

**Hot Work  
Audit Protocol**

<b>Audit Information</b>
<b>Facility Name:</b>
<b>Date(s) of Audit:</b>
<b>Auditor's Name:</b>
<b>Period Under Review:</b>

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**A. Introduction**

1. Review background information obtained from the facility to develop a general understanding of hot working operations at the facility that may result in an accident, injury, or fatality.
2. Tour the facility to gain a general understanding of the areas of hot work

**B. Step 1: Understand Management Systems**

***Note:** The purpose of Step 1: Understand Management Systems is to develop a detailed understanding of the facility's overall approach to managing its regulatory obligations. After completing this section of the protocol, the auditor should understand:*

- *How and why the facility has evaluated the applicability of existing regulatory standards to facility operations.*
- *Types of facility procedures that exist to implement compliance activities, and the general scope of such procedures.*
- *Methods used by the facility to assist in the implementation of compliance programs.*
- *Whether compliance management roles and responsibilities are clearly understood.*
- *Types of programs or activities engaged in to familiarise staff with hot work information.*
- *How the facility maintains and documents the effectiveness of its hot work program activities.*

**C. Step 2: Assess Strengths and Weaknesses of Management Systems**

***Note:** Once the auditor has developed an understanding of how the facility manages its hot work programme, the next step is to evaluate the soundness of the management and control systems in the context of the potential environmental, health, and safety impacts. The purpose of this assessment is to determine verification priorities for Step 3: Gather Audit Evidence activities. Spending the time to evaluate priorities will enable the auditor to maximize the effectiveness and efficiency for gathering the evidence needed to achieve the objectives of the audit.*

3. Determine the range of potential impacts if a hot work activities are not managed appropriately.

4. Evaluate the management systems and controls to determine if they are designed soundly, i.e. consider if the systems, coupled with the control systems, are appropriate given the potential impacts.
5. Set verification priorities so as to provide the optimum allocation of available team resources to ensure that issues representing high risk and weak management/control systems receive sufficient attention. That is, complete the matrix provided in Table 5 that links the management systems assessment with potential impacts to determine your prioritization scheme.

**Table 1: Determining Verification Priorities**

Based on your understanding of the management system for hot work and the potential impacts if hot works activities are not managed appropriately put hot work in the appropriate box on the graph.

		Potential Impacts	
		Low	High
y axis	Weak	3	1
	Strong	4	2

x axis

#### D. Step 3: Gather Audit Evidence

**Note:** *The results of Step 2: Assess Strengths and Weaknesses of Management Systems activities (i.e., setting the verification priorities) provide the basic framework for the auditor to use in developing a sound and defensible verification strategy. Once the auditor has determined where the audit priorities lie for their protocol assignment(s), he/she develops a verification strategy based on available resources, what needs to be done, how to gather the information, where to apply verification testing, and what sampling strategies to employ. It is important to remember that the auditor develops this strategy in general to help ensure that the verification strategy is representative of the assessment made in Step 2: Assess Strengths and Weaknesses of Management Systems, and that the types of information gathered are appropriate for the protocol topics being examined. When gathering audit evidence, each auditor should ensure that the most appropriate type(s) of information will be representative and will be sufficient to verify compliance, as well as to substantiate noncompliance.*

#### **Hot Work (Welding, Cutting, and Brazing)**

##### *In Designated Areas*

6. If welding, cutting, or brazing is undertaken, tour the facility to verify that activities are effectively managed. (Use Table 2 to record your information.)
  
7. Determine whether a proper evaluation and selection of personal protective equipment has been conducted and made available, including the following (place a check [√] on the line if the facility evaluates, selects, and makes available personal protective equipment that meets the following condition(s)):
  - \_\_\_ Helmets or hand shields during arc welding and arc cutting operations.
  
  - \_\_\_ Goggles or suitable eye protection during all gas welding or oxygen cutting operations.
  
  - \_\_\_ Goggles or suitable eye protection during all other grinding and cutting operations.
  
  - \_\_\_ Appropriate protective clothing (i.e., gloves, aprons).
  
  - \_\_\_ Transparent face shield or goggles for operators of resistance welding/brazing operations.

Note any discrepancies in your working papers.

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Table 2: Welding, Cutting, and Brazing Checklist**

<b>Criteria</b>	<b>Yes</b>	<b>No/Describe Discrepancy</b>	<b>Location</b>
Compressed gas cylinders are legibly marked with gas content.			
Acetylene cylinders are stored valve end up and are secured.			
Empty cylinders are stored with valves closed.			
Cylinder storage inside buildings is well protected, well ventilated, dry, and at least 20 feet from highly combustible materials.			
Cylinders are secured and equipped with a valve protection cap.			
Oxygen cylinders in storage are separated from fuel-gas cylinders or combustible materials by a distance of 20 feet or by a non-combustible barrier at least five feet high having a one-half hour fire resistance rating.			
Adequate ventilation is provided during welding and cutting (e.g., local exhaust hoods and booths) to maintain the amount of toxic fumes, gases, or dusts below regulatory levels.			
Welding cables and other equipment are placed clear of passageways, ladders, and stairways.			
Welding cables are in good condition.			
Guards (i.e., screens and shields) are utilized to confine heat, spark, and slag, if objects to be welded cannot be removed and if all fire hazards cannot be removed.			
Cutters or welders and their supervisors are trained in the safe operation of their equipment and the safe use of the process.			

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### *Outside of Designated Areas*

**Note:** *If the facility conducts welding operations in confined spaces, also refer to the Confined Space Entry Program section of this protocol.*

8. If welding, cutting, or brazing is performed in areas not specifically intended or approved for these activities, verify that in addition to the above practices outlined for designated areas, the following are conducted (place a check [√] on the line if the condition is met):

- \_\_\_ The area is inspected before cutting and welding is performed and a written permit is issued granting authorization to perform the work.
- \_\_\_ A fire watch is required where a fire might develop and the fire watch is maintained for at least a half hour after welding or cutting operations have ceased.
- \_\_\_ Combustible materials on the floor are removed, guarded with resistant shields, or otherwise protected.
- \_\_\_ Ducts and conveyor systems that may carry sparks to distant combustibles are protected or shut down.
- \_\_\_ Fire extinguishing equipment is maintained in a state of readiness for instant use.

Note any discrepancies in your working papers.

9. Verify that procedures for cutting and welding outside of designated areas have been established.

### **E. Step 4: Evaluate Audit Findings**

10. Review actions taken to complete each step of the protocol. For each protocol step assigned, summarize your conclusions regarding the facility's compliance status. (Use Table 3 to summarize your opinion regarding the level of compliance being achieved)
11. Review and discuss any unresolved compliance issues with appropriate facility personnel. Note explanations and disposition of such issues in the working papers.
12. Develop a written list of your exceptions and observations and use as a basis for discussion with other team members prior to the exit conference. As a team, evaluate the data used to substantiate the audit results and identify any patterns or trends in the results. In addition, evaluate your findings and observations based on the information gathered during Step 1: Understand Management Systems.
13. As a team, develop a complete list of exceptions and observations, which are clearly and concisely written and substantiated by audit data gathered.

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**F. Step 5: Report Audit Findings**

14. Review all exceptions and observations with the facility environmental, health, and safety contact, and present them to facility management during the close-out meeting.

**Table 3: Audit Opinion**

Develop an opinion as to the compliance status of the facility regarding hot work using the guidance provided below. Place a check (✓) in the most appropriate category or record N/A (not applicable). Document your opinion in your working papers.

Protocol Topic	Audit Opinion				
	Meets	Substantially Meets	Generally Meets	Requires Improvement to Meet	Requires Significant Improvement to Meet
Hot Work (Welding, Cutting, and Brazing)					
<b>Description of Audit Opinion Categories</b>					
<p><b>Meets Governmental and Internal Requirements</b>            This opinion applies when, based on the audit team’s review, the facility is judged to be in compliance with all (or virtually all) of the applicable requirements included in the audit scope. For those very few requirements where isolated exceptions are noted, these departures are determined to be occasional and anomalous, and are considered to be inconsequential in comparison to the overall level of compliance achieved. It is intended for locations that are found to be in full compliance with applicable requirements.</p> <p><b>Substantially Meets Governmental and Internal Requirements</b>            This opinion is given when the audit results substantiate a high degree of compliance. It applies when, based on the audit team’s review, the facility is in compliance with most of the applicable requirements reviewed but only a few requirements were not satisfied. These departures are considered to represent isolated exceptions in an otherwise effective compliance program.</p> <p><b>Generally Meets Governmental and Internal Requirements Except as Noted</b>            This opinion applies when, based on the audit team’s review, several exceptions to applicable requirements are noted. These exceptions are more than isolated anomalies and reflect weaknesses in the design and/or implementation of compliance programs.</p> <p><b>Requires Improvement to Meet Governmental and Internal Requirements</b>            This opinion applies when, based on the audit team’s review, several exceptions to applicable requirements are noted and some of the exceptions reflect the absence of required programs, significant departures from established criteria, or lapses in program implementation.</p> <p><b>Requires Significant Improvement to Meet Governmental and Internal Requirements</b>            This opinion applies when, based on the audit team’s review, many exceptions to applicable requirements are noted, including several significant departures from established criteria, the absence of several required programs, or prolonged inattention to the resolution of previously identified compliance or liability issues.</p>					

