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NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

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Report No.: 50-302/90-34

Licensee: Florida Power Corporation
3201 34th Street, South
St. Petersburg, FL 33733

Docket No.: 50-302 License No.: DPR-72

Facility Name: Crystal River 3

Inspection Conducted: November 5 thru 9, 1990

Inspectors: D. A. Seymour — 5 Dec '90 Date Signed

R. P. Carrion — 5 Dec '90 Date Signed

Approved by: for T. R. Decker, Chief — 12/5/90 Date Signed
Radiological Effluents and Chemistry Section
Radiological Protection and Emergency
Preparedness Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of radiological effluents, plant chemistry, environmental and meteorological monitoring, and solid radwaste management and transportation.

Results:

Crystal River 3 liquid and gaseous effluents were well within Technical Specification, 10 CFR 20, and 10 CFR 50 effluent limitations. (Paragraph 4)

Based on a selective review of portions of the program, it was determined that the Solid Radwaste Manag ment and Transportation Program was effectively organized and implemented at this time. (Paragraph 8)

The Count Room and Hot Lab were adequately staffed with knowledgeable personnel; and the equipment was well-maintained. (Paragraph 10)

Based on a review of 1989's Annual Radiological Environmental Operating Report, there were no significant radiological consequences attributable to the operation of Crystal River in 1989 from airborne, waterborne, aquatic ingestion or direct exposure pathways. (Paragraph 3)

A review of records indicated that the ESF Control Room Habitability Ventilation System had been adequately tested in accordance with Technical Specification requirements and that acceptance criteria had been met. (Paragraph 9)

Progress had been made in improving PASS operability. (Paragraph 7)

The licensee's program to monitor and trend secondary water chemistry was adequate and the parameters were generally maintained within administrative limits. (Paragraph 6)

The portions of the Meteorological Monitoring System that were reviewed met regulatory requirements. (Paragraph 11)

In the areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*P. Beard, Senior Vice President of Nuclear Operations
A. Boettcher, Chief Nuclear Chemistry Technician
*G. Clymer, Nuclear Waste Manager
P. Ezzell, Radiochemistry and Environmental Specialist
J. Gilbert, Nuclear Waste Supervisor
J. Huegel, Nuclear Project Engineer
*A. Kazemfar, Radiation Support Services Supervisor
*S. Robinson, Nuclear Chemistry and Radiation Protection Superintendent
A. Stern, Nuclear Project Engineer
*R. Widell, Director of Nuclear Operations Site Support
*M. Williams, Nuclear Regulatory Specialist
*W. Worley, Nuclear Chemistry Manager

Other licensee employees contacted during this inspection included engineers, mechanics, technicians, and administrative personnel.

NRC Resident Inspectors

*P. Holmes-Ray, Senior Resident Inspector

*Attended exit interview

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

2. Organization and Training (84750 and 86750)

Both the Nuclear Chemistry and Nuclear Waste Sections were fully staffed with no vacancies. The Nuclear Chemistry Manager directed a force consisting of a Nuclear Chemistry Clerk, three Nuclear Chemistry Supervisors, three Chief Nuclear Chemistry Technicians, eighteen Nuclear Chemistry Technicians, and one Assistant Nuclear Chemistry Technician. Similarly, the Nuclear Waste Manager directed a force consisting of a Nuclear Waste Clerk, three Nuclear Waste Supervisors, eight Nuclear Waste Systems Technicians, and nine Nuclear Apprentice Waste Systems Technicians. Both managers reported to the Nuclear Chemistry and Radiation Protection Superintendent, who reported to the Manager of

Nuclear Plant Operations. The organization had remained stable since the last report, the only change being in the position of Manager of Nuclear Plant Operations when the incumbent assumed a corporate position. The inspectors noted that this change did not detrimentally affect the daily activities of the sections inspected.

The inspectors interviewed the Nuclear Chemistry and Nuclear Waste Managers who described their responsibilities and operations.

The inspectors reviewed selected training/qualification records of personnel from both groups. Training and annual requalification were the focal point of the training program in maintaining a competent staff. The inspectors selectively reviewed course outlines, containing learning objectives and scope of material covered. From their selective review, the inspectors concluded that the licensee's program was adequate at this time.

No violations or deviations were identified.

3. Radiological Environmental Monitoring (84750)

The inspectors conducted a review of the radiological environmental and monitoring surveillance program to determine if the status of the program was consistent with sampling requirements, analytical requirements, and schedules specified in Technical Specification 4.12.1.1.

The inspectors interviewed cognizant licensee personnel about the program and examined an air sampling station. The sampling station was located off site, near the meteorological tower. The area around the station was well maintained, with no trees (which could pose potential damage from falling limbs) in the immediate vicinity.

Technical Specification 6.9.1.5(c) requires the submittal of the Annual Radiological Environmental Operating Report. Pursuant to this requirement, the inspectors reviewed the report for 1989. The following observations were made:

- Iodine-131 was not detected in air samples in 1989. Gross beta activities on quarterly composite air filter samples in 1989 were higher than those of 1988 but lower those of 1987 (1.4E-02 pCi/cubic meter).

- Iodine-131 in drinking water remained at less than detectable levels in 1989. Gamma emitting radionuclides analyses for drinking water indicated concentrations well below regulatory limits. Tritium activity was not detected in drinking water.

- Of twenty-one monthly saltwater grab samples, two had measurable levels of tritium activity, both well within regulatory limits. Gamma spectral analysis on thirty six samples found levels of activity near the LLD for Manganese-54 and Cesium-137.

- Detectable gamma activity was revealed in analyses of carnivorous fish and oysters from the indicator and control locations in 1989, at levels approaching LLD.

- No tritium or gamma activity was observed in groundwater in 1989.

- Sediment samples showed no measurable amounts of Cesium-134 or Cesium-137. Only Manganese-54 was identified in two (of eight) samples, at levels well below regulatory limits.

- Cesium-137 was detected in fourteen of twenty three indicator samples and six of twelve control station samples of broadleaf vegetation as well as in watermelon and orange samples, all at levels approaching LLD.

- The TLD (direct radiation) results for 1989 were consistent with the results obtained in 1988 and 1987.

No significant radiological consequences attributable to the operation of CR3 in 1989 were noted from airborne, waterborne, aquatic, ingestion, or direct exposure pathway. Within the scope of this selective review, the inspectors determined that the licensee's Radiological Environmental Monitoring Program was satisfactory as executed.

No violations or deviations were identified.

4. Radiological Effluents (84750)

Technical Specification 6.9.1.5.d requires the licensee to submit a Semi-Annual Radiological Effluent Release Report within the time periods specified, covering the operation of the facility during the previous six months of operation.

Pursuant to these requirements, the inspectors reviewed the semiannual radioactive effluent release report for the first six months of 1990. This review included an examination of the liquid and gaseous effluents for the first half of 1990 as compared to those of full-year 1989 and 1988 compilations.

Radioactive Effluent Release Summary

Crystal River, Unit 3	1988	1989	first half 1990
Activity Released (curies)			
a. Gaseous Effluents			
1. Fission and Activation Products	3.42E+03	4.54E+03	6.60E+03
2. Iodines	1.03E-03	1.66E-03	4.44E-04
3. Particulates	2.17E-04	2.86E-06	6.54E-07
4. Tritium	9.93E+00	3.43E+01	9.95E+00
b. Liquid Effluents			
1. Fission and Activation Products	2.31E-01	2.94E-01	4.42E-01
2. Tritium	5.11E+02	3.44E+02	1.74E+02
3. Dissolved and Entrained Gases	2.60E+01	4.30E+01	4.09E+01
4. Gross Alpha	3.26E-06	6.90E-05	5.55E-05
5. Volume of Released Wastes (liters)	4.42E+07	3.03E+07	2.32E+07

For this reporting period, Crystal River's liquid and gaseous effluents were well within Technical Specifications, 10 CFR 20, and 10 CFR 50 effluent limitations. No abnormal releases have occurred to date in 1990.

A comparison of the liquid and gaseous effluent results showed no significant trends for most effluent types. Fission and activation products increased at a more rapid rate than in 1989 for both gaseous and liquid effluents. Dissolved and entrained gases, gross alpha, and total volume of released wastes also increased at a more rapid rate than in 1989 for liquid wastes. The licensee attributed part of the increase of the fission and activation gases to increased reactor coolant leaks. Crystal River shut down in the first quarter of 1990 to repair these leaks.

No violations or deviations were identified.

5. Effluent and Process Radiation Monitors (84750)

Technical Specification (TS) 4.11.1.1.1 requires that radioactive liquid wastes be sampled and analyzed and TS 4.11.2.1.2 requires that representative samples of radioactive gaseous effluents be taken and analyzed.

Pursuant to these TSs, the inspectors and Chief Technician walked down four effluent monitors (RM-A1, -A2, -L2, and -L7) and twelve process monitors (RM-A3 thru -A8, -12, -15, and RM-L3 thru -L6) to become familiar with their physical location in the plant and to observe their general

state of maintenance and operability. All but three were found to be operating normally. Two had been taken out of service, RM-L4 permanently several years ago and RM-A1 temporarily, and one, RM-A15, was found with its paper recorder malfunctioning. It proved to be minor and the Chief Technician was able to correct the problem while we were there. Otherwise, the monitors were well-maintained. The inspectors went to the Control Room to review the instrumentation associated with the monitors and witnessed a source check.

The inspectors observed filter samples being taken at the RM-A2 gas monitor for a continuous release. The technician followed procedure CH-349, Rev. 9, entitled, "Sampling at the Auxiliary Building Exhaust Duct Gas Monitor (RM-A2)." The inspectors also observed a technician take a sample from Evaporator Condensate Storage Tank - A (ECST-A) in preparation for a batch release. Proper sampling technique and health physics practices were noted. The inspectors obtained a copy of the associated documentation for this batch release in Liquid Radwaste Release Permit 90-297, including isotopic sample analysis, estimated release conditions, actual release data, release summary and quarter year totals, and dose calculations. The inspectors also reviewed the strip chart in the Control Room to be sure that the radiation monitor accurately recorded the event. No irregularities were noted.

As required by Surveillance Procedure SP-701, Rev. 24, entitled, "Radiation Monitoring System Surveillance Program," the air monitors were surveilled daily to check the sample flow rate and vacuum, and in addition, RM-A1, -A2, -A5 and -A6 were checked for iodine channel flow. The inspectors accompanied a technician to observe his routine in collecting data for preparing a flow correction report. The inspectors selectively read some of the meters after the technician and compared those readings with those of the report when it was compiled and found them to be comparable. The corrected flow rates for all surveilled monitors were satisfactory, falling between the administrative upper and lower limits and requiring no corrective action.

No violations or deviations were identified.

6. Reactor Coolant Chemistry and Secondary System Chemistry (84750)

TS 3.4.7 specifies the maximum acceptable concentrations of dissolved oxygen, chlorides and fluorides in reactor coolant. TS 3.4.8 specifies the maximum specific activity of the primary coolant in terms of Dose Equivalent Iodine-131 (DEI). These parameters are related to fuel integrity and corrosion resistance.

Pursuant to these requirements, the inspectors reviewed chemistry logs and graphs generated by the licensee for the purpose of tracking these parameters and identifying trends. These documents revealed that DEI for Crystal River, after refuel number seven, was approximately

2.0 E-01 microCuries per gram (uCi/g). The primary to secondary leakrate during the same time frame ranged from approximately 1.0 E-04 to 1.0 E-02 gallons per minute. Tritium in the reactor coolant for the same time frame ranged from approximately 6.0 E-02 to 1.0 E-00 uCi/g. The licensee indicated that there was one or two possible leaking fuel rods at 108 full power days in the cycle. These possible leakers would have an effect on DEI numbers.

The TS limits for reactor coolant system (RCS) chlorides is 0.15 parts per million (ppm). The administrative limit for chlorides was approximately 0.10 ppm. For the first 280 days of 1990 the licensee values for chlorides averaged approximately 1.13 E-02 ppm. The TS limits for RCS fluorides is 0.15 ppm, and the administrative limits for fluorides was approximately 0.10 ppm. For the first 280 days of 1990 the licensee values for fluorides averaged approximately 2.6 E-02 ppm. The TS limit for dissolved oxygen is 0.10 ppm. The licensee values for this parameter for the first 280 days of 1990 were typically below the lower limit of detection of approximately 10 parts per billion (ppb). The licensee did not exceed their administrative values for these parameters for the time period reviewed.

The inspectors also reviewed records and graphs for feedwater and condensate demineralizer chemistry. Crystal River (CR3) has B&W Once-Through-Steam-Generators. These generators require different secondary chemistry controls than recirculating steam generators. For this reason CR3 has developed a CR3 Chemistry Index, as opposed to the INPO Chemistry Index, which was developed for recirculating generators. The primary problem with using the INPO Chemistry Index was that it did not allow for correction of cation conductivity based on the decomposition products of morpholine, which CR3 uses for pH control. The CR3 Chemistry Index was based on feedwater iron concentration, condensate pump discharge oxygen, feedwater chloride concentration, and feedwater sodium concentration. If CR3 was precisely at EPRI limits for these parameters, their CR3 Chemistry Index would be 1.0. The CR3 Chemistry Index for July, August and September 1990 was approximately 0.18. The CR3 Chemistry Index had steadily decreased since mid-1987 from a value of approximately 0.37. The INPO Chemistry Index for July 1990 was 0.3.

The inspectors also reviewed feedwater iron concentrations. This parameter is important because high iron concentrations leads to buildups of magnetite on tube support plates in the steam generators; ultimately restricting power output and causing maintenance problems and increased radiation exposures. CR3 used pH control, including the use of morpholine, to reduce secondary system corrosion, and thus iron concentrations. Graphs provided by the licensee indicated that feedwater iron concentrations have decreased from 5 ppb in 1987 to less than 2 ppb in 1990. The administrative limit for this parameter was 2.5 ppb. The inspectors also reviewed graphs which depicted total copper concentrations in the feedwater, another indication of corrosion control effectiveness. The administrative limit for copper was 2.0 ppb. Typical values for copper for 1990 through October were less than 0.1 ppb.

Condensate Hotwell Dissolved Oxygen is another important secondary chemistry parameter because of oxygen's key function in the oxidation process. CR3 had an administrative limit of 40 ppb for condenser hotwell dissolved oxygen. Typical values for this parameter for 1990 through October were approximately 2.0 ppb or less.

The inspectors also reviewed graphs and documentation covering other secondary chemistry parameters. These parameters included, for feedwater: chlorides, cation conductivity, sodium, hydrazine, ammonia, morpholine, formate, acetate, sulfates, and pH. Graphs for condensate demineralizer parameters were also reviewed, including: sodium, chloride, cation conductivity, and specific conductivity. These graphs covered 1990 through October; in general the licensee did not exceed their administrative limits for these parameters.

Based on this selective review, the inspectors determined that the licensee had a program to monitor and trend their secondary chemistry parameters, and in general maintained these parameters within administrative limits.

No violations or deviations were identified.

7. Post Accident Sampling System (PASS) (84750)

NUREG-0737, Criterion 2a provides specifications for the establishment of onsite radiological analysis capabilities to provide for the quantification of noble gases, iodines, and non-volatile radionuclides in the reactor coolant and containment atmosphere.

During a previous inspection (Inspection Report 90-12), it was determined, through discussions with the licensee and a review of records, that the PASS at Crystal River had experienced continued operability problems over the past couple of years. These problems were attributed to a pressurizer steam space sample being taken without proper cooling, causing leaks in valves and tubing (approximate 1987 time frame).

As detailed in Inspection Report 90-12, an engineering study had been performed to evaluate the PASS, which included requirements, modifications, and problem history. Engineering support was received to test, troubleshoot, and repair the PASS. It was planned that the system would be operated in its current configuration for one year, and in late 1990, be reevaluated to determine what changes needed to be implemented to ensure reliable, economic and efficient operation.

During the current inspection, the inspectors reviewed the progress the licensee had made in ensuring the operability of the PASS. This review included a review of records and interviewing the system engineer assigned to the PASS. The engineer was assigned to this position in July, 1989. Discussions with the licensee revealed that the leaks in the system to the atmosphere had been corrected, fittings had been tightened, and that an extensive leak test had been performed. The licensee indicated

that operability problems with the PASS still continued, but that improvements had been made in that prior to this work, there would be several simultaneous problems (multiple failures), and that current problems typically reflected the failure of a single component.

The inspectors reviewed the results of the one-year operability test. The licensee determined that the existing system was not reliable, did not produce repeatable data, and did not meet the requirements of Reg. Guide 1.97 and NUREG 0737. Some of the problems identified by the licensee were:

- Continuing inoperability problems with the Hydrogen Analyzer. This analyzer was of poor design, and did not provide an accurate or repeatable indication of hydrogen in the reactor coolant system (RCS).

- The boron analyzer had air in-leakage into the analyzer reagent lines, causing periodic inaccuracies. In addition, the computer aligned with the boron/pH analyzer was not reliable, being old and having received insufficient preventative maintenance. At the time of this inspection, the computer had been overhauled and its circuit boards had been reseated; and the air in-leakage had been corrected. The boron/pH analyzer had passed the acceptance criteria tests several times since these repairs had been made.

- The waste reservoir pump experienced intermittent failure, resulting in system trips.

The isotopic analysis section, the chloride analysis section, and the grab samplers were working satisfactorily. The inspectors determined that, due to maintenance problems, the required monthly maintenance tests were run as frequently as once or twice a week.

The system engineer formulated four alternatives for upgrading the PASS in order to meet Crystal River's commitments to NUREG 0737. These alternatives were:

Upgrade the hydrogen analyzer, and leave the remainder of the system as it stands.

Replacement of the boron/pH and hydrogen analyzers.

Replace the existing fully automated system with a manual system.

Replace the boron/pH and hydrogen analyzer, and add the ability to obtain a sample manually (which would be used if the automatic portion becomes inoperable).

There were several pros and cons to each of these alternatives. The first two alternatives would maintain Crystal River's ALARA concept of obtaining and analyzing the samples with no dose to the technician, because the

system would remain completely automated. The third alternative would cause the technicians who obtain the samples and perform the analyses to receive a "manageable" dose (the maximum NUREG-0737 dose is 5.0 rem per person). However, this would be the least complicated system, and probably the most reliable. The last alternative would be a combination of these two options, and thus the most flexible.

These four alternatives were planned to be presented to, and discussed with, upper management during December, 1990. Action plans for the chosen alternative should be formulized early in 1991.

Based on this selective review, the inspectors considered that work to improve the operability of the PASS had proceeded and that engineering support had been received. PASS maintenance and operability will be reviewed during subsequent inspections.

No violations or deviations were identified.

8. Solid Radwaste Management and Transportation (86740)

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

10 CFR 20.311(b) requires that each shipment of radioactive waste to a licensed land disposal facility be accompanied by a shipment manifest and also specifies the required entries on the manifest.

The inspectors reviewed selected documentation of radioactive waste and materials shipments of 1990 (as well as for a shipment awaiting pickup) and the latest revision of selected radwaste procedures to assure incorporation of regulatory requirements. The reviewed documents were prepared in accordance to 49CFR requirements. The radiation and contamination survey results were within the limits specified for the mode of transport and shipment classification. The shipping records were being completed and maintained as required.

Although no shipments were being prepared at the time of this inspection, the inspectors reviewed the shipment which was awaiting pickup to assure that licensee practices were in compliance with applicable regulations. The shipment was 3780 pounds composed of six stators and ten position indicator tubes, destined for the Babcock and Wilcox refurbishment center in Leechburg, Pennsylvania and documented in Shipment No. 90-87 as five strong, tight containers, containing solid/oxide material with a recorded total activity of 3.48E-03 curies from seven identified radionuclides.

No violations or deviations were identified.

9. Control Room Habitability (84750)

T.S. 3.7.7.1 establishes operability requirements and T.S. 4.7.7.1 establishes surveillance requirements for the Control Room Emergency Ventilation System, respectively. This system is designed to assure the habitability of the Control Room during emergency conditions.

Pursuant to these requirements, the inspectors discussed operation of the system with cognizant licensee representatives, walked down the system from its intake at the 164' elevation of the Control Building to its outlet via five overhead registers in the Control Room. Major system components were noted, including the filter trains, which consisted of charcoal, HEPA, and roughing filters, large centrifugal fans, normal duty supply fans, air accumulators to critical dampers (for use during a seismic event), toxic gas monitors, and chillers. No deficiencies or physical deterioration was noted in any of the components, ductwork, insulation, or sealants.

Calibration tags were reviewed on selected equipment, including the charcoal, HEPA, and roughing filters, and were found to be in order. Review of instrumentation in the Control Room found it to be operating normally. The inspectors noted that a fan (AHF-14C) which had been tagged out a month earlier still had not been serviced. Discussions with the cognizant licensee engineer determined that because a white tag had been used, this component did not have a high priority on the schedule. Furthermore, he explained that although the fan was tagged, it was still operational and that the reason for tagging it originally was that it had a small vibration (smaller than that which would require it to be taken out of service for repair) and that the licensee wanted to address the problem before it potentially became severe. Meanwhile, the licensee was trying to minimize its use by running the fans of the other (parallel) train.

The inspectors reviewed records which indicated that the ventilation system had been tested in accordance with T.S. requirements and that the acceptance criteria had been met.

No violations or deviations were identified.

10. Facilities and Instrumentation (84750)

Technical Specification 4.11.1.1.1 requires that radioactive liquid waste samples be analyzed and TS 4.11.2.1.2 requires that representative samples of radioactive gaseous effluents be analyzed.

To assure that the licensee had the requisite ability pursuant to these TSs, the inspectors reviewed the Count Room and Radio-Chemistry Laboratory with the Chief Nuclear Chemistry Technician responsible for these areas. The inspectors noted three High Purity Germanium (HPGe) detectors, two proportional counters, and one liquid scintillation counter. Also noted

was the associated electronic and reporting equipment, including the control console with the capacity for four computer terminals and the ability to archive isotopic spectrums for six weeks. Three printers, one dedicated exclusively to the PASS and two used for daily operations, were observed, as were the cabinets for the PASS computer system. There were also two PASS mimics, one for gas and one for liquid.

Two of the HPGe detectors were out of service, Nos. 1 and 3. Detector No. 3 was new and was being connected to the computer. Detector No. 1 had experienced erratic behavior since the last week of October, according to the control chart reviewed by the inspector. This behavior worsened when, on November 1, the air conditioning system experienced a problem with a fan and the temperature in the Count Room rose to 88 degrees Fahrenheit for about eight hours. On November 3, the decision was made to take the detector out of service. The chief informed the inspectors that he had checked the electronics and could not identify a problem and speculated that the problem was with the cryostat. Detector No. 2 had not been affected by the temperature excursion. The inspectors reviewed calibration for the detectors and found that they were calibrated annually and that the most recent calibration for detectors Nos. 1 and 2 was in September of this year.

The inspectors reviewed the Radio-Chemistry Laboratory, located beside the Count Room and found: one gas chromatograph which can be used as a backup for monitoring hydrogen in the Containment Building, although its principal use was for the analysis of hydrogen, nitrogen, and oxygen; one gas chromatograph, used primarily for acetate, fluorides, chlorides, formates, ammonia, and morphine analysis; a new Dionex gas/ion chromatograph (not yet in service which will use a gradient system) for the analysis of anions only; dual ovens for the analysis of oil and grease as well as total suspended solids; a water purification system used to produce Reagent Grade 1 water; and an atomic absorption unit with two modes, flame and furnace, used for the analysis of metals (iron, sodium, carbon, lithium, copper, lead, etc.). A remote computer for the PASS was also located in the laboratory. Two fume hoods were noted, side-by-side against a wall in an area of low traffic and low cross drafts. Good practice was noted in that the hoods were not in use at the time and their sashes were closed to prevent an inadvertent back puff which potentially could contaminate the laboratory.

The inspectors examined the Primary Annex, in which wet chemistry analysis on hydrozine, chlorides, morpholine, sodium hydroxide, thiosulfate, etc. was performed. It also served as the office of the On-Duty Supervisor. A fume hood was noted and good practice was evidenced in its use.

The inspectors concluded that while the Count Room and Radio-Chemistry Laboratory were clean and housed up-to-date, properly-maintained instruments, they were somewhat crowded. However, personnel had adapted to this feature and it did not hinder work output. There was ample space in the Primary Annex for the work to be conducted there.

No violations or deviations were identified.

11. Meterological Instrumentation (84750)

TS 3.3.3.4 requires that meterological monitoring instrumentation channels, including instrumentation for wind speed, wind direction and air temperature, be operational. These instrument readings are used to generate historical data which is used in dose projections for routine releases; and would be used to evaluate appropriate protective actions for onsite and offsite personnel during abnormal releases.

Pursuant to these requirements, the inspectors reviewed selected portions of procedures covering the surveillance requirements and calibration of these instruments, observed a small portion of the calibration process for the instrumentation for one of CR3's meterological towers, and determined that the instrument readouts in the control room were functioning as required.

Within the scope of the review, the inspectors determined that the meterological instrumentation was being maintained as required.

No violations or deviations were identified.

12. Exit Interview

The inspection scope and results were summarized on November 9, 1990 with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results as listed in the summary. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

13. Acronyms and Initialisms

ALARA - As Low As Reasonably Achievable
B&W - Babcock and Wilcox
CFR - Code of Federal Regulation
CR3 - Crystal River Unit 3
DEI - Dose Equivalent Iodine
EPRI - Electrical Power Research Institute
ESF - Engineered Safety Feature
FSAR - Final Safety Analysis Report
g - gram
HEPA - High Efficiency Particulate Air
HPGe - High Purity Germanium
INPO - Institute of Nuclear Power Operations
LLD - Lower Level of Detection
No. - Number
NRC - Nuclear Regulatory Commission
PASS - Post-Accident Sampling System

pCi - pico-Curie
ppb - parts per billion
ppm - parts per million
Rev - Revision
RCS - Reactor Coolant System
TLD - Thermoluminescent Dosimetry
TS - Technical Specification
uCi - Micro-Curie