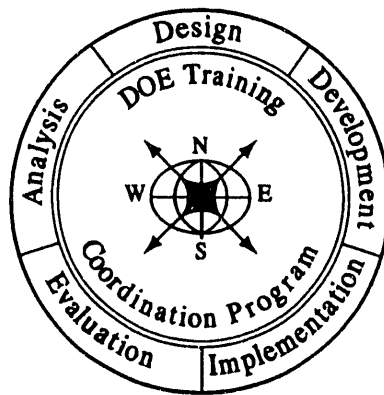


**SUMMARY OF
TIGER TEAM ASSESSMENT AND TECHNICAL SAFETY APPRAISAL
RECURRING CONCERNS IN THE OPERATIONS AREA**



Published January 1993

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**Prepared for the
U.S. Department of Energy
Office of Nuclear Energy
Office of Nuclear Safety Policy and Standards
Under DOE Field Office, Idaho
Contract DE-AC07-76ID01570**

MASTER

FOREWORD

The purpose of the Summary of Tiger Team Assessment and Technical Safety Appraisal Recurring Concerns in Operations is to provide DOE contractor organizations with information that can be used in evaluating their conduct of operations programs against identified concerns and noteworthy practices. This document can be a valuable tool in identifying and correcting conduct of operations program weaknesses.

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SUMMARY OF TIGER TEAM ASSESSMENT AND TECHNICAL SAFETY APPRAISAL RECURRING CONCERNS IN THE OPERATIONS AREA

INTRODUCTION

Fourteen Tiger Team Assessment and eight Technical Safety Appraisal (TSA) final reports have been received and reviewed by the DOE Training Coordination Program during Fiscal Year 1992. These assessments and appraisals included both reactor and non-reactor nuclear facilities in their reports. The Tiger Team Assessments and TSA reports both used TSA performance objectives, and list "concerns" as a result of their findings. However, the TSA reports categorized concerns into the following functional areas: 1) Organization and Administration, 2) Radiation Protection, 3) Nuclear Criticality Safety, 4) Occupational Safety, 5) Engineering/Technical Support, 6) Emergency Preparedness, 7) Safety Assessments, 8) Quality Verification, 9) Fire Protection, 10) Environmental Protection, and 11) Energetic Materials Safety. Although these functional areas match most of the TSA performance objectives, not all of the TSA performance objectives are addressed. For example, the TSA reports did not include Training, Maintenance, and Operations as functional areas. Rather, they included concerns that related to these topics throughout the 11 functional areas identified above. For consistency, the Operations concerns that were identified in each of the TSA report functional areas have been included in this summary with the corresponding TSA performance objective.

The Tiger Team Assessments and TSAs were reviewed and evaluated for concerns in the Operations Area (OP). One hundred and ninety five (195) operations concerns were identified by the Tiger Team Assessments and TSA reports. These recurring concerns appear below. A summary of the Noteworthy Practices that were identified and a compilation of the operations concerns for each performance objective that were not considered as recurring are also included. Where the Tiger Team Assessment and TSA identified the operating contractor or facility by name, the concern has been modified to remove the name while retaining the intent of the comment.

RECURRING CONCERNS

The following concerns are considered to be recurring (two or more facilities) and are categorized under their appropriate performance objective heading in order of decreasing frequency of observation.

OP.1 Organization and Administration

1. Responsibilities and authorities of each position are not documented (5).
2. Administrative controls have not been established (3).
3. Measurable goals and performance indicators are not used to effectively improve performance and safe operations (2).

OP.2 Conduct of Operations

1. Policies or procedures establishing operations log requirements do not exist, and therefore, logbooks are not being uniformly maintained (4).
2. Control room activities are conducted in an informal manner (3).
3. Trending and lessons-learned programs are not in place (3).

OP.3 Operations Procedures and Documentation

1. A process for procedure preparation, approval, and distribution is deficient or does not exist (14).
2. A process for the revision, review, and approval of procedures is deficient or does not exist (4).
3. Policies defining the use and control of operator aids have not been developed (3).

OP.4 Facility Status Controls

1. Lockout/tagout systems do not meet federal regulations and DOE requirements (7).
2. Systems to ensure testing and verification of components critical to safe operation after maintenance is performed have not been developed and implemented (2).
3. Equipment status can not be readily determined because of non-existent or incomplete status boards (2).

OP.5 Operation Stations and Equipment

1. Facility material condition and housekeeping does not effectively support facility operations (7).
2. Design specification verification of replacement parts is not formalized (3).
3. Systems and equipment are not labeled to permit easy operator identification (2).

OP.6 Operator Knowledge and Performance

1. Some operators and supervisors do not fully demonstrate an appropriate level of knowledge (3).

OP.7 Shift Turnover

1. Shift turnover policies, procedures, or operating instructions have not been implemented (2).

OP.8 Human Factors

1. A coding convention standard (color, size, shape, position, and nomenclature) has not been developed and implemented (4).
2. Human factors considerations have not been applied (2).

NOTEWORTHY PRACTICES

OP.3 OPERATING PROCEDURES AND DOCUMENTATION

Performance Objective: Approved written procedures, procedure policies, and data sheets should provide effective guidance for normal and abnormal operation of each facility on a site.

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Noteworthy Practice: In the P-10 Group, an experimenter has generated the "Operating Instructions for the D2-DT-T2 Gas Handling System No. 1" with warnings or other highlights to the operator printed in colored ink. Green signifies a step that must be addressed in order to satisfy quality requisites, red indicates that the step is critical to safety, and blue denotes safe or final condition. Also the text in the operation instructions and the signs in the laboratory are printed the same color. The printing is not overly expensive; the printer costs under \$1000 and is most likely available at most DOE sites. Different

characters can be used in the color highlights that would stand out to those operators who have trouble differentiating among colors. To those of normal color discrimination, the color highlights truly provide a trigger to the operator that the step deserves some special attention which will increase potential for safe operations.

OTHER IDENTIFIED CONCERNS

The following are operations concerns from the Tiger Team Assessments and Technical Safety Appraisals that were not considered recurring. In instances where the concern referenced the facility, the words have been modified to remove the reference yet retain the intent of the concern.

OP.1 ORGANIZATION AND ADMINISTRATION

Performance Objective: Operations organization and administration should ensure effective implementation and control of operations activities.

- o Existing work control practices do not provide adequate work control for activities being performed by maintenance personnel for operational facilities.
- o The operations group does not effectively interface with engineering to ensure sound safety principles in the selection, installation, and operation of components and equipment.
- o Procedures are not developed in accordance with operating contractor policy to ensure documentation of plant hazards and industrial hygiene activities.
- o Staff requirements necessary to perform daily functions and complete required documentation has not been independently evaluated.
- o Program requirements currently identified can not be fulfilled because of budget restraints, especially in the engineering and risk assessment areas.
- o Recently implemented conduct of operations initiatives have not been reviewed by the DOE Area Office and the operating contractor for initial effectiveness and actual performance in the areas of lockout/tagout procedures, operator aid use, and document control.
- o The operating contractor does not have a policy that defines the requirements for an effective required reading program.
- o Safety awareness programs do not exist in the operations departments.

- o Technical operations personnel do not receive safety performance statistics reports.
- o Failure to coordinate the interfaces between organizations responsible for operating three different facilities adversely affects safe operation of these facilities.
- o Operational surety plans have not been revised to consolidate the first-line supervisor responsibilities in one location.
- o First-line supervisor involvement and accountability in ES&H needs to be strengthened.
- o Additional dedicated support for conduct of operations implementation has not been provided.
- o Work control documents have not been reviewed from the standpoint of the user.
- o Operations and oversight functions are not completely separate.
- o Progress toward completion of the procedures upgrade, the technical quality of the revised procedures, and the quality of the working-level operations and training according to the revised procedures has not been evaluated.
- o Procedures for the different assessment, audit, and issues management programs to allow for real-time communication of pertinent information and lessons learned have not been developed.
- o Organizational descriptions have not been reviewed for accuracy.
- o A line manager and supervisor monitoring program has not been developed.
- o Information from the audit, appraisal, and surveillance data bases have not been compiled to gain an understanding of all deficiencies so that key issues can be identified and meaningful trending accomplished.
- o Some portions of the program documents are out of date.
- o Expedite implementation of the tracking system for all internal and external ES&H findings not covered by the Tiger Team Action Plan or the Occurrence Reporting and Processing System.
- o Trending activities including the Performance Indicator Program, reports, accident/incident metrics, and data base search information have not been tied together so that accurate performance data lends itself to early detection and management of problems.

OP.2 CONDUCT OF OPERATIONS

Performance Objective: Operational activities should be conducted in a manner that achieves safe and reliable operation.

- o Filter bags do not have the maximum available fire rating.
- o Management has not implemented a safety program that ensures safety in the workplace in accordance with their safety manual.
- o Assessments of the quality of the containment process have not provided assurance of compliance with Technical Specifications.
- o The operating contractor has not implemented a fifth shift to facilitate training.
- o Proper and complete records are not maintained at one watchstation as required by contractor procedure.
- o Supervisory checks are not performed to assure record quality.
- o Implementation of conduct of operations has not been extended to the working level.
- o The operating contractor has not developed a plan for the graded approach to implementing controls over the conduct of operations.
- o The operating contractor lacks the necessary training, audit, and appraisal programs to ensure safety awareness.
- o Preliminary information gathered in the sitewide safety assessment process has not been used to establish the overall bounding operating envelope for the site.
- o The job analysis program has not been evaluated to ensure that adequate staff time and resources are dedicated to identify hazards in work areas.
- o Acceptance criteria and appropriate action statements (for not meeting criteria) are not incorporated into all preventive maintenance procedures.
- o A project is operated in accordance with an unverified emergency shutdown procedure.
- o The level of training of operating personnel is deficient with respect to facility operational safety.
- o Operations supervisors do not always perform necessary supervisory activities.

- o Operations communications practices are not formal.
- o The operating contractor fails to ensure that operators and supervisors recognize, report, and correct numerous operational and safety deficiencies which threaten safe and reliable operations.
- o Systems and operations under two departments control are not adequately supervised to ensure safe and reliable operations of facilities and equipment.
- o A program to provide a qualified shift supervisor who exercises facility command and control during all operations has not been implemented.
- o Technical Specification compliance cannot be demonstrated.
- o Occurrence and incident reporting has not been implemented.
- o Operations have been performed in a building after its shutdown.
- o The operating contractor has not implemented policies for the design, installation, testing, and operation of barriers.
- o Operations are not conducted in accordance with DOE requirements.
- o The response to off-normal conditions is not conducted in accordance DOE requirements.
- o Safety analysis documentation for facility operations involving fissile material does not provide results of criticality safety calculations to demonstrate that the operation will be subcritical.
- o Safety analysis documentation for operations has not identified the location of all radiological areas.
- o Routine annual radiation monitoring of operational facilities has not been used to properly establish radiological control areas.
- o Management does not maintain authorized user lists for all equipment.
- o The operating contractor has not reviewed the safety-related requirements for employees performing onsite hazardous waste collection operations.
- o A program which ensures that all chemical containers are labeled as required, and that all chemicals have current MSDS sheets readily accessible to employees has not been initiated.

OP.3 OPERATIONS PROCEDURES AND DOCUMENTATION

Performance Objective: Approved written procedures, procedure policies, and data sheets should provide effective guidance for normal and abnormal operations of each facility on a site.

- o Existing documentation does not clearly require periodic review of all technical procedures.
- o Document change requests are not incorporated into revised technical procedures promptly to meet the needs of the users.
- o Operational Safety Requirements are not incorporated into operating procedures.
- o Temporary changes to operating procedures are not canceled in accordance with procedure.
- o The low hazard class determination and the nonnuclear facility designation assigned by the operating contractor for one facility does not acknowledge the onsite impacts of a criticality accident when considering criteria in DOE Orders.
- o The DOE Field Office has not provided clear guidelines for designating nuclear facilities and hazard classes consistent with DOE Orders.
- o A schedule for procedure revision, with milestones, does not exist to assure there will be adequate resources and priority to update operation and maintenance procedures.
- o Management has not implemented an operator aid program to ensure that all operator aids reflect current plant information.
- o The operating contractor has not provided clear guidance to personnel on expectations for procedure usage during operations activities.
- o Standard operating procedures and operator logs do not include clear and sufficient guidance for users to understand and perform their duties effectively.
- o Operators do not have approved operating procedures to aid them in performing their duties.
- o The operating contractor lock, tag, and try procedure is incomplete and, consequently, not effective in ensuring safety of operations.
- o Operations do not meet the intent of both the state and federal regulations regarding the use of blowout preventers.

- o The need for a procedure to ensure that gauges are given a pre-use check upon receipt has not been evaluated.
- o Plant activities have not been reviewed against existing procedures to identify activities that are not normally documented, auditable, and covered by a written procedure.
- o Operating procedures have not been developed or updated to implement quality assurance program plans.
- o A formal policy has not been developed and implemented for deciding whether half- or full-face respirators are needed for specific jobs.
- o The procedure for the control and use of pressure systems does not contain specific guidance for high-pressure systems and additional information for the use of low- and intermediate-pressure systems.
- o The safety envelopes contain some items that are inappropriate, ambiguous, or misleading.
- o Surveillance and monitoring programs are not in place to ensure compliance with all items of the safety envelopes.
- o Emergency response procedures are interspersed with normal procedures, are not readily distinguishable in the event of an emergency, and do not have unambiguous action steps.
- o The currently approved facility Operational Safety Requirements are not complete and not consistent with the Final Safety Analysis Report.
- o There is not a formal procedure for an independent verification that a fence gate is left unlocked during experiments.
- o Operations records are not being kept in accordance with DOE requirements.
- o Procedures (particularly emergency and accident response procedures) are not maintained and readily available at the work site.
- o Approved safety analysis documentation does not exist for many of the facilities to give formal basis for safety limits or Operational Safety Requirements in operating procedures.
- o The operating contractor has assigned hazard classifications which conflict with DOE Field Office guidance.

- o The DOE Area Office is providing unclear guidance for preparation of nonnuclear safety analysis reports and operational safety requirements.
- o Policy direction for preparation of safety analysis documentation and Operational Safety Requirements for nonnuclear facilities has not been implemented by the DOE Program Secretarial Officer.
- o Operating contractor procedures do not require that engineering be involved before, rather than after, the purchase of equipment and services.

OP.4 FACILITY STATUS CONTROLS

Performance Objective: Operations personnel should know the status of the systems and equipment under their control, and should know the effect of non-operational systems and equipment on continued operations. They should ensure that systems and equipment are controlled in a manner that supports safe and reliable operation.

- o Operations personnel do not effectively monitor the operating condition of equipment.
- o An operator was not aware of system status and failed to use an emergency operating procedure for response to an emergency alarm.
- o The operating contractor has not determined the cause of deficiencies regarding calibration stickers on level indicators.
- o The lockout/tagout program does not include energy control procedures for machines that do not meet the exception criteria.
- o The machine guard tag program does not address routinely removable fixed guarding.
- o The operating contractor does not have a program that effectively controls the identification, tagging, and logging of equipment which has been removed from service.
- o The operating contractor has not established a system to assure that appropriate changes are made to affected operating documents prior to the required implementation date of new or revised policies, practices, and DOE Orders.
- o The operating contractor has not established a policy and set of implementing procedures that ensure the staff of an operating facility is trained in new procedures, manuals, and requirements prior to their implementation.
- o In some cases, procedures do not provide for facility station control.

- o Unauthorized changes were made to facilities without the review required by procedures and instructions.
- o Operating procedures and piping and instrumentation diagrams are not part of the document control system.
- o Operations personnel do not know the status of some equipment and facilities and are not ensuring that equipment and systems are maintained to support reliable operations.
- o The DOE Area Office facility representative does not fulfill all responsibilities related to oversight of day-to-day operations, such as review of facility modifications that may involve unreviewed safety questions.
- o Configuration control is not being maintained.
- o The operation of one facility with a cracked fuel ring has not been formally evaluated and approved.
- o Continuous radiation monitoring systems, for which appropriate monitoring equipment is readily available, are not designed or installed.
- o Narrative logbooks are not routinely reviewed by supervisors at many operating facilities.

OP.5 OPERATION STATIONS AND EQUIPMENT

Performance Objective: Operation stations and facility equipment should effectively support facility operation.

- o Certain operating contractor facilities and equipment are not operated in a safe and reliable manner.
- o Interfaces between operations personnel and plant services have not established sufficient operations control for maintaining operations stations.
- o The operating contractor has installed two pieces of equipment neither of which effectively support facility operation.
- o Operators working on the unguarded basin ledges are in danger of falling.
- o A certified cask is not available to ship spent fuel.

- o Some operations personnel do not identify and correct inherent equipment weaknesses which could (and do) result in releases of radioactive material.
- o One building has not always been afforded management attention commensurate with the hazards present.
- o The use of the terms "minor repairs and/or maintenance" in the procedure for maintenance request orders could degrade systems or have the potential for unreviewed safety questions.

OP.6 OPERATOR KNOWLEDGE AND PERFORMANCE

Performance Objective: Operator knowledge and performance should support safe and reliable operation of the equipment and systems for which they are responsible.

- o Operators do not complete formal qualifications before operating alone.
- o Management knowledge of, and involvement in, abnormal operations to minimize dose limits is lacking.
- o Management has not established standards and directives providing a clear concise definition of acceptable operating modes (operating, shutdown, standby, etc.) for facilities and experiments consistent with generally accepted industrial practices.
- o The operating contractor has not established policies and procedures to ensure that job-specific training, retraining, and certification is performed by qualified instructors.
- o Training and qualification plans are not formally documented.
- o Shift Leaders and operators have not received training on the use of Operational Safety Requirements as the primary administrative control documents.
- o Personnel assigned to operations are not enforcing operating instructions that apply to their assignments.
- o The DOE Area Office facility representative has not been provided facility-specific training to promote effective oversight of operations.
- o Operating or safety information from similar facilities (both onsite and offsite) such as lessons learned, unusual occurrence reports, and so forth, is not being disseminated to all workers.

- o Records of qualification of operators for specialized equipment operation are not adequately documented.

OP.8 HUMAN FACTORS

Performance Objective: Human factors considerations should be incorporated in the design, layout, and operation of all facilities on the site to facilitate operator control, information processing, and the recognition and proper response to alarms, instruments, and other equipment.

- o The current shift routine has not been considered in the design of two control panels.
- o Consistent units are not employed for similar measurements.

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