

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/90025(DRP)

Docket No. 50-461

License No. NPF-62

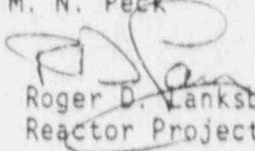
Licensee: Illinois Power Company  
500 South 27th Street  
Decatur, IL 62525

Facility Name: Clinton Power Station

Inspection At: Clinton Site, Clinton, Illinois

Inspection Conducted: November 20 through December 14, 1990

Inspectors: P. G. Brochman  
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Approved By:  Roger D. Lanksbury, Chief  
Reactor Projects Section 3B

1/8/91  
Date

Inspection Summary

Inspection from November 20 through December 14, 1990 (Report No. 50-461/90025(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of licensee action on previous inspection findings; operational safety; maintenance/surveillance; emergency preparedness; security; engineering and technical support; and licensee event reports.

Results: Of the seven areas inspected, no violations or deviations were identified in five areas; two violations were identified in the following areas: (failure to maintain secondary containment integrity during refueling - paragraph 7.a; failure to make a required one hour notification in accordance with 10 CFR 50.72 - Paragraph 5); however, in accordance with 10 CFR 2, Appendix C, Section V.G.1, a Notice of Violation was not issued. Additionally, three unresolved items were identified: (questions if two valves meet primary containment design criteria - paragraph 7.b; questions if two valves have been omitted from Type "B" containment leak rate testing - paragraph 7.b; questions if a safety evaluation should have been performed after a temporary pump was installed to the spent fuel pool - Paragraph 7.d).

Plant Operations

- Plant operations during this report period involved refueling and outage activities. Performance by reactor operators was good.
- Refueling evolutions were completed successfully. One personnel error caused by other than operations personnel occurred when two secondary containment doors were found blocked open (NCV 461/90025-01).

- Housekeeping deteriorated during this report period. Licensee management responded to this problem with vigorous corrective actions.
- The inspectors identified a concern over the ability of the shutdown service water pump for division III to operate without support from a non safety-related system (OPN 461/90025-02).

#### Radiological Controls

- Performance during the outage remained good. The Radiation Protection department personnel remained proactive in their approach to outage work, to maintain personnel exposure as low as reasonably achievable. Clothing and skin contaminations continue to occur.

#### Maintenance/Surveillance

- One personnel error occurred when the wrong bypass switch was positioned during a surveillance. Procedure steps were signed off without actually having been witnessed. This resulted in the actuation of an engineered safety feature and caused the isolation of shutdown cooling for 20 minutes.
- Maintenance/Surveillance activities continue to require close management attention. Shutdown cooling was lost for 20 minutes due to an error in establishing isolation for a containment electrical penetration; however, the error was discovered by the electrician before anyone was shocked. This demonstrated that corrective actions for a previous event were effective. The inspector provided a comment on documenting the location of weld repairs on code piping.

#### Emergency Preparedness

- The licensee failed to make a one hour phone call within the required time for a major loss of emergency communications capability (all offsite sirens were inoperable). The licensee's corrective actions for this event were extensive (NCV 461/90025-03).

#### Security

- Performance has shown some improvement during the inspection period; however, continued management attention is still appropriate.
- A positive result was recorded on a random fitness-for-duty screening test for an individual performing safety-related work in conjunction with refueling activities. The individual's performance did not have any effect on refueling activities.

#### Engineering and Technical Support

- Engineering department evaluation of the residual heat removal heat exchanger studs exceeding their allowed elongation was very good in determining that the original manufacturer's data was incorrect.

- The inspector identified a concern regarding the design of primary containment related to two flanged penetrations (UNR 461/90025-04). A second question related to the need to perform Type "B" leakrate tests on these joints (UNR 461/90025-05). Further evaluation by the licensee indicated that additional penetrations may have similar problems.
- A temporary pump was left installed in the Spent Fuel Pool without performing a 10 CFR 50.59 evaluation to determine if an Unreviewed Safety Question existed for over a month (UNR 461/90025-06).
- The non safety-related drywell equipment drain cooler was found to have blind flanges installed in the cooling water lines.
- Emergent work and response to events have required significant engineering resources. Management oversight has been acceptable and needs to continue. Engineering personnel have been very responsive to NRC requests for information and analysis.

#### Safety Assessment and Quality Verification

- Licensee performance in this area continues to be satisfactory. The quality of audits remains good. The licensee's programs to improve corrective actions are showing some results.

#### Outages

- An overall assessment of the outage showed that performance had been very good up to completion of refueling activities (approximate midpoint of the outage). However, at this point evidence of declining performance was identified in several areas. Licensee management has responded to these problems by focusing awareness of working level supervisors on these problems and has provided additional guidance and direction to improve the outage performance. Evidence of improving performance, in response to these actions, was beginning to emerge at the end of the report period.

## DETAILS

### 1. Persons Contacted

#### Illinois Power Company (IP)

- \*F. Spangenberg, III, Manager, Licensing and Safety
- \*J. Cook, Manager, Clinton Power Station
- \*J. Langley, Director, Design & Analysis Nuclear Station Engineer Department
- \*S. Hall, Director, Nuclear Program Assessment
- \*R. Phares, Director, Licensing
- \*J. Sipek, Supervisor, Regulatory Interface
- \*W. Yarosz, Supervisor, Emergency Planning
- \*J. Bednarz, Principal Assistant to Vice President
- \*P. Yocum, Director, Plant Operations
- \*K. Moore, Director, Plant Technical
- \*R. Morgenstern, Manager, Scheduling and Outage Management
- \*S. Razor, Director, Plant Maintenance
- \*J. Greenwood, Manager, Power Supply
- \*H. Nodine, Supervisor, Procedures
- \*L. Everman, Nuclear Program and Analysis Group
- \*D. Miller, Director, Plant Radiation Protection

#### Soyland Power, Inc.

- \*J. Greenwood, Manager, Power Supply

#### Nuclear Regulatory Commission

- \*R. Lanksbury, Section Chief, NRC
- \*P. Brochman, Senior Resident Inspector, NRC
- \*F. Brush, Resident Inspector, NRC

The inspector also contacted and interviewed other licensee and contractor personnel during the course of this inspection.

\*Denoted those present during the exit interview on December 14, 1990.

### 2. Action on Previous Inspection Findings (92702)

- a. (Closed) Violation (461/89008-09(DRP)): This violation concerned four instances of the licensee either failing to follow the prescribed procedure or failing to prescribe an adequate procedure. Corrective actions included procedure revision, briefing of operators, Control and Instrumentation technicians, and other maintenance personnel on the issues, and initiation of Maintenance Work Requests. The following licensee event reports (LERs) were issued as a result of three of these instances; LERs 461/89008, 461/89009, and 461/89010. The inspectors reviewed the licensee's corrective actions which included reviewing and revising various procedures. Based on the licensee's actions, the inspectors have no further concerns; and this item is considered closed.

- b. (Closed) Violation (461/89014-04(DRP)): Licensee identification of a number of motor operated valves with installed thermal overload protection that were not bypassed when required to perform an active safety function. The licensee's corrective action was to issue a field engineering change notice (FECN) and Maintenance Work Request (MWR) D04678 to install an electrical bypass around the thermal overload protection. The bypasses were installed by April 20, 1989. Based on the inspectors' review of the corrective actions for this violation, no additional response is required; and this violation is closed.
- c. (Closed) Violation (461/89014-06(DRP)): On April 20, 1989, the inspectors found several valves in the Scram Discharge Volume (SDV) instrumentation system unlocked. The licensee immediately performed a valve lineup and found 12 valves unlocked that were required to be locked. Corrective actions included issuing Plant Manager's Standing Order (PMSO) 058 to formally track and control the locking of valves and revising CPS Procedure 9532.22, "SDV High Water Level Float Switch Functional." Based on the inspectors' review of the corrective actions for this violation, no additional response is required; and this violation is considered closed.
- d. (Closed) Violation (461/89018-02(DRP)): Licensee identification of three incidents concerning the failure to meet Technical Specification surveillance requirements. The inspectors reviewed the licensee's corrective actions which included procedure revision, staff training, and engineering evaluations. Based on the inspectors' review of the corrective actions for this violation, no additional response is required; and the violation is considered closed. The following LERs were associated with the incidents; LERs 461/89021, 461/89025, and 461/89026.
- e. (Closed) Violation (461/89026-01(DRP)): Licensee identification of an instance of entering Operational Condition 2 (startup) without meeting the conditions of Technical Specifications 3.5.1 and 3.3.7.5. LER 461/89031 documented the failure to recognize the Technical Specification requirements. Corrective actions included additional operator training on mode changes, using simulator scenarios, a procedure revision, issuance of two night orders for the Operations shift personnel, and the operations counselling of personnel involved in the incident. Based on the inspectors' review of the licensee's corrective actions for this violation, no additional response is required; and this violation is considered closed.
- f. (Closed) Apparent Violations (461/90005-01(DRS); 461/90005-02(DRS); 461/90005-03(DRS); 461/90005-04(DRS); and 461/90012-02(DRP)): These apparent violations are being administratively closed and will be tracked under inspection report 461/90014, which forwarded the Notice of Violation and Proposed Imposition of Civil Penalty. In this Notice of Violation, violation I was associated with the failure to document a deficient condition and initiate corrective actions, and corresponded to apparent violation 461/90005-01. This violation will now be tracked as 461/90014-01(DRS). Violations II.A and II.B associated with design

control and preoperational test control for the shutdown service water (SX) system; and corresponded to apparent violations 461/90005-02, 461/90005-03, and 461/90005-04. These violations will now be tracked as 461/90014-02(DRS). Violation III was associated with the failure to maintain the emergency diesel generators in an operable condition due to mispositioned SX valves; and corresponded to apparent violation 461/90012-02. This violation will now be tracked as 461/90014-03(DRP).

### 3. Plant Operations

The unit remained shutdown for its second refueling outage for the entire report period.

#### Operational Safety (71707)

The inspectors observed control room operation, reviewed applicable logs and conducted discussions with control room operators during November and December 1990. During these discussions and observations, the inspectors ascertained that the operators were alert, cognizant of plant conditions, and attentive to changes in those conditions, and that they took prompt action when appropriate. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified the proper return to service of affected components. Tours of the containment, drywell, auxiliary, fuel-handling, rad-waste, and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations, and to verify that maintenance requests had been initiated for equipment in need of maintenance.

The inspectors verified by observation and direct interviews that the physical security plan is being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. The inspectors also witnessed portions of the radioactive waste system controls associated with rad-waste shipments and barreling.

The observed facility operations were verified to be in accordance with the requirements established under Technical Specifications, 10 CFR, and administrative procedures.

#### a. Secondary Containment Integrity not Maintained during Refueling (LER 461/90016)

At 11:10 p.m., on November 29, 1990, licensee personnel discovered that the outer airlock door to the residual heat removal (RHR) heat exchanger (HX) "A" room had been propped open with a roll of tape to allow hoses to pass through. The inner airlock door to this room was also found open with these same hoses, for local leak rate tests, passing through it. These two doors form an airlock which is one of the boundaries of secondary containment.

Technical Specification 1.38.d defines that at least one door in each access to the secondary containment be closed, except for normal entry and exit, for secondary containment integrity to exist. Technical Specification 3.6.6.1 required secondary containment integrity to be maintained when irradiated fuel was being handled in secondary containment. At the time of this event, irradiated fuel was being moved in the fuel handling building (i.e., inside secondary containment). In addition to being secondary containment doors, the outer airlock door is also a high radiation door and the inner door is also a fire door. Clinton procedure CPS No. 1024.25, Paragraph 8.4.2, required that the doors to all high radiation areas be locked. Fire barrier doors are considered impaired if the latch can not function to secure the door.

The licensee documented this event on condition report 1-90-11-101 and conducted a critique on December 4, 1990. As a result of the critique, the licensee was unable to identify the exact time the doors were breached or who was responsible. The door had been checked secured by a radiological protection technician at 6:45 a.m., on November 29. A review of records indicated several individuals had entered the room after this time, but no additional records of verifying the door was secured were found. The licensee's program checks all high radiation doors at least once per day.

The failure to maintain one of the doors to the "A" RHR heat exchanger room secured during movement of irradiated fuel inside secondary containment was a violation of Technical Specification 3.6.6.1. The licensee's corrective actions consisted of briefing all engineers and craft personnel working on local leak rate tests and radiation protection technicians on this event. The licensee intended to perform a Human Performance Evaluation System (HPES) evaluation of this event to determine the root cause. This event was reviewed at the plan-of-the-day and discussed with all department representatives. Since this violation met the criteria specified in 10 CFR Part 2, Appendix C, Section V.G.1, a Notice of Violation was not issued; and this issue is considered closed (NCV 461/90025-01(DRP)).

The inspectors' evaluation of the unsecured high radiation door was discussed in inspection report 461/90026(DRSS).

b. Housekeeping

The inspectors' observed a general decline in housekeeping during the end of this inspection period. The highly visible, heavy traffic areas continued to look good. However, in generally inaccessible or light traffic areas (e.g., high radiation and contaminated rooms (RHR pump rooms, the drywell, and steam tunnel), housekeeping had declined. Additional issues which the licensee identified were that excessive quantities of contaminated hose had not been returned after work (at one time over 30,000 feet), electrical cords had not been returned and had been left plugged in, over 1,000 radiation work

permits remained open even though all work appeared to have been completed, and numerous pieces of foreign material were observed in the suppression pool.

Taken together, these issues indicated a pattern of not completing administrative tasks after the work was done. The main cause of the housekeeping problem appeared to be that the various craft workers were not cleaning up an area after completing their tasks. These issues were identified at the plan-of-the-day meetings and licensee outage and plant management initiated strong efforts to correct this decline; these corrective actions appeared to have been effective.

c. Division III Shutdown Service Water Pump Problems

At 9:30 a.m. on December 7, 1990, the licensee started the Division III Shutdown Service Water (SX) Pump (1SX01PC) to refill the system piping. The normal service water system had been drained for maintenance so there was no water supplied to the 1SX01PC packing. After a few minutes of operation, a black substance was seen oozing out of the pump at the shaft seal. The licensee determined that the pump packing had been destroyed. The licensee contacted the vendor, who stated that the type of packing which had been installed in the pump was no longer recommended for service and that an alternative was specified in the vendors technical manual. The pump was repacked using a different type of packing and the pump was restarted and the packing was run in. The inspectors identified a question as to whether the pump packing required that water be supplied to it before the pump was started. The normal source of water for the pump seals was from the plant service water system (WS). Since the WS system was not safety-related and could not be considered available after an accident, (e.g., seismic event), it could not be relied upon to support the SX system. Consequently, the inspectors' questioned if the SX pump could be started by itself, in a post-accident environment, without WS supplied to the seals. This issue will be tracked as an Open item (461/90025-02(DRP)).

No deviations were identified. One violation was identified for which a notice of violation was not issued.

4. Maintenance/Surveillance (61726 & 62703)

Station maintenance and surveillance activities of the safety-related systems and components listed below were observed or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, and industry codes or standards, and in conformance with Technical Specifications.

D14835	Installation of Modification 1SXF019
D09656	Clean and Inspect Division IV battery
D07813	Rework of 1B21-F032B, Feedwater check valve
D06674	Rework of 1B21-F032A, Feedwater check valve
D15624	Rework of 1B21-F010B, Feedwater check valve



D07885 Rework of 1E22-F005, High Pressure Core Spray check valve  
D16519 Rework of 1E12-F041A, Residual Heat Removal 'A' check valve  
D07855 Rework of 1E12-F041B, Residual Heat Removal 'B' check valve  
PEMAP553 Calibration of Bus 1B1 overcurrent relays 251-201, /O B and /O C  
PEMSXA005 Clean and Inspect breaker for SX pump 1B  
PEMAP202 Clean and Inspect 480 Volt Bus Main feeder breaker

Splicing of wires in various containment penetrations.

The following items were considered during this review: The limiting conditions for operation were met while affected components or systems were removed from and restored to service; approvals were obtained prior to initiating work or testing; quality control records were maintained; parts and materials used were properly certified; radiological and fire prevention controls were accomplished in accordance with approved procedures; maintenance and testing were accomplished by qualified personnel; test instrumentation was within its calibration interval; functional testing and/or calibrations were performed prior to returning components or systems to services; test results conformed with Technical Specifications and procedural requirements and were reviewed by personnel other than the individual directing the test; any deficiencies identified during the testing were properly documented, reviewed, and resolved by appropriate management personnel; work requests were reviewed to determine the status of outstanding jobs and to assure that priority was assigned to safety-related equipment maintenance which may affect system performance.

a. Shutdown Cooling Isolated due to Incorrectly Positioned Bypass Switch During a Surveillance (LER 461/90017)

At 5:08 a.m., on December 6, 1990, an engineered safety feature actuation occurred when the "A" train of RHR isolated during performance of a surveillance test. The "A" train of RHR was aligned in the shutdown cooling mode of operation to the reactor vessel. Control and Instrument (C&I) technicians were performing Clinton procedure CPS No. 9432.15, "RHR Heat Exchanger A and B Differential Temperature Channel Calibration," when the isolation occurred. The reactor operator who was assisting the C&I technician, read the procedure, but was confused and thought the procedure was testing the reactor water cleanup (RT) differential temperature channel calibration. Paragraph 8.1.2 required that the reactor operator take the RHR isolation bypass switch to bypass. The operator actually took the RT isolation bypass switch to bypass, thinking that the surveillance was on the RT system. This step was required to be double verified; however, it was not. Consequently, when the C&I technician next lifted the leads to the RHR differential temperature detector, an isolation signal was generated; and as the signal was not blocked, by the RHR bypass switch, the RHR system isolated. The operators restored the RHR system to shutdown cooling by 5:25 a.m. The operators did not observe any appreciable rise in reactor temperature, during this period. At the time of this event the

reactor head was removed and the reactor cavity was flooded up to 23 feet above the reactor vessel flange. No refueling activities were in progress.

The licensee conducted an investigation of the event and the C&I technician admitted that he had not verified that this was the correct bypass switch before the operator moved it to the bypass position. Paragraph 2.2.4 defined double verification as the act of two individuals concurring that the action TO BE PERFORMED (emphasis added) is correct. The C&I technician was in the area when the reactor operator mispositioned the RT bypass switch, but not at the switch and only saw an annunciator alarm. The annunciator which alarmed has multiple inputs, two of which are RT and RHR isolation switches in bypass. Based on this he signed off the step without verifying the correct switch was positioned. The inspectors expressed two concerns to licensee management, on this event: (1) the C&I technician signing off activities he had not actually verified and (2) neither the reactor operator nor the C&I technician seemed to have a good understanding of the concept of double verification, versus independent verification.

The licensee issued guidance to all reactor operators and C&I technicians on the difference between double and independent verification, and when each was required. The licensee took disciplinary action against the C&I technician. The inspectors will perform an additional review in a subsequent report after the LER is issued.

b. Shutdown Cooling Lost due to Error in Isolating A Containment Electrical Penetration

At 12:45 a.m., on December 7, 1990, the "A" RHR pump tripped during performance of modifications on containment electrical penetration 1EE19E. A craft electrician was checking a conductor for the presence of voltage, prior to performing the splicing work, and found that the conductor was energized. The craft electrician stopped work and notified the control room. The checking of the conductor caused the limit switch for RHR pump suction valve 1E12F009 to indicate not fully open. This caused an alarm in the control room and caused the "A" RHR pump to trip. At the time of this event the "A" RHR pump was supplying shutdown cooling to the reactor. The valve did not change position, during this event. Control room operators reset the alarm and after investigation, restarted the "A" RHR pump by 1:12 a.m. No discernable rise in reactor temperature was observed.

During this refueling outage the licensee was splicing approximately 4000 electrical conductors in containment penetrations and junction boxes to resolve an environmental qualification issue. To establish the electrical isolation requirements for the thousands of conductors that were to be spliced, the operations department started researching the requirements in July 1990. In addition to the normal reactor operator (RO) and senior reactor operator (SRO) reviews of the

tagouts the licensee had one additional RO and two additional SROs, (for a total of five individuals), review the tagouts for adequacy. This event was the only error, where a circuit was missed, in the work completed to date. The inspectors believe that this event was not of significant concern, but rather showed that corrective actions taken in response to an earlier event were effective (i.e., the electrician did not receive a shock, even though the circuit was energized.) Unfortunately, the process of checking for energized circuits caused the logic systems to sense that the limit switch (valve) had changed positions and directed the pump to trip.

c. Identification of Post Maintenance Testing Requirements for a Weld Repair in MWR D14835

During a review of MWR D14835, the inspectors identified a concern with the post maintenance testing (PMT) described for a weld repair to pipe 1SX04AC8, a shutdown service water system pipe. During installation of a flanged orifice in this pipe, the need to perform a weld repair was also identified. The MWR was changed and step 5b was added to perform a weld repair on pipe 1SX04AC8. Pipe 1SX04AC8 was an American Society of Mechanical Engineers (ASME) code class III pipe, which required a hydrostatic test after any welding or weld repairs. However, an exception in the ASME code exists to this requirement for piping which was vented to atmosphere. This pipe was connected to the Division III diesel generator's heat exchanger, included valve 1SX006C, the new orifice, and then connected to a 10 inch SX pipe, which discharged into Clinton Lake (i.e., vented to atmosphere). Consequently, any repairs made to the pipe upstream of valve 1SX006C would require a hydrostatic test as PMT; while any repairs downstream of valve 1SX006C would not require a hydrostatic test, but just an operational test as PMT.

The inspector was unable to tell from the documentation contained in the MWR package, where on pipe 1SX04AC8 the weld repair had been made; consequently, the inspectors were unable to verify the adequacy of the PMT. The inspectors contacted the maintenance contractor who had performed the work who stated that it had been done downstream of valve 1SX006C. Based on this information, the inspectors concluded that the PMT specified in the MWR, for this weld repair, was adequate.

No violations or deviations were identified.

5. Emergency Preparedness

At 9:15 a.m., on November 28, 1990, licensee personnel recognized that all of the offsite emergency notification system sirens were inoperable. The sirens could be activated by two encoders (primary and backup). The primary encoder controlled a microwave transmitter located at the city of Clinton's fire department. The backup encoder was located at the DeWitt County Sheriff's office and could control the primary transmitter and the secondary microwave transmitter, which was located at the Clinton power plant. The primary encoder could also control the secondary transmitter. The primary and backup encoders communicated with the secondary transmitter via

telephone lines. The primary transmitter had been removed from service at 4:00 p.m. on November 27 to perform a modification. The primary and backup encoders and the secondary transmitter were tested and verified to be working at that time. At approximately 2:00 a.m. on November 28, the Clinton Fire Department contacted the Clinton Power Plant security staff and informed them that the fire departments pagers were not working (they could not communicate with their transmitters). The Clinton Fire Department used the encoder and transmitters to call out the volunteer fire department; consequently, since they could not do that, the ability to activate the emergency sirens was also lost.

The significance of this message was not understood by the security staff, nor were they the right organization to receive it. The fact that the sirens were inoperable due to the inoperable transmitter was finally recognized by the licensee's emergency preparedness staff and the NRC operations center was notified using the ENS (emergency notification system) phone, approximately, seven hours late. By 11:10 a.m. the licensee had reinstalled the primary transmitter and verified that the sirens were operable.

As corrective action the licensee has provided retraining to the fire department and security personnel to improve communications and ensure that messages relating to the transmitter were understood and sent to the correct parties. The licensee believed the problem was located in the telephone lines to the secondary transmitter; however, as the problem was intermittent, the licensee has not been able to resolve it by the end of the report period. The licensee has evaluated the desirability of rerouting or adding an alternate phone line to the backup transmitter and has scheduled the work to be completed in 1991.

10 CFR 50.72(b)(v) required that the licensee notify the NRC operations center via the ENS phone within one hour of any event that resulted in a major loss of emergency communications capability (e.g., offsite notification system). Since the licensee was informed at 2:00 a.m. that the transmitter (i.e., sirens) was not working, the failure of the licensee to notify the NRC within one hour of receiving a report of problems with the emergency sirens was a violation of 10 CFR 50.72. Based on the corrective actions and the safety significance of this event the NRC is exercising its discretion under 10 CFR 2, Appendix C, Part V.A, and is not issuing a Notice of Violation (NCV 461/90025-03(DRP)).

No deviations were identified. One violation was identified for which a notice of violation was not issued.

## 6. Security

### a. Internal Disturbance

At 3:42 p.m. on November 28, 1990, a security officer observed an altercation between two individuals in the turbine building, inside a contamination zone. One individual had entered the contamination zone in his street clothes. In response to the security officer, they were surveyed and taken to the decontamination room by radiological protection

(RP) personnel. Additional surveys showed no evidence of contamination. The individuals were then escorted to the medical room for treatment of minor injuries and then outside the protected area, where statements were obtained. One individual subsequently contacted the Local Law Enforcement Agency to file a complaint against the other. The inspectors were subsequently informed that both individuals employment had been terminated.

b. Fitness for Duty Event

On November 29, 1990, the inspectors were contacted by licensee management, regarding a contractor testing positive on a random fitness for duty (FFD) test. The individual was non-licensed, non-supervisory and was performing safety-related duties. The individual was tested at 8:30 p.m. on November 28, 1990, and tested positive for alcohol. The breathalyzer test indicated a current blood alcohol concentration (BAC) of 0.048. A BAC of 0.04 was the limit for alcohol under the licensee's FFD program. The individual's key card was deactivated and his protected area access was suspended.

The individual had been performing duties in the main control room from 6:00 p.m. to 8:30 p.m., by acting as the communicator between the control room and the refueling bridge in containment. The individual's duties in the control room were to serve as the continuous communication link between the refueling bridge and the reactor operator and to update the control room tag boards and fuel movement log after fuel movements were completed.

At 9:00 p.m., upon receiving notification that the individual had failed the FFD test, licensee management suspended refueling operations and did a comparison of the tag board against the movement made during his shift to determine if any errors were made. None were found. Fuel movements were resumed.

No violations or deviations were identified.

7. Engineering and Technical Support

a. Overstressed RHR Heat Exchanger Studs

The licensee was performing a preventative maintenance inspection on the "A" RHR HX's shell to RHR flange bolting to measure the elongation of the studs for this flange. The elongation was measured to ensure that an adequate clamping force was maintained at the flange to prevent leakage, as some relaxation might occur. The licensee's initial measurement of 6 control studs on the flange indicated that they were elongated 80 - 100 mills (1 mill = 0.001 inches), rather than the expected 20 - 30 mills. The yield strength of these studs could be expressed as the force which would be applied if the studs were stretched 60 mills. If this information was correct it indicated that the studs might have experienced plastic deformation and/or the flange

might have been overstressed. The licensee measured all of the stud lengths again and compared them to the manufacture's data. The delta between the manufacture's data and the measured values was from -1 mill to +180 mills (the stud shrinking in length to exceeding three times its yield strength). Based on this information the licensee decided to replace all of the studs, one at a time, and obtain new baseline data.

The old studs were measured before and after they were removed and the average elongation was 31 mills. This would equate to a stress of 75,000 psi. The yield strength required by the piping code for these studs was 105,000 psi; and the material test reports indicated that the actual yield strength was 123,000 psi. Based on this information the licensee believed that the studs were not overstressed, and did not plastically deform. Consequently, since the studs were not overstressed, then the flange was also not overstressed. Using an average elongation of 31 mills for the studs, the stress in the flange was also calculated to be 51,300 psi. The flange was designed for 54,000 psi stress and this value was also less than the actual material test reports for the flange. Based on this information the inspectors have no further concerns and this issue was considered closed.

b. Primary Containment Design Adequacy Question (61720)

During a review of maintenance activities, the inspectors identified a concern related to the design of primary containment, with regard to valves 1E12F055A and 1E12F055B (see figure 1).

These valves are safety valves which are designed to protect the RHR system from overpressure conditions. They have a setpoint of 500 psig and discharge into the suppression pool (inside containment). The valves are physically located in the RHR HX rooms and are installed with flanged mechanical joints, as opposed to welded joints. The inspectors concern relates to the flanged joints on the discharge of the valves and not to the valves themselves. The inspector postulated that these flanged joints could be exposed to containment atmosphere via valve 1E12F102 if valve 1E51F078 was to fail open. If that was correct then the joints should be designed in accordance with the requirements of 10 CFR Part 50, Appendix A, General Design Criteria 54, in that the reactor containment shall be designed to permit periodic testing at containment design pressure of the leaktightness of penetration which have resilient seals. This question will be followed as an unresolved item (461/90025-04(DRP)). Additionally, the inspector questioned if the flanged joints had been tested in accordance with the requirements of 10 CFR Part 50, Appendix J, Paragraph III.B for testing of Type "B" containment penetrations. This question will be followed as an unresolved item (461/90025-05(DRP)).

c. Modification Installation (35828)

The inspectors initiated an inspection of modification activities performed during this outage which relate to field installation and

testing. The inspectors reviewed the maintenance work request associated with two modifications:

MWR	Modification	Subject
D14835	1SXF019	Installation of Orifices on SX piping
D09889	1IAF010	Modification of Instrument Air Piping to MSIVs and SRVs

This inspection was ongoing at the end of the report period and will be discussed in a subsequent report. These modifications are also reviewed in the modification team inspection discussed in inspection report 461/90027(DRS). Unrelated to the modification, the inspectors identified a concern with the post maintenance testing required for a weld repair performed under MWR D14835. These concerns are discussed further in paragraph 4.a.

d. Temporary Pump Left Installed in Spent Fuel Pit Without Performing a Safety Evaluation

On November 29, 1990, during a routine tour, the inspectors observed a temporary pump installed on the 755' elevation of the fuel handling building. The temporary pump was installed such that it could take a suction from the spent fuel pit and discharge into the fuel building floor drains. The suction hose was approximately two feet under water and was taped in place to a stanchion. The pump had been installed on October 17, 1990, when the spent fuel pit was observed to be overflowing into its ventilation ducts. The pump had been installed to perform emergency dewatering of the spent fuel pit to return it to its normal level. The inspectors were not concerned over the installation of this pump under emergency conditions. However, the inspectors were concerned over the pump remaining installed, on a long term basis, without a safety evaluation having been completed or maintaining status over the pump. When the inspectors asked control room personnel if they were aware of this pump, with its hose in the spent fuel pool, general surprise was observed and they were apparently unaware of it.

Clinton Updated Safety Analysis Report (USAR), Paragraph 15.7.4 discussed the fuel handling accident. This accident assumed that a fuel assembly is dropped in the spent fuel pool and strikes other fuel causing the cladding in several fuel rods to fail and release fission products to the pool. The fission products after some filtering would be released to the environment from the plant via the standby gas treatment system. Paragraph 15.7.4.5.1 stated that the design basis analysis was based, in part, on Regulatory Guide 1.25. Regulatory Guide 1.25, paragraph C.1.c stated that one of the assumptions was that a minimum water depth of 23 feet existed between the damaged fuel and the top of the fuel pool surface; and note #2 stated that for water depths less than 23 feet, the iodine decontamination factors would be less than those assumed in the guide and must be calculated on an individual basis.

10 CFR 50.59 required that changes made to the facility may be made without prior commission approval if they do not constitute an unreviewed safety question. 10 CFR 50.59(a)(2)(i) defined an unreviewed safety question, in part, as a proposed change where the consequences of an accident previously evaluated in the safety analysis report may be increased. Since one of the assumptions used in the fuel handling accident was the depth of water over the fuel, a change to the facility which had the ability to lower the minimum water level in the pool below the value assumed in the USAR might result in a decrease in the iodine decontamination factor which could cause an increase in the dose at the site boundary (i.e., an unreviewed safety question).

The inspector requested that the licensee perform a safety significance analysis to evaluate this event. The licensee had not completed this evaluation by the end of the report period and this issue will be tracked as an unresolved item (461/90025-06(DKP)).

e. Drywell Equipment Drain Coolers Isolation

The licensee discovered during a walkdown of the Drywell Equipment Drain Coolers System that the cooling water supply to the cooler was isolated by blind flanges. It was determined that this condition had existed since preoperational testing of the plant. The licensee performed a safety evaluation and determined that this issue was of little safety significance.

No violations or deviations were identified.

8. Safety Assessment/Quality Verification

a. Licensee Event Report (LER) Follow-up (90712 & 92700)

Through direct observation, discussions with licensee personnel, and review of records, the following LERs were reviewed to determine that the reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications.

<u>LER No.</u>	<u>TITLE</u>
461/89024	Inadequate Procedure Leads to Miscalibration of Reactor Water Cleanup Leak Detection Modules Resulting in Operation Prohibited by Technical Specifications.
461/88026	Loss of Secondary Containment Integrity due to Failure to provide a program for maintaining Loop Seal Drain Traps Operable.
461/89027	Lack of understanding of the effect of a missing screw on Seismic Qualification



results in inoperability of Control Room Heating, Ventilating, and Air Conditioning System.

- 461/89033 Failure to Recognize and Address Problems with Extended Operation in HOT SHUTDOWN Results in Condensation in Main Steam Lines, High Steam Flow Signals and Group 1 Isolations.
- 461/89039 Licensed Operator misinterpreting a note in a Surveillance Procedure results in failure to demonstrate operability of High Pressure Core Spray System Suction Valves.
- 461/89041 Leakage of Refrigerant from Chiller Results in Inoperable High Pressure Core Spray System While Reactor Core Isolation Cooling System was Inoperable.

9. Meetings

- a. On November 27, 1990, Mr. T. O. Martin, Director, Division of Reactor Safety and members of his staff met with Mr. J. Miller, Manager - Nuclear Station Engineering Department, and members of his staff to review engineering department initiatives and areas of concern.
- b. On November 27, 1990, Dr. C. J. Papperiello, Deputy Region III Administrator and members of his staff met with Mr. S. Perry and members of his staff. The purpose of this meeting was to review recent events, the performance of the outage, to date, and selected licensee performance indicators.

10. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in Paragraph 3.c.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 7.b and 7.d.

12. Items For Which A "Notice Of Violation" Will Not Be Issued

The NRC uses the Notice of Violation as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support licensee initiative in the self-identification and correction of problems, the NRC will not generally

issue a Notice of Violation for an issue that meets the tests of 10 CFR 2, Appendix C, Section V G.1. These tests are: 1) the issue was identified by the licensee; 2) the issue would be categorized as Severity Level IV or V violation; 3) the issue was reported to the NRC, if required; 4) the issue will be corrected, including measures to prevent recurrence, within a reasonable time period; and 5) it was not a issue that could reasonably be expected to have been prevented by the licensee's corrective action for a previous violation. Issues involving the failure to meet regulatory requirements, identified during the inspection, for which a Notice of Violation will not be issued are discussed in paragraphs 3.a and 5.

13. Exit Interview

The inspectors met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection on December 14, 1990. The inspectors summarized the purpose and scope of the inspection and the findings. The inspectors also discussed the likely informational content of the inspection report, with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.

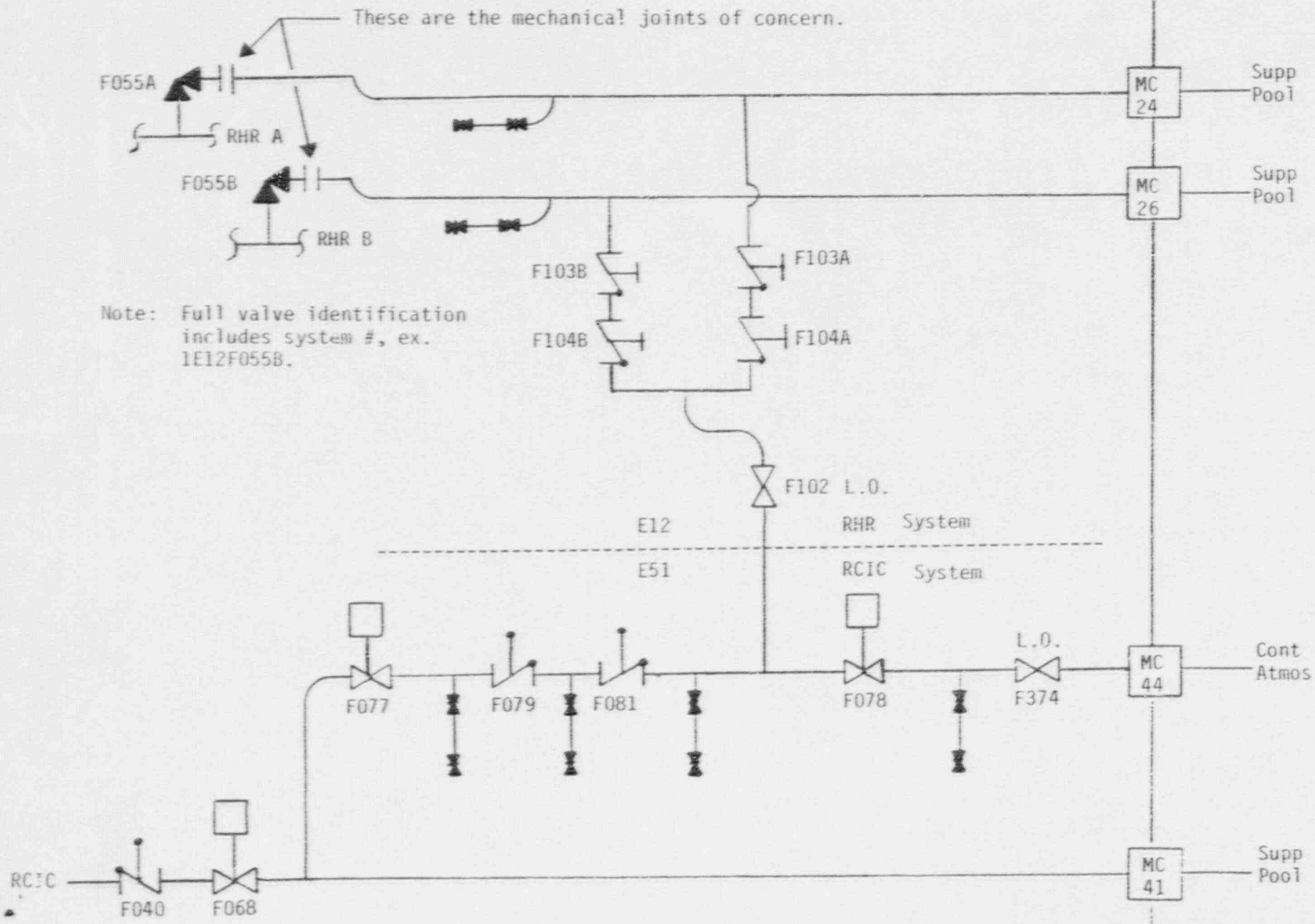


Figure 1 - Simplified Arrangement Drawing of RCIC and RHR Containment Penetrations