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CSA Z246.1:21
National Standard of Canada

Security management for petroleum and natural gas industry systems

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Standards Council of Canada
600-55 Metcalfe Street
Ottawa, Ontario, K1P 6L5
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Preface

This is the fourth edition of CSA Z246.1, *Security management for petroleum and natural gas industry systems*. It supersedes the previous editions published in 2017, 2013 and 2009.

The most significant change, relative to the previous edition, is the introduction of cybersecurity measures that has replaced the previous Clause 7 on information technology and industrial control system security.

This Standard uses the concept of a security management program, and in particular risk management, to address security issues. This Standard provides a performance-based approach for use by the operator to establish governance, conduct planning, implement and improve security operations (including detection and mitigation practices), and refine the security management program through change management and audit processes. This approach allows users to apply this Standard across the petroleum and natural gas industry.

This Standard is one of several security risk management tools. Operators should work with other industries, as well as governmental agencies, in order to effectively manage the security of their energy infrastructure. A security management program should complement existing programs and should consider the risks and criticality of the assets being protected. Therefore, this Standard should be read in conjunction with other security legislation, safety legislation, best practices, policies, standards, and applicable codes (e.g., CSA Z662, CAN/CSA-ISO 31000, and CSA Z1600). In particular, this Standard is aligned with CSA Z246.2, *Emergency preparedness and response for the petroleum and natural gas industry systems*, to both support a continual improvement process and to develop sound risk-based management processes.

This Standard was prepared by the Technical Committee on Security Management for Petroleum and Natural Gas Industry Systems, under the jurisdiction of the Strategic Steering Committee on Petroleum and Natural Gas Industry Systems, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
3) *This Standard was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
4) *To submit a request for interpretation of this Standard, please send the following information to inquiries@csagroup.org and include "Request for interpretation" in the subject line:*
   a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
   b) *provide an explanation of circumstances surrounding the actual field condition; and*
   c) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

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   c) *wording of the proposed change; and*
   d) *rationale for the change.*

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Security management for petroleum and natural gas industry systems

0 Introduction

The importance of a safe, secure, and reliable energy supply is widely recognized and any prolonged interruption in the supply of energy, such as petroleum or natural gas, would adversely impact people, the environment, assets, and economic stability. Because energy infrastructure assets and systems are geographically dispersed and the operation of the infrastructure is typically managed by several different operating companies using a variety of delivery mechanisms, protecting the energy supply presents a unique challenge. In order to help petroleum and natural gas companies evaluate and respond appropriately to security threats, CSA Group has worked with security professionals to prepare this Standard.

This Standard is based on the premise that security risks should be managed using risk-based and performance-based management processes. The foundation of a security management program is the identification and analysis of security risks on a continuing basis and the mitigation of these risks with adequate security measures. The security risk management process can be used to help accomplish this task and to help the operator make decisions regarding the need for security measures. Potential threats and appropriate security measures vary based on size, location, facility type, and existing security measures. This Standard provides a means of identifying, analyzing, and reducing risks through a security risk management process. This Standard also identifies specific security risk reduction measures to be implemented. A risk-based approach recognizes that there is no uniform security management program that would apply to the entire petroleum and natural gas industry and that resources are best applied to mitigate high-risk situations. Not all security risks can be completely prevented.

A governance framework for a security management program begins with an awareness of what the program serves to protect. Effective governance ensures the protection of the key program components: people, the environment, assets, and economic stability.

An effective security management program (as illustrated in Figure 1) requires sustainable governance in the form of

a) legislative and policy framework (policies, process, standards, and directives);
b) organizational and strategic leadership (knowledge, training, and awareness);
c) accountability (both internal and external); and
d) compliance (auditing, monitoring, and evaluating).

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Figure 1
Monitoring and review
(See Clauses 0 and 11.)

1 Scope

1.1 General

This Standard specifies criteria for establishing a security management program for petroleum and natural gas industry systems to ensure security threats and associated risks are identified and managed. This Standard provides mitigation and response processes and procedures to prevent and minimize the impact of security incidents that could adversely affect people, the environment, assets, and economic stability.

1.2 Applicability

This Standard applies to all petroleum and natural gas industry systems (as illustrated in Figures 2 and 3), including

a) pipeline systems handling
   i) oil;
   ii) gas;
   iii) oil-field water;

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iv) liquid products;
v) multi-phase fluids;
vi) slurries; and
vii) system supports, including
1) meter stations;
2) compressor stations;
3) pump stations;
4) tank farms;
5) terminals; and
6) all assets that support Items 1) to 5);

b) liquefied natural gas (LNG) production, storage, and handling facilities;
c) storage of hydrocarbons in underground formations;
d) petrochemical installations, including
i) refineries;
ii) gas processing plants;
iii) liquefied petroleum gas plants;
iv) synthetic natural gas plants; and
v) coal gasification plants;
e) oil and gas exploration, development, production, treatment, processing, and storage operations not covered in Items a) to d);
f) oil sands facilities; and
g) petroleum and natural gas wells.

The requirements of this Standard are applicable to all operators, regardless of the size or number of their assets.

1.3 Exclusions

Offshore petroleum and natural gas activity, petroleum and LNG tankers, and customers piping systems are outside the scope of this Standard.

Note: *See Figures 2 and 3.*

1.4 Terminology

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

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