



Hazard Analysis CoW Technical Standard

Version	Date	Approver
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Introduction

Hazard Analysis (HA) identifies actual and potential hazards, establishes measures to eliminate or mitigate those hazards and verifies they are in place prior to performing work as well as monitoring their effectiveness during the work.

Scope

- This SHEERS Standard applies to hazard analysis conducted under the Control of Work Process.
- HA does not replace risk assessments which are managed through the SHEERS Risk Management process.

Requirements

The following sections provide minimum requirements for HA, as well as supporting guidance to clarify how WJO will meet the intent of those requirements.

- Requirements **shall** be met.

<p>1. Requirement:</p> <p>Guidance:</p>	<p>A hazard analysis shall be required for all tasks within the scope of the Control of Work (CoW) process.</p> <p>This requirement applies to tasks that require a permit as well as tasks classified as Permit Not Required (PNR). While all tasks within scope of CoW require a HA, not all tasks require the HA to be documented. See requirement 3.</p> <p>Hazard analysis shall be conducted for all JO permitted and Permit Not Required (PNR) activities. HA must consider actions as well as physical and environmental conditions. All Permitted activities must have documented HA that must be developed or revised onsite by the personnel performing the work to ensure the systematic identification and mitigation of site-specific hazards before work begins.</p>
<p>2. Requirement:</p> <p>Guidance:</p>	<p>The hazard analysis shall include, at a minimum:</p> <ul style="list-style-type: none">• An overview or description of the task, and• Actual and potential hazards, and• Controls and mitigations for identified hazards. <p>This requirement applies to all forms of hazard analysis, (e.g., documented on a standalone template or form, integrated into other forms of documentation (e.g., standard operating procedure, work instructions, job aids, checklists), and undocumented hazard analysis).</p>

A comprehensive hazard analysis should identify all actual and potential hazards, but the emphasis should be placed on SIF potential hazards.

Tools to guide and prioritize the selection of preventative and mitigative controls include: the hierarchy of controls, the Hazard Identification Tool, the library of hazards and controls, bowties within the CoW standards, and other best practices supporting the standardized selection and application of controls.

Additional attributes may be considered to further improve the quality of the hazard analysis, such as:

- Breaking down the task into steps, which can be helpful to compartmentalize hazards specific to main components of the task.
- Assigning individual actions and responsibilities to implement controls and monitor their effectiveness.

3. Requirement: JO shall develop a list of their work tasks within the scope of the CoW process.

The task list shall be prioritized into a minimum of two levels (Level 1 and Level 2) using a risk-based approach based on factors such as hazard severity, hazard potential, task consequence, task complexity.

Level 2 task hazard analysis requires more rigor than Level 1 hazard analysis in that they are required to be documented and shall involve at least two people in their development. See the CoW Glossary for full definitions.

Appendix A lists the Level 2 tasks that, at a minimum, shall be part of the JO task list (as applicable). JO shall add additional tasks requiring a Level 2 hazard analysis as appropriate based on their evaluation of risk.

The JO task list shall document additional rigor (if any) required for their Level 2 task HAs in addition to the minimum requirements of a Level 2 HA required by Appendix A.

The JO task list shall identify Level 1 tasks that require the HA to be documented.

Guidance: This requirement may be met by listing individual tasks, by grouping/categorizing tasks (e.g., working on pressurized equipment above a certain pressure), or by developing criteria (e.g., hot work in a hazardous "classified" area, work requiring a specialized permit). Examples of an added level of rigor, above a Level 1 HA hazard analysis, may include:

	<ul style="list-style-type: none"> • Involving subject matter experts (SME) for specialized work • Developing and validating the HA in the planning phase • Conducting a jobsite assessment of the task location during the planning phase • Higher level management approval • Occupational risk assessments (as defined per local regulations) <p>The hazard analysis may be documented using a standalone template or may be incorporated into other forms of documentation (e.g., standard operating procedures, work instructions, job aids, checklists) as long as that documentation meets the minimum requirements of the Hazard Analysis Standard.</p>
<p>4. Requirement:</p> <p>Guidance:</p>	<p>For similar, repeatable work, a hazard analysis from previous work may be used as a template but shall be reviewed and updated to reflect the actual conditions and work scope of the current task and location.</p> <p>Revisions to an existing hazard analysis should be reflective of any changes to the scope of work, tasks steps, and specific jobsite conditions.</p> <p>Operational learning opportunities from previous occurrences of the task should also be added, if applicable. Any new operational learning opportunities should be captured and reported in the hazard analysis for future occurrences of the task.</p>
<p>5. Requirement:</p> <p>Guidance:</p>	<p>An assessment of the jobsite shall be conducted by a competent person (e.g., permit holder, crew lead) prior to the task commencing to:</p> <ul style="list-style-type: none"> • Verify that all identified controls are in place and functioning, and • Identify and mitigate any jobsite hazards that may not have been addressed in the hazard analysis. <p>Documentation of the jobsite assessment shall be in accordance with the Work Authorization Standard.</p> <p>Jobsite hazards may include housekeeping, slip/trip/fall hazards, weather conditions, or any other physical conditions that can only be assessed at the jobsite, immediately prior to the task commencing (e.g., SIMOPS).</p> <p>The assessment may be completed by more than one competent person, as long as they have knowledge of the hazards and controls to be verified.</p>

<p>6. Requirement:</p> <p>Guidance:</p>	<p>Additional analysis shall be conducted to identify equivalent controls when one or more controls specified in the HA cannot be implemented.</p> <ul style="list-style-type: none"> • Higher-level management approval (e.g., Permit Approver's supervisor) shall be required if equivalent controls cannot be implemented prior to the work proceeding. • Approval of the work shall be contingent on compliance with applicable local regulatory and company requirements. <p>Further Analysis shall be conducted utilizing extra resources to ensure all controls can be implemented to execute the work safely. When controls specified in the hazard analysis cannot be implemented (e.g., due to physical constraints), this should be captured as an operational learning opportunity.</p>
<p>7. Requirement:</p> <p>Guidance:</p>	<p>Immediately prior to the task commencing:</p> <ul style="list-style-type: none"> • The hazard analysis and the outcome of the jobsite assessment shall be reviewed and communicated to persons performing work. • Persons performing work shall have an opportunity to contribute to the hazard analysis or jobsite assessment. • Persons performing work shall confirm (via physical or electronic signature) that they agree with the content of the hazard analysis and jobsite assessment. <ul style="list-style-type: none"> • Documentation of agreement of the HA content is not required for tasks that do not require a documented HA. • JO management shall approve circumstances where it is deemed appropriate for an individual to acknowledge that the Persons Performing Work have agreed with the content of the Hazard Analysis and jobsite assessment. <p>Work team leader & permit approver must ensure that all persons performing the work have reviewed and agreed on the hazard analysis by signing the HA form.</p>
<p>8. Requirement:</p> <p>Guidance:</p>	<p>Maintain access to the hazard analysis documentation at the task location in accordance with the CoW Process Document.</p> <p>Hazard analysis along with other permit to work, certificates, SWC documents will be available accessible on site.</p>

<p>9. Requirement:</p> <p>Guidance:</p>	<p>Persons performing work shall continuously assess the task for changing conditions and stop work if conditions do not reflect the content of the hazard analysis (e.g., new hazard identified, controls no longer in place).</p> <p>Persons performing work will stop work to revalidate the permit and hazard analysis for any changed condition. Hazard analysis shall be revisited to ensure including all controls/ mitigations before resuming the work again.</p>
<p>10. Requirement:</p> <p>Guidance:</p>	<p>Personnel involved with the development of the hazard analysis shall be trained and competent in accordance with the Training and Competency Standard.</p> <p>JO will provide hazard analysis training for all JO employees who are required to conduct hazard analysis as per TNA. Business partners are expected to provide training to their personnel as per their training matrix. Training and competency for business partners personnel shall be verified during field engagements/ inspections & as part of COEM performance reviews.</p>

Appendix A: Work tasks that require a Level 2 hazard analysis

Task group	Task description
Breaking Containment	Opening Piping & Equipment: <ul style="list-style-type: none"> • Opening live relief / flare lines • Opening equipment against an alternate isolation device (stopple, line freeze, etc.) • Opening equipment with known leaking valves - flammable, toxic, acid/caustic, or > 150psig
Confined Space Entry	Confined Space Entry with special hazardous characteristics, including: <ul style="list-style-type: none"> • Entry into inert atmospheres • Entry into potentially IDLH atmospheres • Entry into process equipment, vessels, tanks, and other spaces without positive isolation
Diving	Commercial diving activities (including underwater welding)
Electrical	<ul style="list-style-type: none"> • Non-diagnostic work conducted on energized electrical equipment over >50 volts
Excavation	<ul style="list-style-type: none"> • Excavation activities requiring gas testing or protective systems (e.g., shoring, bracing, sloping, etc.) • Mechanical equipment to drive sheet piles or piers (or anything else) into the ground. • Excavating with power tools, heavy equipment (mechanical auguring, jack hammer, etc.) or using hydro or pneumatic techniques regardless of depth • Excavating within safe zone of railways, roads, pipelines, electrical powerlines (above ground or underground), process units
Explosives	Work activities involving explosives (e.g., demolition, platform removal, etc.)
Hot Work	<ul style="list-style-type: none"> • Hot tapping • Open Flame - in/on all hydrocarbon or process systems, including steam and utility systems containing flammable materials that are in service or have not been isolated, depressurized & drained. • Open Flame - in classified hazardous area, requiring positive physical isolation.
Isolation	Pigging (smart pigging and caliper pigging)
Leak Repair	<ul style="list-style-type: none"> • Insulation removal on live equipment or equipment that has not been isolated to inspect for leaks - suspected or known leak ->150F, >150psig, flammable, above auto-ignition, toxic systems.

Task group	Task description
	<ul style="list-style-type: none"> • Reinjection Online - systems prone to stress corrosion cracking as designated by JO Engineer • Online - including reinjection: Class 1 process streams, >500F, ASME B16.5 Class 600 flanges and above, Anhydrous NH₃, Oxygen >23.5%, H₂S >3%, and Corrosives • Leak Repair (clamps, plugs, resealing/repumping, drill/tap) - Online, Flammable, Toxic, Acid/Caustic, Corrosives
Lifting and Rigging	Critical lift Operations
Pressure	<ul style="list-style-type: none"> • Hydro cutting • Hydro blasting >2000 psig (138 bar) • Abrasive blasting – on live equipment
Work at Height	<p>Work at height:</p> <ul style="list-style-type: none"> • Requiring personal fall arrest systems (PFAS), except mobile elevated work platforms (MEWPs) • Greater than 4 feet from one surface to another surface including below ground level (excluding use of ladders), outside of fixed platforms, aerial lifting devices or approved scaffolding. (e.g., inspection, measurements, painting, etc.). <p>Scaffolding - erecting, dismantling, or modifying any of the following types:</p> <ul style="list-style-type: none"> • Scaffolds that are greater than 120 feet tall (measured from base plate) • Scaffolds that may exceed 80% of the design load rating while in use • Scaffold or platforms supported by non-rigid supports (ropes, cables, etc.)
Vacuum Truck	Vacuum truck operations involving flammable materials or hydrocarbon service
Other	Asbestos: disturbance or removal of asbestos containing material
Other	Line Stopping Techniques - e.g., stopple, hi-stops
Other	Bypassing Critical Protections
Other	Simultaneous Operations