U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: License Nos:	50-454; 50-455 NPF-37; NPF-66
Report Nos:	50-454/98006(DRS); 50-455/98006(DRS)
Licensee:	Commonwealth Edison Company (ComEd)
Facility:	Byron Generating Station, Units 1 & 2
Location:	4450 North German Church Road Byron, IL 61010
Dates:	January 20-23 and 26, 1998
Inspectors:	W. Slawinski, Senior Radiation Specialist D. Nissen, Radiation Specialist W. West, Radiation Specialist
Approved by:	G. Shear, Chief, Plant Support Branch 2 Division of Reactor Safety

9802240090 980217 PDR ADOCK 05000454 Q PDR

EXECUTIVE SUMMARY

Byron Generating Station, Units 1 & 2 NRC Inspection Reports 50-454/98006; 50-455/98006

This inspection included an announced review of the radiation protection program. Specifically, the inspection focused on the survey program, unconditional and conditional release programs, and containment material condition and radiation worker practices. Also reviewed were the radiological controls implemented during radiography operations.

Plant Support

- Overall, radiation worker practices were good, however, fall protection appears to be an ongoing problem with workers either not wearing or not using fall protection equipment appropriately. Additionally, a weakness was noted with the posting of high radiation areas within containment. (Section R1.1)
- Radiological controls during radiography operations were generally well implemented. Radiography operation pre-job briefings were clear and comprehensive, and included a high level of participant feedback and questioning. Though access controls and postings for these evolutions were executed in accordance with plant procedurer. The licensee identified one instance in which a plant contractor crossed a radiography boundary on January 11, 1998, in violation of plant procedures. This resulted in a concited violation for a failure to follow procedures. (Section R1.2)
- Overall, the survey program was well implemented. A few problems in the survey documentation and the adequacy of the review of the survey data were identified and resulted in a non-cited violation for a failure to follow procedures. The survey program quality control checks performed by radiation protection department supervisors were thorough and identified areas for improvement. (Section R1.3)
- The procedure for the control and movement of materials for unconditional and conditional release from radiologically posted areas was comprehensive and generally well implemented. Station personnel were knowledgeable of the program and survey instrumentation and survey practices were appropriate. One m. incident occurred involving items conditionally released and transferred to the wrom area of the plant. (Section R1.4)
- The inventory, control and security of calibration and reference sources was adequate. However, the source control log used to track source location and movement contained examples of incomplete and inaccurate information. Source and calibration facility security was adequate. (Section R1.5)
- There was little presentation of possible non-radiological contingencies (such as mechanical failures, crane problems, etc.) during the pre-job oriefing for the reactor head set job. This shortcoming, however, was counteracted effectively by very strong participation and questions from the personnel attending the briefing. In addition, the

containment video surveillance system was used extensively by the job participants to indicate personnel stations, equipment placement and orientation, and job progression. (Section R4.1)

The radiological response to an inusual event involving a potentially contaminated and injured worker transported to an offsite medical facility was prompt and appropriate. (Section R4.2)

Report Details

IV. Plant Support

R1 Radic¹ogical Protection and Chemistry (RP&C) Controls

R1.1 Walkdowns of Containment

a. Inspection Scope (IP 83729)

The inspectors conducted several inspections of containment to observe house keeping conditions, radworker practices, and postings.

b. Observations and Findings

æ

Generally, containment was kept clean with areas for trash marked appropriately. Radiation worker (radworker) practices observed were good, however, several workers questioned by the inspectors were unaware of the radiation fields they were working in. Licensee expectations with regards to worker knowledge of radiation fields was discussed with radiation protection (RP) management. It was indicated to the inspectors that workers were expected to review survey maps and be cognizant of the dose rates in the areas they would be working.

Containment access points were posted as high radiation areas (HRAs) with discrete areas inside containment marked as 'elevated dose rates' and 'low dose waiting area' as appropriate. The inspectors questioned radiation protection management about the practice of posting all of containment as an HRA and were informed that this was done specifically for the steam generator replacement project because of an increased number of access points to inside the missile barrier. During previous outages, only areas of containment inside the missile barrier were posted as an HRA while areas outside the missile barrier were typically posted as radiation areas. The inspectors reviewed the results of surveys conducted in containment and found that only two discrete areas outside the missile barrier reached high radiation area levels as defined in 10 CFR Part 20. Other areas within containment had dose rates as low as 1 mrem/hr. Health Physics Position 036 "Posting of Entrances to a Large Room or Building as a Radiation Area" states that it is "counter-productive if substantial areas which are not radiation areas are posted as such". The purpose of radiological postings is to alert workers to the presence of radiation fields and help them to keep their doses ALARA. The methods used by the licensee to post HRAs in containment may not provide workers with sufficient radiological information to minimize exposures from radiation.

The inspectors also noted that fall protection at the plant continued to be a problem. There were various instances of plant workers either not wearing or not using fall protection harnesses when required (by station procedures). This issue was identified and communicated during the last NRC radiation protection inspection at the station. Because of the ongoing deficiencies in this area, and pursuant to the NRC's Memorandum of Understanding with the United States Occupational Safety and Health Administration (OSHA), this item is being referred to OSHA for further review.

c. Conclusions

Overall radworker practices observed were good, however, fall protection appears to be an ongoing problem with workers either not wearing or not using fall protection equipment appropriately. Additionally, a weakness was noted in the way HRAs within containment were posted.

R1.2 Conduct of Plant Radiography Operations

a. Inspection Scope (IP 83729)

The inspectors reviewed radiological controls implemented during outage radiography operations. This review consisted of attendance at a radiography pre-job briefing, observation of RP controls during the setup and performance of a radiography evolution, interviews with cognizant plant staff and participating radiographers, and inspection of applicable procedures and other relevant documents. In addition, the inspectors reviewed the circumstances surrounding an instance of a worker crossing a radiography boundary on January 11, 1998.

b. Observations and Findings

The inspectors noted that the pre-job briefing for the radiography operation conducted on January 20, 1998, was comprehensive and clear. Several of the RP technicians (RPTs) attending this briefing asked pertinent questions and raised nelpful points. The applicable radiation work permits (RWPs) ware discussed, as were the ALARA plan and the station's radiography procedure. Individual job responsibilities were well-defined, as were posting and surveillance activities. In addition, the location and movements of the radiography source for all stages of the operation were carefully specified.

The radiography operation was conducted efficiently and safely. "Radiation Area" radiography postings were placed at every possible access point to areas which could experience a dose rate increase (due to the radiography operations) of 5 mrem/hr or more. The RP supervisor for the job inspected these postings and ensured that the RPTs were stationed at their designated locations prior to the initiation of the radiography operation. In addition, the radiographers placed "High Radiation Area" radiography signs at the appropriate distances from the source location and maintained these boundaries under direct visual surveillance during the radiography exposures. Announcements were made over the plant public address system before the start of the evolution and after its termination. There were no problems with the radiological controls for the January 20, 1998 radiography operations observed.

The inspectors also reviewed the circumstances surrounding an instance of a worker crossing a radiography boundary on January 11, 1998. The inspectors interviewed the individual who crossed the boundary, two radiation protection supervisors who had been on-duty during this event, and one of the radiographers who had been present during

the event. In addition, the inspectors viewed the area where the individual had crossed the boundary and the posting which had been posted at that boundary. The licensee's documentation of the event, a Problem Identification Form (PIF), the plant radiography procedure, the radiographer's license, and written event narratives, were also reviewed.

On January 11, 1998, at approximately 4:45 a.m., during a radiography e olution in the B/C steam generator coffin of Unit 1 containment, a contract pic efitter crossed a "Radiation Area/Radiography in Progress" posting on a ladder leading up to the top of the B/C coffin from the 426' level of containment. The individual proceeded to the top of the coffin wall, at which point an RPT stationed on the polar crane (to monitor dose rates) noticed the individual. The RPT promptly informed RP supervision via headset and attempted to shout to the individual to notify him of his transgression. Though the individual apparently did not hear the RPT, he quickly realized that no one in his workgroup was in the area and that containment was unusually guiet, and promptly climbed back down the ladder. At that point, another RPT confronted the individual, showed him the posting which he had crossed, and escorted him out of containment and to the Containment Access Facility (CAF). Also, RP personnel promptly ceased the operation and secured the source and the area when the individual was spotted by the RPT in the polar crane. The inspectors noted that when the individual had beer, inside the boundary, no radiography exposures were occurring or about to take place. At the time of the transgression, the radiographic exposure device was in transport between snot locations. Also, subsequent review of the individual's electronic dosimeter data showed that the worker had not received any additional exposure as a result of his actions.

The licensee's investigation of the event found that the individual had been out of containment for approximately 1 hour, and had returned and proceeded directly to the location where he had previously been working. The individual did not check in at either the CAF or the 401' level RP Control Point on the way to that location, as required by station policy. The individual stated to the inspector that he had not seen or noticed the radiography posting and that he did not realize that radiography operations were taking place. The individual acknowledged to the inspectors that it had been communicated to plant employees at the beginning of his shift that radiography would be occurring at the end of the shift. He also stated that on previous occasions, he had heard radiography announcements over the intercom system and had evacuated radiography areas when required. In addition, the individual stated that he had been fully briefed by plant staff on the precautions for and dangers of radiography.

The licensee's immediate corrective actions for this event were to cease radiography operations until their investigation was complete, counsel the individual, and suspend the individual's site access for the remainder of the shift; the individual's employment was terminated by his contractor the next day due to this event. The licensee's long-term corrective actions for this event were to discuss the event with plant employees at subsequent shiftly briefings. The licensee's position was that the roct cause of the event was inattention to detail and personnel error. The inspectors concurred with this root cause assessment and found the corrective actions to be adequate. However, the inspectors also noted some contributing factors to the incident: (1) the signs used to

denote the radiography boundaries look very similar to normal plant radiation area postings in that "Radiation Area" or "High Radiation Area" is the most prominent text on the posting and "Radiography in Progress" and "Do Not Enter" are in relatively small fonts under it; and (2) constant surveillance of the radiography boundaries is not maintained by RPTs. Though it is the plant's expectation that workers read and follow all plant postings, the inspectors pointed out to RP management the importance of human factors in preventing personnel errors. The sign which the individual passed closely resembled a normal "Radiation Area" posting and was actually located within a posted high radiation area (containment) in the plant. Though this setup did not justify his actions, it did raise the guestion whether a more effective sign would have alerted him to the potential dangers of that action. With respect to the second contributing factor, plant procedure BRP 6210-6 (Revision 4) required the radiation area radiography postings to be placed appropriately and verified by plant staff, however, constant visual surveillance of access points through the radiation area radiography boundary was not required. The plant relied on the radiographers to maintain constant surveillance (per their license and applicable NRC or Agreement State regulations) of their high radiation area radiography boundary, which is placed inside of the plant's radiation area radiography boundary. Plant RP management stated that they would review their radiography boundary surveillance and posting practices and procedures.

Technical Specification 6.11 requires that procedures for personnel radiation protection be prepared consistent with the requirements of 10 CFR 20 and be approved, maintained and adhered to for all operations involving personnel radiation exposure. BRP 6210-6 (Revision 4), Step F.11, states that all non-essential personnel shail remain outside any posted radiography boundaries and that no person shall enter the radiography area without the permission of the RPT and the radiographer. Contrary to this, on January 11, 1998, during a radiography evolution in the B/C steam generator coffin of Unit 1 containment, a contract pipefitter crossed a radiography boundary across a ladder leading up to the top of the B/C coffir. from the 426' level of containment. This individual did not have permission to enter the radiography area from either an RPT or the radiographer. This non-repetitive, 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 50-454/98006-01; 50-455/98006-01).

c. <u>Conclusions</u>

Radiological controls implemented during radiography operations were effective. Radiography operation pre-job briefings were clear and comprehensive, and included a high level of participant feedback and questioning. Though access controls and postings for these evolutions were executed in accordance with plant procedures, the licensee identified one instance in which a plant contractor crossed a radiography boundary on January 11, 1998 in violation of plant procedures. This resulted in a noncited violation for a failure to follow procedures.

R1.3 Survey Program

a. Inspection Scope (IP 83750)

The inspectors reviewed current surveys kept at the 40°. RP control point in containment and also at the RP office. Routine surveys from 1996 and 1997 for various areas in the auxiliary building (AB) were also reviewed, as well as the procedure for performance and review of surveys. The inspectors interviewed radiation protection technicians regarding the performance and documentation of surveys and accompanied a technician on a routine survey. Also, the inspectors interviewed radiation protection foreman about the survey review and approval process and the quality control checks performed.

b. Observations a d Findings

The inspectors reviewed routine surveys performed during 1996 and 1997 for various areas in the AB. Overall, the survey records and maps were consistent and completed properly, however, a few problems were noted in the completeness of the survey documentation and with the adequacy of the review of the survey data. Procedure BRP 6020-3, Revision 11, "Routine Plant Surveys", requires that survey forms include the signature or initial of RP supervision that reviewed the survey results and the date review. However, the inspeciers identified two survey forms out of approximately 400 reviewed, that did not include the RP supervisors signature or initial and/or the date of the supervisor's review. Three other survey record discrepancies were also noted related to additional or revised information recorded on survey forms. Additionally, one instance was identified when a RF foreman reviewed and approved a survey record that lacked any radiological survey data. This inattention to detail problem was later recognized by the foreman and corrected. The failure to include the RP supervisor's signature or initial and date on survey forms is a violation of minor safety concern and is being treated as a Non-Cited Violation, consistent with Section IV of the NRC Enforcement Policy (NCV 50-454/98006-C2; 50-455/98006-02). RP management indicated that they would inform the staff of the need to ensure that survey documentation was properly completed and carefully reviewed.

The inspectors reviewed the "Semi Annual Quality Control Check Report January through June 1997". This report documented the findings of RP supervision quality control checks of station survey practices and related survey documentation. The quality control checks include bimonthly RP supervisor review of survey documentation and routine plant tours to evaluate survey practices and to conduct confirmatory surveys. The inspectors reviewed the findings of the quality control checks and the action plans to correct any deficiencies noted and determined that the program was well implemented.

The inspectors reviewed the survey maps located in containment at the RP control point and discussed the survey program with RPTs. This review determined that the discrepancies identified in NRC Inspection Report 97023, regarding out of date surveys it the control point had been corrected. The RPTs indicated that there was only one copy of current surveys being kept at the control point, whereas previously additional copies had been on the desk for workers to review. A single copy had made it easier for the RPTs to control and update the survey maps as needed. No new instances of out of date or mislabeled survey maps were identified.

c. <u>Conclusions</u>

Overall, the survey program was well implemented. A few minor problems in the survey documentation were identified and resulted in a non-cited violation. The quality control functions performed by the department were thorough and identified areas for improvement.

R1.4 Control of Materials for Unconditional and Conditional Release from Radiologically Posted Areas (RPAs)

a. Inspection Scope (IP 83750)

The inspectors reviewed the implementation of the program for unconditional and conditional release and movement of tools, equipment, personal belongings and other materials from RPAs. The review consisted of interviews with station personnel regarding the program, a review of the instrumentation used to implement the survey program, observation and evaluation of technician survey methods and practices, and a review of the program.

b. Observations and Findings

Unconditional Release Program

Station procedure BAP 720-3, Revision 18, "Control of Materials for Conditional or Unconditional Release from Radiologically Posted Areas," was comprehensive, contained appropriate precautions and release criteria, and included limitations, actions, and guidelines which clarified procedure implementation. Survey instrumentation and measurement techniques and restrictions for releasing volumetric materials (liquids, soil and other dispersible solids), materials and equipment with enclosed or concealed areas, and personal belongings were adequately addressed in the procedure. One discrepancy was noted with the procedure regarding use of a microRmeter to complete surveys of certain items. The discrepancy was brought to the attention of RP management, who indicated that the metter would be addressed through a procedure revision.

Instrumentation used to conduct unconditional release surveys was appropriate. Unconditional release surveys of most small itsens and articles were conducted primarily with small article monitors (SAMs), excluding those items with self-shielding that may attenuate and mask contamination. Conventional Geiger-Mueller (GM) survey instrumentation was used for surveying most other items. MicroRmeters were used to augment the program for aggregate surveys of trash bags prior to unconditional release, as described further below. Materials and articles were unconditionally released provided no NRC-licensed material was detected, when measured in a low radiation background area.

No problems were identified while the inspector observed several RP staff conduct unconditional release surveys at the primary RPA material release location in the auxiliary building and in the decontamination facility constructed to support the steam generator replacement project. Appropriate instrumentation was used in accordance with procedure and survey techniques were good.

The inspectors also reviewed the operation and calibration of the automated large area survey table (waste sort table) used to conduct unconditional release surveys of most solid wastes generated in the RFA. Use of the sorting table was discontinued in October 1997, for economic reasons and prior system operability problems. Since that time, all solid waste generated in RPAs was assumed to be radioactively contaminated and transferred to an agreement state licensed contractor for processing and disposal. after general sorting by the licensee. While in operation, the waste sorting detection system was checked daily for proper operation and alarm function and calibrated annually using National Institute of Standards and Testing (NIST) traceable cobalt-60 sources. Inspector discussion of waste sorting table operations, and review of procedures, release criteria and methods used to conduct daily surveillances and annual calibrations of the system, revealed no problems. Most solid waste generated in the RPA was collected in plastic bags and transferred to the waste sort area in the auxiliary building. Each individual piece of waste was then removed from its trash bag and surveyed using the waste sort table detection system, placed in a clean waste bag and the bagged material was subsequently surveyed with a microRmeter. The microRmeter survey was conducted to ensure that the bagged, aggregated waste did not exhibit measurable radioactivity. Solid waste generated in an RPA was unconditionally released if no radioactivity above background was detected by either the sort table detectors or microRmeter

Additionally, the inspectors reviewed the circumstances surrounding two PIFe generated in July and August 1997, relating to radioactive material found in the non-occitaminated (clean) trush. In both instances, small quantities of contaminated waste was discarded into an open bag of clean, recently sorted and surveyed trash that was temporarily staged in the sorting area. Both problems were identified by a radiation protection technician and rectified before the waste bags were removed from the RPA and disposed of in the non-radioactive trash. Corrective actions included notifying RP staff of the need to seal and remove sorted and bagged clean trash at the end of each sorting shift, and the installation of a plexiglass wall to segregate clean, sorted trash bags from unsorted bags. The plexiglass wall was constructed to reduce the potential for contaminated trash to be placed in bags of clean, recently sorted and surveyed trash.

Conditional Release Program

Items and materials that were contaminated or suspected to be contaminated were, on occasion, conditionally released for transport from one RP' to another. In these

instances, the RP staff determined the radiclogical conditions of the material and issued a transport tag which accompanied the item while in transit. The transport tag identified the material, its point of origin, destination, removal date and requestor, along with radiological survey data pertaining to the material. Inspector review disclosed the conditional release program to be generally well implemented; however, no mechanism currently exists to track and verify if a conditionally released item reached its intended destination. An isolated incident occurred in December 1997, involving several conditionally released items that were transferred to a non-RPA within the plant, due to worker miscommunication about where the materials were to be taken. Although the problem was licensee identified and the contaminated materials later transferred to the appropriate RPA without consequence, the problem may have been prevented had a tracking system been in place.

c. <u>Conclusions</u>

The procedure for the control and movement of materials for unconditional and conditional release from RPAs was comprehensive and generally well implemented. A discrepancy in the unconditional release procedure was brought to the licensee's attention and will be rectified. Station personnel were knowledgeable of the program and survey instrumentation and survey practices observed during the inspection were appropriate. One minor incident occurred involving items conditionally released to a non-RPA, caused by worker miscommunication and the lack of a tracking system to ensure such items reached their intended destination.

R1.5 Inventory Control and Storage of Calibration and Reference Sources

a. Inspection Scope (IP 83750)

The inspectors reviewed the inventory, control and storage of NRC-licensed radioactive sealed source used for calibration and reference purposes. The program was discussed with RP personnel, relevant procedures and source inventory and control logs were reviewed and sources maintained in the storage area were selectively inventoried by the inspectors.

Observations and Findings

NRC-licensed sealed sources used for instrument calibration, instrument surveillance onecks, and other purposes were maintained in a storage locker located in the auxiliary building's calibration facility. Keys for the calibration facility and storage locker were issued to RPTs and other RP staff authorized and trained to use the sources. A sealed source inventory list was maintained along with a source control log used to track the location of sources at any given time. The log included columns to document source log-out and log-in information and the mitials of the individual completing the action. Although not required by procedule of management expected the source control log to be completed expeditiously whenever a source was removed or returned to the source storage locker. RP management also expected that an appropriate log entry be made to indicate who was assigned responsibility for a source, if it could not be returned to the storage locker at the end of a shift.

Sealed source inventory records were properly maintained and current. However, problems with the completeness of the source control log were noted by the inspectors. For example, several recent log entries lacked source "log in" information, even though the sources were returned to the storage locker. The inspectors also noted time periods of a week or more when sources were "logged out", without sufficient information in the log to deputify the location and custodian of the source while they were no longer stored in the locker. Other inspector identified source log discrepancies included source return dates preceding log out dates, and licence identified instances when RP personnel failed to initial the log upon source returns. RP staff periodically audit the control log and the staff recognized that the log was not aiways completed appropriately. These inattention to detail discrepancies were brought to the attention of RP management, who indicated that the log would be better maintained and audited to ensure it was accurate and complete.

In addition to the source storage locker, the calibration facility houses a calibration device that is used to calibrate portable survey instrumentation. The "gamma calibration range," a self-shielded device that contains two sealed sources resitioned within a source well, is used only by authorized RP personnel. Keys to calibrate the range and to unlock padlocks on the device's source rod and shield door were also controlled by a thorized RP staff. Inspector walkdowns of the calibration facility revealed security for the calibration facility, calibration device and source locker to be adequate. The health physicist responsible for the calibration facility indicated that the calibration device and storage locker are maintained locked unless authorized personnel are in attendance.

c. <u>Conclusions</u>

Physical inventories of calibration and reference sources were conducted and inventory records were current. However, the source control log used to track source location and movement contained examples of incomplete and inaccurate information. Source and calibration facility security was adequate.

R4 Staff Knowledge and Performance in RP&C

R4.1 Reactor Head Installation Pre-job Briefing

The inspectors attended the pre-job briefing for the reactor head installation on January 23, 1997. The inspectors noted that the briefing covered most job areas adequately, including thorough discussions of the following items:

- expected radiation dose rates
- historical dose rate and air sample data
- accumulated dose and dose rate alarm settings
- dosimetry requirements
- in-olace radiological monitoring

- clothing requirements
- personnel access control methods
- communications equipment and protoccl
- time line of job activities
- radiological contingencies

The inspectors noted that there was little presentation of possible non-radiological contingencies (such as mechanical failures, crane problems, etc.). This shortcoming, however, was counteracted effectively by very strong participation and questions from the personnel attending the briefing. In addition, the containment video surveillance system was used extensively by the job participants to indicate personnel stations, equipment placement and orientation, and job progression.

R4.2 Generating Station Emergency Plan (GSEP) Unusual Event (UE)

A GSEP UE was declared at the station on January 19, 1998, and terminated about one hour later, because a potentially contaminated, injured worker was transported to an offsite emergency facility.

The injured worker experienced back pain when attempting to climb a ladder in the Unit-1 containment en route to the top of the steam generator coffins, and collapsed. On-site and off-site emergency response personnel, including about ten emergency medical service (EMS) personnel and several RP staff worked together and moved the injured worker down to the containment hatch, out through the auxiliary building and into an awaiting ambulance. An RPT accompanied the EMS personnel in the ambulance, as required by statich procedure. Due to the nature of the injury, the injured worker's protective c'othing was not removed and extensive surveys of the individual were not completed at the site.

EMS personnel responding to the event in containment were provided appropriate dosimetry and protective clothing, and were surveyed for contamination prior to site departure. No contamination was identified on any of the EMS personnel, the ambulance or other emergency equipment used in the event. Surveys of the hospital's radiation emergency area where the individual was treated also identified no contamination. Exposure to all personnel involved in the emergency response was minimal, as measured by the electronic dosimetry worn by the responders. The injured workers protective clothing, plastic used to line the ambulance and other materials used offsite that was potentially contaminated was returned to the station.

No problems were identified with the radiological response to the event. The licensee's response appeared prompt and appropriate.

R8 Miscellaneous RP&C Issues

R8.1 (Closed) Inspection Follow-up Item No. 50-454/97023-01 and 50-455/97023-01: As discussed in section R1.3 of this report, no new instances of out of date or mislabeled survey maps were identified. This item is closed.

V. MANAGEMENT MEETINGS

ģ

X1 Exit Meeting Summary

On January 23, 1998, the inspectors presented the inspection results to licensee management. 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.

PARTIAL LIST OF PERSONS CONTACTED

- J. Bauer, Health Physics Supervisor
- L. Bushman, SGRP Radiation Protection Supervisor
- R. Colglazier, NRC Coordinator

K. Kofron, Station Manager

M. Marchionda, Technical Lead Health Physicist

W. McNeill, ALARA/Operations Lead Health Physicist

INSPECTION PROCEDURE USED

- IP 83750: Occupational Radiation Exposure
- IP 83729: Occupational Exposure During extended Outages

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-454/455-98006-01 50-454/455-98006-02	NCV NCV	Worker crossed radiography boundary Minor problems with survey documentation
<u>Closed</u>		
50-4,54/455-97023-01	IFI	Problems with survey information and communication

0

LIST OF ACRONYMS USED

ALARA	As Low-As-Is-Reasonably-Achievable
CAF	Containment Access Facility
CFR	Code of Federal Regulations
EMS	Emergency Medical Service
GM	Geiger-Mueller
GSEP	Generating Station Emergency Plan
HRA.	High Radiation Area
IFI	Inspection Follow-up Item
INPO	Institute for Nuclear Power Operations
M-REM/HR	Millirem per hour
1.CV	Non-Cited Violation
NIST	National Institute of Standards and Testing
OSHA	Occupational Safety and Health Administration
PDR	Public Document Room
PIF	Problem Identification Form
RP	Radiation Protection
RPA	Radiologically Posted Area
RPT	Radiation Protection Technician
RP&C	Radiation Protection and Chemistry
RWP	Radiation Work Permit
SAM	Small Article Mc litor
TS	Technical Specification
UE	Ghusual Event
VIO	Violation

.

PARTIAL LIST OF DOCUMENTS REVIEWED

BAP 720-3	"Control of Materials for Conditional or Unconditional Release from radiologically Posted Areas." (Rev 18)
BRP 5825-17	"Control, Storage, Inventory, Leak Testing and Disposal of Radioactive Sources," (Rev 8)
BRP 5825-3	"Operation and Use of the J. L. Shepherd Model 89 Gamma Calibration Range," (Rev 3)
BAP 499-3	"Requirements for Erecting Scaffolding and Ladders," (Rev 12)
BAP 30:00-6	"Fall Protection," (Rev 1)
BRP 5010-1	"Radiological posting and Labeling Requirements," (Rev 14)
BRP 5500-1T1	"Respiratory Control Measure Flowchart." (Rev 1)
BRP 6020-3	"Routine Plant Surveys" (Rev 11)
BRP 6210-6	"Radiological Precautions for Radiography Activities in the Plant " (Rev 4)
BRP 6210-8	"Rad ological Controls for Reactor Head and Upper Internals Movement," (Rev 2)

Station Survey Records:

6

BRP 2000-T5	AB 346 General Area U-1
BRP 2000-T12	AB 364 General Area HX Walkway U-2
BRP 2000-T21	AB 383 VLV Aisles/Control Room Chillers
BRP 2000-T32	AB 401 General Area U-2
BRP 2000-T46	AB 426 U-1 Electrical Penetration Area
BRP 2000-T71	FH 426 Spent Fuel Pool and Walkway
BRP 2000-T306	U-1 377 IMB All Inclusive
BRP 2000-T309	U-1 390 IMB All Inclusive
BRP 2000-T318	U-1 401 IMB RCP Deck
BRP 2000-T327	U-1 426 All Inclusive
BRP 2000-T329	U-1 Reactor Cavity
BRP 6020-2T1	Air Sample Activity Data Sheet
RRP 6020-2T4	Air Sample Activity Data Sheet

Station Problem Identification Forms (PIFs):

B1998-00104 "SPP 97-041, OSGSF Dose Rate Survey, Failed Acceptance Criteria" B1998-00142 "Individual found inside Radiography boundary inside unit 1 cnmt" B1998-00320 "Unauthorized material found in RPA"

Other Documents:

Illinois Department of Nuclear Safety Radioactive Material License for Conam Inspection, Inc., (License Number IL-01223-22 Amendment 2, dated 11/30/97)

32 Illinois Administrative Code Part 350, "Radiation Safety Requirements for Industrial Radiographic Operations," dated 11/95

Radiation Work Permit (RWP) No. 971860 (rev 1), "SGRP - Radiography (MB/OMB)"