

## 24. HAZARD MANAGEMENT

### Table of Contents

24.1. INTRODUCTION .....	1
24.2. TRACKING HAZARDS .....	2
24.3. HAZARD MANAGEMENT PRINCIPLES.....	3
24.3.1. Reporting.....	3
24.3.2. Hazard Elimination and Control .....	3
24.3.3. Risk Reduction .....	4
24.3.4. Integration of Hazard Management .....	4
24.4. PROCEDURES.....	4
24.4.1. Hazard Identification, Communication, and Reporting .....	4
24.4.2. Line Control Program .....	5
24.4.3. Behavioral Accident Prevention Program .....	5
24.4.4. PSM Process Hazard Analysis (PHA).....	5
24.4.5. Design Review .....	5
24.4.6. Scope of Work Review .....	6
24.4.7. Other Considerations.....	6
24.4.8. Communicating Hazards .....	7
24.4.9. General Hazard Tracking.....	7
24.5. HAZARD TRACKING SYSTEMS.....	8
24.5.1. Work Order System .....	8
24.5.2. Assessment Tracking System.....	9
24.5.2.1. Assessment Tracking System Item Initiation .....	9
24.5.2.2. Status Updates .....	9
24.5.2.3. Closing an ATS Entry.....	10
24.6. HAZARD EVALUATION AND CONTROL.....	10
24.6.1. Requirements .....	10
24.6.2. Risk Assessment Terms .....	10
24.6.3. Risk Coding Matrix .....	11
24.6.4. Risk Assessment.....	12
24.6.4.1. Work Orders .....	12
24.6.4.2. ATS Hazard Entries .....	12
24.6.4.3. Accident Scenarios .....	13
24.6.4.4. Status Information.....	13
24.6.5. Management Involvement (Commitment and Attention) .....	13
24.7. TABLES: HAZARD MANAGEMENT .....	14
24.8. FIGURES: HAZARD MANAGEMENT .....	22

### 24.1. INTRODUCTION

The purpose of the Hazard Management system on the SPR is to protect SPR personnel, the public, the mission, and SPR property from harm. To accomplish this, hazards must be recognized and controlled to the greatest extent possible. The SPR uses the guiding principles and core functions of Integrated Safety Management (ISM) to accomplish this purpose.

Safety management systems in place are consistent with the requirements of DOE’s ISM process, OSHA’s Process Safety Management (PSM), and OSHAS 18001, the Safety and Health equivalent

of the ISO standards. The hazard management process also coordinates with the annual budget, which provides funding for hazard mitigation, and the Work order and Action Tracking Systems, which track hazard mitigation actions.

This section provides instructions on how to identify, report, evaluate, prioritize, track, control (mitigate or eliminate), and close hazards. The hazard management process exists for the purpose of recognizing and controlling hazards so that work is done safely. The hazard management system also provides the information and mechanisms necessary to allow employees to recognize and control hazards to which they might be exposed in the course of their work. This section also delineates who has the authority and the responsibility to perform hazard management activities.

## 24.2. TRACKING HAZARDS

The hazard management process provides senior management with an accurate picture of the everyday risk of running the SPR. Two systems are used to transmit this information to management: the Assessment Tracking System (ATS) and the Work Order System. They are also used to document abatement plans and interim corrective actions taken to immediately control the hazards and subsequent reduction in risk.

- a. The ATS database contains records of identified hazards that require corrective action(s) that cannot be completed with the accomplishment of a work order. Examples of such actions include writing an Engineering Change Proposal (ECP), obtaining funding, or developing procedures or design.
- b. ATS retains records of closed as well as open hazards. Closed hazards are those for which the corrective actions have been completed and verified and any remaining risk accepted. This provides a cradle to grave record of hazard management.
- c. The Work Order System is used to track those hazards that can be controlled adequately by completion of a work order (only), that is, by making a repair or replacing the equipment in kind. If any other type of action is required to control the hazard, such as processing a configuration change or revising a procedure, the hazard will be tracked in ATS.
- d. Physical hazards identified during the Behavioral Accident Prevention Process (BAPP©) are tracked in either ATS or the Work Order System, depending upon the action required.
- e. Behavioral hazards are recorded during observations and the Site Steering Committee enters the information in the RINCON® database.
- f. Ergonomic hazards identified as a result of workstation or task assessments are tracked in ATS if they cannot be corrected with a work order or in the SAP-based work order system used by Data Services if they can. Closure of ergonomic hazards and proper use of ergonomic equipment is verified and reinforced by behavioral observations.
- g. Any hazards identified as “findings” during yearly Organizational Assessments (OAs), are tracked in the ATS and the Work Order System if required to correct the finding.
- h. ATS is not used to track potential hazards found during design review of future systems. Reviewers use the design review comment system maintained by Engineering. The purpose of these reviews is to identify and eliminate potential hazards before construction.
- i. Design or equipment hazards coincidentally identified during the performance of a subcontract will be controlled or eliminated and tracked using a work order, if possible. If some other action is required, such as writing an ECP or an Engineering Change Notice (ECN) and the hazard has not been closed within 30 days of the identification date, the hazard is tracked using ATS. The same is true for hazards identified at Readiness Review Boards (RRBs), external auditors, etc. RRBs are used to confirm that a new or significantly changed process or facility is authorized for operation.

- j. The Primatech System is used to track hazards identified during the Process Hazard Analyses (PHAs) required by OSHA's PSM regulation. Primatech is maintained by Operational Systems.
- k. Once a hazard is validated by the Site Steering Committee, an action plan is developed to control the hazard and is implemented. Any problems that the Steering Committee is not enabled to resolve are worked through the Site Safety Management Council. "At risk" behaviors are not tracked in any other system and immediate, positive intervention is used to control the hazard.
- l. Occupational hazards identified by a subcontractor during construction are to be remedied immediately and are tracked contractually by the SMTR.
- m. Hazards identified in the Tripartite Safety Council are tracked to completion in the DOE Action Tracking System (DATS). Actionees and completion dates are assigned by the DOE Project Manager.
- n. Interim corrective actions shall be taken for those hazards that cannot be fixed immediately.

### **24.3. HAZARD MANAGEMENT PRINCIPLES**

The DOE ISM policy mandates certain basic principles of hazard management and control.

- a. First, hazards can be identified and controlled and line management is responsible and accountable for their control.
- b. The work to be done shall be analyzed and any inherent hazards recognized and controlled.
- c. The worker must be trained to do the work assigned and must have a clear understanding of his role and responsibilities.
- d. The work should be authorized at an appropriate level of authority and performed in accordance with approved procedures within the defined safety envelope.
- e. Procedures should be compliant with applicable codes, regulations, and other appropriate (necessary and sufficient) requirements.
- f. Necessary resources must be provided.
- g. Workers must be involved in providing feedback and continuous improvement and shall be empowered to do so.

#### **24.3.1. Reporting**

- a. Anyone on the SPR can identify and report a hazard.
- b. Any SPR employee can stop work if it is necessary to prevent an unsafe act or situation.
- c. Any worker has the authority to refuse to do a task that he or she is uncertain that they can perform safely.
- d. Hazards can be reported to the supervisor, the site safety specialist, the safety monitor, the behavioral safety observer, the New Orleans S&H department, the Fluor Hotline (1-704-540-2248 or [www.fluorhotline.com](http://www.fluorhotline.com)), the Tripartite Safety Council, or to DOE.

#### **24.3.2. Hazard Elimination and Control**

Hazards can be eliminated or controlled in a variety of ways. In ranked order with the most desirable being first, some of the methods used are:

- a. Engineering out the hazard.
- b. Separating the hazard from the worker by time and/or space.
- c. Providing interlocked warning and "stop work" devices.

- d. Providing safe working procedures.
- e. Providing personal protective equipment (PPE) and training.
- f. Posting a warning.

Hazard controls must be tailored to the work being performed.

- a. In most cases a combination of the listed methods is used to control a hazard.
- b. Training personnel to properly operate and maintain equipment further mitigates the risk.
- c. Reinforcing safe behavior provides another level of control.

### **24.3.3. Risk Reduction**

Risk reduction is a combination of reducing potential causes and mitigating the consequences of a mishap. Although reducing the frequency of task performance is also used as a control, it only limits the frequency of exposure without changing the possible consequences. In some cases, frequency reduction may be the only way to control a hazard. Also, frequency and severity may change depending upon the nature or environment of the process being conducted.

### **24.3.4. Integration of Hazard Management**

Although line management has the primary responsibility for implementing all safety programs, several directorates assist them:

- a. Technical Support Services, including ES&H
- b. Maintenance and Engineering
- c. Data Systems
- d. Human Capital
- e. Finance

Specific roles, responsibilities, authority, and accountability are described in the following section.

## **24.4. PROCEDURES**

### **24.4.1. Hazard Identification, Communication, and Reporting**

- a. MOC identifies and reports hazards for the purposes of immediate (interim) control, communication to personnel and management, and final (permanent) control.
- b. MOC employees are required to report defective equipment, unsafe conditions, and/or procedural problems to their supervisor.
  - 1. Employees are encouraged to submit the report in writing, but oral reports are taken.
  - 2. This active participation by the workers partially fulfills the PSM standard requirements for employee involvement and the ISM requirement for “feedback and improvement.” Identified hazards can be reported anonymously to the New Orleans S&H staff through the Fluor Hotline (1-704-540-2248 or [www.fluorhotline.com](http://www.fluorhotline.com)).
  - 3. Employees may also report ergonomic hazards using the Industrial Hygiene hotline, extension 4061.

#### **24.4.2. Line Control Program**

- a. Line safety monitors inspect working conditions and identify hazards. These hazards are reported to their supervisor.
- b. The supervisor or safety monitor reports any hazard beyond his or her authority to correct to the Site Safety Management Council (SSMC).
- c. The SSMC takes corrective action for hazards when they can and refers those outside their scope to the Executive Safety Council (ESC) or places them in the ATS or the Work Order System to be tracked until adequately controlled (see Figure 24-1).

#### **24.4.3. Behavioral Accident Prevention Program**

- a. Hazards may be identified during Behavioral Accident Prevention Process observations or data analysis. Positive feedback on safe and at risk behavior is provided during the observation and interim hazard controls are implemented immediately.
- b. Physical or process hazards are then reported to the site steering committee through the observation checklist, and an action plan is developed.
- c. The hazard and plan are brought to the SSMC by a representative from the site steering committee if the steering committee is not enabled to correct or control the hazard (see Figure 24-1).

**NOTE**

Additional information can be located in the Employee Behavioral Safety Process (EBSP) section of this manual.

#### **24.4.4. PSM Process Hazard Analysis (PHA)**

Hazards may also be identified during a PHA.

- a. PHAs may be done using a variety of techniques such as;
  1. “What if analysis”
  2. Checklists
  3. HAZOPs.
- b. PHAs are required for new operating processes and for significant equipment or process changes.
- c. These hazards are reported in the PHA Report and are tracked in the Primatech, Inc., the PHA Works Program.
- d. Actions identified as necessary by a PHA that are intended to correct operability problems are not tracked as hazards.

#### **24.4.5. Design Review**

- a. Potential hazards may be identified during any stage of design review, from the conceptual package to the scope of work.
- b. These potential hazards do not physically exist yet and are tracked by Engineering Design using the Design Review tracking system.

- c. Every effort is made to identify and correct hazards as early in the design process as possible. This allows the hazard to be “engineered out” before construction and is less expensive than retrofitting.
- d. If the hazard still exists at the time the equipment or process is changed, tracking is transferred to ATS or the Work Order System and corrective action is initiated.

#### **24.4.6. Scope of Work Review**

- a. Occupational safety hazards identified during the preliminary review of a Scope of Work (SOW) are identified in a written report to the subcontractor, a Preliminary Hazards Review (PHR). PHRs are prepared by the person entering the Purchase Requisition with assistance as needed from Safety and Health. A Work Instruction and Checklist are available from S&H.
- b. The contractor has the responsibility to implement adequate hazard controls. The subcontractor documents a contract-specific Safety and Health Plan as a contractual submittal. It must be approved by MOC S&H.
- c. ISM principles and functions flow down to the MOC subcontractors and their sub-tier contractors via their contract language.
- d. All contractors and subcontractors performing work on an SPR site are directed to comply with all SPR safety and health requirements.
- e. **All subcontractors are required to comply with APM requirements where applicable to the work they are performing.**
- f. The SMTR has the responsibility to provide contractor oversight with the assistance of the site safety specialist and the subcontractor’s safety professional or representative for the project if one is required.
- g. Subcontractor safety professionals or representatives may be required by contract. This is usually determined by MOC safety in cooperation with the project initiator based upon the work involved for MOC subcontracts contracts they administer.
- h. MOC subcontractor safety performance is evaluated using the Subcontractor Performance Evaluation Analysis Report (SPEAR) system. MOC subcontractors who violate safety requirements receive a Non-Compliance Notice, directing them to submit their corrective actions in writing to the MOC Subcontract Manager or the Contracting Officer.

#### **24.4.7. Other Considerations**

- a. Hazards may be identified at the Tripartite Safety Council also; during routine fire, security or safety inspections; or during other auditing and assessments. They will be entered into the DATS or the ATS tracking database depending on the identifier.
- b. Hazards may be identified also by external assessors, such as the Fossil Energy ES&H staff, the EH Office of Oversight, or OSHA during VPP assessments.
- c. All hazards are tracked to closure regardless of the identifier.
- d. Hazards are frequently recognized during accident investigations and recommended corrective actions mandated.
- e. Recommended Corrective Actions are tracked using a graded approach. Recommendations from the formal reports are entered into either the Work Order System or ATS/DATS according to the criteria explained above.
- f. Recommendations from the annual ISM reports are tracked in the ATS; they are usually programmatic.

#### **24.4.8. Communicating Hazards**

- a. MOC management, in New Orleans and at the sites, is responsible for communicating information concerning identified hazards to any worker who could be affected by them. MOC departments, assessors, or other hazard identifiers is responsible also for providing senior management, both DOE and MOC, with sufficient information about each identified hazard to evaluate the risk and to judge the adequacy of hazard controls.
- b. For purposes of this section, hazard communication is used in the broad sense of providing information to workers and management about the hazards. It is not limited to the specific requirements of OSHA 1910.1200, "Hazard Communication," Which is addressed in another section.
- c. All of the hazard reports previously discussed are used to transmit or communicate information about hazards. However, hazard information is communicated in several other ways, usually based upon the method of identification and the interim controls.
  1. A PHR-identified hazard may be briefed to workers by a HAZOP team.
  2. A supervisor can use identified hazards as the subject of monthly safety meetings.
  3. Formal risk assessment reports are developed to support ES&H-driven engineering changes.
  4. Senior management is briefed often on identified hazards and how MOC is controlling them during Site and Executive Safety Council meetings, Project and Program reviews, and special briefings.
  5. Special computer- based training, Crosstalks, Lessons Learned and e-mails may also be used to reach the entire workforce.

#### **24.4.9. General Hazard Tracking**

- a. MOC maintains a database of hazard information.
  1. The database is used to report hazards, to communicate the nature of the hazard to the worker(s) who may be exposed, and to provide workers information on what controls need to be in place before interaction with the hazard.
  2. MOC tracks hazards to ensure that hazards get management visibility, are properly prioritized, that required hazard control action occurs, and that the hazard is closed after verification of the corrective actions.
  3. MOC reporting/tracking is computer- based in one of four tracking systems. There is no duplicate tracking. MOC hazard tracking is done in four systems:
    - a) ATS
    - b) Work Order System.
    - c) Primatech tracking system (PHA/HAZOP hazards only)
    - d) DATS (Tripartite action item tracking only)
- b. In the ATS, Work Order, and PHA tracking systems, the formats used to input the information are designed to support and encourage hazard analysis and assessment. When properly completed, the hazard entries provide sufficient information so that someone knowledgeable about the SPR would be able to understand the at-risk condition, the potential severity of the consequences, the probable frequency of an accident/incident occurring given the controls in place, and the interim and permanent (recommended) hazard controls.
- c. The ATS format also requires a narrative of the actions taken since initial hazard identification and their impact on the assessed initial risk of the hazard, that is, a determination of whether changes that have taken place after the hazard changed the risk.

1. The narrative allows a review of the risk management decisions made during the course of hazard control.
2. Only the SPR Project Manager can accept the risk for high and medium hazards.

## 24.5. HAZARD TRACKING SYSTEMS

- a. Hazard tracking systems provide documented hazard information and data to be used to:
  1. Make management decisions
  2. Prioritize actions
  3. Establish Goals
  4. Identify performance trends
  5. Provide early identification of potential problems
  6. Communicate lessons learned
  7. Document needed design, funding, engineering changes, etc.
- b. The ATS system, particularly, serves as a feedback mechanism for the identification and communication of ES&H lessons learned, good practices, and corrective actions and is guaranteed to have management visibility.

### 24.5.1. Work Order System

- a. MOC tracks hazards that can be corrected by completing a work order in the Work Order System (see Figure 24-1). ES&H, Fire Protection, Emergency, and Security Management work orders are tracked this way and are given top priority.
- b. The following steps will be followed by Site Safety Specialist and Fire Protection/Emergency Management Specialist.
  1. Review ES&H and Fire Protection/Emergency Management work orders requiring 30 days or more to close to identify those intended to correct, or prevent, a hazard. Ensure that the correct suffix (1A, 2A or 3A) is applied to the work order. A section of the work order is provided for risk assessment information. New Orleans S&H will assist, if requested.
  2. Evaluate the present risk level (initial, present, injury, and residual) and enter it in the appropriate area in the work order. A section of the work order is provided for risk assessment information.
  3. Develop an interim corrective action to mitigate the hazard until the work can be completed and enter it in the work order.
  4. Attend the site's weekly planning meeting to ensure that ES&H and Fire Protection/Emergency Management work orders are addressed according to priority and hazard.

#### **NOTE**

Because an ES&H work order report contains all required information, no duplicate ATS entry is made. Special closure verification is not required for work order hazards. The equipment has either been repaired or replaced in kind, with no configuration change.

## **24.5.2. Assessment Tracking System**

Hazards identified during an OA, an accident/incident or near miss investigation, and the annual ISM recommendations are tracked in the ATS system. ATS entries serve as documented action plans to resolve identified hazards as required by OSHA.

### **24.5.2.1. Assessment Tracking System Item Initiation**

- a. A hazard identified during an OA (that cannot be resolved by completing a work order), that has remained open for more than 30 days, will be entered into ATS by NO S&H as a Safety Issue. (Note: Very low risk hazards are not tracked.)
  1. Anyone may identify and report a hazard to their supervisor, the site safety specialist, their safety monitor or a NO safety analyst. If the identified hazard cannot be corrected using a work order, it will be entered into ATS by NO S&H or the Site Safety Specialist.
- b. Audit/assessment (other than OAs) safety and health findings requiring more than a work order to correct are entered in ATS by NO S&H.
- c. Fire protection hazards identified during monthly New Orleans Fire Protection and Prevention inspections or OAs that have not been closed within 30 days and cannot be fixed by using a work order are entered into ATS by the New Orleans senior fire protection specialist.
- d. New Orleans environmentalists enter identified environmental hazards.
- e. New Orleans is a unique site in that:
  1. Standard work orders are used to fix or maintain warehouse equipment and facilities using MOC personnel,
  2. A commercial property oversight company manages the other buildings and is responsible for resolving any identified physical hazards within those facilities,
  3. The New Orleans Safety Council forwards safety monitors' reports to MOC Facilities Management,
  4. MOC Facilities Management is responsible for reporting hazards to the management company,
  5. The facility at the Stennis warehouse is also included in this process, and
  6. Other New Orleans work orders are tracked by the Help Desk system.

#### **CAUTION**

Hazards to be corrected via the work order system still require immediate, interim hazard control/mitigation. No safety, environmental, or fire protection/emergency management classified work orders will be coded as "NO RISK."

### **24.5.2.2. Status Updates**

- a. Site directors shall review open hazards every month during Site Safety Management Council (SSMC) meetings, publishing or discussing:
  1. safety monitor reports
  2. ES&H work order list
  3. HAZOP recommendations
  4. Open ATS items
- b. This review will be documented in SSMC minutes.
- c. Site directors will ensure ATS and the work order system are used to track the progress of actions that affect their site.

### 24.5.2.3. Closing an ATS Entry

To submit a closure of an ATS entry, the root cause and corrective action plan will be identified. A brief description of how the hazard was closed should be added to the corrective action or additional status areas. Closure will be verified as specified in ATS procedures.

## 24.6. HAZARD EVALUATION AND CONTROL

The SPR Risk Assessment Coding Matrix (Figure 24-3) is used to evaluate and express the risk of identified hazards and their control mechanisms. The matrix is based on SPR life cycles and the credible hazards of SPR operations. The SPR Project Manager shall approve any changes to the Risk Coding Matrix. The matrix will have a revision number and date.

The matrix is used in conjunction with the work order system for determining appropriate priorities. The matrix is cross-referenced to the work order priority matrix, so it is easy for a user to determine the appropriate priority when developing a work order. The Risk Coding Matrix is also used during the PHAs/HAZOPs required by PSM and during Enterprise Risk analysis. Severity and frequency definitions are printed on the back of the matrix.

Laminated copies of the risk matrix may be requested from the New Orleans S&H staff. The matrix is Official Use only and persons using printed copies are responsible for verifying their copy against the APM master, to ensure that it is the most recent edition. Any printed copy, whether provided by the S&H staff or printed directly from the APM, will be considered "Unofficial".

### 24.6.1. Requirements

The SPR Risk Coding Matrix will be used to evaluate the severity/frequency of all identified hazards. Risk assessments may be done or verified by any ES&H, Systems Safety, or Fire Protection/Emergency Management professional. NO ES&H resolves disputes over risk assessments.

### 24.6.2. Risk Assessment Terms

- a. Hazard severity expresses an assessment of the consequences of the credible mishaps that could result from a hazard.
  1. Severity codes recognize the following consequences:
    - a) Negative impacts on SPR personnel or public health and safety
    - b) Harm to indigenous wildlife and bio systems
    - c) Investment costs
    - d) Impact on the SPR mission or security
    - e) Noncompliance with approved standards
  2. Categories of work-related illness include:
    - a) Toxic exposure
    - b) Ergonomically induced physical conditions
    - c) Other industrial hygiene-type exposures to stressors
  3. Severity code abbreviations are ranked I, II, III, and IV, with I being the most severe.
- b. Hazard frequency is an expression of the likelihood that an identified hazard will result in a mishap.
  1. The frequency of negative effects of a hazard are;

- a) “Highly Likely” if it is very probable that the incident will occur within the first year the hazard is identified or
- b) “Likely” if the accident is one in 10 years, and so on.
- 2. These frequencies are consistent with the priority system used by Operations and Maintenance for work orders.
- 3. Frequency abbreviations are: H(ighly likely), L(ikely), P(ossible), and U(nlikely).

HAZARD FREQUENCY CATEGORY DEFINITIONS	
CATEGORY	RISK DEFINITIONS
Highly Likely (H)	A hazard whose potential impact is very probable (100%) within the next year, or one occurrence in a year.
Likely (L)	A hazard whose potential impact is probable (10% - 100%) within the next year, or one whose impact has at least one chance of occurring within the next 10 years.
Possible (P)	A hazard whose potential impact is possible (1% -10%), or has one chance of occurrence in 100 years. <sup>1</sup>
Unlikely (U)	A hazard whose potential impact is likely to occur less than once in 100 years (<1%).
Notes	<sup>1</sup> This category can be compared to the 100-year flood exposures used in design.

- c. The risk of a hazard is the combination of the severity and frequency assessments. Risk categories are labeled as high, medium, low, and very low.
  - 1. Example: a hazard with a severity of IV and a frequency of P (IV/P) would be a low risk hazard.
  - 2. Severity categories are expressed in uppercase Roman numerals from I to IV
  - 3. Probabilities are expressed in alpha characters: H, L, P, and U.
  - 4. The relationship between the two is shown in Figure 24-3, the SPR Risk Coding Matrix.
- d. Each severity category in the risk matrix includes consequences to personnel, the public, SPR investment loss, the environment, compliance, security and the SPR mission.
  - 1. The hazard is placed in the highest category for which it meets one or more criteria.
    - a) Example: a potential fatality is “catastrophic” even if all other consequences are negligible. Severity categories are defined in Table 24-2.
- e. Frequency Categories
  - 1. Occurrence Frequency is assessed in terms of hazard probability, or the likelihood that an identified hazard will result in a mishap, based on an assessment of such factors as location, task performed, environment, and frequency of the exposure to the risk.
    - a) Risk exposure may be assessed in terms of cycles, hours of operation, or years.
    - b) The SPR risk matrix is based upon the number of expected occurrences in a given number of years.
    - c) Risk impacts are assessed on an average yearly rate based on a normal equipment or scenario life cycle.

**24.6.3. Risk Coding Matrix**

- a. The SPR Risk Coding Matrix (see Figure 24-3) is a graphic presentation of the definitions when integrated to a single risk code. Colors indicate hazard control priorities of high, medium, low, and very low for each risk category, as indicated in the simple chart below.

Red	High Risk Hazards
Yellow	Medium Risk Hazards
Green	Low Risk Hazards
Blue	Very Low Risk Hazards

- b. New Orleans S&H is the system owner of the matrix and will continue to revise it as needed or as directed. Revision numbers and dates are assigned. Users of the laminated copies of the matrix are required to verify that they are using the most recent edition (as found in the APM).
- c. The SPRPMO project manager approves the matrix. (It has been revised most recently to be compatible with ISO 14000, ISM, and VPP requirements and to add Security consequences.)

**24.6.4. Risk Assessment**

As owner of the Hazard Management procedures, New Orleans S&H provides oversight for assessments done by other organizations and makes the final assessment for disputed hazards. Immediate interim action will be taken to control the risk of hazards identified by any audit, assessment, or similar process, such as locking out or tagging out equipment or barricading an area.

**24.6.4.1. Work Orders**

- a. Work order risk assessments are translated to a work order priority, as found in the Work Order System Procedures.
- b. They are then worked in the order assigned by the Work Order Priority System Matrix.
  - 1. 1A - High ESS&H work orders (based on risk assessment)
  - 2. 2A - Medium and Low ESS&H work orders
  - 3. 3A - Negligible ESS&H work orders
- c. The Risk Matrix shown in Figure 24-3 is cross-referenced to the work order priority system.

**NOTE**

It is useful to remember when developing the hazard description that the hazard is the **condition** that triggers the accident and the resulting consequences. Example: If the hazard was the failure to provide guardrails, one associated mishap would be that an employee could slip and fall from the walking/working surface with the potential consequence being a broken arm. The number of times an employee is exposed to the hazard (daily, monthly, etc.) and whether there are hazard controls in place determines the frequency of the potential consequence.

**24.6.4.2. ATS Hazard Entries**

- a. In the ATS database, risk codes are assigned for:
  - 1. Initial risk: the risk (severity/frequency) of the hazard when first identified, including any existing controls. This initial risk will not change unless an error was made in the original assessment. Changes to initial risk should be explained in the Status Information, the change should be dated, and the person making the change should enter their initials.

2. **Present risk:** the risk of the hazard at the date of the last revision, including all installed controls in place. This risk changes as hazard status changes. Implementation of interim controls should lower this risk from its initial assessment.
3. **Residual risk:** the anticipated remaining risk of the hazard once final, permanent controls have been installed or all approved actions are completed. Residual risk acknowledges the possibility that some hazards may be inherent and can only be controlled to the level of risk that would be accepted by a reasonable and prudent person. If all corrective actions have been taken, when a hazard is closed the present risk will be the same as the residual risk. The residual risk of a hazard that has been completely removed shall be entered as IV/U. For example, an installed alarm system reduces the risk of an employee injury due to exposure but the potential risk of a release remains.
4. **Injury, Environmental, Equipment/Property Damage, Mission, and Compliance Risks:** The current (or present) risk will be assessed for each specific potential consequence. A hazard involving a brine spill, for example, may have no risk of injury, but a serious risk of environmental harm. Specifying risks by consequence type provides management with needed information. The present risk becomes the highest risk of all of the potential consequences. A hazard with an injury risk of IV/P and an environmental risk of a III/L will have a present risk of III/L.

#### **24.6.4.3. Accident Scenarios**

A separate assessment of risk for each accident scenario is entered during tracking only in the ATS in the Corrective Action Plan/Root Cause. Work order hazards do not require accident scenarios.

#### **24.6.4.4. Status Information**

- a. The Status Information is a running summary of the history of the hazard and may be the only record of the decisions made about the hazard and the action taken.
- b. A typical Status Information block would include entries such as:
  1. Work order number, initiation date, and prioritization information (date entered, initials of the person who provided or entered the information)
  2. The work order has been delayed awaiting parts (date, initials)
  3. The work order has been put into consolidated engineering project number with an estimated completion date, or ECD. (date, initials)
  4. Changes in risks (date, initials)

#### **24.6.5. Management Involvement (Commitment and Attention)**

- a. As stated earlier, MOC believes that all accidents are preventable and that management's highest commitment is to the safety and health of the workforce and to reducing/eliminating accidents.
- b. When a hazard is recognized, effective means of hazard control shall be identified and put in place in a timely fashion. Interim corrective action(s) to control the hazard shall be taken if final resolution will be delayed.

**24.7. TABLES: HAZARD MANAGEMENT**

<b>TABLE 24.1. HAZARD MANAGEMENT RESPONSIBILITIES</b>	
<b>Position or Department</b>	<b>Responsibility</b>
MOC Project Manager	a. Be ultimately responsible for controlling all recognized hazards involved with MOC’s operations. b. Participate in and actively demonstrate support in the line safety and behavioral accident prevention programs. c. Make ES&H commitment a performance measure for the MOC employees at all levels. d. Serve as the final authority on risk assessment and interpretation of ES&H requirements within MOC. e. Appoint the New Orleans site manager (for safety).
Assistant Project Managers	a. Ensure all necessary action is taken to enter hazards identified by their directorate in the appropriate tracking system. b. Be responsible for ensuring that hazards assigned to actionees within a directorate are actively worked on a timely basis and that accurate status for these hazards is entered in the ATS system on a monthly basis. c. Inform their employees of the hazards to which they may be exposed and ensure that they use appropriate hazard controls. d. Report hazard status for the hazards they own at Project Review. e. The ES&H director will ensure adequate support for risk assessment is provided to other directorates in the areas of safety and health, and answer questions pertaining to risk assessment and ES&H requirements interpretation that cannot be resolved by the managers of Safety and Health, Environmental, or Fire Protection.
Directors, Senior Managers, and Supervisors	a. Ensure that hazards identified by their department are entered into the appropriate tracking system with the risk information. b. Ensure that hazards assigned to actionees within their department are actively worked according to assigned priority and that accurate status for these hazards is entered in the ATS system on a monthly basis. <b>Note:</b> Managers will usually be the “owner” assigned for hazards whose corrective actions are their department’s responsibility.
Site Directors	a. Be the “owner” of all hazards whose recommended corrective actions can be completed by the site. b. Review, validate, and accept newly opened hazards in ATS for their sites. Review the open ATS report bimonthly and be knowledgeable about hazards associated with operating the site. c. Use the report to track actions taken by other organizations to control site hazards. Be responsible for ensuring corrective actions are completed and hazard controls maintained. d. Ensure that interim corrective actions are taken for those hazards for which permanent solutions require time. e. Ensure that the nature and controls of identified hazards are

**TABLE 24.1. HAZARD MANAGEMENT RESPONSIBILITIES**

Position or Department	Responsibility
	communicated to workers with potential exposures by providing on-line access to ATS hazards to the workers; holding all-hands meetings, providing briefings on hazards identified during PHAs, HAZOPs, assessments, and/or Readiness Reviews; posting warnings; and informing workers of interim procedures for operations and maintenance used to protect them from risk.
Operations Manager	Assign Work Order System priorities. Assignment of any Category (1A) (inoperative) priorities will be reviewed by site director.
Site ES&H Manager	<ul style="list-style-type: none"> <li>a. Be responsible for the professional safety and health support provided to site line management.</li> <li>b. Ensure that environmental work orders are reviewed for risk assessment.</li> <li>c. Establish training guidelines for hazard recognition, reporting, and assessment requirements.</li> <li>d. Review ES&amp;H Work Orders for proper hazard evaluation. Identify and/or assess hazards with the potential for environmental damage.</li> <li>e. Enter environmental hazards in ATS.</li> <li>f. Upon request, perform risk assessments for hazards entered by others for the consequence area of environmental damage and/or non-compliance.</li> </ul>
Site Safety Specialist	<ul style="list-style-type: none"> <li>a. Provide the primary technical support for risk assessment and monitor and assess site hazards.</li> <li>b. Work cooperatively with construction managers and MOC SMTRs to provide adequate oversight for subcontractor safety performance and to assess the risk of any hazards identified and enter them in the appropriate tracking system.</li> <li>c. Report “at risk” construction management conditions to the SMTR for resolution.</li> <li>d. Enter hazard management information in the work order and ATS systems, as applicable, and verify risk assessments. Update ATS entries assigned to him/her as required.</li> <li>e. Oversee interim hazard controls (corrective actions).</li> <li>f. Review all ES&amp;H category work orders open weekly to validate that they are ES&amp;H-driven, to assess their priority, and to determine the risk level for entry in the Work Order System.</li> <li>g. Ensure during weekly site planning meetings that ES&amp;H work orders that need to be addressed because of risk are addressed.</li> </ul>
Supervisors/Foreman	<ul style="list-style-type: none"> <li>a. Provide information to assist in assessing risk, if requested</li> <li>b. Ensure that hazards reported to them are entered into the appropriate tracking system.</li> </ul>
Employees	<ul style="list-style-type: none"> <li>a. Report hazards and supply information for risk assessments.</li> </ul>
Site Engineer	<ul style="list-style-type: none"> <li>a. Provide technical expertise to identify feasible and cost-effective solutions to hardware, ergonomic, process, and similar hazards.</li> </ul>

**TABLE 24.1. HAZARD MANAGEMENT RESPONSIBILITIES**

Position or Department	Responsibility
	b. Prepare required change control documents for corrective actions that require a configuration change and make engineering evaluations of permanent hazard control action. c. Provide information and expertise for risk assessments. d. If an ATS actionee, be responsible for entering accurate monthly status updates.
Site Fire Protection/ Emergency Management	a. Enter hazard management information in the work order and ATS systems, as applicable, and verify risk assessments. b. Enter ATS updates assigned to them monthly. c. Oversee interim hazard controls (corrective actions). d. Review all fire protection/emergency management category work orders to validate that they are fire protection/emergency management-driven, to assess their priority, and to determine the risk level for entry in the Work Order System. e. Ensure during weekly site planning meetings that fire protection/emergency management work orders that need to be addressed because of risk are addressed.
Site Support Services	a. Report hazards identified by the employees that they supervise.
Site Steering Committee	a. Lead the site’s EBSP efforts and resolve behavioral hazards, coordinate development of corrective action plans, and provide information to the Site Safety Council. b. Provide information to the site ATS Administrator who will create an ATS entry for any action plan requiring configuration or procedural changes.
Engineering Design (N.O.)	a. Provide estimates for proposed corrective actions, cost/benefit analyses, ECPs, PHA recommendations validation, expert information in areas such as structural requirements, and other safety-related design tasks as required. b. Operate the design review process and be responsible for tracking design comments about safety to comment resolution. c. Serve as actionees for ATS hazards requiring design, such as changes to the equipment or process. As ATS actionees, be responsible for entering accurate status in ATS on a monthly basis and working solutions according to assigned priorities.
Subcontract Manager’s Technical Representatives	a. Provide direct safety oversight of construction subcontractors and some major service subcontracts under their direction to ensure that subcontractor employees are implementing appropriate hazard controls. b. Review, understand, and enforce the subcontractor’s Site Specific Safety Plan, which must equal or exceed the requirements in the APM. c. With assistance from the site safety specialist or contract safety specialist, be responsible for recognizing hazards and directing their correction and for evaluating the safety performance of a subcontractor they have supervised. d. Report hazards identified to them to the Site Safety Specialist.

**TABLE 24.1. HAZARD MANAGEMENT RESPONSIBILITIES**

Position or Department	Responsibility
Contractor/Subcontractor Employees	a. Report hazards encountered while performing work or during other activities to their supervisor, SMTR or the Site Safety Specialist.
Process Engineering (N.O.)	a. Identify hazards, assess risk, develop corrective actions, do cost/benefit determinations, research process and offsite exposure hazards, and input ATS entries for hazards that can't be corrected by work order or within 30 days of identification. b. Provide primary support to the sites for identification and resolution of hazards associated with firearms and explosives. c. Coordinate and conduct the PSM-required PHAs/HAZOPS and track PHA hazards internally until the hazards have been validated, a definitive action plan developed, and an actionee and owner assigned. PHA recommendations are tracked in the Primatech system. Provide monthly updates for HAZOP recommendations to their owners. d. Fire Protection Engineering, part of the Process Safety and Engineering Design groups, cooperate with Fire Protection and Prevention personnel in the Security and Emergency Management directorate to evaluate fire protection systems-related hazards and their controls, and to assess risk in the area of fire-related property damage.
Data Systems (N.O.)	a. Be responsible for baseline change control as required by PSM and DOE orders. b. As part of the Change Management (CM) Technical Review Board (TRB) process, ensure proposed configuration changes are reviewed for safety impact; whether they can introduce a hazard or increase a risk exposure; or, if the change is intended to correct a hazard, whether that hazard has been assessed and is being tracked. This group is also responsible for the configuration of equipment and programs used by the site operating system, the Distributed Control System (DCS). c. Software Engineering personnel are not responsible for identifying or controlling hazards related to office computers, such as PCs, nor do they deal with issues such as office ergonomics. d. (Software Engineering) Processes configuration changes that require software modifications to correct hazards resulting from software and/or DCS equipment. e. Serve as a source of information when preparing ATS input sheets and may assess what controls are possible for an identified hazard.
Occupational Safety and Health Safety Analysts and Industrial Hygienists	a. Take primary responsibility for providing corporate-level staff support to the line organization for hazard management. b. Develop MOC S&H hazard management policies and procedures and provide related training for site safety personnel. c. Provide MOC compliance interpretation for safety and health

**TABLE 24.1. HAZARD MANAGEMENT RESPONSIBILITIES**

<b>Position or Department</b>	<b>Responsibility</b>
	<p>issues and be responsible for resolving conflicts in this area.</p> <ul style="list-style-type: none"> <li>d. Provide oversight of MOC subcontractor safety and health concerns as described in this manual. Conduct onsite inspections of subcontractors and their equipment and work identified hazards through the SMTR.</li> <li>e. During yearly independent assessments and OSHA VPP audits, provide oversight to all areas of hazard management at the sites.</li> <li>f. Assess identified hazards using the SPR Risk Coding Matrix and provide that information for tracking.</li> <li>g. Perform additional, informal S&amp;H site reviews if requested by a site to aid in identifying and controlling hazards.</li> <li>h. Identify hazards and recommend corrective actions.</li> <li>i. Be trained in risk assessment, evaluate and enter hazards in the ATS system, provide code citations and interpretations.</li> <li>j. Provide hazard management support for the N.O. facility.</li> </ul> <p>f. Ensure that S&amp;H reviews TRB agendas and is represented on the electronic TRB to ensure that hazard impacts are recognized and risk assessments are made.</p>
ATS Technical Administrator	<ul style="list-style-type: none"> <li>a. Maintain the tracking system by identifying needed improvements and coordinating programming, access, and security. Working cooperatively with Information Systems, “own” the system and be responsible for its continuous improvement.</li> <li>b. Train new users.</li> <li>c. Be responsible for information retrieval and publishing required reports.</li> <li>d. Develop procedures for the system.</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>a. Identify and/or assess hazards with the potential for environmental damage.</li> <li>b. Enter environmental hazards in ATS.</li> <li>c. Upon request, perform risk assessments for hazards entered by others for the consequence area of environmental damage and/or non-compliance.</li> </ul>
Security and Emergency Management, and Fire Protection	<ul style="list-style-type: none"> <li>a. Identify and evaluate risks associated with security, fire and/or explosions and be trained in risk assessment methodology.</li> <li>b. Establish the risk criteria used for fire-related property damage and security severity measurement and enter Fire Protection and Security hazards into ATS for tracking. Upon request, perform risk assessment for hazards entered by others for the consequence area of property loss due to fire.</li> <li>c. Recommend hazard controls or corrective actions. Fire Protection personnel are technical experts in Life Safety and other areas predominantly associated with fire protection and provides code citations for the National Fire Protection Association (NFPA) standards. Resolve any fire protection NFPA code interpretation conflicts.</li> </ul>

**TABLE 24.1. HAZARD MANAGEMENT RESPONSIBILITIES**

Position or Department	Responsibility
	d. Perform a monthly inspection of the New Orleans facilities. The New Orleans site safety specialist uses the resulting report for ATS input, as previously described. e. Determine the confined space rescue requirements if disputed. f. Notify S&H when NFPA standards change.
Finance	a. Provide funding and scheduling information to the ATS administrator. b. Coordinate budget to reflect appropriate priorities for projects needed to correct identified hazards.
Procurement	a. Purchase goods and services necessary to support the hazard management process. b. Incorporate safety exhibits as identified in the ES&H checklist accompanying the PR. c. Coordinate subcontractor submittals as required by the subcontract for approval.
Operations and Maintenance, New Orleans	a. Own the Work Order System and be responsible for its control and maintenance. b. Provide status for ATS hazards for which O&M personnel are actionees. c. Be responsible for ensuring operating and maintenance procedures (preventive, predictive, and corrective) are accurate and written in a way that provides hazard management. This includes such areas as required PPE, training requirements, and cautions and warnings.
General Counsel	a. Provide legal information to MOC senior management in the area of legal compliance and risk. b. Provide severity risk assessments for compliance consequences for use in ATS for hazards identified by others, as requested. In this role, the general counsel may be an actionee for ATS hazards.
Quality Management System	a. Coordinate assessments of the S&H programs. The high risk analysis quality category ranking of the ES&H processes are listed in Appendix A of the QA Program Manual.
Performance Improvement	a. Provide support and resources for continuous improvement of the Hazard Management Program. b. S&H personnel will be active participants in the CQI process. c. Coordinate documentation and entry of Lessons Learned.

**TABLE 24.2. SEVERITY CATEGORY DEFINITIONS**

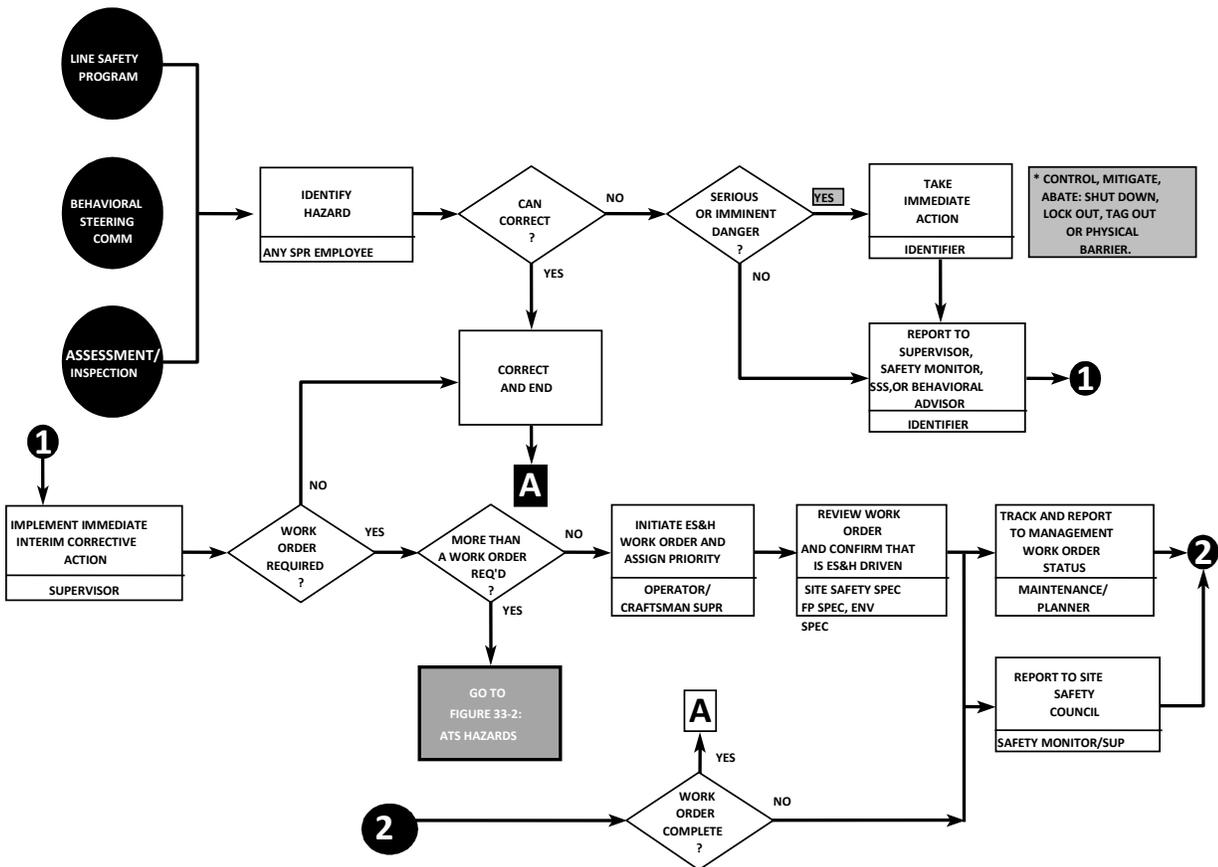
<b>CATASTROPHIC: I</b>	
<b>CATEGORY CONSEQUENCE</b>	<b>RISK DEFINITIONS</b>
Personnel	Death or fatal work-related illness.
Public	Death or severe personal injury or illness of one or more members of the public.
Environment	A spill of oil in excess of 2380 bbls , or brine, or other hazardous substance which has the potential for injury <sup>2</sup> to sensitive fish and wildlife habitats, sensitive biologics, or human-use activities. <sup>3</sup> Potential for more than 100 tons per year of VOC emissions, 2,200 lbs. of hazardous waste generation, or 3.7 MM lbs. of solid waste generation, or other severe impact relative to an environmental aspect.
Investment Loss	Single occurrence loss greater than \$2.5 million or annual loss of \$500,000 or more. <sup>4</sup>
Compliance	Major noncompliance with Federal, state, or local laws; enforcement actions; or compliance agreements significant to ES&H and involving significant potential fines or penalties.
Mission	Equipment damage or theft that results in downtime <sup>5</sup> of 30 days or greater.
Security	Complete loss of the Central Alarm Station or Radio Communication System.
<b>CRITICAL: II</b>	
<b>CATEGORY CONSEQUENCE</b>	<b>RISK DEFINITIONS</b>
Personnel	Permanent disability, severe work-related illness or injury, or 5 or more lost workday cases from one occurrence.
Public	Any personal injury or illness to members of the public.
Environment	A 238 to 2,380-bbl spill of oil, brine, or other hazardous substance which has the potential for injury to sensitive fish and wildlife habitats, sensitive biologics, or human-use activities. Potential for 25 to 100 tons per year of VOC emissions, 220 to 2,200 lbs. of hazardous waste, or 1 MM to 3.7 MM lbs. of solid waste, or other substantial impact relative to an environmental aspect. <sup>6</sup>
Investment Loss	A single loss of \$100,000 to \$2.5 million or annual loss of \$50,000 to \$500,000.
Compliance	Major noncompliance with Executive Orders, DOE Orders, or Secretary of Energy Directives (Notice or Guidance Memoranda) significant to ES&H or security but not involving significant potential fines and penalties.
Mission	Equipment damage or theft that results in downtime of greater than 10 days but less than 15 days.
Security	A complete loss of the Intrusion Detection System, Camera Monitoring System, Barrier Systems, or the Protective Force Fleet.
<b>MARGINAL: III</b>	
<b>CATEGORY CONSEQUENCE</b>	<b>RISK DEFINITIONS</b>
Personnel	Lost time injury or illness not resulting in disability or loss of quality of life.
Public	Any significant impact to members of the public not included in Severity Categories I and II, such as a major quality of life loss or perceived illness.
Environment	A reportable spill of less than 238bbls of oil, brine, or other hazardous substance which has the potential for localized injury to sensitive fish and wildlife habitats, sensitive biologics, or human-use activities. Potential for 10 to 24 tons per year of VOC emissions, or other moderate impact relative to an environmental aspect. <sup>6</sup>
Investment Loss	A single occurrence loss of \$10,000 to \$100,000 or an annual loss of \$5,000 to \$50,000.
Compliance	A marginal noncompliance with Federal, state, or local laws; Enforcement Actions; Compliance Agreements; Executive Orders; DOE Orders; Secretary of Energy Directives significant to ES&H or security; or exceedance of CESQG hazardous waste limits of 220lbs per site per month.
Mission	Equipment damage or theft that results in downtime of 1 to 10 days.
Security	A loss of individual components of the Individual Alarm Points, Cameras, Radios, Patrol Vehicle, Access Card System or X-Ray and Metal Detection.

**TABLE 24.2. SEVERITY CATEGORY DEFINITIONS**

**NEGLIGIBLE: IV**

<b>CATEGORY CONSEQUENCE</b>	<b>RISK DEFINITIONS</b>
Personnel	Injury that results in no lost time and is treatable by first aid at the facility.
Public	Little or no impact to members of the public.
Environment	A non-reportable spill oil, brine, or other hazardous substance which has low potential for injury to sensitive fish and wildlife habitats, sensitive biologics, or human-use activities. Potential for no more than 5 tons per year of VOC emissions, zero hazardous waste generation, zero of solid waste generation, or other minor impact relative to an environmental aspect. <sup>6</sup>
Investment Loss	A single occurrence loss of less than \$10,000 or annual loss of less than \$5,000.
Compliance	Significant deviation from good management practices with no potential civil or criminal penalties.
Mission	Equipment damage or theft that results in less than 1 day of downtime.
Security	A loss of an individual component of a security system that does not result in loss of detection or response capability
Notes	<p><sup>1</sup> Oil spill sizes are those defined for coastal (region) in the National Spill Contingency Plan.</p> <p><sup>2</sup> (Environmental) injury as defined in 40CFR 112.20 Part 112 and environmental receptors as defined in 40CFR Part 68.</p> <p><sup>3</sup> “Sensitive environments” as defined in 40CFR 300, expand human use to include groundwater use and 40FCR Part 68.</p> <p><sup>4</sup> Investment loss categories are adapted from those formerly used in the ES&amp;H Management Plan and dollar amounts are consistent with DOE accident investigation categories. Investment loss includes the sum of the dollar value of property damage or loss, equipment damage or loss, noncompliance fines and penalties, and small clean-up costs.</p> <p><sup>5</sup> Site “downtime” is defined as the number of days that a site is unable to draw down crude oil.</p> <p><sup>6</sup> See MOC ISO 14001 Environmental Management Plan ASI5400.55 for a list of environmental aspects and impacts.</p>

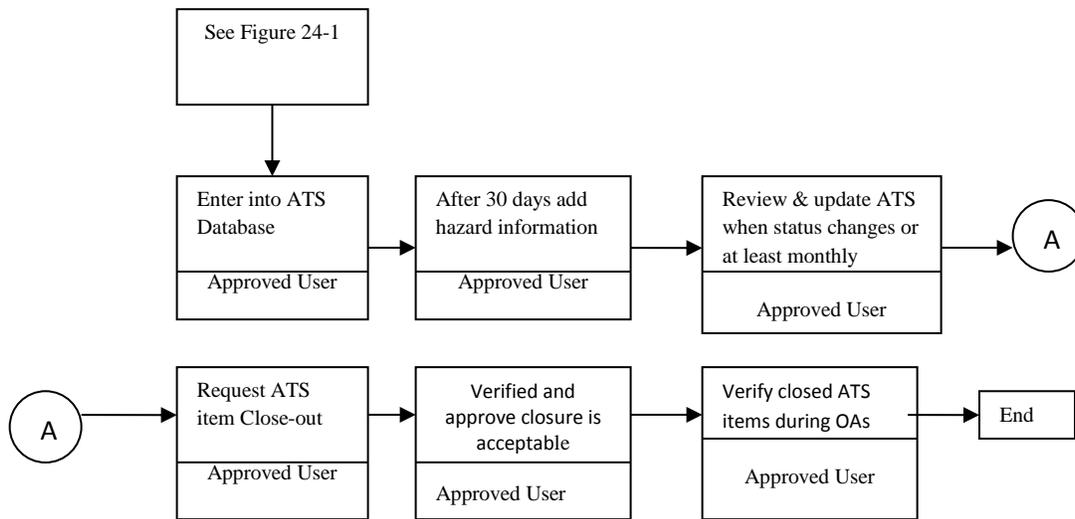
24.8. FIGURES: HAZARD MANAGEMENT



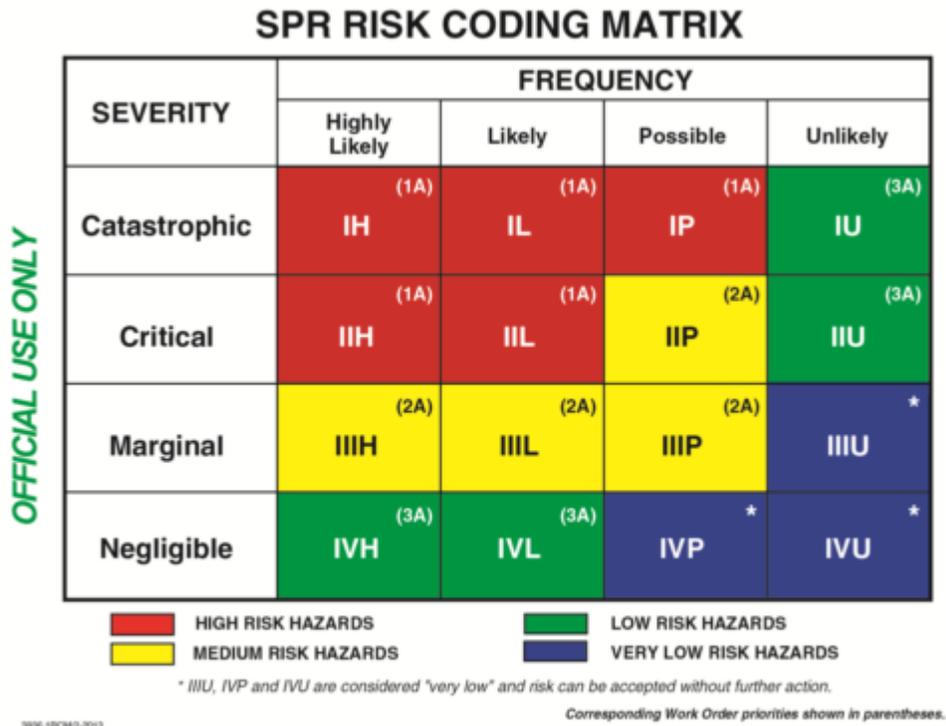
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A is end of the process for this hazard

Figure 24-1. Work Order Hazard Tracking Flow Diagram



**Figure 24-2. ATS System Flow Diagram**



**Figure 24-3. Risk Coding Matrix**