

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 22, 1993

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**COPIES:** Board Members

**FROM:** Ralph Arcaro, Technical Staff

**SUBJECT:** Report on Training and Qualification at the Hanford Site

1. **Purpose:** This memorandum describes and provides comment on the status of training and qualification of federal and contractor employees at the Department of Energy's (DOE's) Hanford Site. A DNFSB staff review team consisting of DNFSB staff members Ralph Arcaro and Charles Keilers and outside experts David Boyd and Douglas Volgenau performed a review of training and qualification from November 30 to December 2, 1993 to assess the progress and improvements made since a DNFSB staff review in June 1992, and DOE EM-25 reviews in January and October 1993. Observations of Conduct of Operations were also made and are commented on in an attachment to this report. The review team received presentations from managers responsible for training and qualification from both DOE Richland Operations Office (DOE-RL) and Westinghouse Hanford Company (WHC). The team also reviewed facility-specific training and qualification at the T-Plant, K-Basin, Plutonium Finishing Plant, and 222-S Laboratory facilities.
2. **Summary:** The DNFSB review team found little improvement in the state of training and qualification at DOE-RL and WHC. It appears the majority of their efforts aimed at correcting the several training and qualification deficiencies noted during the DNFSB staff June 1992 review are concentrated on fixing specific problems and deficiencies rather than identifying underlying issues and addressing root causes.

General conclusions of the review and major comments are presented here. Supporting comments and other observations are presented in the attachments. Attachment 1 provides comments on DOE-RL. Attachment 2 provides comments on WHC. Attachment 3 provides specific comments on the conduct of operations at the facilities reviewed.

- a. **DOE-RL:** The primary finding of the review was that DOE-RL continues to underestimate the importance of training and qualification for both federal and contractor personnel.
  1. DOE-RL guidance and direction provided to WHC concerning training and qualification programs continues to be ineffective as evidenced by the nature and number of deficiencies noted in each of the training and qualification programs at the four facilities evaluated.

2. In August 1993, DOE-RL management moved the site training organization out of the Human Resources Division. The organization, now named the Office of Technical Training and Education, now reports directly to the DOE-RL Manager. However, this change has not had the desired effect of elevating training priority to any significant degree. The following deficiencies have contributed to this situation:
  - a) Although the Director of the OTE reports directly to the DOE-RL Manager, discussions with individuals at DOE-RL indicate the OTE does not effectively invoke the authority of the Manager to ensure needed training and qualification improvements are implemented.
  - b) The OTE has not received sufficient support from DOE-RL line management at the facility level to effect broad-based improvement. DOE-RL line management is not proactive in enhancing training programs through day-to-day guidance and direction at all facilities.
  - c) The OTE has issued a directive prescribing the OTE oversight of contractor training and qualification programs. No comparable directive applicable to DOE-RL line management exists.
3. The DOE-RL Facility ("Site") Representative program is still not making a positive impact on improving contractor training, qualification, and conduct of operations programs. The principle reason for its ineffectiveness appears to be the sluggish restructuring of the program that has hindered its maturation.
  - b. WHC: The WHC management has continued with training improvements since the June 1992 DNFSB staff visit. However, at the four facilities reviewed, major deficiencies continue to exist:
    1. Improvements are exceedingly slow. None of the four facilities have fully implemented the requirements of DOE Order 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*. Three of the four facilities have not yet developed all training materials necessary for program implementation.
    2. At T-Plant, K-Basins, and the 222-S Analytical Laboratory, the contractor has not technically justified compensatory measures for allowing continued facility operation with operators and supervisors trained and qualified to a non-compliant program.
    3. DOE-RL reported improvement in accelerating approval of the Training Implementation Matrices (TIMs). However, review of two of the matrices showed

they did not contain sufficient detail to allow the approving authority to objectively determine their merit. For example, The T-Plant TIM gives a false indication of a near fully compliant program. DNFSB staff review revealed that the TIM's compliance claim is based on a facility-level training procedure that is not fully implemented.

- c. **Conduct of Operations:** DNFSB reviewers observed several training, operations, and maintenance evolutions that provided an opportunity to evaluate the conduct of operations at two of the facilities. The observations made by the DNFSB review team, detailed in Attachment 3 of this report, indicate that conduct of operations at Hanford requires significant improvement.

3. **Background:** Members of the DNFSB staff and several Outside Experts performed a site-wide review of training and qualification at the Hanford Site in June 1992. The primary concerns resulting from the review involved DOE-RL management's lack of commitment to training and qualification, lack of formalized training for DOE-RL employees, and deficient contractor training and qualification programs at the four facilities visited. The Board transmitted these and other concerns to DOE in a letter dated July 6, 1992 forwarding the staff's trip report.

Since the June 1992 visit, the DNFSB staff has been monitoring the efforts of DOE, DOE-RL and WHC in the training and qualification upgrade efforts. A DOE (EM-25) assessment in January 1993 of training and qualification improvement efforts at Hanford, particularly the Tank Farms, identified several findings indicating that WHC had not achieved significant progress in upgrading the training at the Tank Farms. A follow-up review conducted by EM-25 in October 1993 noted that progress in effectively addressing the concerns from the January 1993 visit had been minimal. Additional concerns in the training area were documented. The highest concern was that DOE-RL and WHC operations management were not taking an active role in training.

In order to assess the current status of the training and qualification programs, discussions were held with DOE-RL and WHC management and four facilities were visited. The facilities visited included the Plutonium Finishing Plant (PFP), 222-S Laboratory, K-Basins and the T-Plant. At the facilities, discussions were held with the facility management, records were reviewed and conduct of evolutions was observed.

4. **Future Staff Actions:** Given the lack of significant progress in improving training and qualification at the Hanford Site, the staff will closely monitor DOE-RL's and WHC's actions in response to this review and those performed by EM-25. The staff will intensify its evaluation of the effectiveness of the improvements initiated by the Richland Operations Office as well as line management and oversight organizations at DOE Headquarters. The staff will also concentrate efforts on Hanford as the Department implements DNFSB Recommendations 92-7 and 93-3 to improve training and qualification across the defense

nuclear facilities complex. The staff intends to include training, qualification, and conduct of operations topics in all future site visits of an operational nature to ensure the staff stays abreast of all improvement actions. A decision to perform a specific follow-up review of training, qualification, and conduct of operations will be made based on progress made by DOE-RL and WHC.

**Comments Concerning DOE Richland Operations Office (DOE-RL)**

1. **DOE-RL Office of Training and Education:** There has been little progress since June 1992 in the effective oversight of Westinghouse Hanford Company (WHC) site training and qualification programs. This appears to be principally the result of a lack of senior program management attention to this important area. The following observations are provided:
  - a. In August 1993, DOE-RL formed an organization entitled the Office of Training and Education (OTE), which is responsible for coordinating DOE-RL training and qualification programs and for oversight of contractor training and qualification programs. The director of this office reports directly to the Manager, DOE-RL. This office appears to be primarily the renaming and repositioning of an existing organization that had been a subordinate within the Human Resources Division of DOE-RL. This organization is not empowered with the authority of the Manager to ensure training and qualification requirements are effectively implemented.
  - b. The OTE is understaffed. Only four DOE employees (and approximately eleven contracted personnel) are assigned full time to the Office. The OTE Director is forced to take on many tasks that would otherwise be delegated, distracting him from maintaining the focus of the organization. This issue was initially reported by DOE Headquarters in a 1990 audit. It has not yet been addressed.
  - c. A DOE-RL implementing procedure (RLIP) or implementing directive (RLID) has not been written to establish the OTE function, vision and goals, organizational structure and responsibilities, standards, and implementing strategies. A mission and functions statement was developed for use within the group, but this statement does not define responsibilities, authorities, and relationships between OTE with other DOE-RL divisions concerning training matters. RLIP 3410.TEB, *Training Management Plan*, was the corresponding procedure for the OTE predecessor organization, but this procedure has not been modified to reflect an increased emphasis on training and education at DOE-RL.
  - d. There was little evidence that DOE-RL senior program management is involved in fulfilling the requirements of DOE Orders 5480.18A, *Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities*, and 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*, regarding the oversight of contractor training programs. The OTE developed a procedure for conducting training and qualification assessments of the contractor; however, this directive was not applicable to DOE-RL line management.
  - e. An OTE-originated DOE-RL letter of November 23, 1992 to WHC summarized concerns in the DNFSB staff trip report of the June 1992 review. A comparison of the DOE-RL letter with the DNFSB staff report revealed that in many cases, the specific

deficiencies, rather than the broad-based issues and underlying issues, were communicated to WHC as concerns to be addressed. Root causes were not effectively investigated to design lasting corrective actions.

- f. The OTE organization is responsible for the training of DOE-RL (federal) employees. An effective program to train those individuals tasked with contractor oversight on the specifics of the various facilities does not exist. This requirement was well articulated in DNFSB Recommendation 93-3. A program to identify and implement training requirements for DOE-RL technical positions is in its infancy and therefore was not reviewed in detail.
  - g. The cost of training for federal employees is administered by a "billback" system in which appropriate program funds are used to pay for training when an employee enrolls. This system is designed to discourage no-shows at planned training. However, it was reported that this method has also resulted in reluctance on the part of line managers to commit federal employees to training. It is not clear whether this reluctance results from a perception that the training is not valuable or cost effective, or a perception that management is not committed to training.
2. DOE Facility Representatives: A revised DOE-RL Facility ("Site") Representative program is in the early stages of implementation and is not yet capable of providing effective facility performance monitoring. The following observations are provided:
- a. DOE-RL has taken the position that the "Facility Representative" described in DOE Order 5000.3B, *Occurrence Reporting and Processing of Operations Information*, and DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, must be the applicable Division Director. The Division Director is the "Facility Representative," but carries out the Facility Representative duties and line management oversight through "Site Representatives" designated for each major facility or group of lesser facilities. This is inconsistent with the Guidance promulgated in DOE-STD-1063-93, *Establishing and Maintaining a Facility Representative Program at DOE Nuclear Facilities*, and the Facility Representative Programs at other major DOE sites. This lack of conformity to established standards may be diluting the responsibility of the Facility Representatives, and may be contributing to the lack of effectiveness of the Facility Representative Program at DOE-RL that has been noted repeatedly during reviews and assessments.
  - b. A new implementing directive (RLID 1300.1A) for the "Site" Representative (SR) Program was issued in October 1993. The lines of authority and the duties and responsibilities for a SR are extensively defined in this directive. DOE-RL has recently hired a number of people to serve as SRs under their new program and has instituted an incentive program for advancement to paygrade GS-14 upon completion of the SR qualification requirements. Some of the selected people had previously served as SRs

and others are newly assigned. All individuals but one are in training. Those individuals currently serving as SRs, but not selected for the new program, are continuing to perform as SRs until the new people gain sufficient experience. Their status is undefined and as a result, there is little incentive for them to perform. These factors are contributing to the ineffectiveness of the SR program, which may be significantly hindering the ability of DOE-RL to oversee the WHC.

- c. Facility-specific SR qualification requirements have not yet been determined for all facilities.
  - d. Two experienced SRs assigned to the Plutonium Finishing Plant (PFP) are performing SR duties, but have not completed qualification. Neither is slated to be retained as a SR under the new program, therefore they are not continuing SR training. An individual assigned to PFP as a new SR is not located at PFP, as he is awaiting security clearance. Alternatives such as the use of escorts or limited access are not being used to maximize this individual's time in the facility prior to full assignment.
  - e. No full- or part-time SR is assigned to the Processing and Analytical Laboratory complex.
3. Training Implementation Matrices: The failure of DOE-RL to review and approve facility Training Implementation Matrices (TIMs) in a timely manner was noted in the June 1992 DNFSB staff visit. TIMs are required of WHC to schedule implementation of DOE Order 5480.20. Since the June 1992 visit, there has been much effort on the part of DOE-RL to process the TIMs in a timely manner and as a result, a number have been approved.

Two of the TIMs that had been determined to be adequate by DOE-RL were reviewed. In a number of cases, WHC had inaccurately indicated that an Order requirement had been met. As submitted, the two TIMs reviewed by the DNFSB staff did not contain sufficient evidence of compliance to allow an objective, accurate review by DOE. DOE-RL indicated that compliance verification reviews were scheduled for a later date. However, in the interim, the contractor may not be working toward compliance with all requirements.

The members of the review team observed on-the-job training (OJT), pre-job briefs, and preventive and corrective maintenance evolutions. Observations and comments of an operational nature are included in Attachment 3. The following observations regarding the training and qualification programs are provided:

- a. Facility management is in the process of formulating an upgraded training and qualification program. Two of five operator certification packages have been completed, but significant changes are planned to incorporate Job Performance Measures. Development of the qualification requirements will be completed by September 1995. T-Plant management has not addressed how it will upgrade operators qualified before the issuance of the new certification packages incorporating Job Performance Measures.
- b. Supervisors and operators are conducting operations in the facility. None are qualified to the requirements of WHC-CM-5-34, which implements DOE Order 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*. Their certification to conduct these operations has not been verified. No effective measures to compensate for their qualification status have been taken.
- c. Although the T-Plant Training Implementation Matrix (TIM), which schedules implementation of the new training program, is nearing final approval, DNFSB staff review indicated a number of errors in the stated compliance with requirements. The T-Plant TIM asserts compliance with many of the requirements of DOE Order 5480.20 based on the existence of the T-Plant training procedure, WHC-CM-5-34. This assertion is misleading because the training program procedure is not fully implemented.
- d. The upgraded training and qualification program's supervisor training requirements were not at an increased depth to reflect the added responsibility of their positions as required by DOE Order 5480.20. This requirement of DOE Order 5480.20 is not addressed in the T-Plant TIM.
- e. The planned facility continuing training program does not contain many of the program elements required by DOE Order 5480.20.
- f. There are no facility-specific knowledge requirements for the Facility Manager. The Facility Training Manager has not completed qualification as an Operations Supervisor as required by WHC-CM-5-34. He has not been assigned a formal qualification program for this qualification.
- f. An examination that had been administered to an operator was reviewed. The exam consisted of multiple choice questions of reasonable difficulty. There were no questions that related the individual's fundamentals knowledge to operator requirements.



**Comments Concerning Westinghouse Hanford Company (WHC)**

1. **Site-Wide Training and Qualification:** In early November 1993, WHC reorganized the organization responsible for site-wide training. A new manager was assigned and the position is now a level 2 manager, reporting directly to the WHC president. The following observations are provided:
  - a. Under the new organization, training representatives are matrixed directly to facility line management. This appears to be having a positive effect on the training programs; however, it is too early to fully evaluate the long term effectiveness of the overall training program.
  - b. Because of the number of facilities in standby, and the rapidly changing mission at Hanford, WHC intends to request long term, permanent exception from the requirements of Department of Energy (DOE) Order 5480.18A, *Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities*, regarding Training Program Accreditation. Exemption letters for the PUREX and Plutonium Finishing Plant (PFP) facilities have already been submitted.
  - c. WHC management considers that many of the identified deficiencies from the various DNFSB staff and EM-25 visits have been corrected or addressed. However, it appears that the majority of the effort aimed at correcting the several training and qualification deficiencies is concentrated on fixing the specific deficiencies rather than identifying underlying issues and addressing the root causes.
  - d. Facility training and qualification programs are currently being upgraded. In the interim, there has been little or no effort to define the present qualification status of the supervisors and operators who are conducting various operations and evolutions on a regular basis. No real consideration has been given to the use of compensatory measures to ensure continued safe facility operation. The safety of continued operations in some facilities can not be ascertained as the training and qualification status of supervisors and operators, currently conducting operations in these facilities, has not been verified.
2. **T-Plant:** The T-Plant training program was not included in the June 1992 DNFSB staff review. The current mission of T-Plant includes providing decontamination services, providing facilities for liquid waste transfer car certification and repair, providing characterization, segregation, and repacking of containerized waste, providing storage and surveillance for pressurized water reactor irradiated fuel elements, and performing fabrication and repair for stack continuous air monitors and area monitors for the Hanford Site. The facility is currently performing some portions of its mission. This low hazard facility is the only one at the Hanford Site with these capabilities.

g. An on-the-job evaluation (OJE) of a trainee performing various plant surveillances was reviewed. The following comments are provided:

1. The OJE guide did not include written criteria for determining successful demonstration of knowledge requirements contrary to the guidance in DOE-STD-1012-92, *Guide to Good Practice for On-the-Job Training*.
2. The T-Plant Surveillance Course (No. 450020) was not reflective of the most recent change to its companion procedure (Daily Surveillance Procedure DO-040-001).
3. Both the trainee and the instructor demonstrated deficient knowledge of air flow fundamentals.

3. **K-Basins:** These facilities consist of K-East (KE) and K-West (KW) basins and are being used for the long term storage of spent reactor fuel. Concern about the storage conditions at these basins has been well documented. A plan is in place to commence encapsulation of the KE fuel in June 1994. The K-Basins have previously been identified as having an inadequate level and quality of operator training, engineering support, and conduct of operations. An October 1993 training assessment, conducted by DOE-RL, confirmed the existence of major weaknesses in the K-Basins training and qualification programs.

The DNFSB review team toured the facility and observed a routine surveillance and preventive maintenance procedure. Observations and comments of an operational nature are included in Attachment 3. The following observations regarding the training and qualification programs are provided:

- a. An effective training and qualification program does not currently exist for the K-Basins. The existing supervisors and operators were qualified under a previous program and perform some functions of a routine nature on a daily basis. Their level of training has been determined to be inadequate by a number of assessments. In spite of this, facility management has not done an assessment to determine which individuals should be certified to take particular actions in the facility. There is no listing of which people are certified to perform actions in the K-Basin facilities.
- b. The facility management has undergone a number of changes over the last year in an attempt to improve the training conditions. A new Facility Manager was assigned in August 1993. WHC has formed a new separate organization for the K-Basins. The past instability in the management of the facility has slowed the improvement and correction of identified weaknesses.
- c. A new Facility Training Manager was assigned in early 1993. His efforts have centered around formulating an effective training and qualification program. Some progress has

been made in improving the level of knowledge of operators. In 1993, all operators but one have completed a five week fundamentals training course. For most, it was the first formal training since a several-day briefing on conduct of operations principles was held about two years ago. Beyond this briefing, formal operator training had ceased when the N-Reactor was shutdown. This improved level of attention has not been placed on supervisor fundamentals training. Facility management does plan to have supervisors complete either a five or eight week course in fundamentals prior to the start of KE fuel encapsulation, currently scheduled to start in June 1994.

- d. The major KE training emphasis is towards preparation for fuel encapsulation. Qualification packages for fissionable material handler certification are under preparation. Materials for facility-specific classroom type training and on-the-job training (OJT) are not yet developed. Operator certification is to consist of classroom, examination, OJT and OJE processes. Not all of these have been defined. Considering the current maturity of the training program, completion of the certifications required for the start of encapsulation in June 1994 is ambitious and may not be realistic.
- e. The K-Basins Operations Training Plan was reviewed. The following comments are provided:
  - 1. Examination requirements are ambiguous. Although examinations are required, it is not clear at what point in the qualification process trainees will be examined.
  - 2. Qualification/Certification training requirements are labeled as "TBD."
  - 3. Engineering and Facility Management training requirements have not been identified.
- f. A positive initiative of the new Facility Manager was to arrange for cross facility experience training in work control procedures for some of his people at the Fast Flux Test Facility. Experience training in the conduct of operations area is also planned for sometime in the future.
- g. A continuing training program that meets the requirements of DOE Order 5480.20 has not been developed.
- h. Facility-specific training programs for the technical staff and maintenance personnel have not been developed.
- i. Recently, new air cooled chillers were installed in the K-Basins. An OJT checklist was developed to be used for operators to demonstrate competency in performance and knowledge requirements regarding operation of the chillers. The one operator who had

completed the certification had been evaluated and certified by an operator who had not been officially approved to operate the chiller.

4. **222-S Laboratory:** The 222-S Laboratory training program was not included in the June 1992 DNFSB staff review. The 222-S Laboratory is part of the Processing and Analytical Laboratory (PAL) and is engaged in providing analytical chemistry and process development services. The 222-S Laboratory is a low-hazard facility.

Like the other Hanford facilities visited, the 222-S Laboratory is in the early stages of developing a training and qualification program consistent with DOE Order 5480.20. The following observations were made:

- a. The PAL does not have a permanently assigned training manager for Laboratory training. This situation contributes to a lack of integration between operations and training organizations. For example, the acting training manager does not attend meetings of the PAL manager's direct reports.
- b. The following observations were made during an OJT session concerning an analytical procedure:
  1. The applicable procedure was not on hand and used for reference during the steps observed.
  2. Detailed written criteria for successfully passing the OJT were not available, contrary to the guidance in DOE-STD-1012-92, *Guide to Good Practice for On-the-Job Training*.
  3. Operators aids were used which were not formally logged and authorized in an operator aid system in accordance with DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*.
- c. A scheduled ventilation test required the temporary evacuation of the radiologically controlled area for two periods of over an hour each. No training or work was planned during the delays. The PAL management was not conditioned to take advantage of this otherwise non-productive period to maximize training time.
- d. A review of an individual's training record revealed that during two weeks of OJT, he had successfully demonstrated knowledge of over 60 procedures by discussion alone. None of the procedures were actually performed or simulated.
- e. The DNFSB team reviewed and observed a portion of the laboratory technologist training course. This course consists of two weeks of classroom training and five weeks

of OJT conducted in portions of the lab at PUREX. The course covers seven analytical and seven operational procedures. The following comments are provided:

1. The location at PUREX is not conducive to oversight by managers at 222-S.
  2. A review of chemistry fundamentals is not included in the course.
  3. An OJT checklist is not used to track trainee qualification for the analytical procedures. Furthermore, qualifications for the operational procedures are signed off based on discussion early in the course rather than based on performance to verify mastery.
  4. Standards for demonstrating proficiency with course procedures are different from the standards for acceptance when actually performing the procedures. The analytical acceptance band is tighter in training, but only 70 percent of the student's results need be within the tighter band.
- f. Chemical technologists are qualified to individual procedures rather than a position as intended by DOE Order 5480.20.
5. Plutonium Finishing Plant (PFP): The PFP training program was included in the June 1992 DNFSB staff review. Continuing improvements have been made to correct deficiencies noted in the trip report of the staff review. However, the recently announced PFP mission to prepare the facility for decontamination and decommissioning includes actions with significant but not yet fully defined training impacts, such as reducing the scope of operations and reconfiguring the staff to support interim actions.
- a. Observation of classroom instruction on pressure differentials and air flows associated with glove boxes indicated that the instructor lacked an understanding of fundamentals, did not have satisfactory knowledge of related systems, and was not proficient in presenting the subject matter. Similar comments regarding this same instructor were made following the June 1992 DNFSB review.
  - b. DNFSB staff review of a general plant operations written examination revealed it did not meet the guidance contained in DOE-STD-1011-92, *Guide to Good Practice for the Design, Development, and Implementation of Examinations*:
    1. A disproportionate number of questions (approximately 40%) covered a single topic (hazardous waste handling).
    2. No time limit was specified for taking the exam.

3. Multiple choice questions had only three choices for answers and the number of possible correct choices was not specified.
- c. Classroom instructors have not completed training and qualification on facility systems and lack knowledge of these systems.
  - d. Because OJT evaluators have been moved out of the operations organization, proficiency of OJT evaluators is no longer being tracked.
  - e. Specific standards are not provided for instructing and evaluating trainees in OJT requirements, contrary to the guidance in DOE-STD-1012-92, *Guide to Good Practice for On-the-Job Training*. The PFP training organization is preparing Job Performance Measures to provide a more consistent, less subjective method to evaluating trainee performance.

## **Comments Concerning Conduct of Operations at T-Plant and K-Basins**

### **T-Plant**

1. The performance of a weekly preventive maintenance procedure on a PCM-1B (personal whole body radiation monitor) was observed. Although a lengthy pre-job brief was conducted and documented, the extent appeared excessive since the operator had performed this weekly cleaning, inspection, and functional test on numerous occasions. A number of deficiencies were noted in a review of the work package. For example: no approval signatures appeared on the procedure to be used and the work package specified only that "the attached procedure" be used; the work package included a data sheet, but did not reference a particular procedure; an incorrect revision of the Radiation Work Permit was specified. This work package is routinely approved for use for a whole month. There is no requirement for verification of procedural or permit changes prior to each use. The technician failed to perform one of steps required by the procedure.
2. The requirements to conduct pre-job meetings/briefings are not formalized. The need to conduct these briefings, as required by WHC-CM-1-6, was determined from the root cause analysis of an off-normal occurrence in August 1992. Direction for conducting these meetings consists of a brief computer note from the Facility Manager.
3. A member of the DNFSB review team attended a pre-job brief for encapsulation of asbestos in preparation for removal. The work package reviewed specified a procedure for an encapsulation method different than that which was actually to be used for the job. The intended method (double-wrap plastic) was described in an asbestos-removal procedure that was neither included nor referenced in the work package.
4. During a training evolution at T-Plant, the trainee and instructor noted a radiological area posting had fallen from its support. Although the trainee and instructor both recognized the condition as deficient, no action was taken to correct the situation.
5. A T-Plant surveillance procedure observed during a training evolution required the operator to record the status of a trouble light. The associated data sheet for the procedure did not provide a space to record the information. The instructor and trainee indicated no intent to initiate a procedure change until prompted.
6. Discussion with an instructor and trainee indicated inconsistencies in the way operators read gauges when the indicating needle is between gradations.
7. Manually adjusted low and high markers ("red-line" indicators) were available but not used on exhaust ventilation monitoring equipment.

## K-Basins

1. Numerous deficiencies were noted during the observation of an operator performing a routine patrol of the KW-Basin. Many of these deficiencies were in the conduct of operations area. Most of the systems in the basin were shutdown, but no provision for this situation had been made with regard to entries in the patrol log. This caused some confusion for the operator and resulted in his making several errors. Examples of deficiencies include: the operator was not familiar with the proper action to take if an out-of-specification condition was found and was confused on how to record such a condition; the operator was not familiar with requirements for logkeeping and could not recall ever having been instructed in this regard; several errors in the log sheet were noted even though the sheet is currently undergoing its third revision this year; the log required the operator to sign or initial in approximately 114 places during a patrol that lasted about one and one-half hours; the operator was not alert to identify abnormal conditions existing in the facility.
2. During a tour of the KW-Basin Motor Control Room #1, it was noted that three electrical circuit breakers had been removed from an energized electrical panel. In their place, heavy green colored tape had been placed over the breaker handle openings. No lockout/tagout was in place. This condition had existed for over a month, was known by and had been reported to facility management by the operators. No protective actions other than the taping had been taken. The operator making routine patrols no longer logged the condition as being abnormal.
3. A temperature gauge calibration procedure required the calibration instrument well temperature to be set to 150°F. The instrument reading displayed temperature to the first decimal point. Actual temperature steadied at 150.4°F. The procedure did not indicate what temperature range was satisfactory.
4. The temperature gauge calibration procedure was difficult to follow step-by-step. The instrument technician used the data sheet, rather than the procedure, to guide him through the calibration. The data sheet was filled out incorrectly when one gauge failed the calibration.