U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Licensee:	Illinois Power Company
Facility:	Clinton Power Station
Location:	Route 54 West Clinton, IL 61727
Dates:	February 15 - March 29, 1997
Inspectors:	F.D. Brown, Acting Senior Resident Inspector K.K. Stoedter, Resident Inspector R.A. Langstaff, Resident Inspector D.E. Zemel, Resident Inspector - IDNS
Approved by:	Geoffrey C. Wright, Chief Clinton Oversight Team

EXECUTIVE SUMMARY

Clinton Power Station
NRC Inspection Report 50-461/97006 (DRP)

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 7-week period of resident inspection.

Operations

- The licensee implemented a revised procedure adherence policy instruction and performed extensive training on the new requirements. The inspectors did not identify any compliance problems with the new policy, but were concerned that the applicability of Prerequisites for independent Sections of procedures was to be determined by procedure users rather than procedure preparers and reviewers as recommended in ANSI N18.7. The inspectors considered the consistency and clarity of the new policy instructions to be an improvement, but noted one weakness; a non-documented "noted in" concept was being implemented by plant staff shortly after the new policy was implemented. (Section O1.2)

Maintenance

- The prejob brief, engine preparation, and EDG quick start surveillance were accomplished in a professional manner. (Section M1.2)

- The Division I emergency core cooling system surveillance was performed in a thorough and careful manner. The licensee's expectations for the performance of independent verification were adhered to during the surveillance, and procedural adherence was noted. Although the procedure required multiple entries into high radiation and high contamination areas, no radworker deficiencies were identified. (Section M1.3)

- The surveillance procedure for RHR Containment Pressure Instrument Calibration was properly implemented in a professional manner. (Section M1.4)

- The inspectors observed performance of a surveillance test on the Drywell Purge portion of the Containment Ventilation System. One procedural violation was observed. (Section M1.5)

- The inspectors reviewed MWR D60080, the work authorization and coordination document for the modification of the outboard check valve in the "A" Feedwater line, and identified that it contained very poor documentation of the completion of this safety-related activity. Seven examples of a violation of the Technical Specification for Procedures were identified. (Section M1.6)

- Landing of the Drywell head was performed in an appropriate manner. No technical or radiological control noncompliances were identified, but poor communications resulted in an avoidable entry into a high contamination area. (Section M1.7)

- The inspectors determined that the RCIC System was being maintained per the vendors preventive maintenance recommendations. Lubrication of the pump and turbine was also being maintained in accordance with vendor recommendations. No significant problems with material condition or preventive maintenance were identified. (Section M1.8)

- The licensee performed an effective follow-up on an LER from another utility, and identified that a RR system drain line had been damaged by installation of two freeze seals, in close proximity to each other, during the current outage. The inspectors reviewed the installation of these freeze seals and identified that the procedure, training, and supervisory control of this evolution was inadequate to prevent damage to the reactor coolant system boundary. One violation of NRC requirements was identified. (Section M3.1)

- The inspectors identified that the licensee procedure for performing reactor coolant system leakage tests was inadequate in that it allowed test pressures significantly below those experienced during normal power operations. The procedure had been used during the 1995 and the current refueling outages. One violation of NRC requirements was identified. (Section M3.2)

Engineering

- The licensee's engineering organization identified that some TS required quantitative values had been incorporated directly into surveillance procedures without consideration of instrument inaccuracies. The inspectors considered the original practice of using uncorrected TS values in surveillance procedures to have been poor, but concluded that the identification and aggressive response to this issue were an example of a better questioning attitude and safety focus within Engineering. An unresolved item was opened pending inspector review of the licensee's evaluations of procedural adequacy and past operability. (Section E1.1)

Report Details

Summary of Plant Status

The plant entered operational Mode 4 at 4:00 pm on February 15, 1997. The licensee continued to perform outage activities and was performing startup preparation activities at the conclusion of the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments

The inspectors observed the conduct of Operations staff performing normal outage related control room and surveillance activities.

Specific observations for surveillance activities are contained in Section M1 of this report. Activities associated with surveillance procedure CPS 9061.04, "Containment/Drywell Isolation Auto Actuation," were of concern to the inspectors. A special inspection was conducted to review these activities. The results of the special inspection will be documented in Inspection Report (IR) 50-461/97007.

O1.2 Procedure Adherence Policy and Program

a. Inspection Scope

The inspectors followed the licensee's actions to correct procedural adherence and adequacy problems.

b. Observations and Findings

The adequacy of the licensee's procedure adherence policy and programs had been identified as a concern by the NRC in IR 50-461/96010, 50-461/96011, and 50-461/96015. The licensee implemented revised procedure adherence policy and program instructions, CPS 1005.15, "Procedure Use and Adherence," near the end of this reporting period. The licensee informed the inspectors that this new policy and the implementing program requirements were being fully integrated into all upper tier procedures such as the procedures for Conduct of Operations and for Conduct of Maintenance. The inspectors considered this to be an improvement in program consistency and clarity.

The inspectors reviewed CPS 1005.15, and identified one concern. American National Standard Institute (ANSI) N18.7, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," a standard to which the licensee was committed, Paragraph 5.3(4), stated "Prerequisites applicable only to certain sections of a procedure should be so identified." The inspectors noted

that CPS 1005.15 stated that when independent performance of procedure sections was performed, it was the responsibility of the performer to determine which prerequisites were applicable to that section. The inspectors were concerned that the licensee's approach provided less positive assurance that appropriate prerequisites would be identified than that recommended by ANSI N18.7. The licensee acknowledged the inspectors' concern, and stated that the issue would be evaluated during a revision to 1005.15 scheduled for after unit start-up.

The licensee performed extensive training of all plant staff in the new policy and the new program instructions prior to implementing the changes. The inspectors observed some of these training sessions and had no negative observations.

The inspectors identified one concern while observing the Shift Supervisor (SS) turn-over on the morning of March 31, 1997. The inspectors noted the off-going SS mention that information had been "noted in" to CPS 9000.01D002, "Control Room Operator Surveillance Log - Mode 4, 5 Data Sheet," because plant conditions were different than expected. The inspectors followed-up this observation by discussing the "noted in" concept with operators and Operations management, and by reviewing the copy of CPS 9000.01D002 for March 31, 1997. The inspectors were told that "noted in" was understood to be the process of adding extra information to a procedure. The inspectors were told that this concept was not based on written guidance, but had been developed from comments made during the procedure adherence training and during verbal conversations between SSs and plant management. The inspectors determined that CPS 9000.01D002 was not a procedure required by NRC regulations or the facility license, so the "noted in" sign-offs were not a regulatory issue in this case. The inspectors expressed to licensee management the concern that verbally communicated procedure adherence guidance was subject to misunderstanding and misapplication. Licensee management acknowledged the inspectors' concern. The inspectors did not identify any examples of procedural violations associated with "noted in" changes to safety-related procedures between March 31, 1997 and the end of this inspection period.

In addition to the new procedure adherence policy, the licensee also implemented a new program for performing and controlling temporary procedure changes. The licensee informed the inspectors that the intent of this new program was to facilitate efficient, regulatory compliant, procedure changes when field conditions differed from those for which a procedure was written.

c. Conclusions

The licensee implemented a revised procedure adherence policy instruction and performed extensive training on the new requirements. The inspectors did not identify any compliance problems with the new policy, but were concerned that the applicability of prerequisites for independent sections of procedures was to be determined by procedure users rather than procedure preparers and reviewers as recommended in ANSI N18.7. The inspectors considered the consistency and

clarity of the new policy instructions to be an improvement, but noted one weakness in that a non-documented "noted in" concept was being implemented by plant staff shortly after the new policy was implemented.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (61726)

Portions of the following surveillance activities were observed or reviewed by the inspectors.

-CPS 9030.01D028	ATM Channel Functional and Calibration Check for RHR Containment Pressure Instruments E12-N662A, B, C, and D
-CPS 9052.01	LPCS/RHR A Pumps and LPCS/RHR A Water Leg Pump Operability
-CPS 9053.05	RHR/LPCS Valve Operability (Shutdown)
-CPS 9059.01	Reactor Coolant System Leakage Test
-CPS 9061.03	Containment/Drywell Isolation Valve 3 Month Operability
-CPS 9061.04	Containment/Drywell Isolation Auto Actuation
-CPS 9080.01	Emergency Diesel Generator 1A/1B Operability (Both the Division I and II EDG tests were observed)
-CPS 9432.08	Main Steam Line ambient temperature E31-N604C/D Channel Calibration

b. Observations and Findings

The inspectors found the work performed under these activities to be generally acceptable, with procedures present and in use. Comments for specific work activities are discussed in further detail below. The performance of CPS 9061.04 is discussed in a separate inspection report (50-461/97007) due to the significant issues that were identified during its performance.

M1.2 Division I Diesel Generator Surveillance

a. Inspection Scope (61726)

The inspectors observed the pre-brief, engine preparations, and accomplishment of the surveillance for quick starting the Division I Diesel Generator (DG) (CPS 9080.01).

b. Observations and Findings

A thorough pre-job brief was performed, including contingency planning for potential equipment problems.

The preparations for starting the DG were accomplished by three operators and were in accordance with the procedure. Particular attention was placed on barring over the DG no more that two revolutions. Recent concerns with barring the engine and its preconditioning effect were well recognized by the operators.

The operators took 25 minutes to accomplish the procedural steps when the DG was in lockout and unavailable. The procedure contained a caution statement directing the time in lockout be minimized. In this case, the operators were knowledgeable of the required steps and performed the steps in a prompt but controlled manner.

The surveillance procedure was written for quick starting the DG and loading it to the electrical grid. In this case (plant was in Mode 4), the loading was not required. The procedure contained adequate direction to mark specific DG loading steps as "not applicable." In addition, the procedure addressed other steps that may not be required and how to annotate those circumstances. The surveillance was accomplished without problem and the DG was restored to operable status.

c. Conclusions

The pre-brief, engine preparation, and EDG quick start surveillance were accomplished in a professional manner.

M1.3 Performance of Low Pressure Core Spray and Residual Heat Removal A Surveillances

a. Inspection Scope (61726)

The inspectors observed the pre-brief and performance of CPS 9052.01 and CPS 9053.05.

b. Observations and Findings

Briefings on both of these surveillance procedures were detailed and discussed the coordination needed for proper surveillance performance and possible contingencies. Technical specification actions were also discussed to ensure that actions were entered at the appropriate time.

Although the surveillance procedure was complex and required that activities be performed by several groups, coordination was generally good. For example, two operators were allocated to this activity since several of the operations had to be performed in high radiation/high contamination areas. The use of two people ensured that additional time was not spent having one operator traverse in and out of these areas in order to perform the necessary procedure steps.

The inspector noted good use of the procedure by both operators. The licensee's recently implemented self checking techniques were employed as a method of verifying the proper equipment had been identified prior to performing any manipulations. In addition, the second operator allocated to this activity served as a second checker which further confirmed that the proper equipment was operated and ensured that the self checking methods were properly performed.

c. Conclusions

The Division I emergency core cooling system surveillance was performed in a thorough and careful manner. The licensee's expectations for the performance of independent verification were adhered to during the surveillance, and procedural adherence was noted. Although the procedure required multiple entries into high radiation and high contamination areas, no radworker deficiencies were identified.

M1.4 RHR Containment Pressure Instrument Calibration

a. Inspection Scope (61726)

The inspectors observed performance of portions of surveillance procedure CPS 9030.01D028 "ATM Channel Functional and Calibration Check for RHR Containment Pressure Instruments E12-N662A, B, C, and D."

b. Observations and Findings

The inspectors found the Controls and Instrumentation (C&I) technician to be very familiar with the procedure being implemented. The procedure was appropriately released for work by plant operations. The C&I technician completed the procedure as written, and was familiar with the layout and location of the panels and alarms associated with the test.

c. Conclusions

The surveillance procedure for RHR Containment Pressure Instrument Calibration was properly implemented in a professional manner.

M1.5 Containment/Drywell Ventilation System Surveillance

a. Inspection Scope

The inspectors observed performance of the Drywell Purge System portion of surveillance test CPS 2104.02, "VQ/RA Charcoal Absorber Leak Test." The Drywell Purge System was a part of the Containment Ventilation System as described in CPS 3408.01, "Containment Building/Drywell HVAC VR/VQ." As the result of this operation, the inspectors initiated a review of the test methodology for this surveillance.

b. Observations and Findings

During observation of CPS 2104.02 on February 27, 1997, the inspectors witnessed licensee staff make an error while testing filter train 0VQ07FB. The CPS 2104.02 test used Halide to verify the effectiveness of systems' absorber banks. The CPS 2104.02 test was performed in conjunction with test procedure CPS No. 2104.01, "Ventilation Filter Train Testing". Both procedures required the use of two sample tubes which were installed in sample ports in the filter train housing. The licensee staff placed all four sample lines in the sample ports prior to connecting the other end of the sample lines to the test equipment used for the two types of test. The test personnel then connected the correct up stream (U/S) sample line to the U/S sample connection on the test equipment. They then connected a down stream (D/S) sample line to the D/S sample connection on the test equipment. The licensee staff then attempted to perform the CPS 2104.02 test, but the results were unreasonable. The test personnel concluded that the sample lines were not properly connected to the test equipment, in that the sample line connected to the D/S port of the test equipment was installed in the wrong location in the system (this sample line had been staged for the other surveillance procedure). The test personnel corrected the sample line connections and successfully completed the test.

The inspectors noted that the original D/S sample line was located immediately after the absorber bank rather than further down stream as required. This error was potentially significant because Halide which bypassed the absorber had not had a chance to be uniformly distributed in the airstream. This condition could have resulted in conservative or non-conservative test results. Fortuitously, the test personnel recognized the results were unreasonable. This led them to identify their error.

The test personnel stopped performance of tests using CPS 2104.02 and originated CR No. 1-97-02-276. This CR identified that the procedure, as written, was

inadequate to successfully perform the surveillance test in that it did not specify that the D/S sample line be connected to the D/S sample connection on the Halide test equipment. The inspectors considered the use of an inadequate test procedure to perform a surveillance test on a portion of the Containment Ventilation System to have been a **violation (50-461/97006-01)** of T.S. 5.4.1.

In following-up the surveillance observations, the inspectors noted that an unusually large range of system flows was specified in the surveillance acceptance criteria. The inspectors initiated a review of the USAR and original system test documentation to assess the validity of the surveillance. This effort had not completed at the end of the inspection period and will be tracked as an **Inspector Follow-up Item (50-461/97006-02).**

c. Conclusions

The inspectors observed performance of a surveillance test on the Drywell Purge portion of the Containment Ventilation System. One procedural violation was observed.

M1.6 Performance of Feedwater Check Valve Modifications

a. Inspection Scope (62703)

The inspectors reviewed the Maintenance Work Request (MWR) package for the modification of the outboard check valve in the "A" Feedwater line following completion of all identified maintenance activities, but prior to close-out of the MWR.

b. Observations and Findings

The inspectors obtained a partial copy of MWR D60080, "RF6 Rework Valve 1B21F032A Due to LLRT Failure," on or about March 19, 1997 to review the status of three discrepancies discussed by the licensee at a morning status meeting. Final reassembly and post modification testing of 1B21F032A had been completed on or about March 8, 1997. The inspectors performed a cursory review of this partial copy of the MWR and identified that at least 40 of the approximately 110 job steps (J/Ss) were not signed as being completed. The inspectors concluded that no more than four of these J/S should have been unsigned based upon the status of the valve work as described in the licensee's status meetings.

On March 31, 1997 the inspectors performed a more thorough review of the MWR D60080 work package. During this review, the inspectors identified that 22 J/Ss had still not been signed for. The other 18 J/S had been signed as complete or marked "N/A" (non-applicable) between March 19 and March 31, 1997. Among the J/Ss still unsigned, were those for proper check valve reassembly.

The inspectors reviewed the licensee's upper tier procedures CPS 1501.02, "Conduct of Maintenance," and CPS 1029.01, "Preparation and Routing of Maintenance Work Documents" to determine whether the licensee's programs were in compliance with the NRC requirements and the utility's licensing commitments. The inspectors identified that CPS 1501.02 and CPS 1029.01 did not require MWRs to be prepared or performed to the standards specified for procedures. The inspectors also noted that MWRs were not required to be performed as written, and therefore would not satisfy the requirements for documented instructions or drawings required for maintenance activities that could affect the performance of safety-related equipment.

The inspectors discussed the above observations with managers of the Maintenance Department, who informed the inspectors that the licensee did not consider MRWs to be documented instructions, procedures or drawings as described in the NRC requirements. The inspectors noted, and plant staff concurred, that this distinction was not clearly delineated in CPS 1501.02 and CPS 1029.01. The inspectors also noted, and plant staff again concurred, that the use of MWRs as a work authorization and coordination tool did not relieve the licensee from the requirement of controlling maintenance activities which could affect the performance of safety-related equipment by use of written procedures, documented instructions, or drawings. The plant staff assured the inspectors that the maintenance planners who prepared MWRs were aware of the intended function of MWRs and the need to reference approved written procedures, documented instructions, or drawings for each MWR J/S.

Compliance Issues

The inspectors reviewed MWR D60080 and the rest of the available work package for the 1B21F032A modification to assess compliance with NRC requirements and the utility's licensing commitments, and identified a lack of attention to detail in the licensee's handling of the MWR.

The inspectors identified that J/Ss were not signed-off as work was completed, as required by CPS 1501.02, step 8.1.4.8. MWR D60080, J/Ss 77 through 87 covered the assembly of 1B21F032A. These job steps were not signed for in the MWR. J/S 93 required that maintenance mechanics reassemble 1B21F032A in accordance with CPS 8120.04 and the vendor manual. J/S 93 had not been signed by a maintenance mechanic. Failure to sign for J/Ss 77 through 87 and 93 as work was performed was considered to be an example of a **violation (50-461/97006-03a)** of T.S. 5.4.1.

The inspectors identified that procedurally required verifications had not been made. MWR D60080, J/S 93 required that maintenance mechanics reassemble 1B21F032A in accordance with CPS 8120.04 and the vendor manual. A copy of CPS 8120.04C001, the checklist for verification signatures associated with CPS 8120.04, had been prepared for use as part of MWR D60080 on February 10, 1997. CPS 8120.04, Steps 8.9.8, 8.11.1.12, 8.11.2.15, 8.12.5, 8.12.7, and

8.15.11 were neither marked as non-applicable nor initialed and dated on the working copy of CPS 8120.04C001, as required by CPS 1005.01, "Procedures and Documents," Step 8.1.1. Failure to perform procedural steps as directed was considered to be an example of a **violation (50-461/97006-03b)** of T.S. 5.4.1. MWR D60080, J/S 42 required that 1B21F032A be inspected in accordance with the applicable sections of CPS 8120.34, "Check Valve Inspection," with notifications and measurement data to be documented on checklist 8120.34C001. The inspectors confirmed that J/S 42 had been initialed as complete, but found that the copy of 8120.34C001 associated with this J/S was not completely filled in and was not signed by the individual who performed the work. Failure to adequately complete and sign for the performance of work, as required by CPS 8120.34, was considered to be an example of a **violation (50-461/97006-03c)** of T.S. 5.4.1.

The inspectors identified that a J/S had been inappropriately signed for. MWR D60080, Job Step 46 required that Operations be notified after pipe hangers on line 1IS01A were cut. A late entry sign-off of this J/S was completed on 3/26/97. CPS 1501.02, Step 2.1.3 allows such late entries as long as they are based on objective evidence of the performance of the J/S. The inspectors requested a copy of the objective evidence supporting the late entry sign-off of J/S 46. The licensee informed the inspectors that there was no supporting evidence and that the step should have been marked Non-Applicable because the hangers were not removed from line 1IS01A. The licensee cited the reason for this error as being inattention to detail. The inspectors considered the late entry sign-off of J/S 46, without supporting objective evidence of the completion of the step to be an example of a **violation (50-461/97006-03d)** of T.S. 5.4.1.

The inspectors identified that required rework was not documented and that final component measurements were not obtained. MWR D60080, J/S 54 required the fabrication of new actuator shafts for the valve, and specified that the fabricated components' dimensions be verified by Quality Verification (QV). The inspectors reviewed the work package and identified that the record of work activities on the MWR continuation sheets documented re-machining of the shafts after the final QV verification of component dimensions was performed. The inspectors identified this issue to licensee maintenance management. The licensee acknowledged that final measurements had not been documented in the work package as specified in the MWR. The inspectors concluded that no procedural requirement for obtaining the final component measurements existed. CPS 1015.02, Step 8.1.4.8, required that MWR J/Ss which were reperformed be documented on a copy of CPS 1029.01F003. The shaft re-machining was not documented on a copy of CPS 1029.01F003. Failure to reperform and document the additional fabrication work which changed the actuator shaft dimensions covered by MWR D60080 J/S 54 was considered to be an example of a **violation (50-461/97006-03e)** of T.S. 5.4.1.

The inspectors identified that required documentation was not maintained. The licensee initiated Condition Report (CR) 1-97-03-111 to document the need to disposition three deviations from the fabrication drawings for the new internal components of 1B21F032A. This CR was initiated after the valve had been

reassembled. CPS 1501.02, "Conduct of Maintenance," Section 8.9, allows "Risk Basis" deviations from design if the applicable engineer is contacted at the time of identification of the deviation and if the engineer provides verbal approval to continue with the work. Step 8.9.1.2 of CPS 1501.02 requires that the effort to contact the engineer and the engineer's approval to continue work shall be documented on CPS 1029.01F010, "MWR Discrepancy List." The inspectors identified that the applicable copy of CPS 1029.01F010 did not document either an effort to contact an engineer regarding the fabrication errors, nor that approval to continue with valve reassembly had been obtained. Failure to document engineering approval to proceed with the "Risk Basis" reassembly of 1B21F032A was an example of a **violation (50-461/97006-03f)** of T.S. 5.4.1. The licensee informed the inspectors that the required verbal approval had been obtained.

The inspectors identified that the licensee did not have a process for ensuring that components with design deviations were not returned to service prior to resolution of the deviation. CPS 1501.02, Step 8.9.1.5, requires that "Risk Basis" discrepancy list deviations be resolved prior to declaring the effected equipment operable. CPS 1501.02, Step 2.2.19 and CPS 1029.01, Step 4.1 provide similar direction, but add that effected equipment should not be returned to service as well as not being declared operable. The inspectors reviewed the three "Risk Basis" deviations in the 1B21F032A valve work package which had been documented on CR 1-97-3-111. The deviations were found to have been resolved by Engineering Change Notice (ECN) 30099 on March 14, 1997. The inspectors reviewed the Daily Plant Outage Reports and concluded that Residual Heat Removal (RHR) "A" had been considered as operational with flow via the Feedwater "A" line and 1B21F032A prior to ECN 30099 being issued. The licensee was requested to provide any documentation which contradicted this conclusion, but had not done so at the time this report was issued. Returning 1B21F032A to service as an operable flow path for RHR prior to resolving "Risk Basis" deviations was an example of a **violation (50-461/97006-03g)** of T.S. 5.4.1. This issue was of increased concern to the inspectors because the Operations Department staff interviewed could not explain to the inspectors how the status of "Risk Basis" design deviations was tracked. This indicated a potential problem with the licensee's maintenance and modification program. This issue was discussed with the licensee.

MWR D60080, J/Ss 93A, 93B, 93C, 93D, and 93E provided a detailed sequence of steps to be performed by electric maintenance mechanics to check the operation of the 1B21F032A actuator. The inspectors identified that these J/Ss did not refer to procedures, written instructions, or drawings, and were therefore inconsistent with the expectations for the use of MWRs as described by licensee management. After several days of review, the licensee's maintenance staff provided the inspectors a copy of a completed Step 8.1.1.5 of CPS 9861.02D002, "LLRT Data Sheet for 1MC009," an approved surveillance procedure, which provided step by step instructions to perform the test described in MWR D60080, J/Ss 93A through 93E. This test had been performed as a portion of the 1B21F032A modification post maintenance testing. The inspectors concluded that the requirements of T.S. 5.4.1

and 10 CFR 50, Appendix B, Criterion V had been satisfied by the performance of CPS 9861.02, step 8.1.1.5, but conveyed to plant management the concern that the inclusion of J/Ss 93A through 93E in MWR D60080 indicated that the programmatic guidance in CPS 1501.02 and CPS 1029.01 was either not clear or that maintenance planners had not implemented plant managements expectations, as described to the inspectors.

Status of the 1B21F032A Check Valve

The licensee completed post modification testing of 1B21F032A during this reporting period. The check valve passed the tests. The inspectors noted that 1B21F032A had passed previous post-outage local leak rate test (LLRT) surveillances but had failed subsequent as-found LLRTs. These failures were documented in Inspection Report 50-461/96009, and indicate the need for additional confidence in the fabrication and assembly of the valve modification.

The inspector's review of the MWR D60080 work package did not identify any specific examples of out-of-tolerance fabrication details or improper valve assembly techniques or conditions.

c. Conclusions

The inspectors reviewed MWR D60080, the work authorization and coordination document for the modification of the outboard check valve in the "A" Feedwater line, and identified that it contained very poor documentation of the completion of this safety-related activity. Seven examples of a violation of the Technical Specification for Procedures were identified.

M1.7 Installation of Drywell Head

a. Inspection Scope (62703)

The inspectors observed the pre-job briefing, the placement of the head, and final local leak rate testing (LLRT).

b. Observations and Findings

The pre-job brief was considered good in that radiation protection, safety, and task specific issues were addressed. The crew asked several useful questions during the briefing. Following the brief, the crew divided into smaller groups for each specific task and discussed individual assignments.

The actual work of moving and setting the head was not complicated, although most of the work was performed in a high contamination area. Each succeeding task was accomplished in a deliberate and controlled manner. At one point a mechanic identified a minor problem with a the rigging equipment. The work was

stopped momentarily until a replacement part was provided. The task was accomplished without incident.

Prior to starting the local leak rate testing of the DW head, the test operator determined (through communications with a mechanic) that the test hose was not connected properly. A mechanic had attached the hose while in the high contamination area performing other work. This mechanic had not been informed of the specific hose configuration requirements. The intention to save an additional entry into the area was defeated by poor communications. The test hose was reconfigured and the test proceeded in accordance with the procedure.

c. Conclusions

Landing of the drywell head was performed in an appropriate manner. No technical or radiological control noncompliances were identified, but poor communications resulted in an avoidable entry into a high contamination area.

M1.8 Reactor Core Isolation Cooling (RCIC) System

a. Inspection Scope

The inspectors reviewed RCIC vendor manual requirements pertaining to preventive maintenance (PM) and lubrication practices, then compared these requirements with the maintenance history. Also, the inspectors reviewed the current corrective maintenance backlog for the RCIC pump and turbine as well as any actions and trends implemented as a result of the Maintenance Rule.

b. Observations and Findings

The inspectors concluded that the current maintenance PM program for RCIC adequately implemented vendor manual requirements. Maintenance history indicated that the PMs had generally been completed when the task was scheduled. Lubrication requirements for both the pump and the turbine as stated in NSED Standard MS-01.00, "Equipment Lubrication Standard," were consistent with the vendors recommendations. NSED Standard MS-03.00 (Rev. 22), "Oil Sampling and Analysis," had been updated since problems with moisture in the turbine oil were identified in the summer of 1996 (see IR 50-461/96009).

The inspector interviewed the applicable system engineers to determine how the system was being treated in terms of the Maintenance Rule. Plant staff stated that the system was in the increased monitoring a(1) status due to it not meeting system availability goals (other goals were met). The engineers also documented corrective actions in this area, namely to decrease unavailability by increasing preventive maintenance and surveillance outage frequency. They had also re-evaluated the initial average historical unavailability of the system and found it to be inaccurate but conservative. These actions appeared appropriate

c. Conclusions

The inspectors determined that the RCIC System was being maintained per the vendors preventive maintenance recommendations. Lubrication of the pump and turbine was also being maintained in accordance with vendor recommendations. No significant problems with material condition or preventive maintenance were identified.

M3 Maintenance Procedures and Documentation

M3.1 Freeze Seal Issues

a. Inspection Scope (92700)

The inspectors reviewed data pertaining to an industry event (Licensee Event Report from Diablo Canyon Power Plant 1) on the topic of setting two freeze seals on a common line.

b. Observations and Findings

Maintenance Work Request (MWR) No. D60031 was initiated in April of 1995 to document valves with leakage past their seats on the "B" Reactor Recirculation (RR) drain line. The licensee decided to replace the leaking valves. Because the RR loop maintenance isolation valves also leaked past their seats, a freeze seal was required to isolate the drain line from the loop.

Field work commenced on November 11, 1996, utilizing MWR D60031 and procedure CPS 8208.01, "Freeze Seals." The MWR planned for only one freeze seal to be installed, but did not specifically prohibit more than one. The maintenance mechanics who installed the freeze seal installed a second seal approximately six inches from the first because they were not confident the first seal would hold. The mechanics stated that they followed all procedural requirements for each individual freeze seal.

Subsequent to the repair, licensee engineers became aware of LER 50-275 which described how pipe between two freeze seals was damaged due to the hydraulic pressure generated as water between the freeze seals expanded and went from a liquid to a solid state. The engineers walked-down plant piping systems where similar freeze seals were known to have been established. The engineers identified that the RR drain line area where the two freeze seals had been established under MWR D60031 was "bubbled" by approximately .040 inch. This damage was not visible without using calipers. The damaged pipe was subsequently replaced.

Procedure Adequacy

The inspectors reviewed CPS 8208.01, Revision 9. The inspectors found that the procedure provided no precautions pertaining to setting two freeze seals on one

line, though it did discuss pressure relieving requirements in the event a freeze seal was to be installed in the vicinity of a pump or valve. The procedure also did not implement the Electric Power Research Institute (EPRI) Guide entitled "Freeze Sealing (Plugging) of Piping." The EPRI guide discussed in detail the need for properly spacing a freeze seal from another freeze seal or fixed component.

Training Adequacy

The inspectors reviewed the qualifications of the two mechanics who performed the RR drain line freeze seal activities. One of the two individuals was qualified by virtue of a Training Waiver Form. Freeze seal specific training was covered by a site specific lesson plan (Skill No. 082803C018, "Block A Line By Use Of Freeze Seals"), but the training waiver was completed based on the mechanic's past employment as a pipefitter tradesman. The justification stated on the Training Waiver Form was "Supervisor evaluation of experience obtained at Clinton Power Station, craft certification letter previously submitted". This same Training Waiver Form documented a waiver of training in operating valve lapping machines, the use of hand signals to direct crane operators, performing flame cutting, repair/inspect plug valves, and twelve other maintenance attributes. It should also be noted that, according to the Supervisor of Maintenance Training, the lesson plan discussed for these activities has never been taught by the Nuclear Training Department. All plant site qualifications for installation of freeze seals were based on waivers. The inspectors considered the extensive use of training waivers an **Inspection Follow-up Item (50-461/97006-04)** pending review of the basis for such waivers. The second individual was not qualified, which was allowed by plant procedures as long as the non-qualified mechanic was under the direct supervision of the qualified mechanic.

Supervisory Oversight

The inspectors determined that there was no record of supervisory oversight in the decision to install a second freeze seal on the RR system drain line, or the decision to locate that seal in close proximity to the first seal.

Compliance Issues

The inspectors concluded that licensee staff had installed a second freeze seal on the RR system drain line in a manner which resulted in damage to the reactor coolant system boundary. The installation of this second freeze seal was not authorized by the MWR in use, and installation of a second freeze seal was not adequately controlled by the freeze seal procedure, freeze seal training, and supervisory oversight of the work. The inspectors considered this to be a case of plant staff applying a procedure in a manner for which it was not intended rather than a case of a procedure inadequate for its intended purpose. Use of a procedure which was inadequate to ensure the controlled performance of an activity affecting quality was considered to be a **Violation (50-461/97006-05)** of T.S. 5.4.1.

The inspector also reviewed the licensee's response to NRC Information Notice (IN) No. 91-41, "Potential Problems With The Use Of Freeze Seals." This IN did not specifically identify a concern with placing two freeze seals in proximity to each other, but did stress the need for appropriate training and procedures when installing freeze seals. This document was issued by the NRC in June of 1991 and received a formal review at Clinton Power Station. The inspectors determined that licensee staff closed their review of IN 91-41 based upon the existence of plant procedures and training. The inspectors could not determine, based upon the closure documentation, that a review of the procedure and training adequacy was performed when IN 91-41 was assessed.

c. Conclusions

The licensee performed an effective follow-up on an LER from another utility, and identified that a RR system drain line had been damaged by installation of two freeze seals, in close proximity to each other, during the current outage. The inspectors reviewed the installation of these freeze seals and identified that the procedure, training, and supervisory control of this evolution was inadequate to prevent damage to the reactor coolant system boundary. One violation of NRC requirements was identified.

M3.2 Inappropriate Test Pressure Specified for System Leakage Tests

a. Inspection Scope (73051, 73753)

The inspectors reviewed the test conditions specified for the reactor coolant system leakage and hydrostatic tests. The specific test procedures reviewed were:

-CPS 2800.03	Reactor Coolant System Leakage Test, Revision 13, approved December 9, 1993
-CPS 2800.03	Reactor Coolant System Leakage Test, Revision 14, approved April 17, 1995
-CPS 9059.01	Reactor Coolant System Leakage Test, Revision 2, approved March 19, 1997

b. Observations and Findings

The inspectors noted the following licensing basis commitments associated with reactor coolant system leakage and hydrostatic test:

- Figure 1.1-1 and Section 1.2.2.3.2 of the Updated Safety Analysis Report (USAR) described the nominal operating pressure in the reactor vessel at rated power as 1040 psia which corresponds to 1025 psig. In addition, the inspectors noted that the licensee typically operated the plant with a

pressure above 1000 psig in the reactor vessel steam dome when at 100 percent rated power for the period April 1995 through September 1996.

- Section 5.2.4.10 of the USAR stated that pressure-retaining Code Class 1 component and system leakage and hydrostatic testing will be conducted in accordance with the requirements of Article IWB-5000 of ASME Boiler and Pressure Vessel Code Section XI.

- Article IWB-5221, a subsection of Article IWB-5000, of ASME Boiler and Pressure Vessel Code Section XI, 1980 edition through Winter 1981 addenda, specified that system leakage tests be conducted at a test pressure not less than the nominal operating pressure associated with 100 percent rated reactor power.

The test pressures specified by procedures 2800.03, revision 14, and 9059.01, revision 2, were based on an operating pressure of 900 psig. Both procedures specified higher test pressures, 906 (+145, -0) psig and 927 (+103, -0) psig respectively, to allow for instrument error and gauge heights. The inspectors noted that the 906 and 926 psig pressures specified were less than the 1025 (+35, -0) psig pressure specified previously by procedure 2800.03, revision 13, and the operating pressure described in the USAR. The inspectors determined that the lower test pressure was based on the inservice test (ISI) group's interpretation that "nominal operating pressure" consisted of the full operating band that the reactor could operate at (documented by memorandum Y-99740, dated June 29, 1992). Engineering personnel stated that the interpretation was provided to allow greater flexibility in establishing test pressures so as to provide greater margin from the pressure-temperature limitations established by TS. Engineering staff added that this change had been requested by Operations personnel in the 1992 time frame. The inspectors determined that at the time the interpretation was provided, TS did not allow increasing reactor coolant system temperature above 200° for the purposes of the system leakage or hydrostatic tests without undergoing a mode change.

The inspectors questioned the use of the lower test pressure and discussed this issue with licensee staff. The ISI group had established the lower limit of the operating band as 849 psig based on the point at which Main Steam Isolation Valves (MSIVs) close on decreasing pressure. However, the ISI group specified that 900 psig be used as the lower limit for testing because "continuous operation near the low pressure set point is not recommended because it could result in poor steam quality or initiation of MSIV closure." The upper limit was established as 1045 psig based the upper operating limit specified by Technical Specifications (TS). The inspectors noted that the ISI group's interpretation of normal operating pressure at rated power was inconsistent with the USAR and actual system pressures during normal operation. Based on these observations, the inspectors considered the ISI group's determination of "nominal operating pressure" to be inappropriate and non-conservative.

A reactor coolant system leakage test was performed using procedure CPS 2800.03, revision 14, on April 20, 1995. The test pressure was 964 psig. The test was reviewed and accepted on April 28, 1995, and the plant underwent an operating cycle, May 1995 through September 1996, based on acceptance of the test. During the sixth refueling outage, another system leakage test was performed using procedure CPS 9059.01, revision 2, on March 23, 1997. The test pressure was 950 psig. The March 1997 test was not accepted due to observed leakage which required repair. The inspectors considered the performance of the April 1995 test using CPS 2800.03, revision 14, which did not include appropriate quantitative acceptance criteria for determining the satisfactory accomplishment of the important activity of leak checking the reactor coolant system at the nominal operating pressure associated with rated power, to be a **violation (50-461/97006-06)** of 10 CFR 50, Appendix B, Criterion V, "Procedures."

The inspectors determined that TS had been revised to permit the average reactor coolant system temperature to be above 200° without requiring a mode change for the purposes of system leak and hydrostatic testing. This revision was accomplished by TS amendment 95 which was issued December 2, 1994 and became effective January 1, 1995. The NRC safety evaluation for the amendment described the reason for the change as allowing system leakage and hydrostatic testing to be performed without exceeding pressure-temperature limitations. Consequently, the inspectors concluded that original reason for reducing the test pressure, to provide additional margin from pressure-temperature limits, was no longer valid by the time the test procedure had been revised. The inspectors considered this to be an example of poor communications between licensee organizations contributing to the adoption of an non-conservative position.

c. Conclusions

The inspectors identified that the licensee procedures for performing reactor coolant system leakage tests were inadequate in that they allowed test pressures significantly below those experienced during normal power operations. The procedures were used during the 1995 and 1997 refueling outages. A violation of 10 CFR 50, Appendix B, Criterion V, was identified.

M8 Miscellaneous Maintenance Issues

M8.X Miscellaneous Maintenance Observations

(Closed) Inspection Follow-up Item 50-461/96015-04: Flexitalic Gasket Torque. The item was related to the proper gasket material and torque values to be used in the reassembly of containment equipment drain sump check valve 1RE038B. As part of the licensee's review of this issue, the vendor was contacted and verified that a flexitalic gasket was the correct type of gasket for use in 1RE038B. However, the torque values given within the maintenance work request (MWR) were for use with a corrugated type gasket. Job step seven of the MWR stated that torquing of 1RE038B should be completed in accordance with Attachment 1 of the MWR. The

inspectors review of Attachment 1 determined that it was not clearly stated that the torque values were only to be used with corrugated gaskets. The inspectors concluded that the inadequate documented instruction was not a violation of NRC requirements because the equipment drain system was not safety-related as defined in the plant's quality assurance program or Regulatory Guide 1.33. After receiving the proper gasket from the valve manufacturer and obtaining the proper torque values, 1RE038B was reassembled and tested satisfactorily. The inspector follow-up of this item did not identify any regulatory non-compliances, and the item is considered to be closed.

III. Engineering

E1 Conduct of Engineering

E1.1 Identification of Surveillance Procedure Adequacy Problems

a. Inspection Scope (37551, 92902)

The inspectors monitored the licensee's response to a licensee identified problem with surveillance procedures for TS required conditions.

b. Observations and Findings

Plant engineering personnel identified that some TS required plant conditions and system capacities were incorporated directly into the facility's surveillance procedures without allowance for instrumentation inaccuracies. This practice was reported to be based on a mistaken assumption that the TS values had been developed with margin for instrument inaccuracies. Once this concern was identified by engineers who were reviewing the Standby Liquid Control System, the licensee implemented a program for reviewing all TS referenced quantitative values for plant conditions and system capacities to determine whether the associated surveillance procedures were adequate. This issue did not apply to TSs for safety-related instrumentation. Instrumentation TS values were established with consideration of instrument inaccuracies included.

The licensee had identified several surveillance procedures inadequacies associated with the failure to consider instrument errors at the end of the inspection period. Each inadequacy was being documented on a CR. The inspectors planned to perform an independent assessment of the surveillance procedure reviews and to assess the regulatory significance of each procedure inadequacy at the completion of the licensee's evaluations. The issue of potentially inadequate surveillance procedures and retrospective operability determinations were considered to be an **Unresolved Item (50-461/97006-07)** pending inspector review of the licensee's completed evaluations.

c. Conclusions

The licensee's engineering organization identified that some TS required quantitative values had been incorporated directly into surveillance procedures without consideration of instrument inaccuracies. The inspectors considered the original practice of using uncorrected TS values in surveillance procedures to have been poor, but concluded that the identification and aggressive response to this issue were an example of a better questioning attitude and safety focus within Engineering. An unresolved item was opened pending inspector review of the licensee's evaluations of procedural adequacy and past operability.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) LER 50-461/96-018-00 and Unresolved Item 50-461/96015-07: Incorrect torque values utilized for Control Rod Drive (RD) Hydraulic Control Unit (HCU) installation. Inspection Report Number 50-461/96015 documented a licensee identified deficiency pertaining to the potential over-torquing (during initial installation) of the middle and upper RD HCU retaining 3/8 inch bolts during initial construction in 1981/1982. The inspectors concluded that the corrective actions and analysis taken since discovery of the deficiency have been appropriate in that all effected bolts were replaced. The inspectors reviewed the licensee's retrospective operability determination and did not identify any non-compliances. The inspectors did not identify any licensee corrective actions during the previous two years which should have led to earlier identification of the over-torqued bolts. The installation of over torqued 3/8 inch bolts on the RD HCUs constituted a noncompliance with 10CFR50, Appendix B, Criterion III, "Design Control," but because the licensee identified and aggressively corrected this condition it is being treated as a **Non-Cited Violation [50-461/97006-08]** in accordance with Section VII.B.1 of the NRC Enforcement Policy, NUREG-1600.

IV. Plant Support

There were no significant Plant Support observations or findings during this inspection period.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management on April 14, following the conclusion of the inspection period. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

X2 Pre-decisional Enforcement Conference Summary

On March 4, 1997, a pre-decisional enforcement conference was held at the NRC Region III office to discuss potential enforcement issues identified in Inspection Reports 50-461/96011, 96009, and 96014. The issues were related to weaknesses in the 50.59 and operability determination program, deficiencies in the testing methodology and corrective actions associated with the feedwater check valves, and the improper implementation of design basis information into a preventive maintenance procedure which resulted in the inoperability of safety related equipment. Slides used in the licensee's presentation at the conference have been included as Attachment A to this report.

X3 Management Meeting Summary

On March 6-7, 1997, Dr. Jack Roe, Director, Division of Reactor Projects for Regions III and IV visited Clinton Power Station. In addition to a plant tour, Dr. Roe met with several members of licensee management to discuss plant material condition, operations and engineering issues, and the status of the startup readiness action plan.

X4 Pre-decisional Enforcement Conference Summary

On March 20, 1997, a pre-decisional enforcement conference was held at the NRC Region III office to discuss potential enforcement issues identified in detail in NRC Inspection Report 50-461/96012(DRS). At the conference, several members of the licensee's senior management presented a summary of the subject events and those corrective actions either taken or proposed. While the licensee discussed each violation in detail, the corrective actions addressed for each event, as presented, appeared to be narrow in focus. A copy of the handouts used during this presentation are attached to this report.

X5 Management Meeting Summary

On March 20, 1997, a management meeting was held in the Region III office to discuss the status of the licensee's restart action plan. The licensee described corrective actions taken to date. The licensee also discussed proposed methods of assessing the effectiveness of these actions. The importance of resolving the licensee's procedure adherence problems was discussed at some length.

INSPECTION PROCEDURES USED

IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 62703:	Maintenance Observation
IP 64704:	Fire Protection Program
IP 71707:	Plant Operations
IP 73051:	Inservice Inspection - Review of Program
IP 73753:	Inservice Inspection
IP 92700:	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92902:	Followup - Engineering
IP 92903:	Followup - Maintenance

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

40-461/97006-01	VIO	Inadequate test procedure to preform a surveillance test on a portion of the Containment Ventilation System.
50-461/97006-02	IFI	Unusually large range of system flows was specified in the surveillance acceptance criteria.
50-461/97006-03a	VIO	Failure to sign off job steps in the MWR at the time work was performed.
50-461/97006-03b	VIO	Failure to perform procedural steps as directed.
50-461/97006-03c	VIO	Failure to adequately complete and sign for the performance of work.
50-461/97006-03d	VIO	Late entry sing-off on J/S 46, without supporting objective evidence of the completion of the step.
50-461/97006-03e	VIO	Failure to reperform and document the additional fabrication work which changed the actuator shaft dimensions.
50-461/97006-03f	VIO	Failure to document engineering approval to proceed with the "Risk Basis" reassembly of 1B21F032A.
50-461/97006-03g	VIO	Returning 1B21F032A to service as an operable flow path for RHR prior to resolving "Risk Basis" deviations.
50-461/97006-04	IFI	Extensive use of training waivers.

50-461/97006-05	VIO	Use of an inadequate procedure to ensure the controlled performance of an activity affecting quality.
50-461/97006-06	VIO	Procedures 2800.03, revision 14, and 9059.01, revision 2, were inappropriate to the circumstances.
50-461/97006-07	URI	The issue of potentially inadequate surveillance procedures and retrospective operability determinations.
50-461/97006-08	NCV	The installation of over torqued 3/8 inch bolts on the RD HCUs constituted a noncompliance with 10CFR50, Appendix B, Criterion III, "Design Control."

Closed

50-461/96015-04	IFI	The item was related to the proper gasket material and torque values to be used in the reassembly of containment equipment drain sump check valve 1RE038B.
50-461/96-018-00	LER	Incorrect torque values utilized for Control Rod Drive (RD) Hydraulic Control Unit (HCU installation).
50-461/96015-07	URI	Licensee identified deficiency pertaining to the potential over-torquing (during initial installation) of the middle and upper RD HCU retraining 3/8 inch bolts during initial construction in 1981/1982.

PERSONS CONTACTED

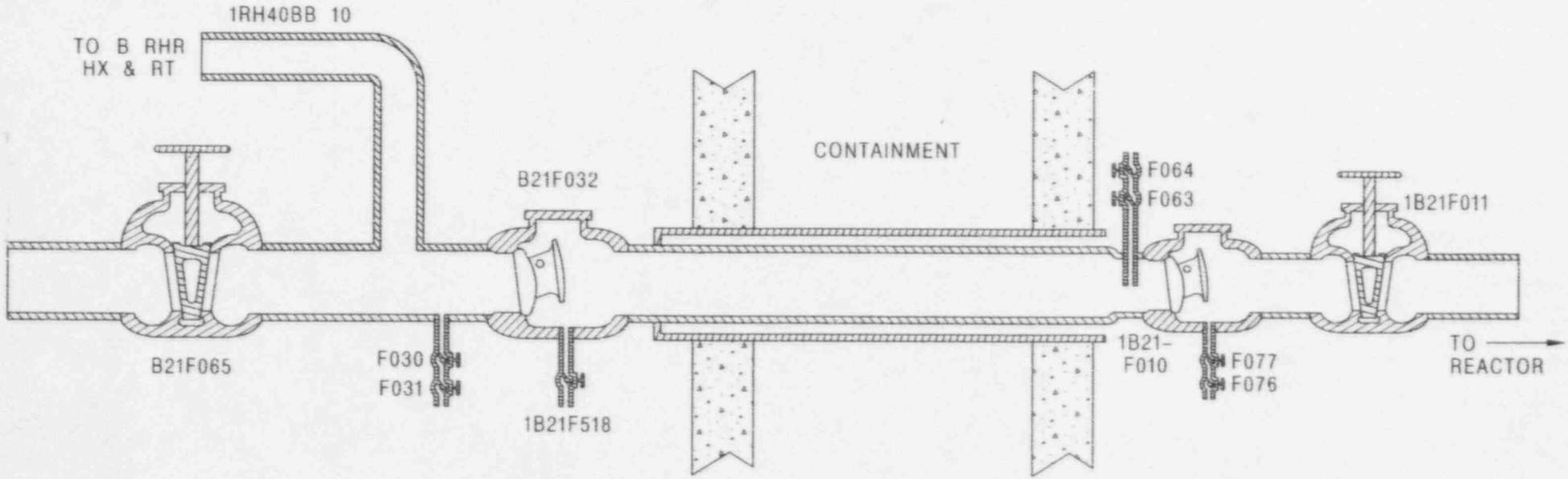
Licensee

W. Connell, Vice President
P. Yocum, Manager - Clinton Power Station
D. Thompson, Manager - Nuclear Station Engineering Department
R. Phares, Assistant to the Vice President
D. Morris, Director - Radiation Protection
A. Mueller, Assistant Plant Manager - Maintenance
M. Lyon, Assistant Plant Manger - Operations

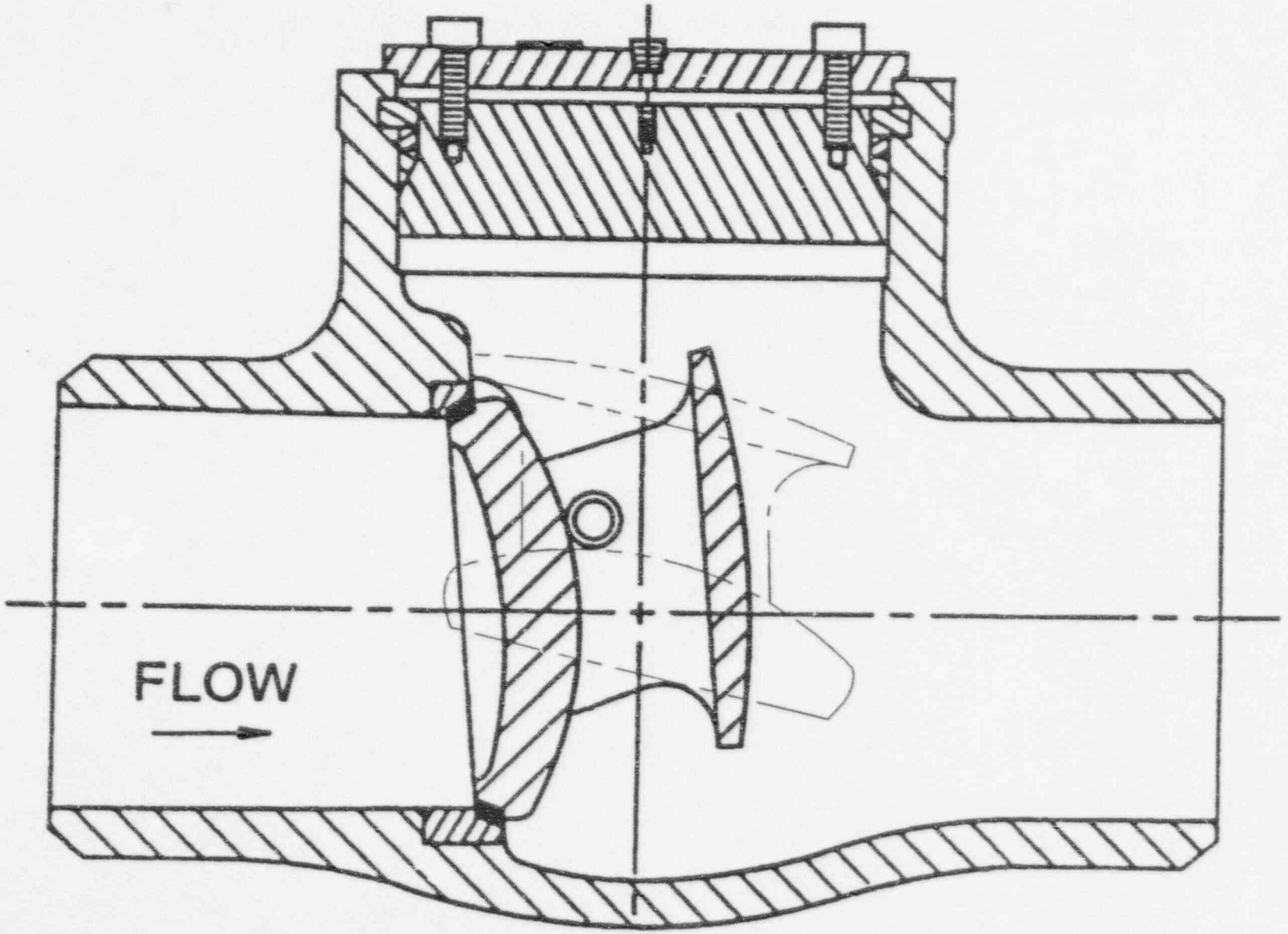
LIST OF ACRONYMS

ATM	Automatic Trip Module
DRP	Division of Reactor Projects
ECN	Engineering Change Notice
HCU	Hydraulic Control Units
MSIV	Main Steam Isolation Valve
MWRs	Maintenance Work Request
PDR	Public Document Room
PM	Preventative Maintenance
RCIC	Reactor Core Isolation Cooling
RR	Reactor Recirculation
RPV	Reactor pressure valve
SSs	Shift Supervisors
TS	Technical Specification
USAR	Updated Safety Analysis Report

FEEDWATER CONTAINMENT PENETRATION PIPING



DRAWN BY KIRK LOWE 2-27-97
C.P.S DRAFTING TEAM



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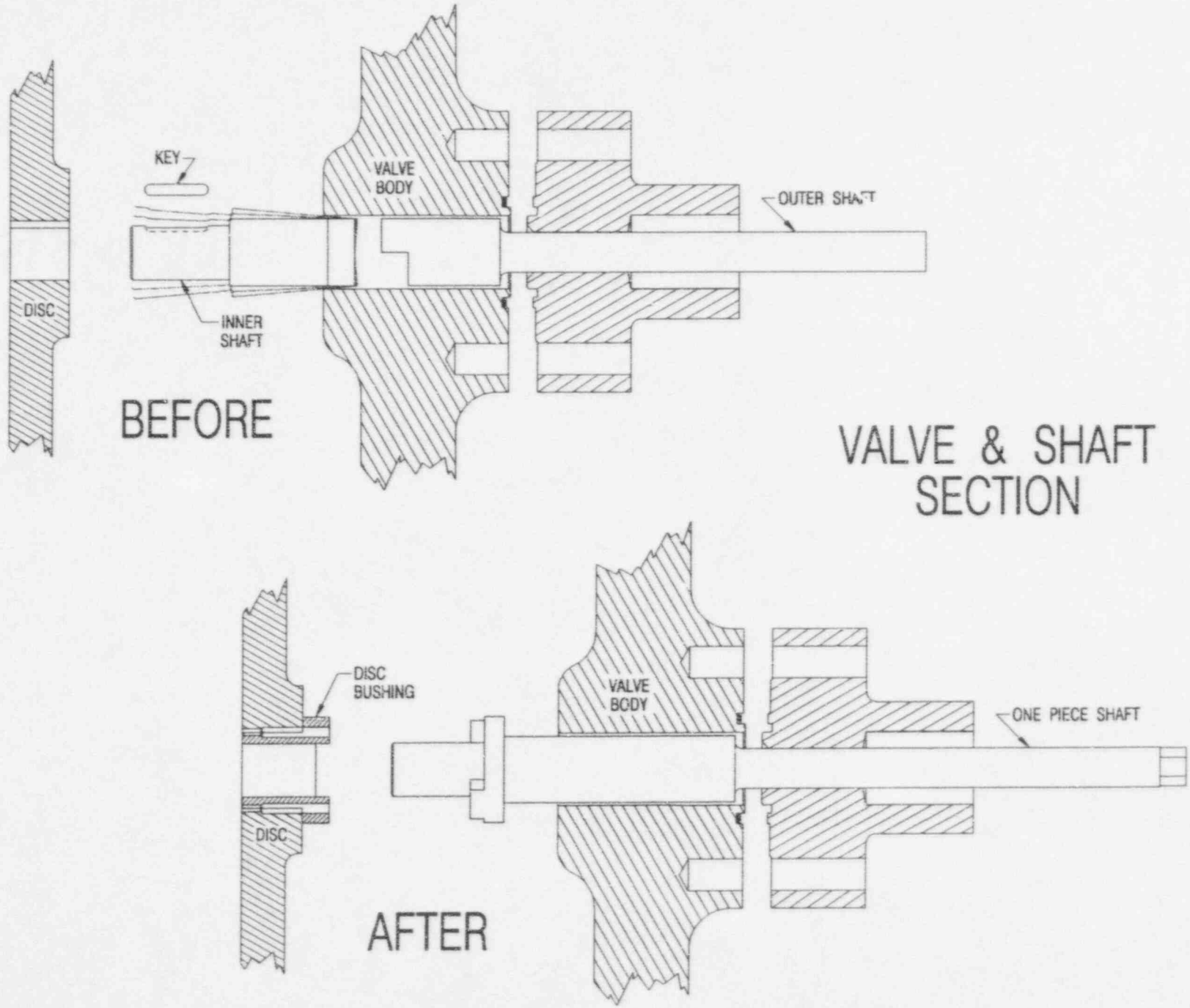

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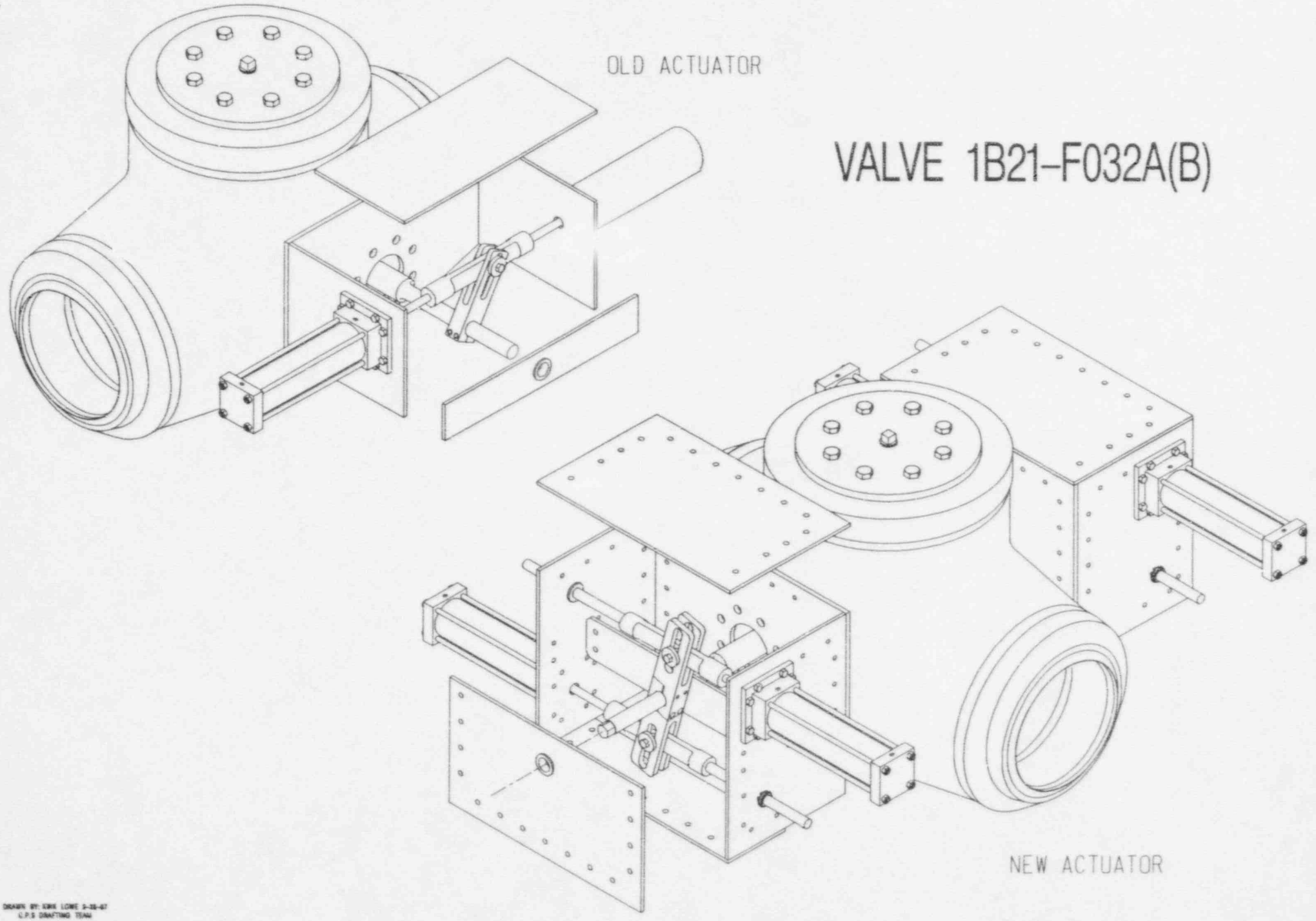
CPS DRAFTING TEAM



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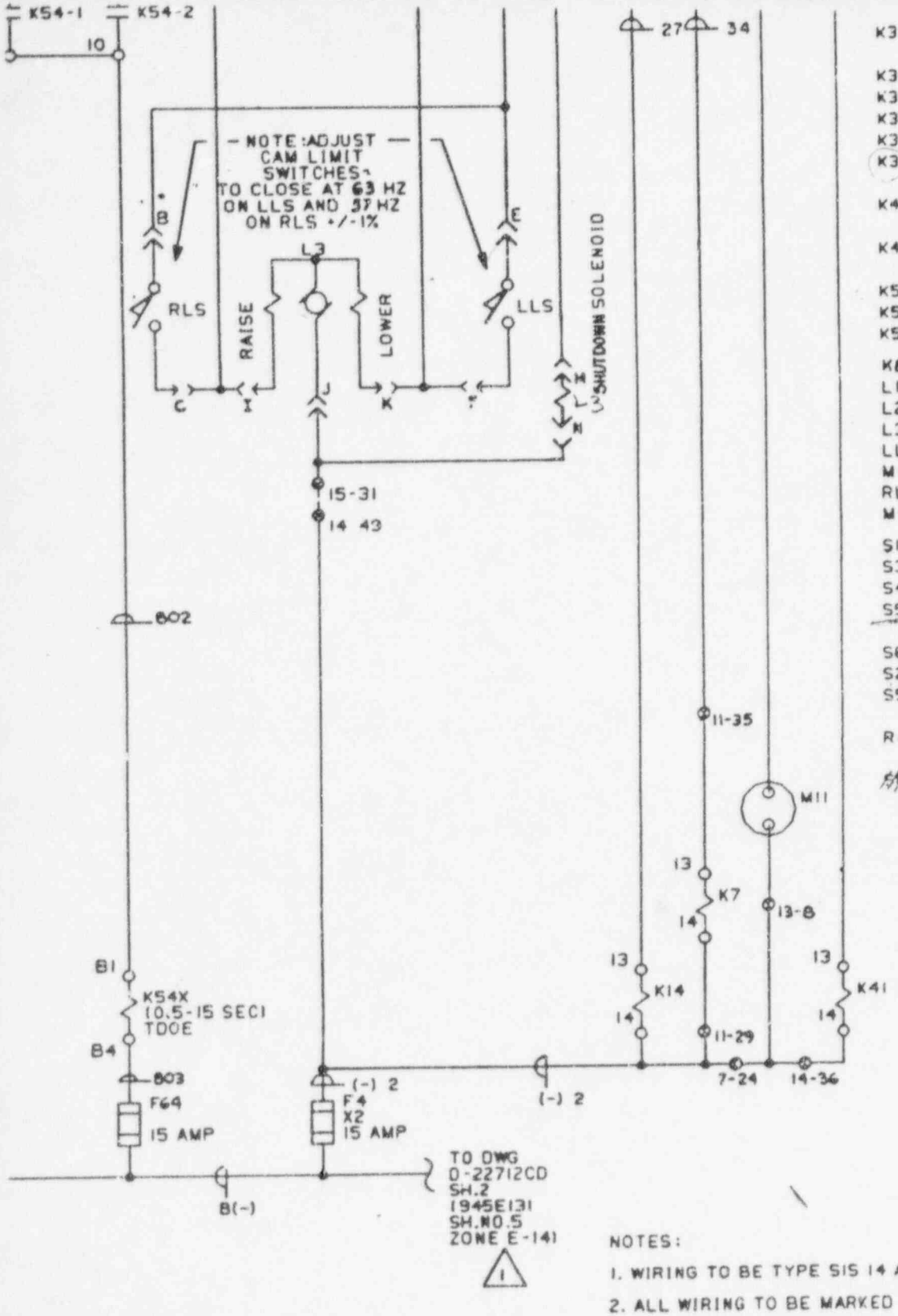
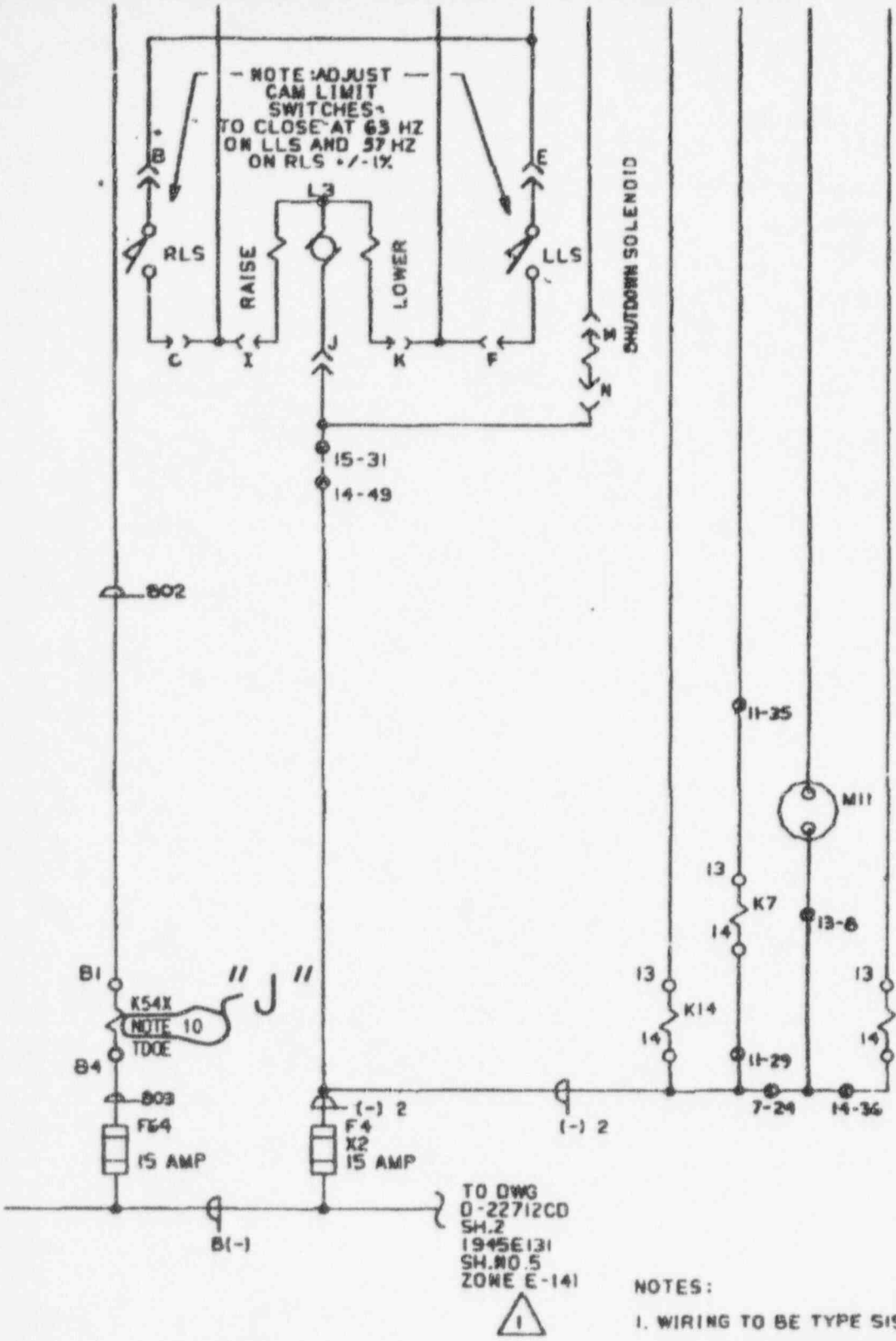
U.P.S. DRAFTING TEAM



K33	RELAY, SAFETY SET UP-TIME DELAY
K34	RELAY
K35	RELAY, 35 RPM AUX
K37	
K38	RELAY, CRANK JOG DELAY
K39	RELAY, OVERCRANK TIME DELAY
K40	RELAY, FUSE FAILURE "RUNNING"
K41	RELAY, FUSE FAILURE "SPEED CONTROL"
K54-1,2	RELAY, VOLTAGE SENSING
K54X	RELAY, TIMER
K55	RELAY, SPEED VOLTAGE SENSING
K8A	RELAY, AUTO START TIMER
L1	SOLENOID, AIR START
L2	SOLENOID, AIR START
L3	SOLENOID, GOVERNOR CONTRO
LLS	"LOWER" LIMIT SWITCH
M11	METER, RUNNING TIME
RLS	"RAISE" LIMIT SWITCH
M15	TACHOMETER
S1	SWITCH, ENGINE CONTROL
S3	SWITCH, MANUAL STOP
S4	SWITCH, MANUAL START
S5	SWITCH, GOVERNOR CONTROL (RAISE-LOWER)
S6 (SPARE)	SWITCH, CRANKING LOCK OUT
S26	SWITCH, REGULATOR
S56, 56A	SWITCH, AIR PRESSURE CRANKING JOG
R10, 11	RESISTORS, LAMP CURRENT LIMIT
~~S8~~	~~SWITCH, OVERSPEED~~

NOTES:

1. WIRING TO BE TYPE SIS 14 AWG MINIMUM.
2. ALL WIRING TO BE MARKED AT TERMINATIONS.
3. DASHED LINES INDICATE WIRING BY OTHERS.
4. ● INDICATES TERMINAL POINT
5. * ASTERISK INDICATES CUSTOMER FURNISHED COMPONENTS. E02-
6. → ARROW TOWARD COIL OR CONTACT INDICATES TIMED TRANSFER ON ENERGIZATION
7. ← ARROW AWAY FROM COIL OR CONTACT INDICATES TIMED TRANSFER ON DE-ENERGIZATION
8. FOR K15 DEVELOPMENT, REFER TO SH.5 OF THIS DRAWING.
9. K18 RELAY CONTACT CHANGED IN FIELD TO N.O 15 & 61.



K34	RELAY
K35	RELAY,35 RPM AUX
K37	
K38	RELAY,CRANK JOG DELAY
K39	RELAY,OVERCRANK TIME DELAY
K40	RELAY,FUSE FAILURE "RUNNING"
K41	RELAY,FUSE FAILURE "SPEED CONTROL"
K54-1,2	RELAY,VOLTAGE SENSING
K54X	RELAY,TIMER
K55	RELAY,SPEED VOLTAGE SENSING
K8A	RELAY,AUTO START TIMER
L1	SOLENOID,AIR START
L2	SOLENOID,AIR START
L3	SOLENOID,GOVERNOR CONT
LLS	"LOWER" LIMIT SWITCH
M11	METER,RUNNING TIME
RLS	"RAISE" LIMIT SWITCH
M15	TACHOMETER
S1	SWITCH,ENGINE CONTROL
S3	SWITCH,MANUAL STOP
S4	SWITCH,MANUAL START
S5	SWITCH,GOVERNOR CONTRO (RAISE-LOWER)
S6 (SPARE)	SWITCH,CRANKING LOCK OU
S26	SWITCH,REGULATOR
S56,56A	SWITCH,AIR PRESSURE CRANKING JOG
R10,11	RESISTORS,LAMP CURRENT LIMIT
[illegible]	[illegible]

NOTES:

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6. → ARROW TOWARD COIL OR CONTACT INDICATES TIMED TRANSFER ON ENERGIZATION
7. ← ARROW AWAY FROM COIL OR CONTACT INDICATES TIMED TRANSFER ON DE-ENERGIZATION
8. FOR K15 DEVELOPMENT, REFER TO SH.5 OF THIS DRAWING.
9. K18 RELAY CONTACT CHANGED IN FIELD TO N.O (5 & 6).
10. K54X RANGE IS 0.55-15 SECONDS. REFER TO E02-1AP04-017 FOR THE SETPOINT.

Illinois Power Company

Clinton Power Station

Enforcement Conference Presentation

March 4, 1997

AGENDA

Introduction	W. Connell Vice President - Clinton Power Station
CPS 50.59 Improvement Plan	P. Telthorst Director-Licensing
50.59 Evaluations and Corrective Action	D. Thompson Manager-Engineering
Concluding Remarks	W. Connell Vice President - Clinton Power Station

CLINTON POWER STATION 50.59 IMPROVEMENT PLAN

Needs Identified by:

- NRC Inspections
- NSED Independent Assessment
- CPS Reviews

Improvement Areas Include:

- Ability to Recognize an Activity as a Test or Activity Not Described in the SAR
- Ability to Document Justification Why a Change Does Not Require a Safety Evaluation
- Review of Licensing Basis Documentation

CLINTON POWER STATION 50.59 IMPROVEMENT PLAN (Cont.)

CPS Response

- Review of Engineering Changes Implemented in RF-6
- Training
- CPS 50.59 Action Plan
  - Revision of CPS Procedure 1005.06
  - Establishment of Core Group of Reviewers
  - Enhanced Training for Core Reviewers
  - Sampling of 50.59 Screenings
- Long-Term Improvement Plan

OVERVIEW OF ENGINEERING PRESENTATION

- Corrective Action
- 50.59 Evaluations
- Feedwater Check Valves
- Emergency Diesel Generator

CORRECTIVE ACTION

Cathodic Protection System (96011-05b):

- 1995 Survey to Review Adequacy of System
- Certain Piping Did Not Meet the Requirements of the CPS USAR
- Safety Evaluation Not Performed

Root Cause for Cathodic Protection:

- Lack of Sensitivity and Understanding of USAR Requirements

Corrective Actions for Cathodic Protection:

- Performance of Safety Evaluation
- Programmatic Improvements to CPS 50.59 Process

CORRECTIVE ACTION (Cont.)

1993 VC Chiller Auto Start Event (96001-07b):

- 1993 Integrated Testing
- 1993 Engineering Work Request
- RF-5 Surveillances
- RF-6 Surveillances

Root Causes for VC Chiller Auto Start:

- Inadequate Operability Determination
- Lack of Formal Operability Program

Corrective Actions for VC Chiller Auto Start:

- Calibration of Time Delay Sequencing Relay
- Comprehensive Review of Operability Determinations
- Verification by Independent Contractor
- Creation of Formal Operability Determinations
- Implementation of Design Change Issue
- Verification of Existing Preventive Maintenance Tasks or Writing New Ones
- Review of Other Diesel Generator Sequencing

50.59 EVALUATIONS

Annunciator Response Books Maintained on Control Panels (96011-05c):

- Purpose and Use of Books

Root Cause:

- Lack of Sensitivity to Potential Seismic Impact

Corrective Action:

- Books Removed From Panel Tops in MCR and Simulator
- 50.59 Improvement Plan

50.59 EVALUATIONS (Cont.)

FC Pump Inlet Valves Contrary to USAR (96011-05d):

- Update of CPS Procedure 3317.01
- USAR Figure

Root Cause:

- Lack of Sensitivity to Safety Evaluation Requirement

Corrective Action:

- Procedure Change Prior to Startup
- 50.59 Improvement Plan

FEEDWATER CHECK VALVES

Ineffective Corrective Action (96009-08a):

- Purpose and Description of Valves
- Maintenance and Testing History
- RF-6 As-Found Test Failure

Root Causes:

- Failure to Take Effective Action
- Failure to Pursue Alternative System Design

Corrective Action:

- Modify the Valves and Actuators
- 32A and 32B Valves Returned to Operable Status
- Explore Alternate System Design Solution

FEEDWATER CHECK VALVES (Cont.)

Failure to Follow Testing Procedure (96009-08b):

- ANSI Standard 56.8-1994
- Corrective Maintenance
- Testing Performed

Root Causes:

- Lack of Familiarity with Design
- Original Design does not Allow Effective Draining

Corrective Action:

- Modification of Design
- Revision of Test Procedures
- Review of Other Type C Tested Containment Penetrations

EMERGENCY DIESEL GENERATOR

Description of Violations (96014-01a and 1b):

- Relay Setpoint Information Not Correctly Translated Into Procedures
- Discrepancy Between As-Found and As-Left Relay Setpoints Not Questioned
- Identified by Licensee during Surveillance

Root Causes:

- Misinterpretation of Setpoint Data
- Lack of Rigor in Engineering Activities
- Lack of a Questioning Attitude

INOPERABILITY OF EMERGENCY DIESEL GENERATOR (Cont.)

Corrective Actions:

- Relay Replaced and Calibrated to Correct Setpoint
- Integrated Surveillance Test Satisfactorily Performed
- Improved Drawing
- Verification of Remaining Setpoints
- Additional Verification of Electrical Relays

OVERVIEW OF RADIATION PROTECTION

Record of Strong Performance

Outage Dose Reduction

SALP 1 Rating

Department Philosophy

APPARENT VIOLATIONS

Radworker Performance

Drywell RSWP

Waste Sludge Handling

Insulation Removal

RADWORKER PERFORMANCE

CPS Identified Examples of Unacceptable Worker Performance

Root Cause:

Lack of Strong Line Accountability

Contributing Causes:

Rationalizing Away RP Requirements

Station Radon Problem

Worker Performance Problems Not Sufficiently Visible to Line Organization

RADWORKER PERFORMANCE CORRECTIVE ACTIONS

Immediate Corrective Action:

Expectations on RP Requirements

Replacement of Radiological Deficiency Reports with Condition Reports

Increased Monitoring of Radworker Practices

RADWORKER PERFORMANCE CORRECTIVE ACTIONS

Long Term Corrective Action:

Continuance of the Use of Condition Reports

Implementation of Remedial Action Approach

Plan to Address Radon Problem

Improvement Plan for Radworker Knowledge of Radiological Requirements and Practices

Department Self Assessment

IMPLEMENTATION OF
DRYWELL RADIATION SAFETY WORK PLAN (RSWP)

Description and Purpose of RSWP

Outage Organizations

Summary of Event

Safety Significance

Root Causes:

Incomplete Understanding of RSWP

Ineffective Communication

Lack of Clarity in RSWP

RSWP CORRECTIVE ACTIONS

Immediate Corrective Action:

Radiation Operations Written Communications

Hold on Further RSWP Suspensions

Revision of RSWP

Reinforce RSWP with Affected Personnel

Written Direction and Clarification of RPSS Authority

Long Term Corrective Action:

Enhanced Briefing of RSWP Prior to Next Outage

Revision CPS Procedure on RSWPs

WASTE SLUDGE SLUICING

Description of Sluicing Operation

Problems Identified:

Pre-job Briefing Lacked Discussion of Contingencies

Supervision Was Not Notified of Problem

Radiation Protection Technician Did Not Maintain Oversight Role

Procedures Did Not Cover Hose Blockage Actions

Vendor Procedure Did Not Address CPS Configuration

Lack of RP Review of Vendor Procedure

Lack of Understanding of Vent Path by Vendor Representative

Waste Sludge Sluicing (continued)

Root Causes:

Ineffective Management of the Process

Inadequate Equipment Configuration

Equipment and Procedure Did Not Address Potential Problems Inherent to Sluicing

Lack of RPT Oversight

Lack of a Planned Approach

Waste Sludge Sluicing (continued)

Corrective Actions:

Error Prevention Training

Hold Placed On Use of Pump and Sluicing Activities Pending Further Investigation and Completion of Corrective Action

Revision of Vendor Procedures and Review By Radiation Protection Department

Procurement of Wand Matching Procedure Configuration

Revision of Vendor Equipment Drawing Applicable to CPS

INSULATION REMOVAL

Description of Respirator Evaluation and RWP Pass Programs

Description of Incident

Results of CPS Investigation of Incident:

- Contamination Levels Exceeded Allowable Levels
- Proper Precautions to Prevent Spread of Contamination Not Taken
- Wetting of Insulation Nor Performed
- Inadequate Radiation Work Permit and RWP Pass Card
- RPT Monitoring of Insulation Removal Insufficient to Prevent Exceeding Contamination Limit Set
- Inadequate Understanding of Ventilation System Status

INSULATION REMOVAL (continued)

Root Cause:

Inadequate Implementation of Engineering Controls

Immediate Corrective Action:

Decontamination of Affected Personnel and Areas

Performance of Diagnostic Whole Body Counts

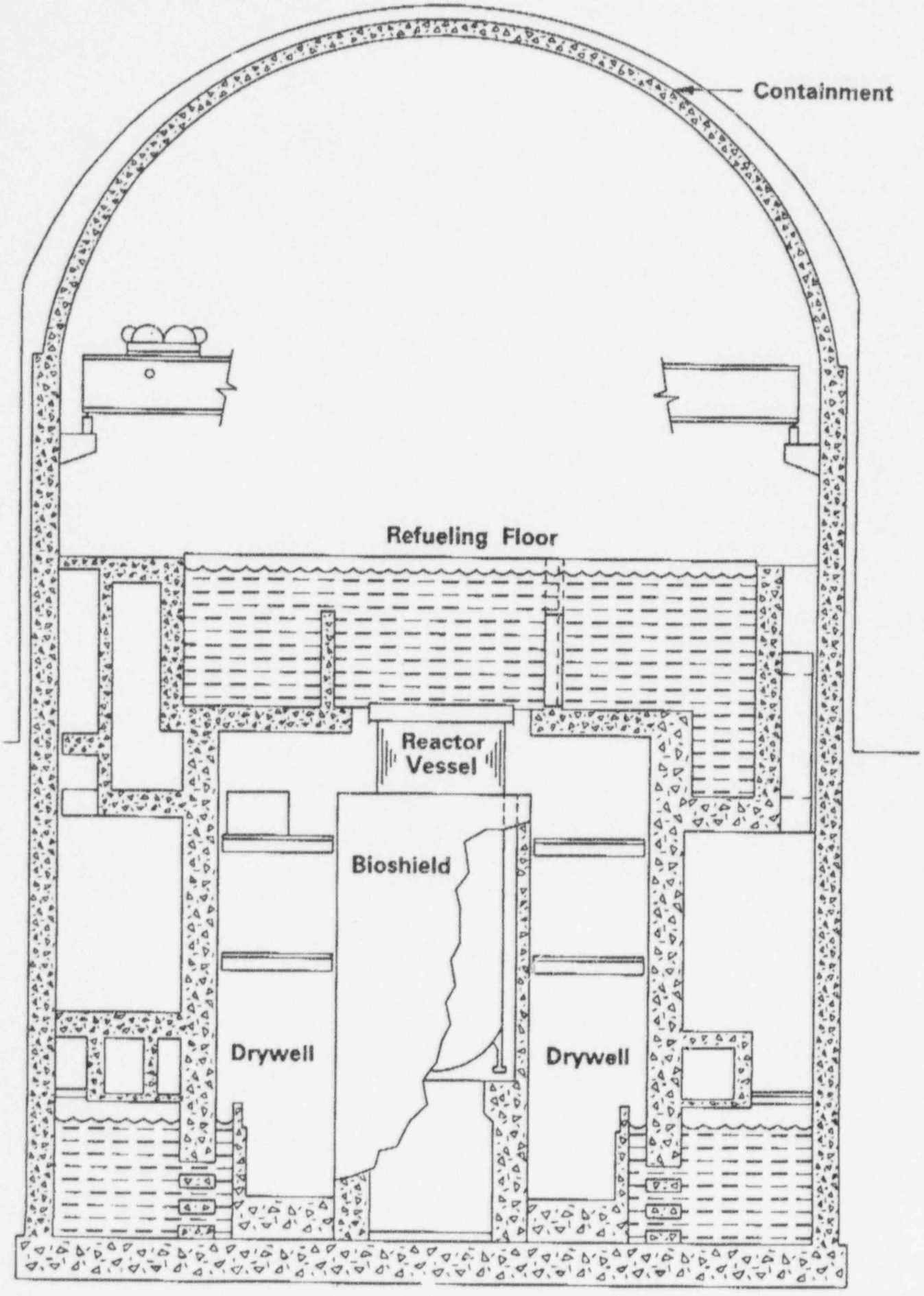
Specific Event Training for RP Technicians

Long Term Correction Action:

Revision of Radiological Systems Lesson Plan

Revision of CPS Procedure on Radiological Job Coverage

Implementation of Respirator Evaluation Engineering Control



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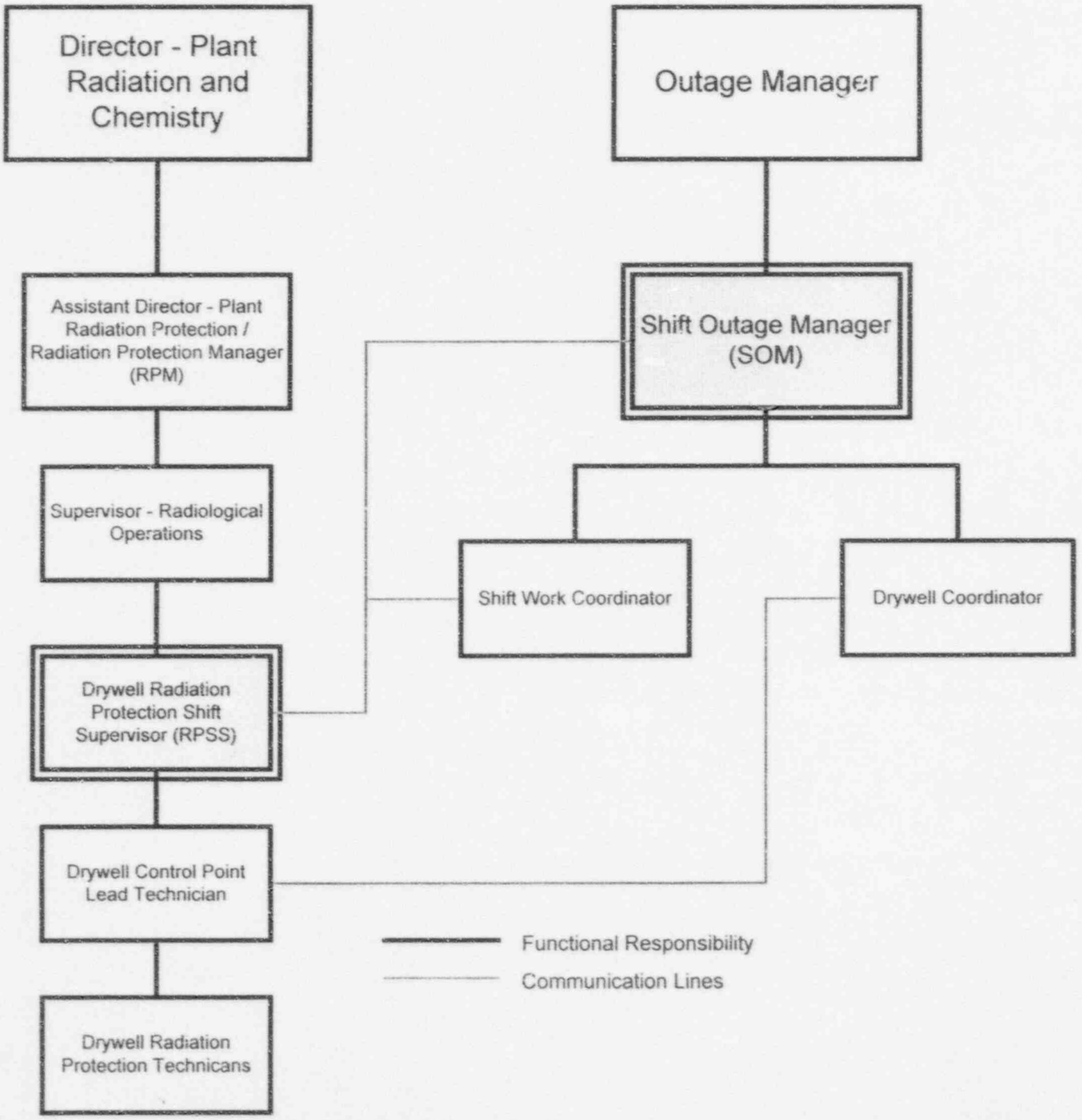
Director - Plant Radiation and Chemistry
Outage Manager
Assistant Director - Plant Radiation Protection / Radiation Protection Manager (RPM)
Shift Outage Manager (SOM)
Supervisor - Radiological Operations
Shift Work Coordinator
Drywell Coordinator
Drywell Radiation Protection Shift Supervisor (RPSS)
Drywell Control Point Lead Technician
Drywell Radiation Protection Technicans
Functional Responsibility
Communication Lines

Simplified Schematic