DACC

DRILLING AND COMPLETION COMMITTEE

IRP 07: Competencies for Critical Roles in Drilling and Completions

An Industry Recommended Practice (IRP)
for the Canadian Oil and Gas Industry

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CAODC
CANADIAN ASSOCIATION OF OILWELL DRILLING CONTRACTORS

CAPP
CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS
Canada's Oil and Natural Gas Producers

EPAC
CANADA'S OIL & GAS ENTREPRENEURS™

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The recommendations set out in this IRP are meant to allow flexibility and must be used in conjunction with competent technical judgment. It remains the responsibility of the user of this IRP to judge its suitability for a particular application.

If there is any inconsistency or conflict between any of the recommended practices contained in this IRP and the applicable legislative requirement, the legislative requirement shall prevail.

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7.0 Preface

7.0.1 Purpose

The purpose of the IRP is to identify the process for preventing serious outcomes at the wellsite through collective competent supervision.

7.0.2 Audience

The audience for this IRP includes the following:

- Personnel involved in establishing and/or maintaining an employer's competency management system.
- Personnel in critical roles.
- Personnel who direct a critical role.

7.0.3 Scope and Limitations

The IRP identifies the minimum process to follow to establish a competency management framework within an organization. This begins with establishing the plausible serious outcomes then defining the controls, roles and the competencies required to prevent the serious outcomes. The framework is not intended to replace an existing competency management system but rather provide minimums for use within the existing system.

This IRP deals with well operations that are generally known in the industry as drilling, completions, interventions, workovers and wellbore decommissioning. The focus of the IRP is onshore operations but the IRP was written in a manner that does not preclude use by offshore operations.

The IRP aligns with the Energy Safety Canada Competency Management Systems Guideline and the Canadian Association of Petroleum Producers (CAPP) Critical Roles and Competency Guide.

The IRP does not specifically identify training and certification requirements. Training and certifications alone do not equate to competency. The IRP does include examples and suggestions to help identify how competency can be measured and some general information about training and experience (see 7.5.4 Training and Experience).

7.0.4 Revision Process

IRPs are developed by the Drilling and Completions Committee (DACC) with the involvement of both the upstream petroleum industry and relevant regulators. Energy Safety Canada acts as administrator and publisher.

Technical issues brought forward to the DACC, as well as scheduled review dates, can trigger a re-evaluation and review of this IRP in whole or in part. For details on the IRP creation and revisions process, visit the Energy Safety Canada website at www.energysafetycanada.com.

A complete list of revisions to this IRP can be found in Appendix A.

7.0.5 Sanction

The following organizations have sanctioned this document:

Canadian Association of Oilwell Drilling Contractors (CAODC)

Canadian Association of Petroleum Producers (CAPP)

Petroleum Services Association of Canada (PSAC)

Explorers & Producers Association of Canada (EPAC)

7.0.6 Acknowledgements

The following individuals helped develop this edition of IRP 07 through a subcommittee of DACC.

Table 1. Development Committee

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7.0.7 Range of Obligations

Throughout this document the terms ‘must’, ‘shall’, ‘should’, ‘may’, and ‘can’ are used as indicated below:

Table 2. Range of Obligation

Term	Usage
Must	A specific or general regulatory and/or legal requirement that must be followed. Statements are bolded for emphasis.
Shall	An accepted industry practice or provision that the reader is obliged to satisfy to comply with this IRP. Statements are bolded for emphasis.
Should	A recommendation or action that is advised.
May	An option or action that is permissible within the limits of the IRP.
Can	Possibility or capability.

7.0.8 Symbols and Abbreviations

CAPP Canadian Association of Petroleum Producers

DACC Drilling and Completions Committee

ERP Emergency Response Plan

FLHA Field Level Hazard Assessment

H_2S Hydrogen Sulphide

IRP Industry Recommended Practice

MOC Management of Change

OEM Original Equipment Manufacturer

SDS Safety Data Sheet

SWA Stop Work Authority

7.0.9 Definitions

Adjacent Operations Close proximity operations, either simultaneous or concurrent operations.

Collective Competence The combination of personnel with the knowledge, skills, training and abilities to perform the activities (controls) necessary to prevent serious outcomes at the wellsite.

Competent A competent person is one that is adequately qualified, suitably trained and has sufficient experience to safely perform his/her work.

Competent Supervisor A competent person who is a supervisor (see below) and is familiar with the regulatory expectations that apply to the work performed at the work site.

Concurrent Operations Activities which are taking place on a wellsite where the activities are not anticipated to interfere with one another.

Critical Roles The roles responsible for implementing and maintaining controls to prevent serious outcomes. This includes both on and off-site personnel.

Employer Any company that has one or more employees at the wellsite. This includes drilling contractors, service companies and sub-contractors. It also includes any small contractors or businesses that have one or more people doing work at the wellsite whether they are employees, owner-operators or self-employed workers.

Management of Change/Change Management A systematic method to handle alterations or unexpected developments in work scope or conditions. The process is designed to ensure adequate controls are in place to reduce the potential for serious outcomes.

Management of Change Process A process involving the following steps:

- Stop the work
- Assess the current state
- Discuss the correction or change
- Involve others to gain insight and perspectives of the risks (could be on site or via subject matter experts from other locations)
- Resolve any conflicts and gain agreement
- Reassess risks with new controls in place
- Proceed with agreed upon process or system change in place
- Document lessons learned to provide for continuous improvement

Pressure System Connected components with an intended use of containing fluids and/or gases at any pressure other than atmospheric.

Primary Containment A system designed to hold or store a product (typically liquid).

Prime Contractor The owner of the wellsite is the prime contractor unless they have specifically assigned this responsibility to another party by written agreement and have taken steps to ensure that the party is capable of fulfilling all the duties and responsibilities (i.e., the safety and coordination at the wellsite) required of a prime contractor.

Secondary Containment A system intended to prevent fluids that have escaped primary containment from reaching the environment (e.g., berms, drip trays, etc.).

Serious Outcomes Events that result in significant negative consequences to workers, the environment or assets. The outcomes that are deemed serious for purposes of this IRP are as follows:

- Serious injury, illness (chronic or acute) or fatality
- Off-lease environmental impact
- Loss of well control
- Unplanned pressure release, fire or explosion

Simultaneous Operations Concurrent activities which are taking place on one wellsite or adjacent wellsites that may have surface or subsurface interference with one another creating the potential for unintended outcomes.

Stop Work Authority A program designed to provide employees and contract workers with the responsibility or authority to stop work when a perceived unsafe condition or behavior may result in an unwanted event.

Supervisor The person directly responsible for directing and overseeing the work and personnel of a specific employer at the wellsite (e.g., rig manager, driller, truck push, fracturing crew supervisor, logging supervisor, cementing supervisor, drilling superintendent, completions superintendent, project manager, etc.).

Well Control Barrier An object that prevents flow from a source (e.g., hydrostatic column, blowout preventer, etc.).

Wellsite Supervisor The representative of the prime contractor at the wellsite responsible for directing all employers at the wellsite. Other commonly used terms for this person are consultant, company man, company representative, on-site representative or wellsite foreman/representative.

7.0.10 Background

The impetus for the development of the first edition of this IRP was a growing need to improve minimum standards for safety management as it relates to the wellsite. The primary focus during the original development of this IRP was on safety through the training and certification requirements of the wellsite supervisor. Compliance with legislation and industry standards that relate to environmental protection and resource conservation was also a goal in these qualification standards.

In 2017 the IRP was opened for full scope review to increase the focus on the competence of all of the personnel in critical roles rather than on the training and certification requirements for supervisors. It was recognized that all of the supervisors for the various services need to have specific competencies, not just the wellsite supervisor. It was also recognized that some of the critical roles were those involved in the preplanning of an operation and not necessarily just those on site.

7.1 Introduction

Wellsite operations often require multiple contractors, technical services and suppliers to work together to complete the objective. These operations need to be planned and executed by qualified and competent personnel to ensure the safety and protection of workers, the public, the environment and assets during the implementation of the planned work program. Wellsite operations covered in this document include the following:

- Drilling
- Completions
- Servicing/Workovers/Interventions
- Decommissioning

The prime contractor for the wellsite has overall responsibility for the work program but there are several critical roles, both within and outside the prime contractor's organization, required to implement the appropriate controls to prevent serious outcomes at the wellsite during implementation of the program.

The wellsite supervisor has the critical role of representing the prime contractor at the wellsite. It is the wellsite supervisor's responsibility to direct and coordinate all employers (e.g., service companies) and contractors on the wellsite to implement the planned work program.

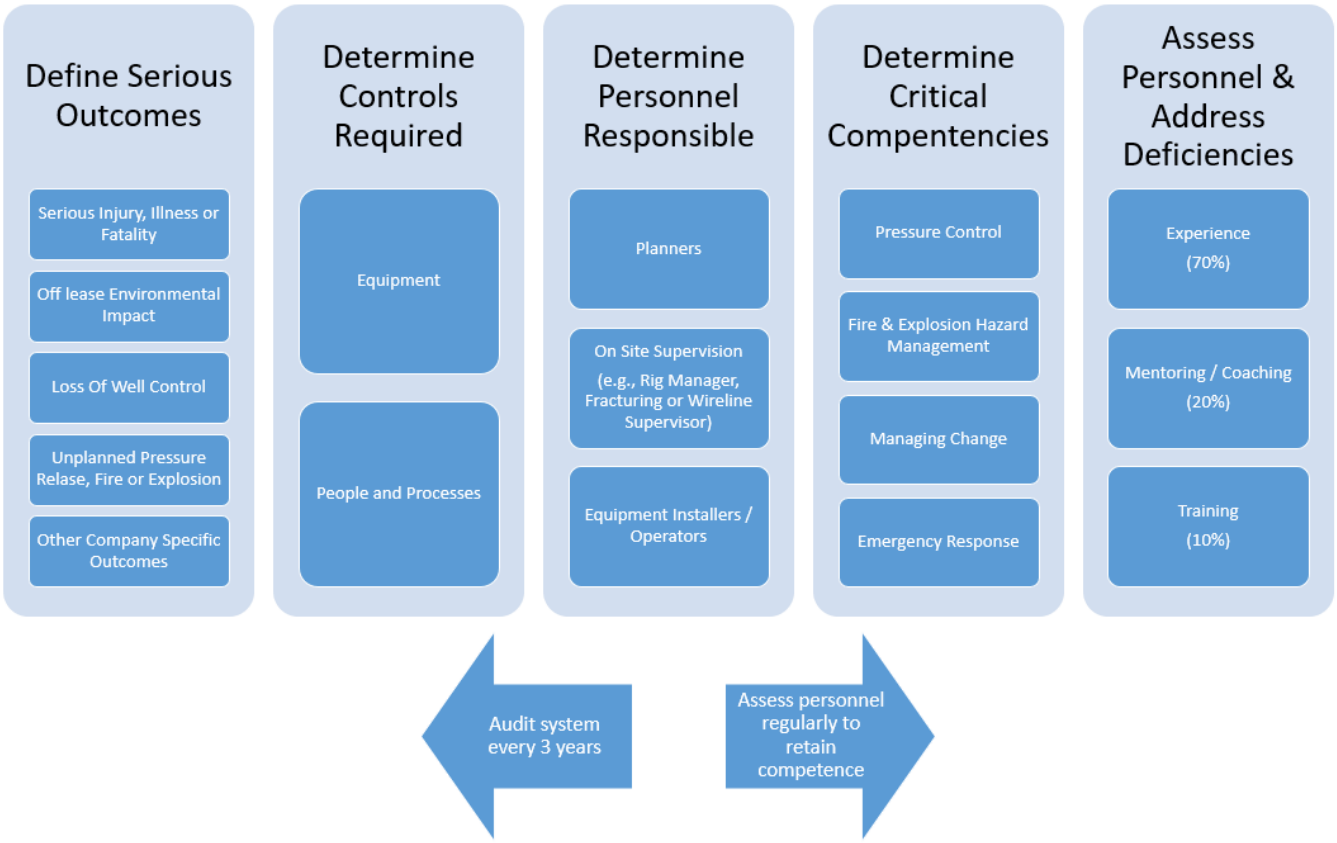
The personnel representing the employers and contractors, typically supervisors, are also critical roles. They are responsible for directing their personnel and collaborating with the wellsite supervisor and other critical roles on site.

The planners and designers of the work program play a critical role. Many of the decisions made during the planning and design of a work program impact safety at the wellsite once implementation begins.

All of the critical roles require specific competencies to ensure a breadth of knowledge, skills, training and abilities are available to safely implement the work program. The collaboration and alignment of these personnel produces collective competency at the wellsite.

Critical roles need to be assessed for competence. This requires a formalized and auditable competency management framework. Establishing the framework requires the following steps:

Figure 1. Establishing the Competency Management Framework



Note: This process is not intended to replace an organization's existing competency management system but rather help establish the minimum outcomes and competencies required to prevent those outcomes.

Widespread implementation of the competency management framework, including verification of use of a competency management process during vendor selection, and consistent assessment of personnel in critical roles will expand the collective competency at the wellsite to collective competency within industry.

To assist with the implementation of a competency management framework the IRP provides a matrix of the competencies in a downloadable format. This matrix includes example tools to evaluate existing competency management systems and personnel in critical roles. The matrix is explained in Appendix B.

7.2 Serious Outcomes and Critical Controls

7.2.1 Serious Outcomes

Serious outcomes are events that result in significant negative consequences to workers, the environment or assets.

IRP Each employer shall define the criteria that defines a serious outcome for their organization.

IRP Each employer shall have controls in place, critical roles defined and competencies identified to prevent the following serious outcomes (as relevant to their organization):

- Serious injury, illness (chronic or acute) or fatality
- Off-lease environmental impact
- Loss of well control
- Unplanned pressure release, fire or explosion
- Any additional serious outcomes identified by the employer

Consider the following when defining additional serious outcomes:

- Impact to the public
- Regulatory consequences
- Organizational values

7.2.2 Critical Controls

Preventing serious outcomes requires appropriate controls to be in place. The controls vary by well type, status, equipment and operation.

The critical controls are in five key areas:

1. Equipment. Physical and administrative controls are often required to prevent a serious outcome from occurring. These controls vary by well type, well status, equipment and operation (e.g., well control barriers, critical safety equipment, secondary containment, safe work procedures, etc.).
2. People. The personnel required to complete the job depends on the scope and complexity of the project, fatigue management and local jurisdictional regulations.

3. Communication. Controls are more effective if communication is clear, accurate and timely.
4. Change management. As work is conducted the wellbore and surface conditions may experience planned or unplanned changes. Failure to identify these changes can result in a control being rendered ineffective or non-existent. Once a change has been identified it needs to be managed and communicated appropriately.
5. Emergency Response. Even with all critical controls in place an event may still occur. The emergency response needs to be timely and appropriate.

7.3 Critical Roles

The identification and control of hazards are the responsibility of key personnel, typically supervisors. This IRP defines these key personnel as critical roles.

IRP **A role shall be deemed critical if it is responsible for the selection, application or monitoring for the effectiveness of critical controls.**

Note: The wellsite supervisor is only one of the many potential critical roles at the wellsite.

Note: There are also critical roles involved in the planning of the operation. These critical roles are not necessarily at the wellsite but can influence the risk of a serious outcome occurring at the wellsite.

The critical roles may not all be within one organization. Collaboration between the critical roles on the wellsite is the responsibility of the wellsite supervisor as the prime contractor's representative. While the wellsite supervisor is ultimately accountable for this collaboration, the other critical roles are not absolved of responsibility. Each critical role on location is responsible for mitigating/managing serious outcomes pertinent to their operation to the best of their ability.

Roles deemed critical include, but are not limited to, the following:

- Wellsite Supervisor
- Drilling and Completions Engineers, Superintendents and Managers
- Rig Manager
- Driller
- Cementing Supervisor
- Fracturing Supervisor
- Coiled Tubing Supervisor
- Wireline Supervisor
- Rig Move Supervisor (Truck Push)
- MPD/UBD/Testing Supervisors

It is not reasonable to expect a person in a critical role to have expertise in every activity required by his or her role, particularly when starting a new role. Identification of gaps in competency and having a plan to address those gaps is required (see 7.5 Managing Competency).

IRP If a gap in competency is identified and the risk of a serious outcome is present the operation shall not be allowed to proceed until the gap in competency is addressed.

IRP Employers shall have a process in place to manage gaps in competency of personnel in critical roles.

This process may include one or more of the following:

- Assigning supplementary resources based on the collective competency of the site
- Assigning a mentor
- Identifying additional training required

7.3.1 Equipment

It is not reasonable to expect one critical role to have all the equipment specific competencies and expertise for every conceivable activity at the wellsite. The person in a critical role for a service, equipment or job type needs to know what controls are required, whether they are appropriate and whether they are effective.

7.3.2 People

Installing, testing and monitoring the effectiveness of controls requires hands on work. It is impractical for critical roles to perform all of these tasks themselves. Delegation of tasks to other competent on-site personnel is a responsibility of the personnel in critical roles for a specific service, equipment type or job site.

7.3.3 Communication

Throughout a project, critical roles provide direction on installation, testing and monitoring of controls. Additionally, critical roles need to verify their instructions have been followed by all personnel. Critical roles depend on front line personnel to make and report observations about the status or implementation of controls. Critical roles need to be able to verify the message as communicated has been received by the intended personnel.

7.3.4 Change Management

Critical roles need to identify and manage change to ensure the appropriate controls continue to be in place.

7.3.5 Emergency Response

Critical roles need to implement Emergency Response Plan(s) for the activities they are directly responsible for and coordinate with other critical roles on site.

7.4 Competencies for Critical Roles

The minimum competencies required to prevent serious outcomes are identified in this section. They may not all apply to every critical role involved in the job. Determining which competencies apply to each role is the responsibility of the employer and is based on the type of work being performed. Additional competencies specific to the wellsite supervisor are identified in 7.4.6 Competencies for the Wellsite Supervisor.

IRP Critical roles shall be assessed by their employer for the competencies applicable to their role.

The IRP provides general guidance about how competence can be verified but the method of assessment is to be determined by the employer.

7.4.1 Equipment Controls

Personnel in critical roles require knowledge of many pieces of equipment in order to mitigate risk and prevent serious outcomes.

7.4.1.1 Well Control

IRP Critical roles shall demonstrate the ability to identify primary and secondary well control barriers required to prevent the uncontrolled escape of reservoir gas/fluids from a wellbore.

IRP Critical roles shall demonstrate the ability to determine which well control barrier is required.

The above competencies are verified by the following:

- Describing primary and secondary well control barriers (definition and examples) and identifying the ways the barrier(s) could fail.
- Explaining hydrostatic pressure and how it prevents influx from the formation.
- Identifying/sourcing the information necessary to determine well control barrier requirements (e.g., expected pressures, well history, well condition, etc.).
- Identifying well control barriers required by local jurisdictional regulations, IRPs and company specific policies.

IRP Critical roles shall demonstrate the ability to monitor and confirm the ongoing functionality of the well control barriers.

This competency is verified by the following:

- Identifying the proper placement of well control barrier(s).
- Describing how to confirm the well control barrier is functional, has the appropriate certifications and is being used as per the Original Equipment Manufacturer (OEM) specifications.
- Determining and implementing a process for ongoing validation of the above considering risk, requirements of local jurisdictional regulations and IRPs.

7.4.1.2 Fire and Explosion Hazard Management

IRP Critical roles shall demonstrate an understanding of fire and explosion hazards and controls.

This competency is verified by the following:

- Identifying the potential fuel, oxygen and ignition sources on site.
- Describing overlapping fire and explosion risks factors that may be present on site (as per Energy Safety Canada's Fire and Explosion Hazard Management Guideline).
- Implementing a suitable control method for the current activity/task being performed on the well or site. (e.g., purging/inerting, eliminating ignition sources, etc.).

7.4.1.3 Pressure Control

IRP Critical roles shall demonstrate an understanding of pressure hazards and the potential consequences of pressure system failures.

This competency is verified by the following:

- Describing why a compressed gas is more hazardous than a pressurized fluid if containment fails.
- Identifying all of the items that have a pressure-related hazard including low pressure systems with a large surface area.

IRP Critical roles shall demonstrate an understanding of maximum pressure ratings.

This competency is demonstrated by determining the maximum and working pressure ratings of a pressure system. This includes identification of the lowest rated component in the system.

IRP Critical roles shall demonstrate an understanding of the controls required to prevent worker exposure to pressure release (e.g., pressure relief valves, piping restraints, remote actuation, exclusion zones, etc.).

This competency is verified by the following:

- Determining whether the pressure components have the appropriate certifications and are being used as per OEM expectations, local jurisdictional regulation, IRPs and employer policies.
- Identifying the minimum controls required by local jurisdictional regulations, IRPs and employer policies.

IRP Critical roles shall demonstrate an understanding of pressure testing of pressure systems.

This competency is verified by the following:

- Identifying the pressure testing required by local jurisdictional regulations, IRPs and employer policies.
- Describing how to perform a safe pressure test of a pressure system.
- Identifying whether the pressure test was successful.

7.4.1.4 Spill and Release Prevention

IRP Critical roles shall demonstrate an understanding of containment strategies for spill and release prevention.

This competency is verified by determining the containment strategies required by local jurisdictional regulations, IRPs and employer policies. Consider all of the potential release types (e.g., liquid vs. gas phase, solids, etc.).

IRP Critical roles shall demonstrate an understanding of primary and secondary containment.

This competency is verified by describing primary and secondary containment.

IRP Critical roles shall demonstrate the ability to determine the health and safety impacts of hazardous products.

This competency is verified by the following:

- Describing and defining a Safety Data Sheet (SDS).
- Describing how to locate the applicable SDS.
- Identifying relevant sections of the SDS to ensure the required controls are in place.
- Identifying when a hazardous products exposure plan is required.
- Implementing a hazardous products exposure plan.

7.4.1.5 Serious Injury/Illness/Fatality Prevention

IRP Critical roles shall demonstrate an understanding of potential causes of a serious injury, illness or fatality on site.

This competency is verified by identifying the hazards and actions that can cause serious injury, illness or fatality incidents on site. Examples include the following:

- Dropped objects
- Hazardous energy exposure
- Hazardous product exposure
- Crush and pinch points
- Driving hazards
- Working at height
- Being in the line of fire

IRP Critical roles shall demonstrate an understanding of the local jurisdictional regulations and legislation for hazard controls applicable to the scope of work.

This competency is verified by applying the applicable local jurisdictional regulation, IRPs and employer specific policies and processes for hazard assessment controls.

IRP Critical roles shall demonstrate an understanding of hazard assessments.

This competency is verified by identifying the two common hazard assessments to be completed to meet regulatory expectations. These are

1. Pre-worksite hazard assessments (completed prior to arriving at the site).
2. Field level hazard assessments (FLHAs) (completed on the job site).

IRP Critical roles shall demonstrate the ability to manage the pre-worksite hazard assessment.

This competency is verified by the following:

- Effectively communicating the pre-worksite hazard assessment plan.
- Identifying hazards and/or controls that are missing from the pre-worksite hazard assessment (using FLHAs as outlined below).
- Identifying additional controls required and put them in place.
- Effectively communicating and identifying the necessary change management implications.

IRP Critical roles shall demonstrate the ability to complete the FLHAs and implement controls.

This competency is verified by the following:

- Identifying the scope of work to be assessed and the personnel required to participate in the assessment (taking into consideration the current conditions and services on the wellsite).
- Identifying the hazards for the scope, including identification of what could go wrong and how can it affect the on-site personnel or the job.
- Identifying the appropriate hazard controls, including the understanding that subject matter experts may need to be consulted, and who is responsible for each control
- Implementing effective hazard controls to eliminate or reduce the hazard potential.
- Identifying an ongoing process for reassessment of hazards and verification of controls (as per local jurisdictional regulations, IRPs and employer policies).

7.4.2 Supervision

IRP Critical roles shall demonstrate the ability to determine who is required to safely install, maintain and operate critical controls and identify capability gaps in those workers.

This competency is verified by the following:

- Identifying whether there are sufficient personnel to implement the critical controls.
- Identifying workers on site that are not competent to adequately install, maintain or activate controls within their charge or are not fit for duty.
- Identifying evidence of competent workers (i.e., through observation of actions and communication utilized by the employers on site).
- Implementing the appropriate action when personnel are deemed not competent or not fit for duty (i.e., stop unsafe work, implement mitigation plan, escalate if required).

IRP Critical roles shall demonstrate the ability to identify relevant personnel to gather required job information.

This competency is verified by the following:

- Identifying the appropriate personnel to include for the process being discussed (e.g., fracturing operation needs fracture supervisor and staff).
- Identifying which information is pertinent to whom.

IRP Critical roles shall demonstrate the ability to monitor and manage work activities for effectiveness.

This competency is verified by the following:

- Correctly interpreting and following the job plan and translating it into activities (i.e., the ability to communicate job process from start to finish).
- Observing for evidence of clear understanding of instructions and compliance (i.e., looking for key performance indicators that each team/function needs to stay within). Watch for the following leading indicators:
    - Hazards identified by others
    - Stop work opportunities
    - Operational challenges
    - Unexpected results
    - Near- miss incidents
    - Underreporting of hazards
    - Team conflict and/or crew turnover
- The ability to respond appropriately to a work refusal (i.e., make the workplace a “safe place” to speak up).

Supervisors have very specific legislated responsibilities related to worksite safety that go beyond prevention of the serious outcomes defined in this IRP.

IRP Supervisors must demonstrate an ability to recognize, comprehend, interpret and apply the regulatory requirements of their role as defined by local jurisdictional regulations.

This competency is verified by the following locating/referencing the applicable legislation and applying the requirements of the legislation to on-site conditions and procedures.

7.4.3 Communication

IRP Critical roles shall demonstrate the ability to communicate clearly with work team.

This competency is verified by the following:

- Using two-way open dialog with direct reports.
- Facilitating communication between all personnel (services) on site.
- Correctly identifying people who are actively listening to the conversation and verifying that participants understand what is being discussed.
- Identifying and using the appropriate communication method for each member of the team.
- Correcting undesirable behavior via the use of appropriate chain of command and authority.
- Implementing a communications protocol with crews to report deficiencies to quickly identify potential gaps or problems.
- Accurately and concisely reporting information.

7.4.4 Managing Change

Managing change is the act of observing that “something is different” from the plan and making an adjustment. Recognition and notification of a change is the obligation of all personnel. The process to manage change requires identification, intervention (i.e., pause the work to analyse the situation), collaboration, communication and action.

Note: This process may require documentation.

For purposes of this IRP, managing change refers to these actions, not the specific organizational Management of Change (MOC) processes and policies followed when change occurs.

Within the competency management framework of this IRP, managing change is a collaborative responsibility of all personnel in critical roles. Any change that impacts a critical control requires communication with the wellsite supervisor.

IRP Critical roles shall demonstrate the ability to monitor work activities and identify unexpected outcome(s) in processes and/or activities (i.e., identify deviations from the plan).

This competency is verified by the following:

- Identifying when a process has moved outside of the allowable parameters.
- Defining and implementing a process for ongoing inspections of hazard controls.
- Identifying to others where the changes have occurred, or are occurring, that impact hazard controls within the current and planned operations.

IRP Critical roles shall demonstrate the ability to manage the intervention (i.e., stopping, pausing, holding the current activity).

This competency is verified by the following:

- Accurately assessing the severity, complexity and potential outcome(s) of the change.
- Successfully collaborating with others on and off site to identify the appropriate intervention to ensure adequate controls exist throughout a period of change. The following are examples:
    - Step Back 5X5, Safety Huddle
    - Adjust process, revise FLHA(s) as required
    - Activate Emergency Response Plan (ERP)
- Demonstrating a working knowledge of the change management process and what actions are required based on results of the assessment and the planned intervention. Some key aspects are as follows:
    - Knowing which employer's MOC process is to be followed on the site.
    - Knowing what communication is required (up and down).
    - Knowing when an approval is required.
    - Knowing who has to review or approve the change.
    - Utilizing assistance from others where necessary (e.g., as defined in hazard assessment IRPs in 7.1.4.5 Serious Injury/Illness/Fatality Prevention).
    - Knowing what documentation of the event is required (regulatory and employer specific).
    - Knowing when, what and how to communicate intervention resource requirements to others on and off site

7.4.5 Emergency Response

Supervisors need to be aware they have roles within multiple Emergency Response Plans (ERPs). Those ERPs can include their own corporate ERP, the prime contractor ERP or a combination of both.

IRP **Critical roles shall demonstrate the ability to implement the work activity specific Emergency Response Plan(s) for the work activity they are directly responsible for (i.e., fracturing, coiled tubing, cementing, wireline, drilling, well servicing, wellsite construction, rig move, etc.).**

This competency is verified by the following:

- Describing what the ERP entails, their role within the ERP and the appropriate procedures to follow/controls to implement.
- Effectively communicating how to activate the ERP.

- Effectively activating the emergency shut-in/shut down, secure or contain procedures associated to the work activities being performed.
- Effectively activating the evacuation of the immediate affected area within the ERP.
- Notifying other on site affected parties of the activation of the ERP, including any rendered evacuation orders.
- Activating the spill response procedures.
- Identifying new potential hazards that may come about as a result of executing the ERP.
- Identifying what additional resources could be required on site for emergency response.
- Gathering and conveying current and accurate situational data in preparation for responders (e.g., regulators, fire fighters, incident commanders, etc.).
- Applying appropriate incident escalation protocols/procedures (e.g., escalation from site-specific ERP to employer's ERP, bringing in external parties such as regulators).

7.4.6 Competencies for the Wellsite Supervisor

As the Prime Contractor's representative at the wellsite the wellsite supervisor has the overall responsibility for operations at the wellsite and has very specific accountabilities and responsibilities above and beyond those required by all of the other critical roles (see Energy Safety Canada Alberta Bill 30 Safety Bulletin Issue #12-2018). As one of the critical roles, all of the competencies already identified apply to the wellsite supervisor. However, it is not reasonable to expect the wellsite supervisor to have expertise in every activity required at the wellsite so the requirements for the wellsite supervisor may be more general and relate to obtaining the required knowledge from others rather than directly possessing the specific knowledge.

The competencies outlined below focus on those responsibilities specific to the wellsite supervisor and the activities they need to perform.

IRP The wellsite supervisor shall demonstrate an understanding of the equipment, regulatory and company specific requirements for well control.

This competency is verified by the following:

- Identifying and effectively communicating how the interaction of services on site can impact the effectiveness of well control barriers.
- Making the necessary adjustments to ensure appropriate well control barriers are in place and effective at all times.

IRP The wellsite supervisor shall demonstrate the ability to identify deficient or conflicting fire and explosion controls.

This competency is verified by the following:

- Identifying and effectively communicating how the interaction of adjacent or connected services on site or nearby can impact the effectiveness of fire and explosion controls.
- Making the necessary adjustments to ensure appropriate fire and explosion controls are in place and effective at all times.

IRP The wellsite supervisor shall demonstrate the ability to validate the controls for risks in pressure systems.

This competency is verified by the following:

- Identifying the maximum and working pressures of a connected system (i.e., the lowest rated active piece).
- Identifying potential failure pathways of connected systems.
- Confirming isolation between a high-pressure system and any lower pressure rated components that could be connected to the system.

  Note: The lowest pressure rated component could be a formation.

- Analyzing equipment and personnel placement to ensure there are no additional risks to adjacent operations (e.g., recognizing potential pressure release points).
- Making the necessary adjustments to ensure appropriate pressure control is in place and effective at all times (i.e., shutdown systems, PSVs, pressure relief piping, line securement, spacing etc.).

IRP The wellsite supervisor shall demonstrate the ability to validate the controls for risks in close proximity wellbores, surface locations or downhole locations.

This competency is verified by the following:

- Determining the maximum and working pressures of a potentially connected subsurface system (i.e., what is the lowest rated active piece).
- Identifying failure pathways of potentially connected subsurface systems.
- Confirming isolation between components of potentially connected subsurface systems.
- Making the necessary adjustments to ensure appropriate monitoring and pressure control is in place and effective at all times.

IRP The wellsite supervisor shall demonstrate the ability to identify poor or ineffective spill controls.

This competency is verified by the following:

- Identifying when one service provider's spill prevention may interfere with service provider's duties (and thus will be disabled or impacted).
- Identifying and effectively communicating how the interaction of adjacent or connected services on site or nearby can impact the effectiveness of spill controls.
- Making the necessary adjustments to ensure appropriate spill controls are in place and effective at all times.

IRP The wellsite supervisor shall be able to demonstrate the ability to supervise and manage the site to identify and minimize overall risk of a serious outcome.

This competency is verified by the following:

- Identifying, implementing and verifying that controls are in place to prevent serious outcomes.
- Effectively observing what is happening on the site. (e.g., recognizing hazards, walking around and observing operations and workers, understanding which operations the worker needs to have 'eyes on', understand what tasks he/she needs to verify).
- Effectively managing the timelines of various services while complying with applicable legislation (i.e., to prevent fatigue or strain on resources, prevent non-productive time (NPT), respect hours of service.
- Effectively managing tasks (e.g. through timing or location) to mitigate risks (e.g. when two service FLHAs aren't compatible).
- Identifying all operations (on and off site) that can impact their scope of work and anticipate additional hazards.
- Ensuring proper FLHAs are conducted with all applicable personnel and the identified controls are implemented and followed.
- Ensuring there is appropriate supervision and/or mentorship for short service workers.
- Ensuring all workers on site have effective and applicable site-specific orientation.
- Identifying and effectively communicating how the interaction of adjacent or connected services on site or nearby can put personnel in the line of fire.
- Making the necessary adjustments to ensure workers are not placed in the line of fire.

IRP The wellsite supervisor shall demonstrate the ability to implement the Emergency Response Plan(s) as the on-scene commander.

This competency is verified by the following:

- Assigning the appropriate personnel and correctly placing equipment to implement the ERP.
- Applying appropriate incident escalation protocols/procedures (e.g., escalation from site-specific ERP to prime contractor ERP, bringing in external parties such as regulators).
- Providing input to the classification of emergencies according a matrix
    - Alberta e.g., Alert, level 1, 2, 3 as per AER D071: Emergency Preparedness and Response Requirements for the Petroleum Industry.
    - B.C. e.g., Minor, Level 1, 2, 3 as per Emergency Management Regulation.
- Correctly implementing public protection measures as follows:
    - Describing the Emergency Planning Zone, Emergency Awareness Zone and other applicable public safety zones for the current well and operation.
    - Following and implementing public evacuation or shelter in place procedures
    - Igniting uncontrolled releases of H_2S
        - Understanding the ignition criteria
        - Understanding their authority to ignite
        - Understanding how to safely ignite a gas plume
    - Following and implementing isolation procedures such as establishing and managing roadblocks
    - Initiating and managing air quality monitor processes as follows:
        - Tracking gas plumes
        - Determining if ignition criteria has been met
        - Determining if evacuation or sheltering criteria have been met
- Downgrading emergency classification when appropriate.

7.5 Managing Competency

7.5.1 Internally

The competencies outlined in 7.4 Competencies for Critical Roles provide the minimum competencies to be assessed for the critical roles and wellsite supervisor but it is up to each organization to determine how they are assessed.

The method of assessment selected needs to be objective, repeatable, measurable and practical.

IRP The assessment shall be completed in a manner that does not put the operation or personnel at risk.

IRP The formality of the assessment shall be determined based on the level of risk being controlled by the competency in order to validate the proper application of the theory.

For example, there is a difference between understanding fire and explosion hazard theory and understanding that when a well goes on vacuum and air is allowed to be drawn into the well, there is now oxygen and fuel within the wellbore.

Each employer has to define their own process for managing competency. The Energy Safety Canada Competency Management Systems Guideline can be used as a resource to establishing a competency management system.

IRP All organizations shall have a process for managing competency of their identified critical roles. This process shall include feedback to workers.

7.5.2 Externally

The critical roles required to prevent serious outcomes can span multiple companies, including those vendors and services brought on site to complete a task or operation. If the competency management process is applied only to the prime contractor then the risk of a serious outcome increases.

IRP The vendor qualification processes for an organization should include confirmation that any vendor selected has a competency management process in place that meets, at minimum, the requirements outlined in this IRP.

IRP Prime contractors and employers should provide feedback to their vendors regarding contract personnel in critical roles as part of their vendor management process.

7.5.3 Continuous Evolution

Competency management has to be an iterative process in order to remain current and relevant. As industry and environmental circumstances and technologies change the serious outcomes, critical roles and competencies will need to evolve. This will require a regular audit and continuous improvement process.

IRP Competency management systems shall be reviewed, evaluated and audited for accuracy and relevance at least once every three years.

7.5.4 Training and Experience

In the past, and in previous editions of this IRP, training and certifications have been used as the measure of competence when combined with experience requirements as outlined in many other IRPs. However, technical training, certifications and experience alone are not equivalent to competence. Personnel may be trained but still not be sufficiently competent or they may be fully competent without formal training.

Assessing competence doesn't end with a certificate or training course. Personnel need to maintain or grow capabilities and be aware of developments in best practices.

The following 70:20:10 model, in conjunction with developmental goals and reassessment targets, provides a more accurate framework for competency development:

- 70% competency development through on-the-job experience (e.g., challenging assignments, increases in work scope, horizontal moves, etc.).
- 20% competency development through mentoring and coaching (e.g., interactive work relationships, networking, etc.).
- 10% competency development through training (e.g., classroom, simulations, online learning, etc.).

Training requirements are specific to each employer based on the requirements of the worker's role. Specific training and experience requirements for some of the key services can be found in IRPs focused on those specific services (e.g., IRP 01: Critical Sour Drilling, IRP13: Wireline Operations, IRP 21: Coiled Tubing Operations, etc.). Refer to the Appendix C for reference links to these IRPs.

Appendix A: Revision Log

The revision history for IRP 07 is shown in Table 3.

Table 3. Revisions Summary

Edition	Section(s)	Remarks/Changes
1		Original IRP sanctioned March 2002.
2	Front	Logo Updates from merger of Petroleum Industry Training Services and Petroleum Safety Council to form Enform. Sanctioned November 2005.
3	General	IRP reformatted to current IRP style guide and updated references to AEUB, Alberta Employment, Immigration and Industry and Saskatchewan Industry and Resources. Sanctioned January 2008.
4	General	• Document converted to current DACC template. • Complete editorial review for conversion to template and current DACC Style guide. Specifically, IRP formatting (Must, Shall, Should) and active voice with clear, concise writing. Updates to references and hyperlinks. This required review of many ‘‘may’ IRP statements from the original IRP and decision about whether they were actually an IRP statement or just general direction. • Complete industry review with scope change and all new content for competencies rather than training and certifications. • Document Sanctioned April 2019.

Appendix B: Competency Matrix

The Competency Matrix is a supplementary download for this IRP. It is an Excel workbook created to assist organizations in the following:

1. Assessment of their Competency Management System to determine whether they are IRP 07 compliant or, if no competency management system is in place, can be used as a starting point for competency management.
2. Identification of competencies for their critical roles.
3. Assessment of personnel.
4. Examples of how the competency list could look for four critical roles including training and certification examples and assessment methods.

This workbook is a tool to help companies get started and not a definitive identification of the competencies or assessment required. Companies are still expected to identify serious outcomes, identify critical roles and define competencies as noted in this IRP and can modify the matrix as appropriate to their company.

The workbook is broken down into several different worksheets:

- The instructions for use.
- The master competency list used to evaluate a company's competency management system to see if it meets IRP 07
- The master competency list used to evaluate a company's personnel in critical roles (includes the Wellsite Supervisor specific competencies)
- The competency list example for a Drilling and Completions Wellsite Supervisor
- The competency list example for a Fracture Supervisor.
- The competency list example for a Rig Manager.
- The competency list example for Planners and Engineers.
- The master competency list with a blank role for user completion (excludes Wellsite Supervisor specific competencies)

Assessing the Competency Management System

The information in this worksheet can be used to help assess an existing competency management system to determine whether it is compliant with all of the competencies outlined in the IRP. The competencies are all listed, grouped by the same categories as the IRP, and can be reviewed against an existing competency management system. For

each competency, identify whether it applies to the company and/or critical role being considered, identify what the company's training and certifications requirements are around each competency and identify any company/role specific suggestions or requirements for assessing personnel for the competency. Comparing this list to the existing competency management system will assist in identifying any gaps so a column has been provided to record gap information.

The following table provides a high level example of how the competency management framework might be implemented. More detailed examples are provided in the matrix.

Table 4. Competency Management Framework Examples for Specific Roles

Serious Outcomes	Critical Controls	Role Responsible	Example Competency
Serious Injury, Illness and Fatality Prevention	Complete Pre-Worksite Assessments	Drilling/Completions Engineer	Risk Assessment Experience
	Implement pre-worksite assessments	Wellsite Supervisor	Ensuring effectiveness of assessed controls
	Execute FLHA	Wellsite Supervisor	Organizing and facilitating FLHA meeting
Well Control	Install and test BOPs	Driller and Rig Manager	Familiarity with equipment specifications and procedures
Fire and Explosion Hazard Management	Isolate fuel, oxygen and ignition sources	Testing Supervisor	Correctly implementing purging and testing procedures

Assessing Personnel in Critical Roles

The information in this worksheet can be used to help assess personnel in critical roles when there is no other formal assessment tool in place. Through the work done to assess the competency management system, this list can be pared down to just those competencies applicable for the critical role being assessed and should identify any training/certification requirements for the role and any company/role specific requirements or methods for assessment. There are columns to identify the assessment and any identified gaps.

Role Examples

The IRP committee has created example competency matrix for four critical roles.

In these examples the complete competency list is shown but the competencies that are relevant for the role (as recommended by the committee) are clearly identified. These examples can be modified as relevant to a company but it is important to remember that the competencies identified in this IRP are the MINIMUM required for the role.

These examples can be used to assess the competency management system or the personnel in critical roles.

The IRP committee have provided examples in the assessment suggestion and assessment columns for training, mentoring and experience for the first competency in the matrix. These columns need to be completed as relevant to the role specific to the company using the matrix.

Wellsite Supervisor

The IRP identifies additional competencies specific to the wellsite supervisor. These are identified in a separate section at the bottom of the worksheets. These competencies are required for the assessment of the wellsite supervisor role and should not be overlooked.

Blank Role

The complete competency list has been replicated without a role assigned for users to complete their additional critical role competency lists.

Appendix C: References

CAPP References

Available from www.capp.ca

Critical Roles and Competency Guide, January 2017.

DACC References

Available from www.EnergySafetyCanada.com

IRP 01: Critical Sour Drilling

IRP 02: Completing and Servicing Critical Sour Wells

IRP 13: Slickline

IRP 15: Snubbing Operations

IRP 21: Coiled Tubing Operations

IRP 22: Underbalanced and Managed Pressure Drilling Using Jointed Pipe

Energy Safety Canada References

Available from www.EnergySafetyCanada.com

Alberta Bill 30 Safety Bulletin Issue #12-2018

Competency Management Systems Guideline

Contractor Management Systems Guideline

Fire and Explosion Hazard Management Guideline

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Provincial References

This is not an exhaustive list of references available for OH&S legislation in Canada but these are references that were consulted during the preparation of this IRP.

Alberta Energy Regulator

Available from www.aer.ca

Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry

BC Oil and Gas Commission

www.bcogc.ca

Government of Alberta

Available from www.alberta.ca

OHS Act, Regulation and Code

Government of British Columbia

Available from www.bclegislation.ca

Emergency Management Regulation

Government of Saskatchewan

Available from www.saskatchewan.ca

Oil and Gas Regulations

WorkSafeBC

www.worksafebc.com

PSAC References

Available from www.psac.ca

Occupational Competencies – PCP Program

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