Environmental Management (EM) Work Planning and Control Program Guidelines

The following work planning and control program guidelines were developed by the Office of Safety Operations Assurance (EM-22), in collaboration with their colleagues in the Field, based on the references cited in the guidelines. The guidelines were first published in a memorandum from Dr. Steven L. Krahn, Deputy Assistant Secretary for Safety and Security Program, on April 7, 2010. These guidelines represent a description of a mature work planning and control program. The guidelines should be useful as a model for work planning and control programs.

It is expected that DOE oversight will use these guidelines during site visits and formal assessments of work planning and control processes, procedures and implementation.

PROGRAMMATIC AND PERFORMANCE OBJECTIVE

The Contractor has developed and implemented a comprehensive and effective work planning and control process.

Guidelines

1. The contractor work planning and control procedure(s) is approved, implemented, and personnel are trained to the latest revision of the procedure(s).
   a. Document Control records verify that work planning and control procedure(s) are approved and the latest revision has been implemented.
   b. Training records or other documents indicate that appropriate personnel have been trained to the latest changes and/or revision of the work planning and control procedure(s).

2. Procedures adequately describe the methods for initiating, analyzing, developing, revising, and approving work control documents (WCDs).
   a. Procedures adequately describe the process for requesting/initiating WCD.
   b. The requested work activity scope and boundaries are defined in sufficient detail to allow the work planning team to determine the necessary job steps so that all hazards can be identified, appropriate controls established, and adequate work instructions developed.
   c. Procedures address the process for screening of the requested work against the existing safety envelope and/or permits.
   d. There is adequate guidance regarding the use of the "graded approach" in determining the type of WCP and associated levels of planning and detail based upon the activity's complexity, frequency, and/or risk.

      1) Graded approach is defined and there are limitations established regarding its use.
      2) Any type of work that is considered "exempt" from the work planning and control process is delineated in the work planning and control procedure, and its justification document is available for review.
      3) Each craft that will use the skill-of-the-craft, designation to exempt any proposed work from the established work planning process has delineated these exempt activities.
         a) Skill-of-the-craft is defined for each craft including required proficiency, experience, knowledge, skill, and ability; and the type of work that can be safely performed without enhanced work planning.
         b) Tasks determined to be skill-of-the-craft are evaluated prior to first time use to ensure that appropriate controls/work instructions are within the craft skill set.

e. Procedures address when an independent safety review of WCD is required.
f. Procedures adequately describe the Emergency Work process and criteria.
g. Procedures adequately describe the process for the work planner to develop the proposed WCD including:
    1) Criteria for work scope statement and associated boundaries.
    2) Performing initial scoping walkdown.
    3) Establishing the appropriate personnel for the work order planning team, based on the complexity, hazards, and frequency of the proposed work.
    4) Reviewing the Operating Experience/Lessons Learned database for similar/previous work activities/hazards and applicable lessons learned or best practices to be considered for integration into the work planning and hazards analysis effort.
    5) Clearly defining special tools or equipment to be used.
    6) Determining the need for special/mockup training.
    7) Researching procedures and/or vendor manuals.
    8) Developing draft work instructions (major steps) for the work order planning team to use during the hazard analysis and work instruction development.
    9) The work planning and control procedure(s) or the hazard analysis procedures establish adequate criteria for applying the graded approach in the development of a hazard analysis (e.g., automated hazards analysis, planner walkdown, a team walkdown, or a roundtable).
    10) The work planning and control procedure or hazard analysis procedure establish the priority/hierarchy of hazard controls (i.e., hazard elimination or mitigation, engineering controls, administrative controls, and Personal Protective Equipment (PPE)).
    11) Procedures adequately address the need to collectively document and analyze all the hazards, to determine any negative synergistic effects, to arrive at the optimum set of controls for the work being performed.
    12) Procedures provide adequate assurance that hazard controls remain in effect as long as the hazard exists (particularly important during decontamination and decommissioning).
    13) If automated hazards analysis or generic hazards analysis is used, the process adequately describes how to customize the hazards and their associated controls for a particular WCD.
        a) All the listed hazards and controls are relevant to the work.
        b) The hazards and controls are specific to the work. If generic, there are provisions to account for job-specific hazards.
        c) There is involvement of the planning team regarding the use and contents of automated hazards analysis (i.e., the work planner is not a single-point failure potential).

h. The procedures provide adequate details for the planner to develop a consistent, quality WCD (especially the work instructions).

1) There are established formats for WCDs, which contain the following minimum elements:
   a) Review and Approval
   b) Scope
   c) Precautions and Limitations
   d) Prerequisites
   e) Required Training
   f) Special/Mockup Training
   g) Special Tools or Equipment
   h) Drawings, Sketches, Illustrations
   i) Work Instructions
   j) Return to Service and/or Post Maintenance Testing Requirements (when applicable)
   k) Close-out
   l) Status Log

2) There are adequate instructions regarding the inclusion of all hazards and controls (generic and specific) in the WCD (i.e., job specific hazards and their associated controls are in the work instructions just prior to encountering the hazard while generic hazards, and controls may be included in the Precautions and Limitations section).

3) Guidelines are established for work instruction development and include the following minimum elements:
   a) Work instructions identify critical work steps and controls (i.e., steps with significant importance to safety, the safety basis, or are regulatory in nature).
   b) The work instructions are written in a clear, concise, user-friendly manner, are commensurate with the education and experience of the workers.
   c) There is a logical flow in the sequencing of the job steps and sub-steps.
   d) There are adequate instructions regarding the use of active versus passive work steps.
   e) There is only one action per work step.
   f) Warnings (potential personnel hazards,) Cautions (potential equipment or environmental damage,) and Notes (supplemental information) are used appropriately.
   g) No actions are directed by the Warnings, Cautions, and Notes.
   h) Hold Points and controls significant to safety are integrated into the work instructions.

i) There are adequate instructions regarding worker compliance with sequence of work steps and sub-steps (i.e., are workers allowed to deviate from step-by-step compliance).
j) Generic references to work permits, procedures, vendor manuals, etc. are not used unless the work instruction specifies that the next work step is to be performed in accordance with the stated document, in its entirety or a specified part of the document.
k) There are adequate instructions regarding the use of "Not Applicable."
l) There are adequate instructions and criteria regarding equipment restoration, Return to Service and Post Maintenance Testing so that there is confidence that design and safety functions will be adequately performed.

i. The draft WCD requires peer or work control management review prior to distribution for concurrence and approval.
j. The procedure(s) adequately address the WCD change and revision process:
   1) Personnel authorized to request changes
   2) Form or process for requesting change
   3) Definition of administrative/editorial changes versus intent changes and the process for both types of changes
   4) Personnel authorized/required to concur and/or approve change requests
   5) Format of incorporating changes into WCD
   6) Criteria for reconvening the planning team for WCD changes
   7) Requirement to review existing hazard analysis after any changes to the WCD to determine if new hazards were created, any existing hazards were modified, or any existing hazards eliminated by the change
   8) Criteria for revisions to the WCD
   9) Brief/train workers on the changes
k. The process adequately describes the responsibilities and accountabilities of the personnel concurring with and approving the WCD.
l. The process requires a final WCD approval by work planning and control management.
m. The process requires a WCD approval by Operations prior to work, and the criteria for approval are adequately described (if not in the work planning and control procedures, in an Operations procedure).
n. The process describes who is ultimately responsible for the-adequacy of the WCD (there is a need to establish accountability).
o. Line Management is responsible for verifying the training and qualification of the workers and supervisors.

3. Hazard analysis (Job Hazards Analysis, Job Hazards Analysis, Activity Hazards Analysis, etc.) and incorporation of hazard controls into the WCD.
   a. Procedures adequately describe the hazard analysis process and its interface with the work planning and control process.
   b. There is an adequate process to determine if appropriate personnel are involved in the hazard analysis.

c. The hazards and their associated controls are specific to the job. (Generic hazards that are already addressed by other programs dilute the effectiveness of the hazard analysis).
d. The controls for each separate hazard are identified individually (i.e., the format of the hazard analysis provides the crosswalk of all controls to their respective hazards; a column of hazards and a column of controls is unsatisfactory).
e. Hazards and controls from other safety program analyses (Documented Safety Analysis, As Low As Reasonably Achievable Job Review, Industrial Hygiene Exposure Assessment, etc.) have been considered and integrated into the hazard analysis, if appropriate.
f. The hazard analysis team performs "what if' scenarios during the walkdown/roundtable.
g. A hazard analysis developed for a model/standard WCD is evaluated and/or modified each time the model/standard WCD is used. Documentation is required as to the participants in the evaluation.
h. The WCD work instructions are written in such a manner that specific hazards and their associated controls can be readily identified (e.g., bolded, boxed, etc.).
i. The chosen method of implementing the hazard control from the hazard analysis into the WCD is appropriate. The stated hazard control in the hazard analysis may have several ways to implement the control into the WCD, but the intent of the control is maintained.

4. The work planning and control process involves appropriate personnel (planners, workers, supervisors, engineering, and health and safety professionals).
   a. The work planning and control procedure(s) provide adequate guidance regarding the selection of personnel on the planning team,
      1) A work control manager or equivalent, determines the composition of the planning team if a planning team selection matrix has not been developed.
      2) Procedure(s) emphasize the participation of workers and supervisors in the WCD development phase.
      3) Appropriate personnel/disciplines are involved in the scoping of the work and work instruction development of the WCD.
      4) Participation on the planning team is mandatory and the participating disciplines cannot "opt-out" without justification.
      5) Appropriate personnel (e.g., Superintendent, Supervisor, and Foreman) perform a “verification” walkdown prior to the approval of the WCD. This walkdown verifies that the WCD is “workable” and endorsed by· craft supervision.

   b. The procedure(s) provide adequate guidance regarding the involvement of Subject Matter Experts (SMEs) in the development of work instructions, such as:
      1) Radiological Protection for radiation/contamination surveys and radiological Hold Points.

2) Engineering for equipment/system specifications and Preventive Maintenance Testing requirements.
3) Safety/Industrial Hygiene for air monitoring, Permitting and PPE determinations.
4) Fire Protection for design equipment/component specifications, system requirements, performance criteria, etc.
5) Quality Assurance for quality assurance/control inspection Hold Points.
6) Nuclear Safety for safety basis requirements, limiting condition for operations (LCO) and specific administrative controls (SAC) conditions.

c. The procedure(s) delineate who is required to review WCDs for closeout and the review criteria are clearly identified.

Note: Approval means that the WCD has been reviewed and is approved as a workable document. Release means that the WCD has been reviewed by the facility/area operations authority and the WCD can be performed.

5. Procedures adequately address WCD approval, release, performance, and closeout
   a. Work activities are formally approved and scheduled on the Plan of the Day or equivalent, to facilitate notification to affected personnel, resolution of scheduling conflicts identification of resources and support required, prioritization with other work and availability of required facilities and systems.
   b. Examples of Shift Manager/Equivalent considerations for WCD release:
      1) Personnel safety
      2) Equipment repair/work urgency
      3) Impact of the work on LCOs and SACs
      4) Operability of redundant equipment
      5) Effect of work on other on-going activities
      6) Facility conditions required for equipment repair/work
   c. Procedures address Foreman/Supervisor responsibilities including:
      1) Obtaining the release of WCD
      2) Performance of a pre-job walk-down to determine if present conditions still meet the scope of the WCD.
      3) Pre-Job Briefings at a minimum need to consider:
         a) The briefing area promotes team member focus on the briefing
         b) Attendance requirements
         c) Scope and boundaries of the work
         d) Review of initial conditions
         e) Precautions and Limitations
         f) Prerequisites
         g) Task assignments
         h) Verification of training
         i) Hazards and controls/PPE
         j) Major work steps

k) Error-likely situations
l) Procedural compliance
m) Questioning attitude of workers
n) Response to unexpected conditions/stop work authority

4) Supervision of work activities to assure work is continuously within scope
5) Presence during all critical steps of the WCD
6) WCD changes
7) WCD Status Log entries
   a) Appropriate status of work progress
   b) WCD changes, concurrences, approvals, and their associated dates
   c) Description of unplanned stoppages and their resolution
   d) Change in supervision
8) Turnover requirements
9) WCD close-out requirements

d. Procedures address worker responsibilities and expectations.
   1) Work is performed in accordance with the work control document.
   2) Personnel understand their stop work authority.
   3) Job steps are understood before performance of the step, for applicable WCDs.
   4) Job steps are performed as written.
   5) If job steps cannot be performed as written, the job is stopped.
   6) Job steps are documented complete (where designated) prior to performing the next step.
   7) Steps significant to safety are discussed prior to performing the step.

6. The contractor's work planning and control procedure(s) contains or references mechanisms for providing WCD lessons learned and feedback.
   a. There is an established process to capture worker and supervisor WCD feedback.
   b. There is required follow-up by the planner for worker and supervisor feedback.
   c. The work planning and control procedure(s) require a documented post-job review.
   d. The planner is required to document changes to WCDs as a result of feedback.
   e. There is an established process to initiate lessons learned.
   f. There is an established process (i.e., identified databases or information sources) for planners to incorporate lessons learned into WCDs.
   g. WCD feedback/lessons learned are tracked, trended, and made available for planner use.

7. The training and qualification requirements for work planners are established and implemented.

   a. An adequate selection, training, and qualification program exists for work planners.
      1) The work planner education, knowledge, and experience criteria in the position description are appropriate.

2) Contractor, site and/or facility specific training and qualification requirements are appropriate.
3) The program addresses mentoring, disqualification, and the remedial training process.
4) The Qualification Authority is at the appropriate management level.

b. Work planner training contains, at a minimum, the following elements:
1) Integrated Safety Management System Core Functions and Guiding Principles
2) Roles, responsibilities, authorities, and accountabilities of interfacing organizations
3) Work Planning and Control process procedures
4) Hazard analysis process procedures
5) Incorporation of hazard controls into WCD work instructions
6) Conduct and appropriate use of walkdowns
7) How to apply applicable requirements, standards, permits, regulations, etc. to work planning
8) The appropriate use of SMEs
9) Facilitation of planning team meetings, walkdowns, and round-tables
10) Technical writing skills

c. The program addresses the continuing training for work planners.

References:

- 48 CFR 970.5223-1, *Integration of Environment, Safety, and Health into Work Planning and Execution*
- 10 CFR 830, *Quality Assurance*
- 10 CFR 830.120.122 Criterion 5, *Performance/Work Processes*
- 10 CFR 851, *Worker Safety and Health Program*
- 29 CFR 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*
- DOE Order 440.1B, *Worker Protection Program /or DOE (Including the National Nuclear Security Administration) Federal Employees*
- DOE Order 433.1A, *Maintenance Management Program for DOE Nuclear Facilities*
- DOE Order 414.1A, *Quality Assurance*
- DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*
- DOE Order 210.2, *DOE Corporate Operating Experience Program*
- DOE Policy 226.1, *Department of Energy Oversight Policy*
- DOE Manual 450.4, *Integrated Safety Management System Manual*
- DOE Guide 450.4-1B, *Integrated Safety Management System Guide*
- DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*
- DOE-STD-1030-96, *Guide to Good Practices for Lockouts and Tagouts*