DMB

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-10/84-17(DRSS); 50-237/84-22(DRSS); 50-249/84-20(DRSS)

Dockets No. 50-10; 50-237; 50-249 License No. DPR-2; DPR-19; DPR-25

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Dresden Nuclear Power Station, Units 1, 2, and 3

Inspection At: Dresden Site, Morris, IL

Inspection Conducted: November 13-16, and 19-20, 1984

Inspectors: R. A. Paul — 12/21/84 Date

W. B. Grant — 12/21/84 Date

Approved By: L. R. Greger, Chief
Facilities Radiation
Protection Section — 12/21/84 Date

Inspection Summary

Inspection on November 13-16 and 19-20, 1984 (Reports No. 50-10/84-17(DRSS); 50-237/84-22(DRSS); 50-249/84-20(DRSS))
Areas Inspected: Routine, unannounced inspection of solid radioactive waste system including barreling, packaging and treatment of waste; transportation activities; Unit 1 and 2 chemical cleaning; Unit 2 refueling outage activities; an unplanned liquid release into the Unit 2/3 discharge canal; and the circumstances surrounding a personal contamination incident. The inspection involved 102 inspector-hours on site by two NRC inspectors.
Results No violation or deviations were identified.

DETAILS

1. Persons Contacted

L. Burczak, Health Physicist
*T. Gilman, Lead Chemist
K. Hostert, Lead RCT Foreman
*S. McDonald, Lead Health Physicist
*G. Myrick, Rad/Chem Supervisor
R. Ragen, Assistant Superintendent Operations
D. Scott, Station Superintendent
D. Sharper, Waste Systems Engineer
R. Stobert, Quality Assurance
*J. Wujciga, Assistant Superintendent, Administration and Support Services

S. Stasek, NRC Resident Inspector
*T. Tongue, NRC Senior Resident Inspector

The inspectors also contacted other licensee personnel.
*Denotes those attending the exit meeting.

2. General

This inspection, which began at 9:00 a.m. on November 13, 1984, was conducted to examine the licensee's solid radwaste activities, transportation program, Unit 2 refueling outage activities, and the status of the decontamination of the Units 1 and 2 chemical cleaning. Selected records of radioactive waste shipment, air samples, radiation surveys, whole body count and personnel monitoring record and indpendent surveys were made. Also examined were the circumstances surrounding an unplanned liquid release into the Unit 2/3 discharge canal. Several tours of the Units 2/3 reactor, turbine, and radwaste buildings were made. With the exception of a few minor discrepancies, plant housekeeping was generally good, and noticeably improved over other refueling outages.

3. Licensee Action on Previous Inspection Findings

(Closed) Open Item (010/83-11-03; 237/83-19-03; 249/83-17-03): Review of the basis for the use of a 2.2 buildup factor to calculate curie content for a Stock System 55-gallon cement filled drum. The inspectors reviewed the calculational basis for the use of the factor and found it acceptable.

(Closed) Open Item (237/83-33-01; 249/83-31-01): Need to strengthen follow up of Radiation Occurrence Reports ROR's. A review of the ROR's during this inspection indicated resolution of this weakness. See Section 17 of this report.

(Closed) Noncompliance (2 83-33-03; 249/83-31-03): Failure to train contractor employees in a rdance with 10 CFR 19 requirements. N-GET training was provided to one of the employees who returned to the station. In addition, all department heads were instructed in their responsibilities to ensure procedures are followed for controlling access to the station.

(Closed) Noncompliance (237/83-33-04; 249/83-31-04): Failure to maintain control over entries into a HRA in the rad waste area. The HRA door which was abrogated was repaired. All department heads were instructed in their responsibilities to ensure procedures are followed concerning access to radiation areas. The station employee responsible for allowing contractor employees into a HRA received disciplinary action.

(Closed) Noncompliances (237/83-33-05; 249/83-31-05; and 237/83-33-06; 249/83-31-06): Failure to provide personal dosimeters to workers and failure to make a survey to determine radiation hazards before entry into a HRA. All department heads were instructed to re-emphasize escorts' responsibilities with respect to controlling entrance into radiation controlled areas and following procedures.

(Closed) Noncompliance (249/83-31-02): Failure to maintain a high radiation area in the Unit 3 valve gallery area locked. Radiation occurrence reports of violations concerning HRA's are being trended to identify specific offenders of HRA requirements. Station construction persons and CECO station personnel were given additional instructions concerning the use and following of the procedures controlling HRA access.

(Closed) Open Item (10/84-05-08): Control of health physics activities and monitoring of areas in the Chemical Cleaning Building during the solidification and handling of Unit 1 radwaste. Currently the licensee does not have plans to use the chemical cleaning building to process and solidify radwaste.

(Closed) Open Item (10/84-05-07; 237/84-07-07; 249/84-06-07): Repetitive occurrences of continuing violations of access to and egress from HRA's identified in the ROR's. The inspectors verified that since the first quarter 1984, the ROR's have indicated that considerably fewer HRA violations have occurred compared to the same period in 1983. The licensee has attempted to strengthen management control over HRA requirements.

(Closed) Noncompliances (10/84-05-03; 237/84-07-03; 249/84-06-03 and 10/84-05-04; 237/84-07-04; 249/84-06-04): Failure to make adequate surveys to ensure licensed material is transferred to authorized recipients and transfer of byproduct material to persons not authorized to possess such material. These noncompliances involved transfer of

contaminated rugs to a contractor laundry. Short term corrective actions were discussed in Reports No. (10/84-05; 237/84-07; 249/84-06). Additional corrective action included survey and removal of all contaminated sludge found at each laundry facility; prohibiting further transfer of any rugs offsite; implementation of a procedure (DAP 12-10) which addresses methods for surveying and releasing vehicles from the station; and development of a Nuclear Stations Directive (NSDO-S14) establishing guidelines for the offsite release of selected materials from all CECO nuclear facilities. These actions were reviewed by the inspectors and found to be adequate.

(Closed) Noncompliance (10/84-11-01): Failure to control liquid releases into the Unit 1 discharge canal in accordance with technical specification limits. A response curve of the unit service water monitor was posted in the control room to provide the operator with correlation between recorder response and activity noted; a detector for the Unit 1 service water monitor was shielded to reduce miscellaneous spikes from fluctuating radiation backgrounds; the daily sample point was changed from the sphere service water discharge line to the discharge header, giving a more representative sample of the service water; and the Unit 1 composite sampler was returned to service.

(Closed) Noncompliance (10/84-11-02a; 237/84-13-02a; 249/84-12-02a and 10/84-11-02b; 237/84-13-02b; 249/84-12-02b): Failure of personnel to wear film badges properly and failure to frisk in accordance with step-off pad instructions. An RCT is now assigned to the Unit 2 trackway area to ensure that materials are surveyed and persons properly frisk themselves, and the number of egress points from the radiologically controlled areas has been decreased; increased surveillance by HP's and first line supervisors has been initiated to ensure adherence to radiological control procedures; and, weekly departmental sessions between supervisors and plant employees have been established to improve communication and to discuss aspects of the radiological control program.

4. Organization and Management Controls

The inspectors reviewed the licensee's organization and management controls for radiation protection, including changes in the organizational structure and staffing, effectiveness of procedures and other management techniques used to implement the program, experience concerning self-identification and correction of program implementation weaknesses, and effectiveness of audits of the program.

The Rad/Chem Department consists of two sections: Radiation Protection and Chemistry. Each section has a lead professional who reports to the Rad/Chem Supervisor. The Rad/Chem Supervisor reports to an Assistant Superintendent who reports to the Plant Superintendent. Reporting to the head health physics professional are six health physicists, five

engineering assistants, a staff assistant, a new lead rad foreman and eight rad foremen. Reporting to the lead chemistry professional are four chemists and a new chem lab foreman. There are currently 40 rad/chem technicians (RCTs) performing chemistry and health physics functions.

The licensee has fifteen additional contractor radiation protection workers and several Braidwood Station RCT's for this outage. Additional manpower from the Braidwood Station is available, if needed. A member of the Rad/Chem department was designated liaison for the contractor personnel, who are assigned radiation protection coverage for nonlicensee workers. The licensee required contract radiation protection personnel to meet the qualification and experience criteria of ANSI N18.1. The contract employee's received training in procedures and plant practices from the lead HP.

During this inspection, management members of the Rad/Chem department were observed performing frequent surveillance of routine and outage activities.

5. Audits and Appraisals

The inspectors reviewed reports of audits and appraisals conducted for or by the licensee including audits required by the technical specifications. Also reviewed were management techniques used to implement the audit program, and experience concerning identification and correction of programmatic weaknesses.

The results of eleven quality assurance audits and surveillances conducted since January 1983 were reviewed. The audits covered, radwaste, nuclear fuel handling, storage and shipment radiation protection, radiochemical and chemical control, radiation/chemical instruments and standards, radiation protection - surveys and records, radioactive material shipments and a corporate technical audit of plant chemistry and health physics. Both the onsite and offsite audit teams included persons with professional training and experience in health physics and chemistry.

Corrective action appear to have been timely for the most recent audits in process by the licensee. One surveillance audit was the destructive examination of two randomly selected solidified radwaste drums in order to determine if liquids were present. No problems were identified with any of these audits.

6. Outage Planning and Preparation

Health physics personnel participated in preplanning meetings and were aware of major radiation jobs in advance of the outage. Radiologically significant jobs included piping/hanger walkdown and installations, ISI,

CRD repair and removal and replacement of drywell insulation. The inspectors did not identify any significant problems concerning health physics control of outage activities. Special emphasis was placed on observing work habits to judge adherence to good health physics practices, including ALARA.

7. Training and Qualifications of New Personnel

The inspectors reviewed the education and experience qualifications of new plant and contractor radiation protection and chemistry personnel, and training provided to them. Also reviewed was radiation protection training provided to other contractor personnel.

The inspector attended the licensees' Nuclear General Employee Training (NGET) course. This course is required for all new employees, contractors and visitors requiring unescorted access to the plant. The course consists of a series of lectures, slides and video tapes covering: security; industrial safety; radiation protection; QA/QC; and proper procedures for and practice in donning and removing protective clothing. In addition, two handouts titled "Radiation Protection Guides and Helpful Hints' and "Minimum Requirements for Contractors" were provided to each student. To successfully complete the course, each student must pass a written exam. Respiratory protection training is available for those students whose job requires them to maintain respiratory protection qualifications. This course appears to meet the training requirements of 10 CFR 19.12 "Instruction to Workers".

Records of selected contractor and licensee personnel were reviewed to verify that each employee had: a completed NRC Form 4; medical approval; respiratory fit test analysis; WBC data; and training results. No problems were noted.

No violations or deviations were identified.

8. External Radiation Control

The inspectors reviewed the licensee's external exposure control and personal dosimetry programs, including: changes in program to meet outage needs; use of dosimetry; planing and preparation for maintenance and refueling tasks including ALARA considerations; and required records, reports, and notifications.

Based on a record review, no persons received whole body doses exceeding the licencee's quarterly administrative limit of 2400 mrem for this outage through November 4, 1984. The total whole body dose for all persons involved in the Unit 2 outage from October 1 through Nobember 4, 1984, was 80 person-rems. Almost 50 percent of this dose was due to reactor cleanup system modifications, insulation removal, ISI work and torus hydrolazing.

Since July 1984, the licensee has used actual self-reading dosimeter (SRD) readings to estimate dose until the film badge (FB) readings are received from the vendor. This has resulted in a less conservative but more accurate estimation of the worker dose than the previous method of timekeeping. The licenee's FB versus SRD comparison program was reviewed. The RCT's read the SRD's after each shift, but do not rezero them. Each individual is responsible for rezeroing his own SRD. If an individual fails to rezero his SRD, the RCT will again add the SRD reading to the individual's record when the dosimeters are read on the next shift, which can result in conservative dose compilations. A health physicist (HP) investigates all FB versus SRD comparisons that differ by more than +30% or -35%. The cause is most often failure to rezero. During the investigation the HP discusses the correct use of the FB and the SRD with each individual. As a result, the number of comparison out of tolerance has dropped from about 25-30% to 3%. The inspectors selectively reviewed form NRC-4s of licensee and contractor employees who have exceeded one rem per quarter. No problems were noted.

No violations were identified.

9. Internal Exposure Control and Assessment

The inspectors reviewed the licensee's internal exposure control and assessment programs, including: changes in facilities, equipment, personnel, and procedures affecting internal exposure control and personal assessment; determination whether engineering controls, respiratory equipment, and assessment of individual intakes meet regulatory requirements; planning and preparation for maintenance and refueling tasks including ALARA considerations; required records, reports, and notifications; effectiveness of management techniques used to implement these programs; and experience concerning self-identification and correction of program weaknesses.

The licensee used a commercial whole body counter during this outage for baseline counting of incoming contractor personnel who are also counted when they leave the station. The inspectors selectively reviewed whole body count results. The licensee calculated a contractor employee exceeded the 40 MPC-hour control measure (60 MPC-hours) based on the assumption that the inhaled activity was of insoluble form but never reached the lung. The inspectors agreed with the licensee's assessment. Licensee action was taken in accordance with the requirements of 10 CFR 20.103 (b)(2) for the worker who exceeded the 40 MPC-hour control limit.

Records of air samples taken in the drywell and other locations of the plant where outage activities were involved were reviewed. It appeared to the inspectors that more job specific air samples have been taken during the current outage than in previous outages. For example, 80 air

samples were taken in the D/2 drywell during the outage to date. In addition, the routine air sampling program is being utilized during the outage. Air sample recounting appeared to be in accordance with posted instructions and notification of management personnel occurred when required.

Selected aspects of the licensee's respiratory protection program were reviewed. Worker N-GET cards indicate, in addition to an expiration date, their qualifications related to respiratory protection. This includes their medical evaluation, proof they have received required training, and the type of respirators they are qualified to wear. The inspectors observed the issuance of respirators and collection of N-GET cards to determine if the cards were current and whether the worker was qualified for the respirator requested. One weakness noted was that the RCT does not verify the respirator was physically returned, when respirators are turned back in, because the locations of the respirator return point cannot be easily observed by the RCT. This matter was discussed at the exit interview. (10/84-17-01; 237/84-22-01; 249/84-20-01)

Although there appears to be less unreturned respirators located throughout the station during outage activities, this continues to be a problem. The licensee continues to track those persons who do not return their respirators by collecting their N-GET cards each day from the respirator distribution point, and has implemented a disciplinary action policy for repeat offenders.

The licensee has recently remodeled their respirator maintenance area and installed an automatic respirator cleaning and dryer system and new respirator storage bins. These changes appear to have streamlined and made the respirator cleaning, maintenance and distribution more efficient. A cursory check of respirators that were ready for use showed that adequate attention was given to respirator inspection, storage and maintenance. Of fifteen full-face and half-face respirators checked, none had missing parts or wrinkled inhalation valves, nor were any distorted due to the improper storage.

The respiratory protection program appears to meet the requirements of 10 CFR 20.103 and Regulatory Requirement 8.15. Persons required to use respiratory equipment for outage activities need medical approval, training, and quantitative fit testing. The inspectors selectively reviewed fit test results, training, and medical approval records. No problems were noted; it appeared that only those persons who satisfied the licensee's requirements were authorized to wear respirators.

10. Control of Radioactive Materials and Contamination

The inspectors reviewed the licensee's program for control of radioactive materials and contamination, including: adequacy of supply, maintenance, and calibration of contamination survey and monitoring

equipment; effectiveness of survey methods, practices, equipment, and procedures; adequacy of review and dissemination of survey data; and effectiveness of methods of control of radioactive and contaminated materials.

The licensee has had a program for identifying, documenting and tracking personal contamination events in place for more than a year. Monthly reports to management detailing the total number of contamination events and whether the contamination was on clothing, skin or both are listed. The names of individuals who have accumulated three or more contamination events during the year, their work group, the job they were doing, the date of the contamination and probable cause are included. An ROR is also written for these individuals. The program appears to be identifying certain plant areas as having residual contamination concerns and some indicate poor work habits or insufficient training. In addition new "state of the art" portal monitors are identifying levels of contamination that were previously not detectable. Personnel who accumulate three or more contamination occurrences are recommended for Radiation Retraining Sessions given by the Rad/Chem and the training departments. This training session format has recently been revised and updated. The goals are to increase proficiency in contamination prevention techniques and change area procedures and to strengthen the employees knowledge of basic radiation principles and contamination control. As a result of the personal contamination tracking study, procedure DRP-1620-1 "Minimum Protection Clothing" has been revised to require two pairs of gloves instead of one as the minimum hand protection when entering a contaminated area. A hands-on training session involving simulated work activities in RWP clothing using fluorescent powder to illustrate contamination prevention techniques is planned. This was discussed at the exit meeting and will be reviewed during on future inspections. (237/84-22-02; 249-84-20-02)

The licensee has recently started a campaign to reduce levels of residual contamination in specific areas of the plant. Extensive repainting of floors and walls have improved the general appearance of the reactor and turbine buildings. Housekeeping appears good. No problems were noted.

11. ALARA

The inspectors reviewed the licensee's program for maintaining occupational exposures ALARA, including: changes in ALARA policy and procedures; worker awareness and involvement in the ALARA program; establishment of goals and objectives, and effectiveness in meeting them. Also reviewed was management techniques used to implement the program and experience concerning self-identification and correction of program implementation weaknesses.

For this outage the ALARA Coordinator identified specific areas which were reviewed for ALARA and the actions taken to implement ALARA. These actions include: use of master slave for remote inspection activities inside the drywell; numerous job briefings with various work groups; decontamination of the Unit 2 recirculation and reactor clean up systems; and the use of the ALARA Action Review program. This program sets forth certain criteria which must be used to determine when and under which conditions an ALARA review is required before an RWP is issued. All jobs which are to be accomplished in a radiologically controlled area must be reviewed by the ALARA coordinator or his designee, even if the job is estimated to involve less estimated radiation dose than required to initiate ALARA action. The intent of this program is to ensure that the ALARA coordinator, the RAD/CHEM department, and supervisory personnel are involved in the process of ALARA for all jobs in which there is an expected exposure of one person-rem or more. (10/84-05-04; 237/84-07-04; 249/84-06-04)

In May 1984, the licensee initiated a contamination control program as part of the station ALARA Program. The purpose of this program is to decontaminate floors, walls and horizontal surfaces in the reactor, turbine and radwaste buildings with contamination levels in excess of 1000 dpm/100 cm^2 beta-gamma. The program is managed by the ALARA coordinator, a part time foreman, a part time HP, and five stationmen who rotate each week. The goal of the program is to reduce the square footage in the plant designated and controlled as contamination areas, and to maintain those areas clean. To date, approximately 25% of the floor surfaces of the plant have been decontaminated. After the floor areas are decontaminated the licensee will attempt to decontaminate as many horizontal surfaces of the plant as feasible. The assistant Plant Superintendent in charge of the decontamination stated to the inspectors that the station intends to maintain the decontamination effort as an ongoing program. The progress and effect of the Contamination Control Program will be reviewed at a future inspection (237/84-22-03; 249/84-20-03)

12. Solid Radioactive Waste

The inspectors reviewed the licensee's solid radioactive waste management program, including: determination whether changes to equipment have reduced effectiveness of the systems; adequacy of the system to prevent and collect spillage; adequacy of test program of solid waste system; adequacy of monitoring system to determine valid radiation measurements; adequacy of required records and procedures; and experience and training concerning operation of the solid waste systems.

The licensee's radioactive waste solidification system and the use of the system remains as previously described in Reports No. 10/82-08; 237/83-12; 50-249/82-13 and 10/83-11; 237/83-19; 249/83-17. The inspectors made several tours of the radwaste area and reviewed the solidification and barreling system with a radwaste operator in the control room while the system was in progress.

Periodic inspections of the solidification and compactor waste systems are made during operator rounds, and periodically by the radwaste foreman. Preventive maintenance is performed where necessary. The inspectors reviewed the problems with the Stock Solidification System identified by the licensee and the subsequent solution to these problems by members of CECO and the Stock company. This appears to be a good method to identify, correct, and upgrade the equipment used in the system to reduce failure rates, subsequent maintenance, and radiation exposure. The licensee has instituted several changes in the handling and processing of solid waste to achieve ALARA, including: use of herculite in the drumming units thereby reducing cleanup time of spills; increasing the level of loose contamination on a barrel before decontamination is required; prohibiting use of the system unless all remote cameras are operating; and tightening up of drum specifications with vendors and increased inspection of incoming drums to reduce problems associated with improper fitting in the drumming and capping unit.

The radwaste Stock barrel monitors were examined and calibrated in July 1984. From the calibration, a new backscatter correction factor was calculated for typical 55 gallon cement filled barrels. During the examination of the system it was noted that the distance between the Stock barrels and the radiation detectors was changed due to a new modification. As a result a new connection factor for determining curie content from the dose rate form solidified stock drums was computed. The inspector reviewed the methodology used to develop the new correction factor and agreed with the licensee's value. Procedure DRP 1520-2 "Curie Content of Radioactive Shipments" which contains the table of curie content as a function of direct measurement, was in the process of revision to reflect the use of the new correction factor for solidified drums.

13. Elevated Contamination on the Refueling Floor

The inspectors reviewed the circumstances surrounding elevated floor and horizontal surface contamination levels on the refuel floor on separate occasions during the outage. Contamination levels ranged up to 20,000 dpm/100 cm^2 By on top of the frisker booth to 120,000 dpm/100 cm^2 By on sections of the overhead crane. On each occasion the contamination was found by persons frisking themselves when leaving the refuel floor. Follow up smear surveys showed extensive areas of the floor were contaminated. On two occasions during this period the constant air monitor indicated elevated airborne activity. Follow-up air samples were also taken. Based on the results of the air samples, speculated personnel occupational stay turns in the area, and whole body count of contractors working in the area, it appears only one person was exposed to greater than 40 MPC-hours (Section 9).

As a result of an investigation into this problem, it appears the elevated contamination and airborne levels were probably caused by: contractor

cleanup of equipment used in the fuel pool; D/2 cavity work; closure of a damper in the refuel floor ventilation system due to mechanical failure; and, closure of a vent in the D/2 drywell. Contamination on the crane and other normally inaccessible horizontal surfaces has accumulated since the operation of the plant and is probably not attributable to the above causes. The licensee brought in vendor representatives to review and correct the problem in the ventilation system. The refuel floor foreman was instructed to ensure that any future fuel pool equipment cleanup by contractors was carefully monitored. The vent in the D/2 drywell appeared to be intentionally closed for outage activities and radioactivity may have evolved to the refueling floor when some of the NS-1 solvent was spilled in the drywell area.

During this period the licensee initiated a major decontamination of the refuel floor as part of the Plant Contamination Control Program and as a result of the contamination problem. Walls and horizontal surfaces up to six feet off the floor were included in the cleanup. The licensee intends to decontaminate additional refueling floor areas when equipment and manpower is available. These matters were discussed at the exit interview.

14. Unit 2 Chemical Cleaning of Recirculation System and Reactor Water Clean-up System

On November 1, 1984, Pacific Nuclear Services Inc. (licensee contractor) initiated chemical cleaning of the Unit 2 Recirculation System and portions of the Reactor Water Clean-up System piping. This was done in order to reduce drywell radiation levels for personnel to conduct In Service Inspection (ISI) and Induction Heating Stress Improvement (IHSI) work. This process involved the circulation of a dilute acid reagent and a corrosion inhibition solution which removed significant quantities of radioactive material from the interior of the piping. The radioactive material was then extracted from the solution by use of ion exchange resin columns and filters. The contaminated resin from the ion exhange column was transferred as a slurry to a special cask and liner in the Unit 1 fuel storage building where it was converted into a solidified cement mixture.

The chemical cleaning was planned and evaluated through a licensee onsite review pursuant to 10 CFR 50.59. Special measures were implemented to ensure ALARA considerations were followed and the effectiveness of the cleaning on radiation exposure levels was evaluated. Those measures included use of special radiation protection and waste handling procedures, special surveys to monitor radiological conditions before, during, and after the cleaning, access control to certain areas in the reactor building and drywell, and use of additional shielding where necessary. The inspectors reviewed the onsite review, special procedures and the specific measures taken to ensure ALARA and found them to be adequate. The licensee is evaluating the decontamination factor achieved by the cleanup. The final results of the cleanup will be reviewed during a future inspection. (237/84-22-04; 249/84-02-04)

On November 4, 1984, approximately 100-200 gallons of reactor water containing small quantities of the cleaning solution were released onto the reactor building floor and surrounding area when the hose carrying the solution broke. The contaminated water flowed into the reactor building floor drain system. Floor contamination was confined to the area inside the chemical cleaning station and areas near the station. No release of radioactivity outside the reactor building occurred. There were no significant personal contaminations and no release of airborne radioactivity into the reactor building above 10 CFR 20 limits. The contaminated areas were decontaminated within two days. A replacement hose had to be obtained from an off-site vendor, delaying the cleaning process for approximately four days. The inspectors reviewed the licensee's actions and corrective actions; no problems were identified.

No violations or deviations were identified.

15. Radiation Protection Procedures

The inspector selectively reviewed the following new or recently revised procedures for compliance with regulatory requirements and good health physics practices. No significant problems were identified.

DRP - 1480-2	Revision 2	Arrival and departure surveys of spent fuel casks
DRP - 1520-1	Revision 0	Determination of waste classification for radioactive waste burial
DRP - 1520-2	Revision 5	Curie content of radioactive shipments (common containers)
DRP - 1520-3	Revision 2	Calculation of curie content of radioactive shipments (non-routine containers)
DRP - 1520-5	Revision 1	Receipt of radioactive material shipments
DRP - 1520-6	Revision 5	Surveying radioactive shipments
DRP - 1520-7	Revision 4	Operation of the stock system labeling station
DRP - 1520-8	Revision 1	Survey of DAW drums and boxes

16. Independent Inspection

The inspectors collected fifteen smears of floor and horizontal surfaces on three levels of Unit 2/3 reactor buildings. The smears ranged from no contamination above background levels to 4100 dpm/100 cm^2. Only two smears, both from horizontal surfaces of ductwork were greater than 1000 dpm/100 cm^2. These results were given to the licensee for followup.

17. Radiation Occurrence Reports

Radiation Occurrence Reports (RORs) for the period April through October 1984 were reviewed. The licensee continues to trend occurrences to determine repetitive violations and violators. Occurrence report summaries are issued monthly. Dresden Administrative Procedure (DAP) 12-11 has recently been implemented to provide specific guidance for the initiation processing, trending and analysis of RORs. The inspectors review of RORs indicated a downward trend in repeat occurrences. One common repetitive occurrence, violation of access to and egress from high radiation areas, (nine in the 1st quarter of 1984) occurred only twice in the 2nd quarter of 1984, and did not occur in the 3rd quarter of 1984. When an ROR requires additional followup and corrective action by the assistant superintendent or manager, a copy of the ROR is placed in the employee's personal file as a warning if the occurrence is determined to be valid. For the period reviewed, nine such warnings were placed in individual's personal files. It was also noted that one repeat violator received a warning followed by a day off without pay. This positive trend appears to indicate a strengthening of the ROR program. This was discussed at the exit meeting.

18. Unplanned Liquid Release of Radioactivity into the Unit 2/3 Discharge Canal

The inspectors reviewed the circumstances surrounding an unplanned release of radioactive liquid into the Unit 2/3 discharge canal on October 2, 1984. The release was caused when an air operated valve was removed from the Unit 1 chemical cleaning Facility Rinse Water Tank 104 B discharge line because it failed to close. As a result, discharge line drainage together with a leaking manual isolation valve released approximately 220 gallons of contaminated rinse from the Unit 1 decontamination to a rain drain sump for approximately 19 hours. The drainage from the sump flows through an oil separator pit to the Waste Water Treatment Plant (WWTP), which is normally a clean system out to the D 2/3 discharge canal. The unplanned release of contaminated water was terminated on October 3, 1984, when for an unreleated reason, a chemical cleaning foreman directed the rain drain sump to a retention tank in the chemical cleaning building. The licensee discovered the release into the 2/3 discharge canal as the result of a routine monthly water sample from the WWTP taken on October 9, 1984. Based on this and other samples taken from the oil separator, an equalization tank in the WWTP and Rinse Water Tank 104B, the licensee determined that approximately 2 millicuries of radioactive liquid was released into the D 2/3 discharge canal. This quantity of activity when diluted with the flow from the 2/3 operating recirculation pumps was considerably below technical specification limits.

According to the licensee, corrective actions included: termination of discharges from the WWTP after the results of the water samples were known;

the rain drain sump discharge piping to the Unit 1 oil separator pit was flushed; the WWTP equalization tank was pumped to the 2/3 Radwaste Facility; the rain drain sump discharge valves to the WWTP were valved out-of-service and the discharge path from the sump well remain directed to the Unit 1 decontamination building; a sign was placed at the valve on the Facility Reserve Water tanks to warn of the potential problem if the valves are removed for maintenance; and, a drip pan was installed under the valve.

19. Status of Unit 1 Chemical Cleaning

During this inspection the licensee was completing the last of the demineralized water rinses and continuing the liquid waste evaporation process in the Chemical Cleaning Building. No solidified waste has been processed. The contaminated liquid is stored in storage tanks 102 A and B in the Chemical Cleaning Building. The final analysis of the effectiveness of the chemical cleanup was not available, however preliminary results reviewed by the inspectors indicated the chemical cleanup was quite effective.

At the time of this inspection, the licensee had not yet decided how the concentrated waste from the chemical cleaning will be solidified for transfer and burial. Apparent options are the use of the installed DOW system located in the Chemical Cleaning Building (the equipment is currently being retested) or the use of the Chem-Nuclear cement solidification system. According to the licensee, both methods are capable of handling the waste; however, the use of the CHEM-NUC method would probably be less costly, more problem free, and produce less radiation exposure. Currently, the licensee is awaiting the transurancic sample results from chemical analyses to determine 10 CFR Part 61 waste classification. The licensee expects to resolve this matter in December 1984.

Preliminary decontamination surveys were made by General Electric (GE) a licensee contractor, and EGG, an NRC contractor, in the Unit 2 A, B, and C Secondary Steam Generator Rooms. According to the licensee, some of the EGG surveys were invalid due to equipment difficulties. EGG has since requested GE's preliminary survey results. Post surveys from which decontamination factors will be determined, will be conducted by GE.

Based on a discussion between the inspectors and a representative from NRR subsequent to the inspection, it appears EGG will not make post surveys and will request GE's post survey results. These matters will be reviewed at a future inspection. (10/84-17-02)

20. Personal Contamination Incident

On September 18, 1984, the licensee informed the NRC that a radwaste foreman accidentally burned and contaminated his arm while collecting a

sample of liquid concentrate from a radwaste system evaporator. The burned area was contaminated to a maximum of 50,000 dpm/100 cm^2. After decontamination efforts made at the plant failed to remove all the detectable contamination, the employee was taken to a hospital escorted by an HP and an RCT. The employee's burn was treated. Further decontamination efforts at the hospital also were unsuccessful. As a result, the licensee took precautions to ensure all bandages which were subsequently removed from the employee were returned to the station. Urine and a whole body count results indicated no personal internal exposure occurred. The licensee estimated that the skin of the arm received approximately 70 mrems from the contamination.

As a result of the inspector's review of this matter, it appears the apparent cause of the accident was employee error and inadequate instructions and precautions. The licensee has intiated action to have a sign posted at the sampling station indicating precautionary measures to be taken when pulling the sample. In addition, a formal procedure will be developed for sample collection of the radwaste concentrate tanks. This matter will be reviewed at a future inspection. (237/84-22-05; 249/84-20-05)

21. Transportation Activities

The inspectors reviewed the licenesee's transportation activities, including: verification that clearly defined management authorities and responsibilities extent; verification that an aceptable training program is in place for persons involved in transport activities; determination whether an NRC approved Quality Assurance program has been implemented; determination whether procurement, selection, preparation and delivery of packages is in compliance with NRC and DOT regulations and the licenesee's quality assurance program; determination whether receipt of and periodic maintenance of packages are in compliance with NRC and DOT regulations; adequacy of required records, reports, shipment documentation and notification; and experience concerning identification and correction of programmatic weakness.

Shipments of low specific activity (LSA) waste to licenesed burial sites are the major transportation activity. Contaminated solid trash (paper, plastic, wood, metal, discarded clothing, etc.) is either packaged in 55-gallon steel drums and compacted or packaged in large metal boxes if the materials are not compactable. New DOT Specification 17-H drums are used which meet the DOT 7-A performance specification. The metal boxes are supplied by a vendor. Liquid wastes consisting of resins, filter sludge, and evaporator bottoms are solidified using a Stock Equipment Company cement solidification system. Programmed amounts of waste and cement are added to Specification 17-C drums through a bunghole in the non-removable top of the drum. After the drum is tumbled, more waste and cement are added and the drum tumbled a second time to promote uniform

mixing and solidification. Following the solidification process, measurements are made to determine drum radiation levels, curie content, and contamination levels. The entire process and subsequent storage and loading into exclusive use transport vehicles is accomplished remotely.

The inspectors reviewed the licenesee's procedures for transportation of radioactive material. The procedures are current with respect to burial site criteria and NRC/DOT regulations. The licensee's method for ensuring NRC Certificate of Compliance cask maintenance requirements are met was reviewed by the inspectors. Most cask maintenance is performed by an onsite contractor. Stickers on casks indicate the date maintenance was done and by whom. The licenesee's procedures require confirmation that package maintenance has been completed before shipment. No problems were identified.

The inspectors discussed radwaste operations and radwaste operation training with a radwaste operator. The operator was trained and appeared well versed in the operations of the Stock Solidification System he was operating at the time. He stated that radwaste foremen give periodic training in procedures and equipment operation. However, about every six weeks the "B" operators change operating activities and do not necessarily return to the same radwaste operation they did before. Therefore, continuing familiarization with procedures and equipment could become a problem. This was discussed at the exit meeting.

Records of radioactive shipments made during 1984 to date were selectively reviewed for compliance with 49 CFR 172-173 and 10 CFR 71. Quality assurance surveillance of these shipments were also reviewed. No problems were noted.

On November 8 and 9, 1984, the inspectors observed the receipt of a TN-9 spent fuel cask from Nuclear Fuel Services, West Valley, NY. The cask contained a Unit No. 1 failed fuel element. The inspector observed the licensee's initial surveys of the vehicle and the cask, unloading of the cask from the truck, transfer of the cask to the decontamination pad and sampling of the cavity gas and cooldown liquid from the cask. The reported levels of radioactivity were 5.2E-2 µci/cc for the gaseous samples and about 4.4 E-1 µci/cc for the water samples which were within the expected range of activities. The action levels limiting release of cask water into the spent fuel pool stated in the NRC Certificate of Compliance were not exceeded. Independent measurements of the shipment for radiation and removable contamination were conducted. Survey results showed radiation and removable contamination levels were within applicable regulatory limits and agreed with licensee survey results. No problems were noted.

The inspectors reviewed procedure DRP 1480-2, the licensee's method for determining contamination removal efficiency of smears taken from spent fuel casks exceeding 22,000 dpm/100 cm^2. The efficiency study consists

of smearing a 100 cm^2 area with ten different smears and counting these smears in a proportional counter. A smear guide is used to ensure that the repetitive smears cover the same area, and a rubber stopper is used when smearing to ensure consistent smearing of the 100 cm2 area. The results of the ten smears are added together to determine the total contamination present. Removal efficiency is determined by dividing the total contamination present (dpm/100 cm^2) on all smears into the contamination removed by the first smear (dpm/100 cm^2) and multiplying by 100 to get a percent of removal efficiency. The inspectors reviewed a smear efficiency study done on October 26, 1984, for a contaminated cask shipped from West Valley, NY. Using the described method the licensee determined the removal efficiency to be 83% and the removable contamination level to be below the DOT limit of 220,000 dpm/100 cm^2. A similar contaminated shipment on August 31, 1983, was shown by smear efficiency study to be within DOT contamination limits. The inspectors concur in the licensee's method and in their results.

22. I & E Information Notices

The inspectors reviewed licensee action taken in response to selected I & E information notices:

I & E Information Notice 82-31: Overexposure During Work in Fuel Storage Pool. According to licensee representatives, DRP 1610-6 "Radiation Protection Requirements for Unit 2/3 New Fuel Rack Installation Modification" is the only procedure requiring a diver and it will be reviewed and modified in accordance with this information notice before any future diver enters into the pool. A temporary procedure change has been generated prohibiting use of DRP 1610-6 cannot be implemented until it is revised.

I & E Information Notice 83-59: Dose Assignment for Workers in Non-Uniform Radiation Fields: In accordance with CECo "Radiation Protection Standards" based on pre-job surveys, the licensee badges that part of the body, except extremities, with the greatest expected exposure and records the highest measured exposure as the whole body dose.

I & E Information Notice 83-67: Emergency Use Respirator Material Defect Causes Production of Noxious Gases: The licensee does not have the Bio-Pak 60-P identified by this notice.

I & E Information Notice 83-68: Respirator User Warning: Defective Self-Contained Breathing Apparatus Air Cylinders. Licensee representatives stated none of the components identified in this notice were used at this station.

I & E Information Notice 84-72: Clarification of Condition for Waste Shipments Subject to Hydrogen Gas Generation: Licensee representatives stated the corporate office is reviewing this notice for possible applicability to waste shipments. Until further guidance is given the conditions of the Certificates of Compliance are being complied with. This matter will be reviewed further during a future inspection. (237/84-22-06; 249/84-20-05)

23. Plant Tours

During numerous tours of the plant and site, the following observations were made:

a. Step-off pads outside of frisker areas which instruct persons to survey themselves are confusing in that they give the impression that anyone going by the friskers should survey themselves when in fact the friskers are intended for persons who leave a step-off controlled area somewhere near the frisker location.

b. There were several frisker booths without available plastic shoe covers for use in case shoe or hand contamination was detected.

c. On four occasions the contract employee assigned to observe contractor personnel portal monitoring at the Unit 3 trackway was not at his station.

d. On two occasions friskers located at designated frisker stations were not operable.

e. Not one case of persons not adhering to procedures was noted during these tours.

These matters were discussed at the exit interview.

24. Improvements in the Health Physics Program

During this inspection it was noted that many improvements have been made or are in the process of being made to strengthen the health physics program during routine and refueling outages. They include:

a. Increased numbers of shielded frisker stations throughout the plant with more comprehensive instructions concerning actions to follow when personal contamination is detected.

b. Increased portal contamination monitors with greater detection sensitivity located at the Units 2/3 trackways, inside the health physics decontamination office, and on the refuel floor.

c. A new personnel decontamination facility located in the access control building, and relocation of the shoe decontamination facility. Improved instructions concerning clothing requirements for persons decontaminating their shoes.

d. Increased professional health physicist and RCT foreman surveillance of plant activities.

e. Assignment of RCT's at the D/2 trackway during normal hours to observe proper personal frisking and material surveys are being accomplished. Assignment of a contractor employee to make the same observations at the D/3 trackway during outage conditions.

f. The requirement for two pair of gloves instead of one pair for work requiring protective clothing.

g. The stationing of an RCT or equivalent contractor employee at the entrance to and egress from the drywell during outage activities to assure adherence to frisking, dress, and RWP requirements.

h. Development of a more efficient and sensitive laundry monitor.

i. Implementation of the ALARA review system and the ALARA contamination control program discussed in Section 11 of this report.

j. Increased management attention, support and concern for an improved and strengthened health physics program.

k. The implementation of the personal contamination tracking program.

25. Exit Interview

The inspectors met with the licensee representatives (denoted in Section 1) on November 20, 1984. The inspectors summarized the scope and findings of the inspection. A response to certain items discussed by the inspectors, the licensee:

a. Stated that the respirator return bin will be in sight of the RCT returning the workers N-GET after the workers return their respirators to the bin (Section 9).

b. Acknowledged the inspectors' remarks concerning the use of fluorescent powder to illustrate contamination prevention (Section 10).

c. Stated that the investigation and corrective action taken concerning the elevated contamination levels on the refuel floor were sufficient (Section 13).

d. Acknowledged the inspectors' remarks concerning the improvement in the use of ROR's (Section 17).

e. Stated that identified problems noted by the inspectors had been corrected during the inspection. This action was verified by the inspectors (Section 23).