**JSA Training, Identification and Risk Mitigation**

**Skill of the Craft**

Skill of the Craft acknowledges workers are trained and experienced in performing identified tasks, thus eliminating or minimizing hazards associated with performing those tasks.

The key to using skill of the craft in the graded approach is to ensure that eventually all tasks included in the skill of the craft category have been identified. A qualification or training program should include documentation of these items: Identify the hazards, perform the analysis, determine the controls, and train the worker to perform the task using the controls. If this traceability cannot be shown for each task then we should be wary of including the tasks as part of the Skill of the Craft activities.

Another aspect of using Skill of the Craft is to ensure the workers are trained in dealing with situational and location hazards. It is an oversight to think that a worker trained to safely perform a task is also aware of and understands how to handle hazards brought on by changing conditions or location-specific hazards unless the same traceability can be shown to the training or qualification for conditional or location-specific hazards.

Training or qualification programs are just a part of the equation for use of Skill of the Crafts. Frequency and complexity of performance need to be factored into the decision to allow workers to perform work without further instruction or oversight. This is where management and supervisor understanding of their people’s performance at the shop level is imperative for appropriate use of Skill of the Craft.

**Define Scope**

**Concept**

This element describes the processes and tools that should be in place to determine the total scope of work, which is an essential step in performing effective Hazard Analysis. In order for the scope to be sufficient for a Job Hazard Analysis to be effective, the scope must provide each employee the same mental picture of the activities required to accomplish the tasks within the scope of the activity.

**Mechanics**

Defining the scope of work entails more than describing the task.

A Walkdown Checklist that includes the following items should be used to fully determine a scope of work:

* Identification of work activity description, expected outcome, and results\*
* Research of feedback mechanisms to ensure continuous improvement.\*
* Performance of an activity Task Breakdown through discussion with supervisors and workers\*
* Identification of work location environment hazards such as, traffic, weather conditions, etc.
* Identification of the critical tasks/steps.
* Identification of work activity hazards/impact
* Identification of work method, tools, and equipment to determine:
	+ What tools or equipment are to be used
	+ How the tools or equipment will be used
	+ Where the tools or equipment will be used
	+ The interaction between tools, materials, equipment, personnel, procedures, etc. required to complete scope of work
	+ Identification of impacts if system fails
* Utilization of worker involvement
* Application of **hierarchy of controls** (eliminate the hazard, engineer the hazard out, administratively control the hazard, use PPE)
* These activities may be performed in Site Inspections to improve efficiency and effectiveness.

**Hazard Identification**

**Concept**

This element describes the processes and methodologies for identifying hazards. Safe and efficient work performance combines the effort of planning, craft training, site safety culture, and work ethic to produce a predictable, positive result. Safe performance of work should always include a review of the types and severity of the hazards to determine the most effective hazard controls.

Identifying hazards associated with all tasks is important and needs to be factored into the way people perform their work using different methods of implementation. For most tasks the hazards will be well understood and common on the job site. This is where established standards and controls, once people are trained to them, should not take a lot of planning time. Most time and energy in planning should focus on critical steps and ask thought provoking questions based on Error Likely situations or Error Precursors.

**Mechanics**

Effective hazards identification should include:

* Review of the entire job scope and break each activity down into steps/tasks
	+ Describe and list each task in sequence
* Identify any outside influences for each task
	+ Beside each task, write down the materials, equipment, processes, site factors, operational factors, and environmental factors that could cause an accident or health effects. People factors may also be relevant
* **Identify the critical task hazards**

Thought provoking questions for critical tasks should be included in the analysis or discussion by Planners, Supervisors, Workers, and SMEs to determine if there are hazards beyond those that are common place to the team. A short list of thought provoking questions based on error likely situations may include:

* How could mistakes be made during this critical task?
* What is the worst thing that can go wrong based on our actions during the critical tasks?
* What can be done to prevent mistakes or things going wrong during the critical tasks?
* Are we doing something differently than we routinely do it?
	+ Is there a good reason, if not, do it the way we always do it.
	+ If we need to do it differently, have we thought through the possible hazards and controls introduced.
* Are there time critical tasks (once started they must finish one continuous set of subtasks in a specific order)?
	+ Can we break down the tasks to keep them from being simultaneous?
	+ Can we use more people?
	+ Can we provide review just prior to performance?
* Are the controls identified compatible with the rest of the controls?

These questions may be included as a checklist for use during discussions.

When identifying potential common hazards, a checklist may be used to ensure that all known hazards have been considered. The checklist can include a list of commonly found hazards as well as behaviors that may result in accidents.

Common hazard types that should be identified in a checklist:

* Biological
* Chemical
* Fire/explosion
* Electrical
* Multiple energy source equipment (i.e. electrical, steam, gas, etc.)
* Ergonomics
* Excavation
* Wall/floor/ceiling penetration
* Fall (Slip/Trip)
* Fire/heat
* Mechanical
* Moving parts of machinery, tools, and equipment (i.e. pinch and nip points)
* Noise
* Material falling from height, rolling, shifting, or caving-in
* Pressure systems (i.e. steam boilers and pipes)
* Ejection of material
* Radiation
* Temperature extremes
* Toxic substances
* Visibility
* Weather
* Environmental

Common potentially high-risk behaviors that should be identified in a checklist:

* Lifting and other manual handling operations
* Working at heights (i.e. work done from scaffolds or ladders)
* Others working above or below the work area
* Use of bridge cranes or man lifts
* Working on or near energized equipment/components
* Hazards caused by working alone or in isolated workplaces
* Operating vehicles (i.e. forklifts, backhoes, trucks, etc.)
* Working within a confined space

Other sources that can be used to identify safety hazards:

* Material Safety Data Sheets (MSDSs)
* Lessons Learned
* Subject Matter Experts (SMEs)
* Area/facility personnel that have a knowledge of facility hazards and operations
* Accident and incident reports
* First aid statistical records
* Behavior Based Safety (BBS) reports
* Health and safety committee meeting minutes
* Previous inspection reports
* Previous JHAs
* Work procedures
* Safety manuals
* Equipment manuals
* Maintenance/repair records

Because the controls for an activity depend on both the types and severity of the hazards, it is important to re-evaluate the activity whenever:

* New hazards are introduced (e.g. job scope changes)
* Changes decrease the effectiveness of identified controls
* Changes impact nearby activities

When there are changes in the work, the hazards shall be reviewed to confirm that they are within the scope of what was previously analyzed and that the ES&H controls remain adequate.

Additionally, any relevant Lessons Learned should be reviewed and incorporated in