts (Business Analysis and Engagement Team).
  - Regular daily and weekly statistical reporting on events, operational issues and performance metrics.
  - The Petrinex Business Desk Leader leads and coordinates the Petrinex Daily Operations meetings (Petrinex team, AER, AEM, the Governments of British Columbia, Manitoba and Saskatchewan, and IOGC representatives attend).

- **Petrinex Change Management Team:**
  - Headed by the Petrinex Business Operations Director (or Senior Business Analyst), the Change Management Team meets on a weekly basis and is composed of members from respective stakeholder groups (Petrinex, AEM, AER, the Governments of British Columbia, Manitoba and Saskatchewan, IOGC and Industry).
  - The Change Management team employs a rigorous change management process to assure that all change items are adequately vetted, prioritized, scheduled, tested and implemented.

- o The Change Management team is responsible to ensure that the System Delivery Lifecycle methodology is consistently applied to all change items.

- **Petrinex Application Maintenance and Support (AMS) Team:**
  - o The AMS teams activities are managed by the AMS manager that reports to the Technology and Innovation System Owner for Petrinex. The AMS team is responsible to ensure that Petrinex consistently meets stakeholder performance/processing expectations (as per the documented list of Key Performance Indicators) not only on a day-to-day basis, but also on an hour-to-hour basis.
  - o The AMS team manages the day-to-day activities of Petrinex, with hardware, network and general system support provided by the Technology and Innovation Production Support Team.
  - o The AMS manager is responsible to ensure that his team of application developers, DBA's, Production Operations analysts and Change Management analysts are available to address any issue that may arise, in addition to being responsible to ensure that the operational needs of Petrinex are addressed.
  - o The AMS team adopts practices for securing web applications as recommended by the "Open Web Application Security Project (OWASP)".

- **Petrinex Communications and Stakeholder Support Coordinator:**
  - o The Petrinex Communications and Stakeholder Support Coordinator is responsible for ensuring that timely communication (tips/alerts/broadcast messages, links to relevant documents) is provided to Petrinex stakeholders on the Petrinex website. The targeted communications are intended to be succinct, accurate and provide enough information to be useful to the intended audience.
  - o The Petrinex Communications and Stakeholder Support Coordinator is responsible for ensuring that Petrinex's comprehensive online training system (comprised of training modules for all jurisdictions) is available to all its registered users. The modules are to be constantly reviewed (considering any changes implemented that have an impact to the modules) to keep the information current, informative and accurate.
  - o The Petrinex Communications and Stakeholder Support Coordinator supports communication planning for industry readiness on major projects and initiatives.

Data

Petrinex is a central, repository of royalty, regulatory, volumetric and infrastructure data related to Alberta's, British Columbia's, Manitoba's, Saskatchewan's and IOGC's upstream, midstream and downstream oil and gas industry. Petrinex contains records of wells, facilities, business associates, operators of record, and company contacts. It replaced, or streamlined, many previous disconnected methods of distributing and obtaining volumetric, allocation, valuation, and pipeline split information.

Data is received by Petrinex from clients securely logging in to the application and submitting data in one of two main manners: online or batch. The data is validated by Petrinex and then, when

applicable, sent to the respective Ministry for further use in its business processes. The output from the applicable Ministry is then sent back to Petrinex for the end-user to access at specified periods in the submission cycle.

Data is validated before it is accepted into Petrinex. Once it is posted, all stakeholders can "read from the same page." That is, they can access the same view of the data at the same time. If there are errors, or if data is missing, operators receive prompt, electronic notification. This gives them the opportunity to correct mistakes and avoid potential compliance penalties or provisional assessments.

To avoid mathematical calculation errors, Petrinex data is stored in its most granular form. Petrinex is capable of making calculations and deriving other types of information on the basis of these granular elements. It calculates sum totals and locates cross-references. This provides mathematical accuracy and assures that all data in Petrinex remains "in balance."

Processes, Procedures and Control Mechanisms

Petrinex has incorporated the following procedures, some of which are carried out by Technology and Innovation Teams on behalf of Petrinex:
- Incident Response Procedures
- Change Management Procedures
- Emergency Response Procedures
- Business Resumption and Disaster Recovery Procedures
- Security administration and monitoring procedures
- Security auditing and log analysis procedures
- Performance monitoring procedures
- Interest Expressed from Outside Parties Procedures
- Founding Stakeholder Initiated Enhancement Procedures
- Petrinex Central Security Administrator Procedures
- Petrinex Document Release Protocol Procedures
- Communication Procedures, including Media Contact Procedures
- Enhanced Production Audit Program (EPAP)
- Enhanced Production Valuation Program (EVAP)

Attachment B:

Alberta Energy and Minerals' Principal Service Commitments and System Requirements for Petrinex

Alberta Energy and Minerals designed the processes and procedures related to Petrinex to facilitate efficient, standardized, safe and accurate management/exchange of "data of record" information essential to the operation of the petroleum sector. Those objectives are based on the service commitments that Alberta Energy and Minerals makes to user entities, the laws and regulations that govern the provision of Petrinex services, and the financial and operational requirements that have been established to deliver those services under binding legal agreements with Petrinex jurisdictions.

Security, confidentiality, processing integrity and availability commitments to user entities are documented and communicated in the description of the service offering provided online. These commitments are standardized and include, but are not limited to, the following:

- Security and confidentiality commitments:

  - Security principles implemented within Petrinex are designed to permit system users to access the information they need based on their role in the system, while restricting them from accessing information not needed for their role. Security protocols are designed to ensure that proprietary/confidential data is accessible only to authorized users. Shared data is accessible and usable by entitled Industry and Ministry stakeholders only. Access to data in the public record is unrestricted.
  - Encryption technologies are used to protect the confidentiality of user data in transit.
  - Proprietary/confidential data is retained and/or disposed of in accordance with:

    - applicable Government of Alberta policies, directives, and standards, or
    - as directed by the Governments of British Columbia, Manitoba, Saskatchewan or IOGC (when applicable).

- Expectations of service provision and availability: Petrinex services are generally available 15 hours a day, Monday to Saturday, with occasional Sunday openings. These services are not available 24 hours a day due to regular maintenance activities. Petrinex users are encouraged to view the exact hours of operation on a given day/month within the "Business Desk" area of the Petrinex website.

- Processing integrity commitments: Petrinex includes built-in edit and error checking to enable consistent and timely processing of data submissions, and consistent automated

calculations based on granular data to enable mathematical accuracy.

Alberta Energy and Minerals establishes operational requirements that support the achievement of its system commitments, relevant laws and regulations, and other system requirements. Such requirements are carried out by Technology and Innovation on behalf of Alberta Energy and Minerals and communicated in Technology and Innovation, and Alberta Energy and Minerals system policies and procedures, system design documentation, and in relevant contracts and agreements.

Operational policies define an organization-wide approach to how systems and data are protected, administered, maintained, and made available. These include policies around how the service is designed and developed, how the system is operated, how the system and network are managed, and how employees are hired and trained. In addition to these policies, standard operating procedures have been documented on how to carry out specific manual and automated processes required in the operation, development, and maintenance of Petrinex.