UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-261/88-28

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket No.: 50-261 License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: September 11 - October 10, 1988

Inspectors: R E Carroll — 11/8/88
L. W. Garner, Senior Resident Inspector — Date Signed

R E Carroll — 11/8/88
R. M. Latta, Resident Inspector — Date Signed

R. D. Starkey — 11/8/88
R. D. Starkey, Reactor Inspector — Date Signed

C Bassett — 11/8/88
C. H. Bassett, Radiation Specialist — Date Signed

Approved by: [signature] — 11/9/88
P. E. Fredrickson, Chief, Section 1A — Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine, announced inspection was conducted in the areas of followup on previous inspection items, operational safety verification, physical protection, surveillance observation, maintenance observation, onsite followup of events at operating power reactors, onsite review committee, solid radioactive waste, and transportation.

Results: Three violations were identified: Failure to Have a Program To Use Calibrated Stop Watches For Required TS and ASME Section XI Testing, Paragraph 6; Failure to Correct Sump Pump Controls Which Resulted in Radioactive Releases to the Storm Drain System, Paragraph 10; and Failure to Indicate Proper Physical Form of Material on Shipping Papers, Paragraph 11.

REPORT DETAILS

1. Licensee Employees Contacted

R. Barnett, Maintenance Supervisor, Electrical
#D. Baur, Supervisor, Quality Assurance
*J. Benjamin, Unit Head, Systems Engineering
C. Bethea, Manager Training
H. Bryon, Instructor
R. Chambers, Engineering Supervisor, Performance
*S. Clark, Project Engineer, Design Engineering
D. Crocker, Supervisor, Radiation Control
#J. Curley, Director, Regulatory Compliance
*C. Dietz, Manager, Robinson Nuclear Project Department
J. Eaddy, Supervisor, Environmental and Chemistry
R. Femal, Shift Foreman, Operations
W. Flanagan, Manager, Design Engineering
W. Gainey, Support Supervisor, Operations
#S. Griggs, Aide, Regulatory Compliance
P. Harding, Project Specialist, Radiation Control
#*E. Harris, Director, Onsite Nuclear Safety
*M. Heath, Project Engineer, Technical Support
R. Johnson, Manager, Control and Administration
D. Knight, Shift Foreman, Operations
E. Lee, Shift Foreman, Operations
D. McCaskill, Shift Foreman, Operations
R. Miller, Maintenance Supervisor, Mechanical
R. Moore, Shift Foreman, Operations
*R. Morgan, Plant General Manager
D. Myers, Shift Foreman, Operations
D. Nelson, Operating Supervisor, Operations
*M. Page, Engineering Supervisor, Plant Systems
*D. Quick, Manager, Maintenance
*D. Sayre, Acting Director, Regulatory Compliance
D. Seagle, Shift Foreman, Operations
J. Sheppard, Manager, Operations
R. Steele, Shift Foreman, Operations
*H. Young, Director, Quality Assurance/Quality Control

Other licensee employees contacted included technicians, operators, mechanics, security force members, and office personnel.

NRC Resident Inspectors

#*L. Garner
*R. Latta

*Attended exit interview on October 19, 1988.
#Attended exit interview on October 26, 1988.

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Licensee Action on Previous Enforcement Matters (92702)

This area was not inspected.

3. Licensee Action on Previously Identified Inspection Items (92701)

(Closed) IFI 261/08-01, Implementation of the LER Writer's Guide. During a previous inspection, the licensee committed that a LER Writer's Guide, with particular attention paid to corrective actions to prevent recurrence, would be completed and implemented. That Writer's Guide entitled LER Handbook, was completed and implemented on June 15, 1988. This item is considered closed.

(Closed) IFI 261/88-08-03, Track Commitments Made to the NRC in LERs Through the RAIL Commitment Tracking System. Examples were identified of corrective action commitments made in LERs to the NRC, but which were not tracked in the licensee's RAIL commitment tracking system. A review of all LERs issued since that time indicated that all corrective action commitments to the NRC as described in LERs have been entered into the RAIL commitment tracking system. This item is considered closed.

No violations or deviations were identified within the areas inspected.

4. Operational Safety Verification (71707)

The inspectors observed licensee activities to confirm that the facility was being operated safely and in conformance with regulatory requirements, and that the licensee management control system was effectively discharging its responsibilities for continued safe operation. These activities were confirmed by direct observations, tours of the facility, interviews and discussions with licensee management and personnel, independent verifications of safety system status and limiting conditions for operation, and reviews of facility records.

Periodically, the inspectors reviewed shift logs, operations records, data sheets, instrument traces, and records of equipment malfunctions to verify operability of safety related equipment and compliance with TS. Specific items reviewed include control room logs, maintenance work requests, auxiliary logs, operating orders, standing orders, and equipment tagout records. Through periodic observations of work in progress and discussions with operations staff members, the inspectors verified that the staff was knowledgeable of plant conditions; responding properly to alarm conditions; adhering to procedures and applicable administrative controls; and aware of equipment out of service, surveillance testing, and maintenance activities in progress. The inspectors routinely observed shift

changes to verify that continuity of system status was maintained and that proper control room staffing existed. The inspectors also observed that access to the control room was controlled and operations personnel were carrying out their assigned duties in an attentive and professional manner. The control room was observed to be free of unnecessary distractions. The inspectors performed channel checks, reviewed component status and safety related parameters, including SPDS information, to verify conformance with the TS.

During this reporting interval, the inspectors verified compliance with selected LCOs. This verification was accomplished by direct observation of monitoring instrumentation, valve positions, switch positions, and review of completed logs and records. The inspectors verified the axial flux difference was within the values required by the TS.

Plant tours were routinely conducted to verify the operability of standby equipment; assess the general condition of plant equipment; and verify that radiological controls, fire protection controls and equipment tag out procedures were being properly implemented. These tours verified the absence of unusual fluid leaks; the lack of visual degradation of pipe, conduit and seismic supports; the proper positions and indications of important valves and circuit breakers; the lack of conditions which could invalidate EQ; the operability of safety related instrumentation; the calibration of safety related and control instrumentation including area radiation monitors, friskers and portal monitors; the operability of fire suppression and fire fighting equipment; and the operability of emergency lighting equipment. The inspectors also verified that housekeeping was adequate and areas were free of unnecessary fire hazards and combustible materials.

a. CV Temperature Distribution (TI 2515/98)

The inspectors reviewed the results of SP-797, Special Procedure For Monitoring CV Temperature. This procedure measured temperatures at different elevations adjacent to EQ equipment installed inside containment. Temperatures were taken on all three major operating levels (e.g., first level, second level, and operating deck, as well as in the seal table room, PZR cubicle and CV sump entrance). The temperatures taken were compared to the average CV temperature as indicated on the RTGB. Data was taken weekly from March 10 to August 31, 1988, while the reactor was operating. Preliminary engineering review has revealed that the PZR cubicle routinely operates above the 120 degrees F maximum operating temperature assumed in the EQ program. EQ components in the PZR cubicle are ASCO solenoid valves, NAMCO limit switches, conduit seals and valve position indication accelerometers. These components are all associated with the PZR PORV equipment. An analysis was performed which demonstrated that these components had not exceeded their

lifetime rating at the higher temperatures. The licensee is in the process of factoring this higher PZR cubicle temperature into their EQ program. Analysis of approximately four months of data, March 3 through June 29, 1988, showed the following:

AREA	>120F	<110F
FIRST LEVEL	1 WK	10 WKS
SECOND LEVEL	4 WKS	11 WKS
OPS DECK	4 WKS	10 WKS
SEAL TABLE	1 WK	11 WKS
SUMP ENTRANCE	3 WKS	10 WKS
CV AVERAGE	5 WKS	6 WKS

It is indeterminate at this time if the above data is representative of the percent of time temperatures may be in excess of 120 degrees F. For example, reactor power was limited to 60% of full power from February to June 20, 1988. In addition, some data was taken during or immediately following CV purges. A review of average CV temperature during the hottest months, after June 30 to September 30, 1987, indicated that the average temperature had exceeded 120 degrees F for every week except one week which was associated with a shutdown. The need to provide a more representative data base than presented by SP-797 in order to establish EQ equipment lifetimes inside containment was discussed with plant management. This is an IFI: Establishment of EQ Lifetimes Inside CV Based Upon Actual Temperature Conditions (261/88-28-01).

No violations or deviations were identified within the areas inspected.

5. Physical Protection (71707)

In the course of the monthly activities, the inspectors included a review of the licensee's physical security program. The inspectors verified by general observation, perimeter walkdowns and interviews that measures taken to assure the physical protection of the facility met current requirements.

The performance of various shifts of the security force was observed to verify that daily activities were conducted in accordance with the requirements of the security plan. Activities inspected included protected and vital areas, access controls, searching of personnel, packages and vehicles, badge issuance and retrieval, patrols, escorting of visitors, and compensatory measures. In addition, the inspectors routinely observed protected and vital area lighting and barrier integrity.

No violations or deviations were identified within the areas inspected.

6. Monthly Surveillance Observation (61726)

The inspectors observed certain surveillance related activities of safety related systems and components to ascertain that these activities were conducted in accordance with license requirements. For the surveillance test procedures listed below, the inspectors determined that precautions and LCOs were met, the tests were completed at the required frequency, the tests conformed to TS requirements, the required administrative approvals and tagouts were obtained prior to initiating the tests, the testing was accomplished by qualified personnel in accordance with an approved test procedure, and the required test instrumentation was properly calibrated. Upon completion of the testing, the inspectors observed that the recorded test data was accurate, complete, met TS requirements, and test discrepancies were properly rectified. The inspectors independently verified that the systems were properly returned to service. Specifically, the inspectors witnessed/reviewed portions of the following test activities:

a. OST-202 (revision 13), Steam Driven Auxiliary Feedwater System Component Test. During the performance of this surveillance, the acceptance criteria for pump horizontal vibration was exceeded, causing the pump to be declared inoperable and a 7 day LCO to be entered. A work request was written and an engineering evaluation was initiated to determine the cause of the vibration.

   The inspector observed that during the stroke timing of SDAFW Pump Temperature Control Valve SW-TCV-1902A that the operators conducting the surveillance used an uncalibrated watch to stroke time the valve. Upon further inquiry the inspector discovered that the licensee does not use, nor have available for use, calibrated stop watches for the purpose of timing equipment which has safety significance. Failure to assure that measuring and testing devices affecting quality, specifically stop watches, are properly controlled and calibrated is identified as a violation: Failure To Have A Program To Use Calibrated Stop Watches For Required TS and ASME Section Testing (261/88-28-02).

b. PLP-006 (revision 6), Containment Vessel Inspection/Closeout. The inspectors observed completion of PLP-006 attachment 6.3, Auxiliary Operator Weekly Checks, on September 21, 1988. This procedure had been modified to incorporate performance measurements of HVH 4 as described in paragraph 8.b.

One violation was identified within the areas inspected.

7. Monthly Maintenance Observation (62703)

The inspectors observed several maintenance related activities of safety-related systems and components to ascertain that these activities were

conducted in accordance with approved procedures, TS and appropriate industry codes and standards. The inspectors determined that these activities were not violating LCOs and that redundant components were operable. The inspectors also determined that activities were accomplished by qualified personnel using approved procedures, QC hold points were established where required, required administrative approvals and tagouts were obtained prior to work initiation, proper radiological controls were adhered to, appropriate ignition and fire prevention controls were implemented, replacement parts and materials used were properly certified and the effected equipment was properly tested before being returned to service. In particular, the inspectors observed/reviewed the following maintenance activities:

- WR/JO 88-AEUJI Inspection and Cleaning of HVH 1-4 Units
- WR/JO 88-AIQW1 Repair CV Purge Exhaust Valve V12-9
- WR/JO 88-AJYG1 Repair CV Purge Exhaust Valve V12-8
- WR/JO 88-BEF535 Inspection of HVH 1-4 and Motor Coolers per CM-201

No violations or deviations were identified within the areas inspected.

8. Onsite Followup of Events at Operating Power Reactors (93702)

a. Rx Head Vent Valves Not in EQ Program

On September 14, 1988, with Unit 2 in cold shutdown, the inspectors were advised of a reportable event involving the licensee's determination that the reactor head vent valves were not environmentally qualified. Subsequent to this determination the subject valves and their associated containment penetration splices were repaired, EQ packages were developed, and the system was returned to service on September 16, 1988.

The determination that the reactor head vent system, which utilized Target Rock solenoid operated valves, were not qualified was made following a notification to the site on September 9, 1988, that similar valves utilized at the Shearon Harris site were found to have degraded reed switch wires and unidentified terminal blocks installed. An evaluation of the reactor head vent valves at Robinson indicated that although the RCS and reactor vessel head vent system had been installed in 1984 as a seismically qualified and EQ system, they had been omitted from the licensee's EQ file inventory. The failure to have vent valves in the EQ Program is an UNR: Failure to Have Rx Head Vents Environmentally Qualified (261/88-28-03).

The inspectors witnessed portions of the valve disassembly and repair efforts conducted in accordance with WR/JO 88-AJRY1 and determined that the manufacturer had provided reed switches and terminal blocks

of a different configuration than had been originally qualified and certified by Target Rock. These components along with the internal jumper wiring were replaced with qualified materials. Additionally, Patel conduit seals not specified in the original installation were installed and the penetration splices originally configured as butt splices with Ray-Chem sleeves were replaced with qualified penetration splices.

b. Containment Fan Cooler Biological Fouling

As described in Inspection Report 261/88-23, the licensee took the unit to cold shutdown because of reduced heat removal capability of containment fan coolers HVH 3 and 4. The licensee's inspection of HVH Units 1, 2, 3 and 4 and subsequent determination of fouling and pitting due to biological growth are the subject of Inspection Report 261/88-27. This writeup provides an update on inspection activities associated with restart on September 19, 1988.

The licensee performed cleaning of HVH 1, 2, 3 and 4 to remove the fouling. In addition, an inspection was conducted of other potentially susceptible safety related heat exchanges. No other degraded conditions were found. The inspectors examined the tube bundles of selected heat exchangers, including at least one of each pair of ESF pump room coolers (e.g., SI pump room, RHR pump room and MDAFW pump room coolers), as well as the containment fan coolers. No adverse conditions which would render the subject coolers inoperable were observed.

As described in Inspection Report 261/88-27, a hydrostatic test was performed on the containment coolers and associated service water piping. This hydrostatic test provides confidence that the pitting observed in the HVH units had not progressed to through-wall leaks. The licensee is in the process of contracting with Westinghouse to perform eddy current testing of 12% of the tubes in HVH 4 during the refueling outage which is scheduled to begin November 12, 1988. In addition, the licensee is planning to visually inspect the containment fan coolers for indication of resumption of biological growth during the refueling outage. These items are considered an IFI: Review Visual and Eddy Current Testing of HVH 1-4 During November 1988 Refueling Outage (261/88-28-04).

Between resumption of power operation on September 19, and the refueling outage, the licensee has initiated temporary monitoring of the performance of HVH 4 by trending differential service water pressure across the unit, service water discharge pressure from the unit and inlet and outlet air temperatures. The inspectors observed the taking of baseline data and has reviewed subsequent data. To date, adverse trends have been observed. However, the inspectors are

concerned that these methods will not provide early detection of biological fouling prior to significant fouling occurring. This has been expressed to the licensee. The licensee had already been in the process of evaluating options to provide some means of detecting the onset of biological fouling in the coolers. This is an IFI: Licensee to Develop Methodology to Detect Biological Growth in HVH 1-4 (261/88-28-05).

c. Shutdown and Unusual Event Due To Loss of Containment Integrity

On September 22, 1988, the licensee determined that a leakage path existed from containment via the 42" diameter series purge exhaust valves V12-8 and V12-9. Because the leak path could not be isolated within 4 hours of the initial discovery, an unusual event was declared in accordance with the licensee's emergency plan. In accordance with TS 3.0 the reactor was placed in hot shutdown for repairs of the subject valves. The sequence of events and subsequent repair activities are described below.

On September 19, 1988, at 4:50 a.m., the Unit was taken critical after the HVH 1-4 outage described in paragraph 8.b above. During this forced outage, the CV purge exhaust inboard and outboard valves, V12-8 and V12-9 respectively, had been opened for CV cooling and routing of power cables to support CV work. Prior to startup the valves had been closed to establish containment integrity. However, on the afternoon of September 19, these valves were reopened, as allowed by TS 3.6.4.1, to support a routine CV entry on September 21. Due to the relatively long period of time required to pressurize this large penetration, PPS, which is used to maintain a pressure greater than accident pressure on select penetrations during operation, was not placed in service for this penetration during this time. It was only after the CV entry on September 21 was completed that the CV purge exhaust penetration was pressurized. After approximately eight hours, the time allowed by procedure to fully pressurize the penetration, the RTGB instrumentation indicated a high PPS header flow rate. With the reactor at 89% power, at 3:20 a.m., the licensee observed that V12-8 was leaking. A CV entry subsequently determined that V12-9 was also leaking. Attempts to stop the leakage were unsuccessful. Consequently, at 7:21 a.m., an unusual event was declared in accordance with PEP-101, item 6, which requires declaration of an unusual event if one or more automatic CV isolation valve(s) is (are) inoperable for 4 hours and not isolated or repaired. Because repair of the valves required the valves to be fully opened, the licensee elected to work one valve at a time, thereby minimizing the leak path out of containment as much as possible while the reactor was above 200 degrees F. At 9:08 a.m., a post repair test on V12-9 proved unsuccessful. Consequently, at 9:52 a.m., the licensee began reducing load to remove the unit from

service in accordance with TS 3.0. At 11:54 a.m., the Unit was in hot shutdown. The V12-8 butterfly type valve was subsequently repaired by replacing the seal and was successfully tested at 9:45 p.m. The conditions to exit the unusual event were met at that time and the unusual event was terminated. By 1:50 p.m., on September 23, the V12-9 valve was repaired, tested and returned to service. The reactor was taken critical at 4:10 a.m., on September 24.

Preliminary investigation by the licensee indicated that hard foreign material had been embedded in the soft sealing surfaces of each valve. In addition, the leakage by V12-9 may have been compounded by a partial separation of the sealing material from its backing ring. The licensee plans to document their final determinations, root causes, and corrective actions in LER 88-022. The NRC review of this LER and the circumstances surrounding the failure to ensure that these valves would tightly close after being used as a service route for cables is considered an UNR: Review LER 88-022 and CV Operability Requirements After Opening of CV Purge Exhaust Valves (261/88-28-06).

d. Motor Driven Feedpump A Trip

On September 27, 1988, while at 88% power, the A motor driven feedwater pump tripped on low oil pressure. Reactor power was stabilized at 47% power in accordance with abnormal operating procedures by manually reducing turbine load and placing control rods in automatic control. Fourteen minutes prior to the trip, the auxiliary oil pump had begun to cycle on and off every 2-3 seconds. Subsequent investigation indicated that the oil system relief valve was partially open due to trash under its seat and an oil pressure switch was malfunctioning. The repairs were completed and power ascension commenced at 4:45 a.m., on September 29, 1988.

e. Dedicated Shutdown RCS Th and Tc Instruments Routed Through Fire Area

Review of plant modification M-896 revealed that RCS Th and Tc circuits, TE-410 and TE-413 loops respectively, had been routed through Appendix R Fire Area A. These instruments are used per DSP-002, Hot Shutdown Using The Dedicated/Alternate Shutdown System, to stabilize the plant in hot shutdown via natural circulation if a fire occurs in Fire Area A. Per modification M-445, these circuits had been routed outside of the fire area. However, modification M-896, which isolated these instrument loops from class IE equipment per R.G. 1.97, resulted in the circuits being rerouted back into Fire Area A.

On October 5, 1988, the licensee issued engineering evaluation 88-128, JCO 88-008, to address this issue. In summary, the licensee concluded that the likelihood of cable damage sufficient to disable

these instrument loops is extremely low because of the low combustible loading and the automatic capability to rapidly detect and suppress fires which may occur in the area. Furthermore, if these loops are disabled by a fire, an indirect means of obtaining RCS temperature is available from a S/G Pressure - RCS Temperature graph. The inspectors verified that the applicable DSPs contain this graph, that operating personnel are aware of how to utilize it (if necessary), and that the appropriate S/G pressure instruments are in service and are operable.

The licensee is planning to implement a design change to comply with both Appendix R and R.G. 1.97 commitments. Implementation of a modification to correct the TE-410 and TE-413 problem created by plant M-896 is an IFI: Inspect PM to Establish Isolation as Required by Appendix R for TE-410 and TE-413 (261/88-28-07).

f. CV Equipment Not EQ Because of Submergence

On October 6, 1988, the licensee discovered that the calculated CV fluid level of 3.2 ft was non-conservative. A new value of 6 feet 1 inch has be calculated. On October 7, 1988, the licensee issued engineering evaluation 88-132, JCO 88-009, to address the equipment which would be affected by the increased submergence level. The evaluation concluded that the effected equipment would either remain operable, have had achieved its function or has backup capability. Equipment which will not perform its functions are instruments associated with penetration F01; one channel of the exit thermocouples, RVLIS and the Gamma-Metrics neutron flux detectors. RVLIS has not yet been declared operable after installation. The neutron detectors are already inoperable due to a generic problem addressed in a Part 21 notice concerning potential moisture intrusion into soldered and threaded connections. The exit thermocouple channel has a redundant channel and may be inoperable indefinitely per TS Table 3.5-5, note 2.

The licensee's actions to address the long term issues associated with the additional equipment which would be submerged following a worst case design basis CV flood level is an UNR: Followup on Actions to Address Equipment Effected by an Increased CV Submergence Level (261/88-28-08).

No violations or deviations were identified within the areas inspected.

9. Onsite Review Committee (40700)

The inspectors evaluated certain activities of the PNSC to determine whether the onsite review functions were conducted in accordance with TS and other regulatory requirements. In particular, the inspectors attended the September 14, 1988 PNSC meeting involving operability of the HVH

units. It was ascertained that provisions of the TS dealing with membership, review process, frequency, and qualifications were satisfied. Previous meeting minutes were reviewed to confirm that decisions and recommendations were accurately reflected in the minutes. The inspectors also followed up on selected previously identified PNSC activities to independently confirm that corrective actions were progressing satisfactorily.

No violations or deviations were identified within the areas inspected.

10. Solid Radioactive Waste (84722)

The inspector reviewed the details of an event which involved contaminated water being detected in the plant storm drains. At approximately 5:00 p.m., on August 8, 1988, a contract worker informed her supervisor of the presence of cloudy water in the storm drain on the south side of the E&RC building. Upon analyzing a water sample from the storm drain, the licensee determined that the water was contaminated. An isotopic analysis indicated that the radioactivity found was similar to that found in a sample of primary coolant.

Water samples were collected and analysed from other storm drains in the vicinity of the E&RC building and throughout the site, as well as from the west settling basin where these storm drains empty. Contamination was detected in the water samples from two other storm drains that are nearest the E&RC building. There was none found in storm drain samples from the remainder of the site nor in samples from the waste settling basin. Because the licensee suspected that the contaminated waste was coming from the E&RC laboratory sump (the receptacle for primary coolant samples following analysis), the contents of the sump were pumped to the Auxiliary Building #2 sump tank for processing as radioactive waste (radwaste). The licensee also collected air samples above the storm drain covers and performed contamination surveys of the areas around the drains. No airborne or surface contamination was detected. The contaminated water from the three storm drains was also pumped to the #2 sump tank in the Auxiliary building for future processing. The licensee estimated that approximately 200 gallons of contaminated liquid were pumped into the #2 sump tank. The licensee indicated that the 200 gallons included ground seepage water, as well as contaminated water. The exact quantity of ground seepage water could not be determined.

Following the immediate corrective actions to stop the release of contaminated water, the licensee performed an investigation of the event and a walkdown of the E&RC building waste drainage system to determine the source of the problem. The licensee discovered that the E&RC laboratory sump had apparently been filled beyond its capacity. This resulted in contaminated liquid backing up into the floor drains in the chemistry laboratory. The contaminated liquid then flowed through bolt holes in the

flange pipe of the floor drains and through voids around the drain piping to a French Drain installed under the E&RC building. The French Drain subsequently discharged into the storm drain by means of a four-inch line. The investigation also revealed that the level probes (installed in the E&RC building sump to automatically control the level of liquid in the sump) and the alarm (installed to indicate when the sump was full) were not operating properly.

Through discussions with licensee representatives and records review, the inspector determined that the sump pump controls, including the alarm and the level probes, had not worked properly since being installed in 1985. A work request was eventually submitted in September 1987, to initiate repair of the controls. Although repairs were completed in January 1988, and the automatic actuation of the sump pump and the alarm verified, licensee representatives indicated that the controls still did not function properly. No further work requests were initiated until the contaminated liquid was discovered in the storm drains.

The licensee is required by 10 CFR 50, Appendix B, Criterion XVI, to establish measures to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Failure of the licensee to promptly correct identified problems associated with the E&RC building sump pump controls which led to the introduction of radioactive water into the storm drainage system is identified as violation of 10 CFR 50, Appendix B, Criterion XVI: Failure to Correct Sump Pump Controls Which Resulted in Radioactive Releases to the Storm Drain System (50-261/88-28-09).

On violation was identified within the areas inspected.

11. Transportation (86721)

The inspector reviewed selected records of radioactive waste and radioactive material shipments performed during 1988. The inspector also reviewed the records of the circumstances surrounding the shipment of contaminated liquid contained inside a tank and inside a piece of shielding to a recycling vendor.

On February 24, 1988, the licensee made a shipment of two Sea/Land Containers to the Quadrex Recycle Center in Oak Ridge, Tennessee. The containers were filled with material to be decontaminated or disposed of as radioactive waste. The shipping papers identified the physical form of the material as solid; no liquid was indicated on the shipping papers. In March, as the vendor was processing the material from the two containers, a RCP decontamination tank was found to have about six to seven gallons of liquid inside. In addition, a support structure containing lead

shielding, which was included in the shipment, was found to have about two gallons of liquid inside. The vendor collected, analyzed, processed, and disposed of the water, and decontaminated the tank and the shield. Isotopes in the water recovered from the tank and the shield were identified as Cobalt-57, Cobalt-60, and Manganese-54. The tank and shield, with fixed contamination remaining, were sent back to the licensee.

Following an investigation of the incident, the licensee determined that the tank and the shield had been in storage for approximately fifteen months prior to being shipped to the vendor. When placed in storage, the tank had been wiped dry and wrapped with herculite, while the shield, which appeared to be solid, was stored without being wrapped. The items had been stored in a contaminated warehouse which had a leaking roof. Apparently, the liquid discovered by the vendor was the result of rain water leaking on and into the items. The licensee also determined that a second root cause of the problem was personnel error in judgement. The same individual who had wiped the tank and placed it in storage was the one who checked it and prepared it for shipment. Since it had been wiped dry and wrapped previously, the person assumed that no water was in the tank and that no further inspection was necessary. The shield was assumed to be solid and was not inspected or tapped to check for liquid.

The licensee implemented corrective actions to prevent future events of this nature. The individual involved in the event wrote a lesson plan describing what happened and instructed other HP personnel concerning the circumstances of the shipment. This instruction was provided during plant safety meetings held during April 1988. A new procedure, HPP-201, Code of conduct for Radioactive Material Shipment, Revision 1, dated June 24, 1988, was developed to discuss the various aspects of shipping and receiving radioactive material. The new procedure was also written to ensure that double verification of the physical aspects of the shipments, such as the presence of liquid, was performed. The licensee also issued a job request to repair and seal the roof of the contaminated warehouse. As a final measure, the licensee issued a POER detailing the event, the root causes, and the corrective actions taken.

10 CFR 71.5 requires that licensees who transport licensed material outside the confines of their plant or other place of use, or who deliver licensed material to a carrier for transport, shall comply with the applicable requirements of the regulations appropriate to the mode of transport of the DOT in 49 CFR 170 through 189.

49 CFR 172.203(d)(1)(ii) requires that a description of the physical and chemical form of the material being shipped and radioactive material be included on the shipping papers which accompany the shipment.

Failure of the licensee to indicate the proper physical form of the material listed on the shipping papers was identified as a violation of 10 CFR 71.5: Failure to Indicate Proper Physical Form of Material on Shipping Papers (50-261/88-28-10). As this is a violation of minor safety or environmental concern for which, by the end of the inspection, the licensee had already taken or was in the process of taking adequate corrective actions to prevent recurrence, no response will be required.

One violation was identified within the area inspected.

12. Exit Interview (30703)

The inspection scope and findings were summarized on October 19 and 26, 1988, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report. No written material was given to the licensee by the Resident Inspectors during this report period.

Item Number	Status	Description/Reference Paragraph
88-08-01	Closed	IFI - Implementation of the LER Writer's Guide (paragraph 3).
88-08-03	Closed	IFI - Track Commitments Made to NRC in LERs Through the RAIL Commitment Tracking System (paragraph 3).
88-28-01	Open	IFI - Establishment of EQ Lifetimes Inside CV Based Upon Actual Temperature Conditions (Paragraph 4).
88-28-02	Open	VIO - Failure to Have a Program To Use Calibrated Stop Watches For Required TS and ASME Section XI Testing (paragraph 6.a).
88-28-03	Open	UNR - Failure To Have Rx Head Vent Valves Environmentally Qualified (paragraph 8.a).
88-28-04	Open	IFI - Review Visual and Eddy Current Testing of HVH 1-4 During November 1988 Refuel Outage (paragraph 8.b).

Item Number	Status	Description/Reference Paragraph
88-28-05	Open	IFI - Licensee To Develop Methodology to Detect Biological Growth in HVH 1-4 (paragraph 8.b).
88-28-06	Open	UNR - Review LER 88-022 and CV Operability Requirements After Opening of CV Purge Exhaust Valves (paragraph 8.b).
88-28-07	Open	IFI - Inspect PM to Establish Isolation as Required by Appendix R for TE-410 and TE-413 (paragraph 8.e).
88-28-08	Open	UNR - Followup on Actions to Address Equipment Affected by an Increased CV Submergence Level (paragraph 8.f).
88-28-09	Open	VIO - Failure to Correct Sump Pump Controls Which Resulted in Radioactive Releases to the Storm Drain System (paragraph 10).
88-28-10	Closed	VIO - Failure to Indicate Proper Physical Form of Material on Shipping Papers (paragraph 11).

13. List of Abbreviations

ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CM	Corrective Maintenance
CV	Containment Vessel
DOT	Department of Transportation
DSP	Dedicated Shutdown Procedure
E&RC	Environmental and Radiation Control
EQ	Environmental Qualification
ESF	Engineered Safety Feature
F	Fahrenheit
HP	Health Physics
HVH	Heating Ventilation Handling
IFI	Inspector Followup Item
JCO	Justification For Continued Operation
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MDAFW	Motor Driven Auxiliary Feed Water

NRC	Nuclear Regulatory Commission
OST	Operations Surveillance Test
PEP	Plant Emergency Procedure
PLP	Plant Program
PM	Plant Modification
PNSC	Plant Nuclear Safety Committee
POER	Plant Operating Experience Report
PPS	Penetration Pressurization System
PZR	Pressurizer
RAIL	Regulatory Action Item List
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
REV	Revision
R.G.	Regulatory Guide
RHR	Residual Heat Removal
RTGB	Reactor Turbine Generator Board
RVLIS	Reactor Vessel Level Indicating System
SDAFW	System Driven Auxiliary Feedwater
S/G	Steam Generator
SP	Special Procedure
SPDS	Safety Parameter Display System
SW	Service Water
Tc	Cold Leg Temperature
TCV	Temperature Control Valve
Th	Hot Leg Temperature
TI	Temporary Instruction
TS	Technical Specification
*UNR	Unresolved Item
WR/JO	Work Request/Job Order

*UNRs are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations.