



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

JAN 22 1986

Report Nos.: 50-321/85-33 and 50-366/85-33

Licensee: Georgia Power Company
P. O. Box 4545
Atlanta, GA 30302

Docket Nos.: 50-321 and 50-366

License Nos.: DPR-57 and NPF-5

Facility Name: Hatch 1 and 2

Inspection Conducted: October 28-29, November 18-22, December 10, and
December 16, 1985

Inspector:

P. Stoddart
P. Stoddart

1/2/86
Date Signed

Approved by:

W. E. Cline
W. E. Cline, Section Chief
Radiological Effluents and Chemistry Section
Division of Radiation Safety and Safeguards

1/6/86
Date Signed

SUMMARY

Scope: This special, unannounced inspection entailed 41 inspector-hours onsite in the areas of investigation of an allegation involving the Post Accident Sampling System (PASS) and plant liquid and gaseous radioactive effluents.

Results: No violations or deviations were identified.

8601290104 860122
PDR ADOCK 05000321
Q PDR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- **H. Nix, General Manager
- P. E. Fornel, Site QA Manager
- ***G. Goode, Plant Engineering Superintendent
- ***T. Greene, Deputy General Manager
- ***Z. Wahab, Balance of Plant Engineering Supervisor
- *A. Fraser, QA Engineer
- *F. Tsakeres, Senior Health Physicist - Corporate Office
- ***R. Zavadoski, Manager, Health Physics and Chemistry
- ***R. Rogers, Health Physics Superintendent
- N. Dyar, Security Supervisor
- **V. McGowan, Chemistry Supervisor
- D. Vaughan, QA Engineer
- S. Ewald, Corporate Health Physicist
- R. Ott, Training Supervisor
- J. Richardson, PASS Engineer
- T. Wells, Acting Balance of Plant Supervisor
- C. James, Shift Technical Advisor
- C. Stancil, Instrument Shop Supervisor
- **M. Bray, Quality Assurance Engineer
- D. Elder, Quality Assurance Engineer
- M. Carter, Quality Assurance Engineer
- M. Kehoe, Quality Assurance Engineer
- **C. Goodman, Acting Regulatory Compliance Supervisor
- E. Burkett, Senior Plant Engineer
- B. Arnold, Chemistry Lab Supervisor

NRC Resident Inspectors

- **P. Holmes-Ray, Senior Resident Inspector

*Attended exit interview on October 29, 1985.

**Attended exit interview on November 22, 1985.

***Attended both exit interviews on October 29 and November 22, 1985

2. Exit Interview

The inspection scope and findings were summarized on October 29, and November 22, 1985, with those persons indicated in Paragraph 1 above. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Allegation, Discussion and Findings

On October 18, 1985, Region II received, by mail, an anonymous allegation concerning operations at the Georgia Power Company's Plant Hatch, located near Baxley, Georgia. As of December 16, 1985, no followup letters or additional allegations had been received and no further contact had been made by the allegor.

The allegation consisted of a number of statements concerning plant systems and inferred certain plant system interactions or related effects. Each of the several technical aspects of the allegation was investigated in depth and possible correlations or links were sought between the statements of the allegation and plant conditions and plant operating records.

The allegation first stated that a "situation" (an apparent shortcoming) currently existed (approximately October 15, 1985) at Plant Hatch involving the Post Accident Sampling System (PASS). It was alleged that the PASS and three additional plant systems were involved or in some unspecified way were related to the "situation" and that the licensee had violated Federal Codes and Regulations by failing to file a report. No specific federal code or regulation was cited in the allegation.

On October 28-29, 1985, and again on November 18-22, 1985, a Region II inspector went to the Plant Hatch site for the purpose of determining the validity or circumstances of the allegation. On December 10, 1985, the inspector went to the Georgia Power Company corporate offices in Atlanta, Georgia, to review a report of an investigation made by Georgia Power Company staff of the same allegation, based on a copy of the allegation received from an unidentified source.

During the November 18-22, 1985 portion of the inspection, the inspector requested the licensee to supply documentation on the qualifications of persons known to have installed certain items of safety-grade equipment in the PASS liquid sample lines; this information was received December 16, 1985.

The results of the inspector's findings are described below.

a. Allegation

"I need to advise you of a situation that presently is existing at the E. I. Hatch Nuclear plant in Baxley, Ga. It involves the Post Accident Sampling System now in use at the plant. From July 1st thru July 21st, the plants Radiological waste tanks have been discharged into the Altamaha river. The computer print out showed no variation in the spectrum of all of those tanks."

Discussion

Processed radioactive liquid wastes containing low level concentrations of radioactive material are routinely discharged from Plant Hatch to

the Altamaha River. Such releases have been routine procedure at Plant Hatch since plant startup and are considered as routine practice at most nuclear power plants. Radioactive discharges are permitted by the NRC when they are within the limits in plant Technical Specifications and conform to the limits of 10 CFR Part 20.

The inspector reviewed plant records for the period of July 1-21, 1985 (the period specified in the allegation), and found no evidence of increased or unusual liquid discharges and that all releases were in conformance with Technical Specification requirements.

Gamma radiation spectrum analyses of pre-release samples from all processed liquid radwaste holdup tanks for the period of July 1-21, 1985, were reviewed by the inspector. The spectra were contained in 119 release procedure packages prepared for the administrative control of releases and were made prior to release. Many of the spectra were similar in certain respects, as in the recurrence of certain identified nuclides but in no case were any two spectra identical. Spectra were examined for similarity as to (1) identity of radionuclides, (2) energy value, in MeV, for each peak, (3) height or intensity of each peak, (4) full width half maximum (FWHM) of each peak, (5) source of input stream, and (6) age of sample. Similarities in gamma radiation spectra are to be expected when a reactor is operating normally and has been at power for an extended period of time. Differences attributable to statistical variances, age of sample, and source of material, should be expected to provide sufficient variation in spectra printouts to assure that each printout differs in several respects. Such differences were observed in the examined spectra and no two spectra were identified as being identical.

The inspector was able to identify a situation which may have been misunderstood or mistaken by the writer of the allegation. It was noted that in the training program which preceded the implementation of the Radiological Effluent Technical Specifications (RETS) on July 1, 1985, the training Lesson Outline required the operator of the RETS computer program (used to calculate the effects of releases of radioactive liquids from the processed radioactive liquid waste tanks) to "call up" a pre-existing radionuclide spectrum from the computer memory files. The stored spectrum, which was used to simulate the analysis of a liquid waste sample containing several typical nuclides, was employed to shorten the sample counting time to allow more people to be trained in a given class period. If a typical routine reactor coolant sample had been employed, a counting time of one hour or more could have been required for each sample in order to accumulate sufficient data. Since the identical spectrum would have been printed out from computer memory each time during training, this may have been the source of the part of the allegation that the spectra for all analyses of liquid radwaste tanks for the period July 1-21, 1985 were identical. As discussed in the preceding paragraph, no basis was found to substantiate the allegation so far as the record packages for each actual release of processed liquid radwaste were concerned.

The allegation infers that operation of the PASS with the reactor operating normally would result in release of radioactive material to the environment or, in this case, to the Altamaha River. Liquid drainage resulting from the occasional use of the PASS in training exercises or periodic checkout is collected in the coolant grade or high purity waste collection system for cleanup and recycle back to the reactor water makeup tank or to the reactor coolant system. Depending on water inventory, it is occasionally necessary to reduce the reactor coolant system water inventory by transferring water from the high purity system to the low purity system, where it is mixed with other radioactive plant water, treated, and periodically released to the Altamaha River. Waste water from the low purity system is filtered, treated with ion exchange resin beds, or demineralizers for possible discharge. When a processed liquid waste holdup tank is filled, it is mixed thoroughly and then sampled. The sample is then analyzed for radioactivity content. If the analysis shows that the sample meets administrative criteria for radioactivity content and if a dose projection based on calculations of the release of the tank contents shows that Technical Specification guidelines will not be exceeded, then approval can be made to release the material to the Altamaha River.

It was noted that the normal sampling point for reactor coolant samples generates a larger volume of liquid waste than the PASS and is typically used three times daily, while the PASS is used only occasionally during required tests and in the training and qualification of PASS operators. Since the same fluid is being sampled in each case, the normal sampling system would be expected to generate substantially a larger volume of waste than the PASS. Records of analyses of reactor coolant samples for the period July 1-21, 1985 indicated low levels of radioactive materials consistent with a low incidence of fuel leakage and did not indicate any radioactive release which could be attributed to operation of the PASS.

Finding

The allegation was not substantiated. "Radiological" (radioactive) waste tanks containing processed and analyzed radioactive liquids were routinely discharged in accordance with NRC regulations and the plant Technical Specifications. Nothing was found to be abnormal in the releases occurring between July 1 and July 21, 1985. One-hundred and nineteen (119) waste tank sample analysis gamma spectra were examined, covering all releases during the specified period, and substantial variations in the spectra were observed in each instance.

b. Allegation

"A technician accidentally discovered this was taking place and he immediately notified his foreman. An investigation took place and it was discovered that the PASS System was improperly set up."

Discussion

The lack of specific detail in the allegation severely limited the inspector's investigation. Names, dates or plant locations which might have aided in identifying this matter were absent. The inspector discussed the allegation with members of the plant staff and reviewed plant records and logs but was unable to obtain additional information as to the existence of either a notification of a foreman by a technician or the occurrence of an investigation which concluded that the PASS was improperly set-up.

A NRC contractor performed an operational evaluation of the PASS in December 1984. In that evaluation, three items unrelated to the allegation were identified. These were: (1) the gas flow rate meter in the dissolved hydrogen analytical section of the PASS was oversized and inaccurate for the expected flow and should be replaced with a smaller capacity flowmeter; (2) the undiluted reactor coolant grab sample gamma spectroscopy analysis did not meet the required accuracy guidelines, indicating that a representative sample had not been obtained; and (3) an attempt to take an iodine sample using the PASS grab sample port fittings was unsuccessful. These items were concerned with specific components of the PASS system and could not be related to the allegation as presented.

To ensure that the PASS was fully operable, the inspector reviewed the licensee's actions taken to resolve the evaluation items. Item (1) was determined to have been the result of an erroneous assumption on the part of the evaluator in that the flowmeter provided for the dissolved hydrogen measurement was correctly sized for the value of dissolved hydrogen specified by the existing criteria. The nuclear steam supply system vendor had proposed a smaller value for dissolved hydrogen; the evaluator was under the impression that the smaller value had been accepted by NRC. This was not the case and the larger value remains the applicable criterion.

(Closed) Inspector Followup Item (IFI) 321, 366/84-50-01 - Licensee does not meet accuracy Guidelines for Dissolved Hydrogen Measurements. Item based on erroneous assumption.

Item (2) was concerned with a discrepancy between the analytical results of a reactor coolant sample taken from the PASS through a manually operated "grab" sample fitting and the results of a routine reactor coolant sample taken at the sample station used for reactor coolant sampling during normal operations. A licensee representative stated that the cause of the discrepancy between the samples had been resolved and that subsequent tests had shown close correlation. The inspector observed as a licensee employee obtained a sample from the PASS grab sample port, witnessed the preparation of the sample for analysis, and reviewed the analysis. The multiple channel analyzer printout of the gamma spectrum and the associated computer radionuclide identification for the PASS grab sample were compared to the results of

a normal reactor coolant sample analysis made at approximately the same time. Close correlation was seen for the characteristic fission product nuclides. The differences varied from $\pm 1.1\%$ for Iodine-133 to $\pm 17\%$ for Iodine-134. Values for the activation product Sodium-24 varied by $\pm 20\%$. Since the NUREG-0737 criterion for these measurements is $\pm 200\%$ (a factor of two), the values obtained were within the acceptable range.

(Closed) IFI 321, 366/84-50-02 - Licensee does not meet all criteria for backup Liquid Grab Sample. Re-evaluation showed acceptable accuracy.

Finding

The allegation was not substantiated. In the absence of adequate specific information as to the identity of person or persons involved, dates, or plant locations, the inspector was unable to confirm that the alleged circumstances either occurred or did not occur. Discussions with plant staff did not result in additional information.

c. Allegation

" ... Rather than bringing in qualified people to install the system ... (deletion) ... two plant employees who were ... not qualified (were used) to implement the system and it was done completely wrong. Both employees went to work elsewhere knowing that what they did was wrong and they didn't want to be around when their mistakes were discovered ... "

Discussion

Since no names were given for the two plant employees alleged to be involved, and since the inspector was unable to otherwise identify the two plant employees, the inspector was unable to discuss the allegation with the persons concerned. Plant staff members informed the inspector that ten or more corporate engineers and 30 or more plant and contractor employees participated in various aspects of the installation and checkout of the post accident sampling system (PASS). The additional number of architect-engineer, vendor and contractor engineers, technicians and craftsmen associated with installation and implementation is not known with any certainty. Seventy-two (72) Georgia Power Company employees and vendor or contractor employees were specifically identified from plant records as having participated in PASS installation, implementation and operation up to and including November 1, 1985.

The principal components of the PASS, specifically all of the PASS downstream of the second outboard isolation valves on each RCS sampling line, were not required to be designed, constructed or installed to "safety related" criteria since they are not essential to the safe operation of the reactor, do not affect the safe shutdown of the

reactor, and are not required to mitigate the consequences of an accident.

The licensee requires that persons "qualified" to install or repair "safety related" equipment must be trained and tested to criteria established by the licensee to meet the requirements of General Design Criteria (GDC) 1 of 10 CFR Part 50 and of Appendix B to 10 CFR Part 50. Persons installing or repairing "non-safety grade" equipment must also be trained and tested to licensee criteria; however, the applicable criteria are less stringent than those applied to "safety grade" equipment. Additionally, craft workers must also meet the minimum union training and experience requirements to hold union status.

As the allegation was written, the inspector could not ascertain whether the alleged work was referring to safety-related or non-safety-related aspects of the PASS. If the alleged work was done on a "safety-related" section of the PASS by workers qualified to the less stringent licensee criteria for non-safety grade work, this could have led to a violation of GDC 1 and Appendix B, 10 CFR 50 requirements. The information provided in the allegation was not sufficient to support the charge nor was the inspector able to determine the validity based on records review, examination of equipment and discussion with licensee representatives.

The writer of the allegation used the terms "install" and "implement" in apparent reference to the same job or task. "Install" is usually taken to mean the physical placement and assembly of a system such as the PASS, including all activities necessary to get the system ready for operation. Such activities included electrical, plumbing, mechanical and electronic control connections. "Implement" is usually taken to mean performing the activities necessary to prepare the installed system (PASS) for operational use in the plant. Such activities included acceptance testing, adjustments, repairs or modifications of the system necessary to make it operational, verification of the design functions and capabilities of the system, preparing operational procedures, the training of operations personnel in the use of the system and the training of maintenance personnel in the maintenance of the system. Discussions with PASS system engineers indicated that as many as ten engineers and an estimated 30 to 40 craft workers were associated with the installation of the PASS and that as many as eight engineers and 20 to 25 technicians were associated with the implementation of the PASS.

Chronologically, the PASS was ordered in September 1980, the first components were delivered in early 1982, and installation was completed in June 1983, when hot functional tests initiated the implementation phase. Full implementation was completed August 1, 1984, approximately one year prior to the period specified in the allegation.

The fourteen months required for full implementation was the result of a series of problems primarily caused by two defective pressure

reduction valves in the reactor coolant sampling line. Both of these valves were nuclear grade, safety related items. Both failed by internal leakage, which allowed full reactor coolant pressure to enter the PASS system instead of performing the design function of reducing pressure to a maximum of 60 psig. The resulting overpressure caused the rupture of several components of the automatic chemical analytical subsystem. Substantial delays were entailed in the re-design and fabrication of the custom-built replacement components. Minor leaks also developed in other system valves and components and these were either repaired or replaced. The defective nuclear grade valves were replaced with nuclear grade valves of a different design and manufacturer. The replacement valves have performed in a satisfactory manner.

In no instance was any PASS system valve or other component found to have been improperly installed as the allegation implies.

The writer of the allegation used the term "qualified" without being specific as to what sense of the term was meant. There are several degrees of "qualification" which may be applied to the licensee's evaluation or assessment of an individual with respect to that individual's training, experience, education and skill or competence in performing a specific task or craft. For example, a welder applying his skills for non-nuclear applications would be required to demonstrate a lesser degree of proficiency or "qualification" in welding than a welder employed to perform welding on a nuclear grade or safety-related pipe.

Since the PASS was a new and unique system, there was no "qualified person" available since no one had previously operated a similar system; procedures had to be written based on vendor instructions and test experience; and, no instructor was available to teach system operation to the implementing personnel. It was only after the PASS was installed and available for implementation that training procedures could be written and formal training provided to qualify individuals to operate the PASS. Implementation of the Hatch PASS was performed by a number of individuals who had previously demonstrated competence in doing similar work. Each step was performed under a Quality Assurance Program and was subjected to surveillance. By corporate and industry policy and practice the PASS was implemented by qualified personnel. In view of the licensee's practices in qualifying personnel to operate this "first-of-a-kind" system, the allegor's concern about lack of a "qualified person" cannot be supported.

As an example of the qualification of personnel to work on ESF systems, the inspector requested the licensee to provide the qualification records of the welders who installed replacement PASS liquid sample line isolation valves in 1984. On December 16, 1985, the licensee transmitted copies of the welding qualification records of the six welders who did the welding which connected the replacement isolation valves to the PASS liquid sample lines. The documentation verified

that the welders had been examined in accordance with the requirements of Section IX of the ASME (American Society of Mechanical Engineers) Code.

Finding

The allegation was not substantiated. More than 70 licensee, vendor and contractor personnel were involved in the installation and implementation of the PASS, not two as stated. No circumstances could be identified as having any correlation to the statement that "... it was done completely wrong."

d. Allegation

"At present (the allegation was apparently written approximately October 10, 1985) an outside contractor has been brought in to straighten out this mess."

Discussion

Based on the inspector's discussions with several plant staff engineers and employees and on review of plant records on the PASS, no "outside contractor" had been brought in to work on the system at the approximate date of the allegation and either prior to or subsequent to that date. Licensee representatives stated that during the period of installation and implementation of the PASS, from early 1982 until August 1, 1984, several representatives of the PASS vendor, two vendor subcontractors, and the architect engineering firm were at the Hatch facility at various times to support the installation of the PASS and to provide technical assistance during the implementation phase. It is possible that some of these persons might be the "outside contractor" referred to in the allegation; however, the period of time involved, i.e., 1982 to 1984, does not coincide with the period specified in the allegation. In discussions with licensee representatives and the various system engineers and from review of the licensee's maintenance history files for the PASS, the inspector was not able to identify any "outside contractor" as having been specifically brought in to resolve any problem connected with the PASS other than outlined above.

Finding

The allegation was not substantiated. The inspector found no evidence of an "outside contractor" having been brought in for any purpose having to do with the PASS since the PASS implementation date of August 1, 1984.

e. Allegation

"... numerous valves ... were improperly installed (in the PASS system). Because of this, the off gas readings read incorrectly and no

one could determine how much radioactive gas was discharged into the environment."

Discussion

The allegation contains a technical discrepancy in that the "off-gas system" is a separate dedicated system which processes air and noncondensable gases extracted from the main condenser and is unrelated to the PASS. The "off-gas" system has a limited operating capacity and is designed for a nominal input of 30 standard cubic feet per minute of condenser air inleakage. Any extraneous air inputs to this system would defeat the system's design function of minimizing the release of short-lived fission product noble gases to the environment. It is extremely unlikely that this was the system to which the allegor meant to refer.

It is more likely the allegor meant to refer to one of the building ventilation exhaust systems. The PASS system is physically located in the area designated as the "hot machine shop" within the Unit 2 reactor building. The PASS area ventilation is vented to the reactor building ventilation system, which is treated through HEPA filters and charcoal absorbers prior to release to the environment. Each building vent release point is continuously monitored by a detector sensitive to radioactive noble gases which may be present in the exhaust air. Additionally, continuous samples of airborne particulate material and airborne iodine are collected for periodic analysis.

The allegation implies that the "off-gas readings read incorrectly" as a result of improper installation of valves in the PASS. It should be recognized that the improper installation of a valve in the PASS would likely have no physical effect on the operation of radiation detection instruments monitoring the releases of radioactive materials in plant gaseous effluents. If a valve were to be installed incorrectly, system operation would likely be affected in such a manner as to be identified during the system checks and verifications made during system implementation. No improper installations were identified. However, a defective valve properly installed could and did result in a leak of liquid and gas to the PASS area. In the latter event, however, the level of activity in the primary coolant was sufficiently low that the event was of little consequence from a radiological stand point. This occurred during functional testing beginning in June 1983, and does not coincide with the period covered by the allegation.

During the entire period specified in the allegation, i.e., "July 1 through July 21" (presumed to mean July 1-21, 1985), plant logs indicated that all effluent monitoring instrumentation was functioning properly. The inspector noted that the log of gaseous effluent monitor operation for July 25-26, 1985, showed the Unit 1 post-treatment off-gas noble gas monitor to be out-of-service; however, the downstream main stack effluent monitor, which serves as a backup, was operable and showed no increase in effluent activity. It is possible that this may

have been the monitor referred to in the allegation; however there is no technical basis for any imputed relation between PASS malfunction and the outage of this instrument.

Finding

The allegation was not substantiated. The inspector could find no evidence that an improperly installed valve in the PASS system could in any manner affect the radiation detection instrumentation of a totally separate system such as the off-gas system. Two defective valves had been part of the original installation but were replaced in 1984, more than a year prior to the period of time covered by the allegation.

f. Allegation

"Under the Code of Federal Regulation, the NRC must be notified of any improper release to the environment ... no reports (were made) ... actions violated Federal Codes (and) Regulations."

Discussion

The allegation failed to cite specific instances of either "improper" or abnormal releases of either liquid or gaseous radioactive effluents. The inspector reviewed plant records and logs for the specified period and did not identify any releases exceeding any existing regulations or Technical Specifications. In the absence of specific information concerning such improper releases and in the absence of any information or records indicating or confirming that such improper releases actually occurred, the inspector concluded that no regulatory requirements had been violated.

Finding

The allegation was not substantiated. Nothing was found in plant records or in discussions with plant personnel concerning the allegation to indicate that any regulatory requirements had been violated or exceeded. The inspector concluded that no reporting requirement had been violated.

4. Georgia Power Company Investigation in Response to Allegations

Prior to the inspector's first visit to Plant Hatch (October 28, 1985), Georgia Power Company had obtained a copy of the allegation from an unidentified source and had conducted and completed their own investigation of the allegation. The inspector reviewed a copy of the Georgia Power Company investigation report.

The allegation appeared to be a copy of the allegation received at RII and no differences in appearance, wording, or phrasing were apparent. The investigation report of the allegation by Georgia Power Company concluded that no regulatory requirements were violated. The licensee's investigation

report found that an independent consultant had been hired in early 1985, for the purpose of adapting a computer program to fit the needs of the Hatch site relative to the Radiological Effluent Technical Specifications (RETS) and the calculation of offsite radiation doses resulting from plant radioactive releases. The subject computer program, however, had no bearing on or connection with the operation or functioning of the PASS. The licensee concluded that it was possible that this individual may have been the "outside contractor" referred to, if it can be assumed that the alleged mistook the implementation of the Radiological Effluent Technical Specifications (RETS) for the implementation of the PASS.