

Integrated Safety Management at the Waste Treatment Plant

Background

Integrated Safety Management, ISM, has two major components that are necessary for success:

1. The widely recognized process steps – define work scope, identify hazards and hazard mitigation, hazard control, perform work, and feedback, and
2. Principles of behavior – the attitude of the managers and employees.

The Waste Treatment Plant, WTP, project appears to have issues with both components of ISM:

1. Process - A project must practice ISM during the ongoing work and it must ensure that the plant design minimizes the safety risk to the workforce during future plant operation. Safety risk identification and mitigation should be a fundamental component of project management. Technical issues generated by design shortfalls, such as potential criticality due to inadequate mixing or potential employee exposure due to equipment failure in the black cells, are examples of a failure of ISM as applied to future operation.
2. Behavior - The DNFSB recently raised specific concerns about the prevailing safety culture at the WTP, i.e., that the culture at the WTP “deters the timely reporting, acknowledgement, and ultimate resolution of technical safety concerns.” These concerns were expressed in two findings: “A chilled Atmosphere Adverse to Safety Exists” and “DOE and Contractor Management Suppress Technical Dissent” (more detailed discussion is in the appendix [*insert document reference here*]).
3. Other principles of behavior include the vitrification plant’s approach to communicating with the employees and the greater community.

The Department of Energy manages the WTP contractor via the contract vehicle using field observational feedback from the facility representatives. The functional requirements govern the plant design. The contract performance incentives and disincentives are important tools to influence the behavior of the contractor senior management.

Advice

1. Assess the root cause(s) in the DOE-contractor interface that led to these ISM issues:
 - i. Examine the contract vehicle to determine if this was a contributing factor.
 - ii. Examine the vitrification plant contractual functional requirements to determine if reliable plant operation is adequately addressed.
 - iii. Determine why the facility representatives did not detect and report these issues.
 - iv. Examine the WTP performance incentives with respect to their effect on safety and determine if it is appropriate to trigger a safety erosion penalty. Alternatively, incentivize safety and reporting as robustly as achieving cost and schedule.

Blue: Pre-release of DOE Implementation Plan

- v. Determine if the projected WTP cost overruns were the root cause of suppressing safety concerns.
2. ISM Behavior: Encourage the contractor to assess the principles of leadership behavior of their management. Examples: caring for the welfare of current and future employees, and active listening.
 - i. Encourage the contractor to conduct a 360 leadership assessment of the management, coupled with individual training and behavioral improvement actions.
 - ii. Focus attention on the personnel who suppress the reporting of safety concerns and dissenting opinions, and take firm and visible corrective action to stop this behavior.
 - iii. Conduct an independent review of the DOE and contractor Employee Concerns programs.
 - iv. Enhance the communication on the status of the safety improvement activities at the WTP to the public and the HAB. Include how DOE is working with its contractors to foster a safe work environment and a nuclear safety culture that welcomes dissenting professional opinions and a questioning attitude.
3. ISM Process: Incorporate ISM safety risk assessment and mitigation analysis to examine the potential risks during future operations.
 - i. Assess the reliability of the equipment, such as pumps, to determine if forty-year reliability was a functional requirement, and if the future maintenance risk to the employees has been assessed.
 - ii. Assess the long term reliability of all equipment and processes associated with the black cells.
 - iii. Complete the recommended full-scale mixing tests as expeditiously as possible, to provide confidence that the WTP will successfully operate over its mission lifetime.
 - iv. Conduct an independent assessment of the gaseous discharges and secondary waste streams to ensure that the employees, the public and the environment are adequately protected.

The Board looks forward to continue with ongoing dialogue with the Department of Energy and tracking the progress of actions being implemented to enhance the safety culture at the WTP.