U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	50-461/97013(DRS)
Licensee:	Illinois Power Company
Facility:	Clinton Nuclear Power Station Unit 1
Location:	Route 54 West Clinton, IL 61727
Dates:	May 19-23, 1997
Inspectors:	S. Orth, Senior Radiation Specialist N. Shah, Radiation Specialist W. G. West, Radiation Specialist
Approved By:	G. L. Shear, Chief, Plant Support Branch 2 Division of Reactor Safety

EXECUTIVE SUMMARY

Clinton Nuclear Power Station, Unit 1
NRC Inspection Report 50-461/97013

This announced inspection included aspects of the licensee's plant support performance and, specifically, an evaluation of the effectiveness of the radiation protection (RP) and chemistry programs. The report covers a one-week inspection concluding on May 23, 1997, performed by three radiation specialists. One violation with six examples was identified concerning the failure to adequately follow station procedures.

- The licensee continued to develop comprehensive corrective actions, some improvement was observed in station radiological performance, specifically regarding conservative planning and the use of lessons learned. However, the licensee identified an example of a violation for the failure to follow station procedures regarding a worker who exited the plant, without contacting RP, after twice alarming the security portal monitors (Section R1.1).

- The licensee identified that an individual had tampered with a personnel contamination monitor (Section R1.2).

- The licensee identified that a chemistry technician (CT) had not properly performed a required feedwater conductivity analysis, which was an example of a violation for a failure to follow chemistry procedural requirements (Section R1.3).

- Laboratory instrument control charts and interlaboratory test results indicated a good degree of analytical accuracy. However, the inspectors identified two examples of a violation concerning the failure to properly follow chemistry procedures. The chemistry staff failed to take corrective actions, required by chemistry procedures, for quality control tests of laboratory pipettes and in-line chemistry monitors (Section R2.1).

- The control room ventilation (VC) and standby gas treatment (VG) systems were adequately maintained. One Non-Cited Violation was identified concerning a flow rate discrepancy in the VG system which affected the adequacy of Technical Specification (TS) required surveillances; the licensee's identification and resolution of this issue demonstrated effective technical oversight. However, the inspectors identified several discrepancies with TS-surveillance test packages which were not identified during licensee reviews (Section R2.2).

- A CT demonstrated good analytical technique during routine sample collection but demonstrated several poor radiological work practices. The inspectors also identified an example of a violation of chemistry procedures concerning the use of a temporary chemistry monitor and a problem concerning the chemistry staff's resolution of problems identified in chemistry procedures (Section R4.1).

- The inspectors identified an example of a violation of RP procedures concerning a contaminated area that was not adequately posted. Although a CT properly followed post-accident sampling system (PASS) procedures, an equipment malfunction resulted in the inability to obtain an undiluted reactor coolant sample.

In addition, problems were identified with the alignment of the sample cask/cart, which could potentially affect the licensee's ability to obtain a sample while maintaining exposures as-low-as-is-reasonably-achievable (ALARA) (Section R4.2).

- The licensee's assessments of the chemistry program were effective in identifying problems, but were not effective in resolving them (Section R7).

Report Details

IV. Plant Support

R1 **Radiological Protection and Chemistry (RP&C) Controls**

R1.1 Corrective Actions for Previous Radiation Protection Events

a. Inspection Scope (83750)

The inspectors reviewed the status of licensee corrective actions for radiological program events documented in NRC Inspection Report 50-461/96012(DRS). The events were discussed at an NRC Pre-decisional Enforcement Conference on March 20, 1997, and indicated problems in three fundamental areas. Specifically, a lack of sensitivity towards radiological controls and alarms existed among workers; the radiation protection (RP) staff did not demonstrate conservative decision-making; and poor RP procedural use and adequacy was observed. Since the licensee was developing corrective actions at the time of this inspection, the inspection focused on worker awareness of the issues and included interviews with personnel (primarily RP technicians (RPTs) and RP shift supervisors (RPSSs)) and observations of ongoing activities.

b. Observations and Findings

During interviews, both RPTs and RPSSs demonstrated a familiarity with the aforementioned issues and described several corrective actions recently implemented by the RP department. The corrective actions included:

- Written guidance on what types of radiation worker performance events should be documented in a condition report and those conservative planning attributes that should be considered when developing radiation work permits;

- Discussions between RP management and the RP staff regarding station expectations for procedural adherence and adequacy as stated in station Procedure No. CPS 1005.05 (Revision 0) "Procedure Use and Adherence;"

- Discussions between RP management and individual RPSSs regarding expectations for program oversight and implementation; and

- A requirement that RPTs review applicable procedures for infrequently performed (as determined by RP management) tasks.

Additionally, the licensee planned to purchase new personnel contamination monitors (PCMs) having an alpha discrimination channel to reduce those nuisance alarms due to radon contamination. The inspectors reviewed the above actions and verified that both RPTs and RPSSs were familiar with the requirements. For example, the inspectors observed that RPTs had reviewed the procedures prior to performing functional and source checks on the tool monitors (SAM-9s), portal monitors and PCMs, which were considered infrequently performed tasks. The

inspectors also reviewed selected observations of work activities documented by RPSSs between March 1 and May 20, 1997. Although not required by procedures, RP management expected each RPSS to observe a minimum of one RP activity per shift. These self-assessments were thorough, met the stated management expectations, and resulted in appropriate corrective actions.

The inspectors attended pre-job and ALARA planning briefings concerning the movement of traversing incore probes (TIPs) to a shielded position, control rod drive replacement and associated support activities, contaminated laundry packaging and movement, and the hydrolazing of the drywell floor drain sump piping. During the briefings, the inspectors observed good participation by workers and increased emphasis on conservative planning and lessons learned. Additionally, the inspectors observed the laundry and TIP activities, and the de-watering of a radioactive waste liner containing depleted resin. The inspectors noted increased emphasis on procedural requirements and adherence. In particular, the inspectors observed that the applicable provisions of station Procedure No. CPS 3322.01 (Revision 10) "Traversing In-Core Probe" and station safety standard No. 17 (Revision 3) "Electrical Safety" were followed during the TIP and laundry movement activities, respectively.

During plant walkdowns and interviews with personnel, the inspectors verified that workers understood station requirements for control of contaminated areas; requirements for entry into high, restricted high, and locked high radiation areas; and radiation work permit requirements. The inspectors also observed workers appropriately using the PCMs and security portal monitors. However, the licensee informed the inspectors of one instance, occurring on April 23, 1997, where a worker did not follow station requirements for monitor use. Specifically, the RP staff was informed by a security guard of a plant secretary who had exited the plant without contacting RP, after twice alarming the security portal monitors. At the time of the incident, the secretary was exiting the station with the Director of Plant Engineering, who observed the actions. However, the director and the individual believed that the alarm was caused by a motion sensor and, consequently, did not take any additional actions. The inspectors reviewed the licensee investigation, which concluded that the alarm was caused by the motion sensors and the worker was not contaminated. During interviews with the inspectors, both individuals stated that they had forgotten to contact RP staff as they were in a hurry to leave the plant and recognized that the alarm was due to a motion sensor. Licensee corrective actions included suspending the secretary's radiologically protected area access and counselling both individuals on station requirements.

Technical Specification (TS) 5.4.1 requires, in part, that procedures recommended in RG 1.33, Appendix A, be implemented. RG 1.33, Appendix A, recommends that procedures be established to control personnel access and monitoring. Station Procedure No. CPS 1032.02 (Revision 24), "Security Access Control," Step 8.8.2 requires that an individual contact RP personnel after twice alarming a portal monitor. The failure to follow the requirements of Procedure No. CPS 1032.02 is an example of a violation of TS 5.4.1 (VIO 50-461/97013-01a).

c. Conclusions

Although the licensee continued to develop comprehensive corrective actions, some improvement was observed in station radiological performance. However, an example of a violation was identified for the failure to follow station procedures regarding a worker who exited the plant, without contacting RP, after twice alarming the security portal monitors. This example, a PCM tampering event (Section R1.2), and the poor radiological work practices observed during routine chemistry sampling (Section R4.1) indicated that additional licensee attention was needed to address the worker performance problems.

R1.2 Damage to a Personnel Contamination Monitor

a. Inspection Scope (83750)

The inspectors reviewed the significant damage to a PCM which occurred on May 1, 1997. The inspectors reviewed the licensee's investigation of the incident and interviewed the individuals involved in the incident.

b. Observations and Findings

The licensee identified the event and documented it in Condition Report No. 1-97-05-001. As described in this report, a worker notified the RP department that the PCM located near the control and instrumentation (C&I) staff's calibration area (781' elevation of the Radwaste Building) was out-of-service. An RPT, who later arrived to inspect the monitor, observed station security personnel cordoning off the area and observed significant damage to one of the monitoring panels. The nature of the damage suggested that someone had pushed or kicked in the panel. During a subsequent licensee investigation, a station C&I technician admitted that he had damaged the monitor in anger, owing to his failure to properly process through the PCM. The individual was subsequently fired.

Since the calibration area was considered a clean area, personnel (usually C&I technicians) were required to process through the PCM before entering the area. If the PCM was inoperable, workers were required to perform a personal contamination survey using a nearby hand-held survey instrument. The licensee estimated that the PCM may have been inoperable for about 1.5 hours. Neither the licensee's investigation nor the inspectors' independent review identified any workers who had entered the calibration facility without frisking during this period.

c. Conclusions

Although the PCM tampering did not result in a violation of regulatory requirements, it was considered another example of the lack of sensitivity to radiological controls described in NRC Inspection Report 50-461/96012(DRS).

R1.3 Missed Feedwater Conductivity Measurement

a. Inspection Scope (84750)

The inspectors reviewed an improperly performed feedwater conductivity measurement of February 10, 1997. The inspectors discussed the event with chemistry supervision and reviewed the licensee's investigation and corrective actions.

b. Observations and Findings

On February 17, 1997, the NRC was notified by the licensee of an apparent falsification of a chemistry feedwater conductivity analysis sample by a chemistry technician (CT) which had occurred on February 10, 1997. A subsequent licensee investigation concluded that the CT had failed to recognize that a thermometer, used during the analysis, was providing an inaccurate indication and that he had recorded a conductivity value which he understood to be near the expected value. Specifically, the CT had calculated a conductivity value that was slightly lower than the theoretical limit for pure water and, therefore, was scientifically impossible. However, since he knew that the expected conductivity value for the current operational mode (mode 5) was around the theoretical limit, he decided to input the limit as his measured value. The CT was temporarily suspended, recertified for this task, and subsequently fired. Neither the licensee nor the inspectors identified problems with any other measurements made by this CT.

The licensee maintained in-line feedwater system conductivity instrumentation and was completing a modification of the sample panel. Although these monitors were installed and reading data, they were not considered operable as the modification had not yet been completed.

Chemistry Procedure No. CPS 6001.01 (Revision 21) "Sampling and Analysis," Section 2.1.4, required daily recording of in-service in-line monitors during operational modes 4-5 and Section 2.1.9 required a compensatory sample and analysis program for those monitors declared inoperable. Since the feedwater conductivity monitors were considered inoperable, the licensee had instituted compensatory daily sampling of feedwater conductivity during operational modes 4-5. This requirement was stated on the chemistry monitor sample log. Technical Specification 5.4.1 requires, in part, that procedures recommended in RG 1.33, Appendix A, be implemented. RG 1.33, Appendix A, recommends that procedures be implemented covering chemical and radiochemical control. The failure to perform the compensatory sampling as required by Procedure No. CPS 6001.01 is an example of a violation of TS 5.4.1 (VIO 50-461/97013-01b).

c. Conclusions

One example of a violation of chemistry procedures was identified. Specifically, the licensee identified that a CT did not properly perform a feedwater conductivity measurement.

R2 **Status of RP&C Facilities and Equipment**

R2.1 Quality Control of Laboratory and In-line Chemistry Instruments

a. Inspection Scope (84750)

The inspectors reviewed the licensee's quality control (QC) program for both laboratory and in-line analytical instruments, including the maintenance of instrument control charts, control of standards and reagents, and performance in interlaboratory comparison programs. The inspectors also observed a CT performing calibration verifications of pipettes.

b. Observations and Findings

The inspectors reviewed the preparation, labeling, and storage of reagents and calibration standards. The inspectors did not identify any chemicals which were improperly labeled or which had been used beyond their expiration date. Laboratory chemicals were appropriately stored (i.e., incompatible chemicals were not stored in common locations).

On May 20, 1997, an inspector observed a CT performing quarterly pipette calibration verifications on an adjustable pipette as required by Procedure No. CPS 6118.01 (Revision 2) "Gravimetric Pipet Operation and Calibration." The inspector observed that the CT had acquired three data sets at the lower delivery range of about 100 microliters (uL) and had crossed out the first two data sets. When the first data set did not meet the acceptance criteria in the procedure, the CT indicated that he attributed the error to his technique and repeated the data set. When the second data set did not meet the acceptance criteria, he made some minor adjustments to the pipette and repeated the data set. Finally, the CT raised the issue to a chemistry supervisor, who referred to the instructions contained in Step 8.4.6 of the procedure. This step states that if the data attained at the low end point of the pipette's volume range does not meet the acceptance criteria, then the volume is to be increased and the test repeated. The procedure contained additional instructions for when the subsequent data set remained out of tolerance, but did not allow for repeated trials at the 100 uL volume. The inspector discussed the observations with chemistry management who took the pipette out of service and discussed the event with the chemistry staff. TS 5.4.1 required, in part, that procedures recommended in RG 1.33, Appendix A, be implemented. RG 1.33, Appendix A, recommends that procedures be implemented that cover chemistry laboratory instructions and calibration of laboratory instrumentation. The failure to follow the requirements of Procedure No. CPS 6118.01 is an example of a violation of TS 5.4.1 (VIO 50-461/97013-01c).

The laboratory instrument control charts were well maintained and indicated proper instrument response. The chemistry staff reviewed instrument control charts as required and identified statistical biases in the data. With some minor exceptions, biases in the data appeared to be corrected in a timely manner. The inspectors observed that the licensee had two methods for boron determinations: (1) titration and (2) inductively coupled plasma atomic emission spectroscopy. The QC data indicated that both methods produced acceptable results; however, the titration

method had a lower degree of variability. Control chart data indicated that the variance of the boron control standard from the mean concentration was about 10 percent and 5 percent for the inductively coupled plasma and titration analyses, respectively. Consequently, the licensee was in the process of designating the titration method as the primary method.

The inspectors identified problems concerning the QC of in-line chemistry instruments. During a review of 1997 QC data for turbidimeters and the containment sample panel in-line monitors, the inspectors identified some discrepancies in the documentation. The inspectors also identified problems concerning the corrective actions for out-of-tolerance containment sample panel in-line conductivity and dissolved oxygen monitors. Steps 8.5 through 8.6.5 of Procedure No. CPS 6003.01 (Revision 4) "On-Line Monitor Accuracy Verification," required that if a disagreement occurs between a laboratory analysis result and an in-line monitor reading, then a reanalysis of the sample must be performed. If the reanalysis is also not within the acceptance criteria, the procedure required additional corrective actions including cleaning and/or calibration of the detector followed by an additional analysis. If the results remain outside of the acceptance criteria, the procedure required that a maintenance request be written and that grab sampling be appropriately implemented. The inspectors identified instances when these procedural requirements were not met. For example, on January 27, 1997, the comparison of the control rod drive (CRD) conductivity monitor and a laboratory analysis was outside of the acceptance criteria, however, a reanalysis of the sample was not performed. Additionally, the inspectors noted that after a sample reanalysis failed to resolve a disagreement between laboratory analysis results and the CRD and reactor recirculation system dissolved oxygen monitors, on April 7 and 14, 1997, no additional corrective actions were taken. TS 5.4.1 required, in part, that procedures recommended in RG 1.33, Appendix A, be implemented. RG 1.33, Appendix A, recommended that procedures be implemented that cover chemistry laboratory instructions and calibration of laboratory instrumentation. Although the monitors described above were not required in the licensee's operational mode, the failure to follow the requirements of Procedure No. CPS 6003.01 is an example of a violation of TS 5.4.1 (VIO 50-461/97013-01d).

Good results were achieved for the 1996 interlaboratory comparison program. However, during self-assessments (Section R7), the licensee identified weaknesses in the resolution of repeated biases in program results and the follow-up of analyses which were not within the acceptance criteria. At the time of this inspection, the licensee was evaluating corrective actions for these findings. With the exception of some apparent minor dilution errors, the inspectors noted that the chemistry results indicated an acceptable degree of accuracy.

c. Conclusions

Laboratory instrument control charts and interlaboratory test results indicated a good degree of analytical accuracy. However, two examples of a violation were identified concerning the failure to properly follow chemistry procedures. The inspectors identified that the chemistry staff failed to take corrective actions, required by chemistry procedures, for QC tests of laboratory pipettes and in-line chemistry monitors.

R2.2 Control Room Ventilation (VC) and Standby Gas Treatment (VG) Systems

a. Inspection Scope (84750)

The inspectors reviewed the licensee's oversight of the VC and VG systems. The inspection consisted of system walkdowns, interviews with system engineers, a review of TS-required surveillance records, and a review of condition reports pertaining to operability issues. This inspection also included a review of Licensee Event Report No. 97-012-00 (dated April 1997), regarding a discrepancy between indicated and actual VG system airflow.

b. Observations and Findings

During system walkdowns, the inspectors observed that both VC trains were operable, but that both VG trains were inoperable due to the performance of TS-required surveillance testing. Personnel performing the testing were using the appropriate procedures. Additionally, the inspectors verified that selective VC system parameters were as described in the applicable sections of the Updated Safety Analysis Report (USAR). The inspectors also walked down the Control Room panels and interviewed a reactor operator about the operation of both VC and VG systems; no concerns were identified.

The inspectors noted that TS-required surveillances were performed as required and were consistent with guidance contained in NRC RG 1.52 (Revision 2) and applicable industry standards. However, the inspectors did identify three examples where surveillance records were poorly reviewed by licensee staff. Specifically, the cover sheets for the high efficiency particulate air filter tests performed on January 31, 1996 (VG train A), February 7, 1996 (VG train B), and February 29, 1996 (VC train A) indicated that the status was fully acceptable. However, in the body of the test packages, the test performer had indicated that the systems' condition was unacceptable based upon a visual inspection. Although these tests were reviewed by both the test performer and an immediate supervisor, these reviews failed to identify the discrepancies. The inspectors reviewed more recent visual inspection records (which identified no problems), performed system walkdowns and verified that the system had not been modified in the interim. Based on this review, the inspectors concluded that the information had been incorrectly stated on the above forms and that the system was in good condition. The inspectors were concerned that the failure of the licensee to identify these discrepancies was indicative of a failure to adequately read the procedures during both the performance and the review process. The licensee acknowledged the inspectors' concerns and planned to review the matter.

During a review of surveillance procedures, the licensee identified differences (up to 15 percent) between indicated and actual VG system airflow. This condition had most likely existed since plant construction. Due to this discrepancy, the licensee determined that TS surveillances 4.6.4.3.1 and 4.6.4.3.2 had not been performed at the proper flow rate for the "B" VG train and possibly for the "A" VG train. The inspectors' independent review agreed with the licensee's conclusion that the cause was a combination of original construction debris located in relatively inaccessible areas of the system and documentation and flow measurement correction factor

errors committed during the system design and pre-operational testing phase. Additionally, the inspectors agreed with a licensee technical analysis which concluded that the system would have performed its intended safety function in spite of the flow problem. Corrective actions included removing the debris from the system, re-calibrating the flow instrumentation, and re-performing the applicable TS surveillances. Additionally, the licensee was reviewing potential generic concerns that could affect operability of the VC system. Although the TS requirements were not met, this licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (NCV 50-461/97013-02).

c. Conclusions

The VC and VG systems were adequately maintained. TS required surveillances of the VC and VG systems were completed in a timely and acceptable manner. One Non-Cited Violation was identified concerning a flow rate discrepancy in the VG system which affected the adequacy of TS-surveillances; the licensee's identification and resolution of this issue demonstrated effective technical oversight. However, the inspectors identified several discrepancies with TS surveillance test packages which were not identified during licensee reviews. These discrepancies indicated that the test procedures may not have been adequately read during both the performance and the review.

R4 **Staff Knowledge and Performance in RP&C**

R4.1 Sampling and Analysis of Primary Coolant

a. Inspection Scope (84750)

On May 21, 1997, the inspectors observed a CT obtaining and analyzing reactor coolant system (RCS) liquid samples and performing temporary in-line conductivity measurements. During the sampling, the CT followed Procedure No. CPS 3222.01 (Revision 5) "Auxiliary Building Sample Panel (1PL33J)."

b. Observations and Findings

The inspectors observed the CT using good analytical technique and properly rinsing the sample container with the intended sample and purging the sample lines, as required by Procedure No. CPS 3222.01. Additionally, the CT properly handled the sample to reduce the potential for any chemical contamination. However, the inspectors identified some radiological work practice problems. For example, the CT did not obtain a dose rate measurement of the RCS sample and therefore, would have been unaware of higher than expected dose rates if an abnormal sample had been obtained. Additionally, the CT wore gloves when handling contaminated sample lines and sample valves, but did not always remove them before touching personal items. The inspectors also observed the CT place a potentially contaminated, used glove into the pocket of his lab coat. The poor glove control exhibited by the CT had the potential to increase the potential for the spread of contamination.

During the in-line conductivity measurement, the inspectors identified procedural adherence deficiencies. Prior to providing flow to the conductivity monitor, the CT did not close the sample sink hood as required by Steps 8.3.1.4 and 8.3.2.4 of CPS No. 3222.01. After the conductivity measurement was obtained, the procedure directed the CT to rinse the in-line monitor with condensate makeup water to displace any reactor coolant within the monitor. However, prior to providing condensate flow (Step 8.3.2.4), the CT failed to connect the portable, in-line monitor to the condensate supply spigot (Step 8.3.2.3) and attempted to attach the apparatus with condensate makeup water flowing. After recognizing that this would create a contamination hazard, the CT closed the condensate valve, attached the apparatus, and restored condensate flow. TS 5.4.1 requires, in part, that procedures recommended in RG 1.33, Appendix A, be implemented. RG 1.33, Appendix A, recommends that procedures be implemented that cover chemistry laboratory instructions and calibration of laboratory instrumentation. Although these procedural adherence deficiencies would not have affected the accuracy of the measurement, the failure to follow the procedural requirements increased the potential for the spread of contamination and are an example of a violation of TS 5.4.1 (VIO 50-461/97013-01e).

Following the sampling evolution, the inspectors discussed the identified problems with members of chemistry management and the CT. Chemistry management acknowledged the weaknesses with radiological work practices, but disagreed with the inspectors regarding the procedural adherence problems. Specifically, a chemistry supervisor stated that the staff had identified deficiencies in Section 8.3 of Procedure No. CPS 3222.01. Consequently, the staff initiated a procedure revision to eliminate this section and to incorporate necessary instructions into another section of the procedure. In the interim, the CTs were allowed to perform the evolution using their skills and training. The inspectors considered this decision to rely on "toolbox skills" instead of established procedures as non-conservative given the licensee's preexisting problems with procedural usage and with correction of procedural deficiencies.

c. Conclusions

A CT demonstrated good analytical technique during routine sample collection but demonstrated several, poor radiological work practices. One example of a violation of chemistry procedures was identified concerning the use of a temporary chemistry monitor. A weakness was also identified concerning the chemistry staff's resolution of problems identified in chemistry procedures.

R4.2 Post-Accident Sampling System (PASS) Sampling

a. Inspection Scope (84750)

On May 22, 1997, the inspectors observed a CT obtaining an undiluted RCS sample via the PASS. The inspectors reviewed the CT's use of Procedure No. CPS 6005.01, "Post-Accident Sampling (1PS02J/1PS03J)," Revision 14, dated April 9, 1997.

b. Observations and Findings

The inspectors noted that the CT properly followed Procedure No. CPS 6005.01; however, the inspectors observed the CT encounter significant difficulties while attempting to obtain an undiluted RCS sample. Specifically, the CT was having difficulty moving a shielded cart, used to collect the sample, into position. After numerous attempts and with the assistance of another CT, the cart was eventually aligned. As the CTs indicated that this was a frequent problem, the inspectors were concerned with the licensee's ability to obtain a post-accident sample while maintaining exposures ALARA. Chemistry management was unaware of the problem, but agreed with the inspectors' concerns and planned to evaluate the current method of alignment.

During the purge of the sample container, the CT identified a problem with the system. As indicated in Step 8.3.12 of Procedure No. CPS 6005.01, the CT anticipated a rise in pressure as nitrogen flow was increased to the sample line. However, the CT properly identified that the flow decreased, stopped the evolution, and contacted chemistry supervision for additional instructions. Since the effectiveness of the purge would potentially affect the validity of the sample, chemistry supervision requested that the system be returned to a safe position and initiated a work request to correct the problem. The inspectors considered this a good example of problem identification and resolution.

While in the PASS sample area, an inspector observed an unsecured contaminated area (CA) posting (i.e., laying on the floor), behind the PASS sample panel. The posting had apparently been removed during work on a pH probe which had occurred the previous day. Both CTs and RPTs indicated that this area was routinely posted, and a survey by RP personnel identified removable contamination between 1000-2000 dpm/100 cm^2 in the area. Station Procedure No. CPS 7100.01, "Radiological Surveys and Posting," (Revision 0, dated September 13, 1996) Step 8.2.6.1, required that areas having removable contamination $\geq$1000 dpm/100 cm^2, be conspicuously posted as a CA. TS 5.4.1 required, in part, that procedures recommended in RG 1.33, Appendix A, be implemented. 1.33, Appendix A, recommends that procedures be established for radiological postings and control. The failure to post the CA as required by Procedure No. CPS 7100.01 is an example of a violation of TS 5.4.1 (VIO 50-461/97013-01f).

c. Conclusions

An example of a violation was identified concerning adherence to RP procedures. The inspectors identified a contaminated area that was not posted as required by station procedures. Although a CT properly followed PASS system procedures, an equipment malfunction resulted in the inability to obtain an undiluted reactor coolant sample. In addition, problems were identified aligning the sample cask, potentially affecting the licensee's ability to obtain a PASS sample while maintaining personnel exposures ALARA.

R7 Quality Assurance in RP&C Activities

The inspectors assessed the effectiveness of the licensee's identification and resolution of chemistry problems. Specifically, the inspectors reviewed the results of self assessment activities for the previous 12 months and reviewed the corrective actions. The licensee's assessments consisted of routine field observations and comprehensive, programmatic reviews. In addition, individual evaluations of each CT were completed, focussing on analytical principles and procedural adherence. Within the chemistry department, the staff documented the findings, assigned corrective actions, and tracked the resolution of those corrective actions. The inspectors observed that these findings were not documented in the plant's corrective action system; however, the chemistry supervisor stated that these issues were below the threshold of the corrective actions system and that the self-assessments were typically used as a coaching/training tool with personnel errors being corrected in the field. Although effective in identifying problems, the inspector concluded that this approach did not effectively resolve the procedural adherence problems. As described in Sections R1.3, R2.1 and R4.1, the inspectors identified examples of the chemistry staff not adequately following procedures.

R8 Miscellaneous RP&C Issues

The following items identified in previous inspection reports were reviewed by the inspectors:

(Open) IFI 50-461/96012-05: Licensee to investigate cause of higher than expected dose rates in Containment TIP penetration area (737' elevation of containment).

The licensee concluded that the higher than expected dose rates resulted from the mispositioning of proximity sensors (located near the TIP index unit and drywell wall, respectively) which resulted in the TIPs being withdrawn past the normal storage location. These proximity units were used to determine TIP location, and in particular, to auto-initiate a time delay that would stop the TIP drive motor when the TIP was near the storage location. Based on original vendor drawings, both sensors were to be positioned between 5.5 and 6.5 inches from the indexer or drywell wall as appropriate. However, the licensee determined that the actual positions ranged from between 5.5 to 13 inches and 6.5 and 8 inches for the sensors near the indexer and drywell wall, respectively. The licensee had not verified the sensor location since initial installation and believed that subsequent work on the TIP tubing resulted in the sensors being moved. Additionally, procedures did not require that the location of the TIP, as indicated by the TIP position indicator, be physically verified. As stated in NRC Inspection Report 50-461/96012(DRS), there have been no other examples of poor TIP control since 1995 and radiological controls for TIP movement appropriately addressed the provisions of NRC Information Notice (IN) 88-63 (and subsequent supplements).

The licensee planned to take the following corrective actions prior to startup:

- Move the proximity sensors to correspond with the vendor drawings; and

- Revise station procedure 8629.01 "Traversing Incore Probe (TIP) System Channel Calibration" to verify that the TIP will stop in the shielded location. Additionally, the TIP location will also be verified.

The procedure change had been completed prior to the inspection and was reviewed by the inspectors. The other actions will be reviewed pending their completion.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on May 23, 1997. The licensee acknowledged the findings presented and did not identify any of the documents listed as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

W. Connell, Vice President
M. Dodds, Lead Supervisor--Radiological Operations
J. Langley, Director, Engineering Projects
M. Lyon, Assistant Plant Manager--Operations
R. Mauer, Chemistry Supervisor
A. Muller, Assistant Plant Manager--Maintenance
R. Phares, Assistant to the Vice President
W. Romberg, Assistant Vice President
D. Thompson, Manager, Nuclear Engineering Department
P. Yocum, Plant Manager

INSPECTION PROCEDURES USED

IP 83750: Occupational Radiation Exposure
IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring

ITEMS OPENED, CLOSED AND DISCUSSED

Open

50-461/97013-01(a-f)	VIO	Failure to follow procedures recommended by RG 1.33, Appendix A (Sections R1.1, R1.3, R2.1, R4.1 and R4.2)

Closed

50-461/97013-02	NCV	Failure to perform TS surveillance testing on the VG system (Section R2.2)
50-461/97012-00	LER	Failure to perform TS surveillance testing on the VG system (Section R2.2)

Discussed

50-461/96012-05	IFI	Higher than expected Jose rates near TIP drive unit (Section R8)

LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
CR	Condition Report
CRD	Control Rod Drives
CT	Chemistry Technician
HEPA	High Efficiency Particulate Air
IFI	Inspection Follow-up Item
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
NCV	Non-Cited Violation
PASS	Post-Accident Sampling System
PCM	Personnel Contamination Monitor
QC	Quality Control
RCS	Reactor Coolant System
RG	Regulatory Guide
RP	Radiation Protection
RPSS	Radiation Protection Shift Supervisor
RPT	Radiation Protection Technician
RWP	Radiation Work Permit
TIP	Traversing Incore Probe
TS	Technical Specifications
UL	Microliter
VC	Control Room Emergency Ventilation
USAR	Updated Safety Analysis Report
VG	Standby Gas Treatment
VIO	Violation

LIST OF DOCUMENTS REVIEWED

Station Procedures (Nos. CPS):

P-03-051	"Clinton Power Station Transfer and Dewatering Bead Resin in Containers With a Single Layer Underdrain Assembly to Less Than 0.5% Drainable Liquid," (Revision 1, dated 5/7/97)
1005.15	"Procedure Use and Adherence," (Revision 0, dated 4/1/97)
1032.02	"Security Access Control," (Revision 24, dated 2/9/97)
1070.01	"Coordination Plan," (Revision 0, dated 12/30/96)
3322.01	"Traversing Incore Probe," (Revision 10, dated 11/24/96)
3222.01	"Auxiliary Building Sample Panel (1PL335)," (Revision 5, dated 10/16/96)
6000.01	"Quality of Chemistry Activities," (Revision 15, dated 6/7/96)
6001.01	"Sampling and Analysis Activities," (Revision 21, dated 2/9/97)
6003.01	"On-Line Monitor Accuracy Verification," (Revision 4, dated 9/23/92)
6005.01	"Post-Accident Sampling (1PS025/1PS03J)," (Revision 14, dated 4/9/97)
6118.01	"Gravimetric Pipet Operation and Calibration," (Revision 2, dated 5/6/97)
6421.01	"Operation of Hach Ratio Turbidimeter, Model 1890," (Revision 10, dated 9/25/96)
6421.03	"Nephelometric Turbidity Determination," (Revision 10, dated 6/8/94)
7100.01	"Radiological Surveys and Posting," (Revision 0, dated 9/13/96)
8121.01	"Control Rod Drive Removal and Installation," (Revision 8, dated 8/26/96)
8629.01	"Traversing Incore Probe System Channel Calibration," (Revision 34, dated 4/13/95)

Station Safety Standard (SSS) No. 17 "Electrical Safety," (Revision 3, dated 9/9/96)
Condition Report No. 1-97-05-001 "Deliberate Tampering of PCM"
Licensee Event Report No. 97-012-00 "Failure to do TS Required Testing on VG System Flow"
NRC Regulatory Guide 1.52 (Revision 2, dated 3/78)
NRC NUREG 0737
American National Standard (ANSI) No. N510-1980 "Testing of Nuclear Air-Cleaning Systems"

VG and VC Surveillance Tests: (NOTE: VG OR VC TRAIN A/B IS INDICATED AS VG-A/B OR VC-A/B)

HEPA Filter Tests: VG-A (1/31/96; 5/16/97), VG-B (2/7/96; 5/17/97), VC-A (2/29/96), VC-B (5/16/96)
Charcoal Adsorber Leak Tests: VG-A (2/22/96), VG-B (2/7/96), VC-A (6/1/96), VC-B (5/16/96), VG-A (5/16/97), VG-B (5/17/97), VG-A (5/18/97)
Charcoal Adsorber Sampling: VG-A (1/30/96), VG-A (2/20/96), VC-B (5/15/96)
Leak Test: VC-A (10/28/96), VG-B (12/19/96)
Duct Heater Test: VG-A (10/28/96), VG-B (10/4/96), VG-A (5/16/97), VG-B (5/17/97)
Secondary Containment Integrity: VG-A (3/17/97), VG-B (4/1/97)
10 hr run test: VG-A (3/17/97), VG-B (4/1/97)
10/15 min. run test: VC-B (3/13/97), VC-A (3/30/97)