



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

APR 28 1988

Report Nos.: 50-321/88-10 and 50-366/88-10

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: April 4-8, 1988

Inspector: E. L. Clay 4/22/88
E. L. Clay, Safeguards Engineer Date Signed

Approved by: E. J. McAlpine 4/27/88
E. J. McAlpine, Chief Date Signed
Material Control and Accountability Section
Nuclear Materials Safety and Safeguards Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection entailed a review of procedures, records, operations, and physical inventory for use, control and accountability of special nuclear material.

Results: No violations or deviations were identified.

REPORT DETAILS

Report Nos.: 50-321/88-10 and 50-366/88-10

1. Key Persons Contacted

Licensee Employees

- *S. J. Bethay, Supervisor, Nuclear Safety and Compliance
- *O. M. Fraser, Manager, Site Quality Assurance
- *G. W. Neeley, Supervisor, Reactor Engineering
- *J. J. Payne, Senior Engineer, Nuclear Safety and Compliance
- *D. S. Read, Manager, Plant Support
- *W. H. Rogers, Superintendent, Chemistry Department

The inspector also interviewed several other licensee employees.

NRC Resident Inspector

- *P. Holmes-Ray, Senior Resident Inspector

*Denotes those present at the exit interview.

2. Exit Interview

The inspection scope and findings were summarized on April 8, 1988, with those persons indicated in paragraph 1 above. The licensee acknowledged the inspection findings and took no exceptions.

3. Licensee Actions on Previous Enforcement Matters (92702)

No previous enforcement matters were pending in the areas inspected during this inspection.

4. Material Control and Accounting - Reactors (85102)

This inspection was conducted to determine the adequacy and effectiveness of the Georgia Power Company's program to account for and control the special nuclear material (SNM) in its possession and that the use of SNM was being restricted to those locations and purposes authorized by license at the E. I. Hatch nuclear facility. At the time of this inspection, the licensee's SNM holdings were in the form of Fuel Assemblies (F/A), fission chambers in the forms of Intermediate Range Monitors (IRM), Source Range Monitors (SRM), Local Power Range Monitors (LPRM), Transverse Incore Probes (TIP), Fuel Loading Chambers (FLC), Source (Americium-241) and irradiated Sealed Sources.

The licensee's SNM use, control and accountability functions were examined by a review of facility procedures, review of organizational structure and functions, audit of records, review of the facility internal audit program, interviews with appropriate licensee personnel, and reviews, observations and verifications of the conduct of a physical inventory.

a. Facility Organization

The facility Plant Manager bears the overall responsibility for the physical control and surveillance of SNM at the E. I. Hatch nuclear facility. The Plant Support Manager has been delegated the responsibilities for the performance of functions which relate to the control and use of SNM at the site. The Plant Support Manager's organization includes an Engineering Support Section, Reactor Systems Department and a newly formed Reactor Engineering Group.

On January 1, 1988, the Reactor Engineering Group was inaugurated and delegated, in writing, the responsibility to assume facility SNM custodial and use functions at the site. At the time of this inspection, all facility SNM custodial and use functions were in the process of being transferred from the facility Shift Technical Advisor's (STA) group to the Reactor Engineering (RE) group. When all SNM transfer responsibilities have been completed, except for Health Physics (HP) Department SNM responsibilities, the RE group will be responsible for receipt, transfer, storage and use of all SNM and non-irradiated sealed sources at the site. The RE group will maintain all records and standard operating procedures (SOP) associated with these SNM functions. The HP Department will continue to be responsible for all use and control actions associated with irradiated sealed sources.

b. Standard Operating Procedures (SOP)

At the time of this inspection, SOPs for the use and control activities of SNM at the site were being shared with other interplant groups associated with the SNM activities. These SOPs were structured according to organizational responsibilities and authorities for the formulation, implementation, maintenance and periodic assessment and evaluation of the facility SNM accountability program. A review of facility SOPs associated with current SNM use and control activities was conducted during this inspection. It was determined that the licensee was performing and documenting the results of semiannual reviews of SOPs as required and was in the process of formulating plans to perform these reviews on a quarterly basis. The facility SOPs associated with SNM control and accountability activities were approved by management as required, contained delineations of organizational assignments and responsibilities and specified sufficient separation of functions to provide an acceptable

checks and balances apparatus for control of SNM at the site. The SOPs contained definitions of terms and provided operational guidance sufficient to facilitate proper use, storage, inventory, calculation of uranium depletion and reporting accurate material balances.

For operational activities in effect at the time of this inspection, the inspector determined that the licensee had established, maintained and followed approved SOPs that were sufficient to effect acceptable controls for fuel SNM and non-fuel SNM bearing items at the site. Typical key procedures reviewed during this inspection are shown in Table I.

During this procedural review it was noted that as a result of the recent organizational changes effecting SNM activities at the site, the licensee was in the process of revising, amending and rewriting SOPs to reflect applicable SNM control responsibilities associated with the newly formed RE group. The RE group has defined, in writing, operational practices necessary to clarify and alter current plant practices necessary to transfer SNM use and control responsibilities from the STA group to the RE group. The licensee verbally committed to initiate new instructions for SNM use and control responsibilities, training requirements and procedural review requirements by July 1, 1988. Specific committed instructions to be initiated by the RE group are shown in Table II. This is considered an inspector followup item (88-10-01).

c. Training

The licensee's training qualification and requalification program for REs and STAs associated with SNM use and control activities had been implemented as required by procedures. Qualification training was provided by attending one or more offsite schools and by site training in assigned duties and responsibilities. Continued qualifications and requalifications of site personnel associated with SNM activities is now the responsibility of the RE supervisor.

The inspector determined that all REs and STAs associated with SNM use, control and accounting activities had received adequate training in SNM control and use functions as required.

d. Management Reviews and Internal Audits

As required by internal procedures, management reviews and audits of the facility SNM use and control program were being performed annually. These reviews were performed by the site Quality Assurance Section who was organizationally independent of the SNM use, control and accounting operations. Each member of the audit team was considered to be qualified to perform technical evaluations of the

SNM control program. The audit covered receipts, transfers, material controls and records and reports for SNM at the site. To assure that the audit was thorough and included all SNM use and control activities, an audit checklist was developed and used during the conduction of the audit.

The CY-87 annual audit was performed during the period of September 8-13, 1987, and the results were reported to facility management on October 19, 1987. This audit was a performance based audit and compared SCP requirements to actual practices. This audit emphasized familiarization with SNM use and control requirements and the implementation of plant operational practices of those requirements by appropriate plant personnel.

For items considered to be SNM related, the audit team found that: (1) material status reporting data for two accountability periods (10-01-85 through 03-30-87 and 10-01-86 through 03-30-87) could not be located; and (2) the piece count for two IRMs and SRMs in warehouse #6 did not agree with the physical inventory findings. The inspector determined that both of these issues were satisfactorily resolved and that the licensee had performed annual internal audits as required by procedures.

e. Records and Reports

(1) Nuclear Material Transaction Reports

The inspector examined twelve (12) of the most recent Nuclear Material Transaction Reports (DOE/NRC Form 741) for fuel assembly receipts from the General Electric Company, Wilmington, North Carolina. A random selection of fuel assemblies from these reports were traced by fuel assembly identification numbers through internal plant records to the facility computerized inventory data. The transactions reviewed indicated that the licensee had followed approved procedures for SNM fuel receipt data handling and that the SNM fuel receipts were properly acknowledged by the licensee within ten days as required by instructions in NUREG/BR-0006, as referenced in 10 CFR 74.15(a).

The inspector noted that these transaction reports were addressed to the facility receiving warehouse but had been mailed directly to the RE group as noted in internal approved procedures. Each receipt was addressed to a single Reporting Identification Symbol (XDG) for the site, contained the required item data and was signed by an authorized representatives of the shipper and the licensee.

The inspector concluded that the licensee's DOE/NRC Form 741 transaction reports were properly executed and reflected acceptable fuel assembly receipts data.

(2) Nuclear Material Balance Reports (MSR) and Isotopic Inventories

The inspector examined the licensee's MSRs (DOE/NRC Form 742) issued under licenses DRP-57 and NP-5 for the accountability periods of 10-01-86 through 03-31-87 and 04-01-87 through 09-30-87. This examination was used to determine whether the report accurately reflected quantities of fuel received and shipped and whether uranium depletion and plutonium production had been properly recorded. The inspector determined that the report was completed and distributed in accordance with the printed instruction in NUREG/BR-0007 as referenced in 10 CFR 74.13(a)(1) and that the recorded data (SNM shipments and receipts) were found to be in agreement with accountability records.

The inspector noted that the E. I. Hatch facility MSRs were calculated and formulated into a reporting MSR format by Southern Company Services Incorporated (SCSI), Birmingham, Alabama. The MSR data for shipments and receipts was hardcopy transmitted by the licensee to SCSI and the facility fuel. Exposure data, used in the isotopic inventory calculations, was transmitted directly by electronic computer system connection. SCSI calculates the MSR data for the E. I. Hatch facility and transmits a final report to the facility. The inspector determined that the MSR includes all necessary material balance data, including Inventory Differences (ID) and uranium depletion and plutonium production data for isotopic inventories and were submitted semi-annually in accordance with the instructions in NUREG/BR-0007, as referenced in 10 CFR 74.13(a)(1).

The inspector noted that prior MSRs had been submitted directly by the licensee site facility to Martin Marietta Energy Systems, Oak Ridge, Tennessee. Since March 31, 1987, MSRs have been submitted by the site facility to the Atlanta Office of the Georgia Power Company who transfers the reports to the Oak Ridge facility. This reporting technique is considered acceptable.

The inspector concluded that the licensee had determined and reported accurate MSRs and that the MSRs contained calculated isotopic inventories as required.

f. Physical Inventory

At the time of this inspection, Unit 2 (50-366, NFP-5) was operational and Unit 1 (50-321, DRP-57) was in shutdown status for refueling. (To date, Unit 1 and Unit 2 have been refueled 10 and 7

times, respectively). During this inspection the licensee conducted their required semiannual physical inventory of SNM bearing items. The licensee's activities associated with the conduction of their March 31, 1988 physical inventory was observed by the inspector. In addition, the inspector conducted an independent verification of the physical inventory data for randomly selected items in each facility Item Controlled Area (ICA) containing SNM bearing items.

(1) Physical Inventory Conduction Observations

The RE and STA groups shared inventory responsibilities for item identification and data verification during the conduction of this physical inventory. The inventory was conducted and verified by one two-man inventory team consisting of one member from each responsible group.

The original verification of core fuel assemblies (F/A) for each unit was performed at the time of the last refueling. This was done by using a video camera to tape F/A identification members for each F/A positioned in the core. The taped data was read and verified by at least two people from two different inplant groups and a certified listing of the core contained F/As generated. For this physical inventory each member of the inventory team made an independent piece count of the items on each unit core tagboard and compared the piece count data and item location to the computerized perpetual inventory data.

The original inventory data for spent and new F/A located in each unit pool was generated by verification of each F/A identification number, by at least two people, at the time the item was placed into the pool. For this physical inventory, each member of the inventory team made an independent piece count of the items and their locations on each unit pool tagboard. The inventory piece count tagboard data was compared to the facility computerized perpetual data and the physical presence of locations of each item in these pools were verified by the inventory team.

Verification of new fuel, not yet placed in the unit pools for storage, was performed by each member of the inventory team who made an independent piece count and serial number identification of each item on hand. The data was then compared to vendor shipping documentation as confirmation of the presence of the item.

Verification of the presence of fission chambers was conducted jointly by the team members. These items were housed in several locations and considerable physical effort by the team was

necessary to enable verification of serial number identifications and locations of each item on hand. The identification numbers and locations of each of these items was compared to computerized perpetual inventory data for verification.

When fission chambers are removed from service they are highly irradiated and are considered to be SNM bearing sealed sources. These items are stored in independent high radiations storage areas for each operating unit and are physically controlled by the Health Physics (HP)/Chemistry Department. Physical inventories of these items are performed semiannually by the HP Department, while adhering the requirements of a Radiation Work Permit (RWP). From discussions with HP personnel, it was determined that the September 22, 1987, physical inventory was conducted by piece count, serial number identification verification and comparing the inventory data to process records and a perpetual inventory listing.

No discrepancies in piece counts, item identifications, and their locations were detected during the above physical inventory listings. A recap of SNM bearing items on hand at the time this inspection is contained in Table III and Table IV.

The inspector concludes that: (1) the licensee was conducting physical inventories of SNM at the required frequencies; (2) the inventory team was well organized and displayed evidence of ample pre-inventory planning, training and inventory listing experience; and (3) the licensee's inventory activities were conducted in accordance with approved procedures and were adequate to determine the presence of all SNM bearing items on site and could detect losses, thefts and diversions of SNM from authorized uses.

(2) Independent Physical Inventory Verification

The inspector performed an independent verification of the presence of SNM bearing items in each ICA at the time of the March 31, 1987, physical inventory. Verification of SNM bearing F/A located in the reactor cores was performed by randomly selecting ten (10) F/A items from each unit core tagboard and comparing the tagboard item identifications and locations to the facility computerized perpetual inventory data.

Verification of F/A located in the new and spent fuel pools of each unit was performed by randomly selecting ten (10) F/A items from each unit pool tagboard and physically comparing the tagboard and pool locations. These items were further verified by comparing tagboard identifications and locations to the facility computerized perpetual inventory data.

Verification of new fuel was performed by piece count of the shipping containers located on the facility refueling floor and in the receiving area ICA. A random selection of six (6) F/As housed in the shipping containers in each area were selected for further verifications. The piece count and selected F/A items were compared to vendor shipping documentation for items identification and to process records for item location verification.

The inspector verified the physical presence and serial number identifications of each of the seven fission chambers located in warehouse #3 and each of the 15 fission chambers located in warehouse #10. The presence of the drums housing the four fuel loading chambers located on the refueling floor was also verified. For content of these drums, the label data was compared to process records.

The actual physical presence of the irradiated sealed sources and one Am-241 source, controlled by the HP Department, and was not verified during the inspection. The inspector did determine that these items were being maintained in locked areas, whose keys were part of a plant wide key control program, as required by procedures. The inspector performed item identification verification of irradiated sealed sources by comparing field log data to the physical inventory listing data and to the latest MSR data.

No discrepancies in licensee inventory and accounting data were noted during these verification performances. The inspector concluded that the licensee has established, maintained and was following acceptable practices for determining the physical presence of SNM bearing items on hand and for controlling the use of SNM bearing items on site.

g. Summary

The inspector determined that the licensee had established and was maintaining an adequate and effective program for controlling and accounting for SNM in his possession, and had limited the use of SNM to those locations and purposes authorized.

No violations or deviation from NRC requirements were detected during this inspection.

TABLE-I

TYPICAL KEY PROCEDURES FOR
SNM USE AND CONTROL ACTIVITIES
(50-321/88-10)

1. 42FH-ENG-030-05, Revision 1, Special Nuclear Material Inventory and Transfer Control, dated February 8, 1988.
2. 40AC-ENG07-0, Revision 0, Administrative Control Procedure - Control of Special Nuclear Material, dated November 23, 1984.
3. 42FH-ERP-014-05, Revision 0, Fuel Movement Operation, dated January 18, 1988.
4. 42FH-ENG-002-01, Revision 0, Receiving New Fuel, dated June 14, 1985.
5. 42FH-ENG-001-25, Revision 25, Revision 2, Fuel Handling Procedures - New Fuel Inspection, dated November 30, 1987.
6. 42-RP-RAd-007-05, Revision 1, Radioactive Sources, dated July 1, 1986.
7. LR-QAM-014-1047, QA Audit for Fuel Handling Program, dated October 19, 1987.

TABLE-II

COMMITTED REACTOR ENGINEERING INSTRUCTIONS
(50-321/88-10)

1. Special Nuclear Material Instructions.
 - a. Responsibilities and Requirement of the SNM Custodian.
 - b. Receipt and Inspection of SNM.
 - c. Storage of SNM.
 - d. SNM Transfers and Shipments.
 - e. Isotopic Accounting and Physical Inventories.
2. Reactor Engineering Training Requirement Instructions.
 - a. Qualifications and Training Requirements for a Unit Reactor Engineer.
 - b. Qualifications and Training Requirements for a Core Analysis Engineer.
 - c. Qualifications and Training Requirements for a Computer Engineer.
 - d. Qualifications and Training Requirements for a Licensing Engineer.
 - e. Qualifications and Training Requirements for a Reactor Engineer.
3. Reactor Engineering Procedure Review and Control Instructions.
 - a. Quarterly Procedure Review Program.

TABLE-III

SNM PHYSICAL INVENTORY ITEM RECAP
(March 31, 1988)

<u>SNM TYPE</u>	<u>UNIT 1</u>	<u>UNIT 2</u>	<u>TOTALS</u>
Fuel Assemblies:			
Reactor Core	560	560	1,120
New and Spent Fuel Pools	1,035	1,261	2,296
New Fuel	82	-	82
	<u>1,677</u>	<u>1,821</u>	<u>3,498</u>
Fission Chambers:			
LPRM	31	44	75
IRM	15	8	23
TIP	-	1	1
SRM	11	4	15
FLC	4	-	4
	<u>61</u>	<u>57</u>	<u>118</u>
HP Sealed Sources:	25	14	39
TOTALS	<u>1,763</u>	<u>1,882</u>	<u>3,655</u>

TABLE-IV

HP SEALED SOURCE INVENTORY ITEM RECAP
(March 31, 1987)

<u>SEALED SOURCES TYPE*</u>	<u>UNIT 1</u>	<u>UNIT 2</u>	<u>TOTALS</u>
IRM	6	5	11
SRM	10	-	10
TIP	8	9	17
Source (Am-241)	1	-	1
TOTALS	<u>25</u>	<u>14</u>	<u>39</u>

*All sources are considered highly irradiated.