



Canada Energy
Regulator

Régie de l'énergie
du Canada

Human and Organizational Factors Guidance for Contracted Activities



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1.0 Purpose

This document is intended to explore two concepts that may offer important insights about the relationship and coordination between Companies and their contractors: Human and Organizational Factors (HOF) and Safety Culture.

2.0 Background

HOF is a socio-technical discipline that is used to inform:

- how we think about a workplace and its complexity; and
- how we apply tools, data, methods and training to optimize performance.

The HOF discipline can be applied proactively as part of hazard identification and risk management or reactively as part of an incident review to understand underlying factors that may have contributed to an incident. In both instances, the application of HOF facilitates improved organizational learning and continual improvement.

Safety culture is an essential element of HOF; it can be defined as the attitudes, values, norms, and beliefs that a group of people share with respect to safety and risk. Culture influences what people see, hear, feel, and say. Perhaps most importantly, it influences decisions and actions (behaviours). These behaviours drive safety outcomes and performance (i.e., prevention of harm to people and the environment).

3.0 Integrating Human and Organizational Factors in Management Systems and Protection Programs Supports Harm Prevention

HOF considers the workplace to be a set of interacting or interdependent parts that come together to form a holistic system. The interdependent parts of the workplace system include:

- the people (individual workers and teams) performing the work;
- the equipment and technology being used and the physical environment in which work is being performed;
- the organization's culture, policies, procedures, training, resourcing, etc., which govern and/or support the performance of work.

Using a proactive approach, HOF provides concepts and methods to support the identification, evaluation, and management of socio-technical hazards (i.e., specific hazards resulting from the relationship between the parts of the workplace system). Once understood, HOF focused controls can be used to mitigate hazards and improve performance outcomes. Examples of where a HOF analysis may be applied to understand and control undetected hazards include but are not limited to:

- how the design of a procedure may introduce risk to the work being performed (e.g., poor document control resulting in the use of outdated procedure document);
- how the human-machine interface of a tool may become a hazard if not carefully designed to consider and account for human limitations;
- how a person's physical and/or cognitive abilities may impact their work (e.g., fatigue, height, strength, attention to task, memory, etc.);
- how team dynamics (e.g., cultural differences, beliefs, and values) and team situational awareness (e.g., shared understanding of a situation or task) may impact the work being performed;
- how insufficient staffing, inadequate competency development, or poor workload management can introduce risk to the work being performed;
- how a culture that does not support open communication and continual learning and improvement can compromise the performance of the entire workplace system.

The CER's [Learning Portal](#) provides additional information, including several one-pagers dedicated to the principles of HOF:

- Systems thinking – Performance is the result of a workplace system where people, workplace, and organizational factors interactively impact outcomes.
- Local rationality – Individuals make decisions and take actions that seem reasonable to them at the time based on their interpretation of information available.
- Performance variability – The way work is completed is often different from how it was originally imagined or planned (e.g., in process, practice or procedure documentation).
- Just culture – Blame fixes nothing – an environment that seeks to understand what went wrong in the system will learn and be able to take actions to continually improve performance.
- Demands and pressures – Internal and external demands frequently change and have a powerful impact on the workplace system and performance.
- Resources and constraints – Available resources and constraints frequently change and have a powerful impact on the workplace system and performance.
- Trade-offs - Trade-offs are often made to reach performance goals, but they require careful evaluation to identify changing and new risks introduced during the work.

In addition to these resources, more information can be found in the [Canadian Standard Association Express Document No. 16:22 entitled *Human and organizational factors for optimal pipeline performance*](#).

4.0 Reflective Questions and Recommended Practices for Major Projects and Operations and Maintenance Activities

The following reflective questions may provide valuable insights about the application of HOF in your workplace during major projects and/or operations and maintenance activities:

1. Does your company apply systems thinking to its project and activity planning and execution? Do decision-makers consider performance-influencing factors when taking actions that will impact the project or activity?
2. Does your company have mechanisms for collecting information about performance variability within the project or activity? What steps could you take today to better understand and learn from existing performance variability within projects and activities?
3. How does your company support a just culture to facilitate open communication, learning, and continual improvement?
4. What types of internal and external demands and resulting pressures must be managed in the context of this project or activity? What actions can be taken to address these demands and pressures to ensure positive performance?
5. Where might your company struggle with availability and/or quality of resources (e.g., people, time, equipment, dollars) in the context of this project or activity? What actions can be taken to mitigate the potential for resource constraints to impair performance?
6. What can your company do to better identify and evaluate risks and potential unintended consequences resulting from trade-offs during the conduct of the project or activity?

5.0 Contractors and Safety Culture

At recent CER-Industry safety culture workshops, participants noted that evaluating and monitoring contractors is a key challenge associated with their efforts to advance safety culture. Other industries and jurisdictions have identified similar challenges. A recent study by the Norwegian Ocean Industry Authority (NOIA) concluded that contractual relationships impact the way that players interact and conduct themselves; this dynamic can inadvertently impair safety and environmental protection efforts.

A workplace's safety culture encompasses the sub-cultures of the company and the contractors they employ. This safety culture can range from strong, healthy, and aligned, to weak, unhealthy, and fractured.

When a healthy, aligned safety culture exists within a company and its contractors, you are likely to observe:

- leaders demonstrating that safety is their main value and priority
- management system policies, processes and procedures being “lived” during work activities
- risk being considered and managed in the context of decision-making and resource allocation
- hazards being proactively identified and mitigated to prevent harm
- everyone remaining vigilant to emerging hazards and the dynamic nature of work
- everyone being encouraged to report new or emerging hazards (including errors that may have been committed) as the focus is on learning and not blame
- performance being monitored and managed to ensure areas of weakness are identified and resolved in a timely manner
- a tone being set and maintained across the worksite(s) by leaders that facilitates workers feeling respected, empowered, and recognized for making decisions or taking actions that strengthen operational safety (e.g., reporting concerns, identifying hazards, stopping unsafe work, etc.)

The following actions have been suggested to ensure safety and environmental protection outcomes are safeguarded within contracting activities during major project and/or operations and maintenance activities, as applicable:

- Develop, where possible, long-term relationships with contractors to enhance collaboration and knowledge sharing. Two-way learning and feedback loops are improved when trust and personal relationships exist between company and contractor personnel (source: NOIA).
- Pre-qualify and reward contractors based on indicators that capture the contractors' ability to prevent, predict and manage risk (e.g., status of implementing improvement plans, results of audit programs, management involvement, and the quality of how incident reviews and risk assessments are managed and related issues resolved) (source: NOIA).
- Perform planning and analysis before and during contracting activities to understand how contractual conditions may affect risk-sharing between the company and potential contractors. Often contract conditions assign most of the financial consequences for errors and accidents to the contractor, which can impair the contractor's ability to manage and resource safety and environmental protection over the entire term of the contract (source: NOIA).
- Focus on excellence in activity and project planning. Develop joint teams of company and contractor personnel with responsibilities for planning project activities and tasks (including safety and environmental protection implications and mitigations) and for conducting near miss, incident and non-conformance analyses to jointly develop solutions and prevent recurrence (Source: United Kingdom Health and Safety Executive (UK HSE)).
- Build relationships between company and contractor senior leaders. Co-locate major project teams and seek ways to create a strong reporting culture without blame (i.e., non-punitive reporting culture) to facilitate trust and joint learning. This encourages constructive challenging of the status quo and provides formal channels for raising and discussing concerns (Source: UK HSE).
- Disseminate learning across the project and broader stakeholder groups. Incidents, near-misses, new or emerging hazards and/or issues should be shared promptly and widely across the company and contractor personnel involved in the project (Source: UK HSE).

The following reflective questions may provide valuable insights about contracting activities and their potential impacts on safety culture in your workplace.

Safety Culture questions for reflection

1. What is your company's current strategy for aligning contractor safety culture with your own?
2. Does your company have a process for reviewing contract language for potential unintended consequences and impacts on HSE performance? Is appropriate mitigation built into contracts? Are the right people (e.g., operational and safety team representatives) at the table during the prequalification and selection process? How could changes be implemented to better consider HSE risks at the outset of the process?
3. What metrics and criteria do you use to pre-qualify, select, and monitor contractors throughout the lifecycle of contracting activities? How should these metrics and criteria evolve to better facilitate and sustain a robust culture of safety (e.g., moving away from LTI data as a core safety performance metric as doing so disincentivizes reporting and transparency about hazards and risk)?
4. Do your current contracts incentivize collaboration, two-way feedback related to concerns and issues, and shared learning related to near misses, incidents, and non-conformances? How could they better incentivize these things?

6.0 References and Other Resources

Canada Energy Regulator's Advancing Safety Culture in the Oil and Gas Industry: *Statement on Safety Culture*: [CER – Statement on Safety Culture \(cer-rec.gc.ca\)](http://cer-rec.gc.ca)

Canada Energy Regulator's Safety Culture Learning Portal includes various educational and practitioner materials related to safety culture and human and organizational factors: <https://www.cer-rec.gc.ca/en/safety-environment/safety-culture/safety-culture-learning-portal/>

[Canadian Standard Association's Express Document No. 16:22 entitled *Human and Organizational Factors for Optimal Pipeline Performance*](#). (Available for free at the CSA e-store)

North American Regulators Working Group on Safety Culture's Safety Culture Indicators Research Project: A Regulatory Perspective (Appendix B includes a suite of safety culture indicators): [CER – Safety Culture Indicators Research Project: A Regulatory Perspective \(cer-rec.gc.ca\)](http://cer-rec.gc.ca)

United Kingdom Health and Safety Executive's (HSE) *Client/Contractor Relationships in Managing Health and Safety on Projects*: <http://www.hse.gov.uk/research/rrpdf/rr462.pdf>