

USNRC REGION II  
ATLANTA, GEORGIA

**Babcock & Wilcox**

82 MAY 4 AB: 36

Commercial Nuclear Fuel Plant

P.O. Box 800, Lynchburg, Va. 24505

Telephone: (804) 384-5111

April 29, 1982

United States Nuclear Regulatory Commission  
Region II  
101 Marietta Street, N.W.  
Suite 3100  
Atlanta, GA 30303

ATTENTION: Mr. A. F. Gibson, Chief  
Technical Inspection Branch  
Division of Engineering and Technical Programs

REFERENCES: (1) SNM-1168, Docket 70-1201  
(2) Inspection Report No. 70-1201/81-06  
(3) Letter from R. A. Alto to R. C. Lewis, 9/30/81  
(4) Letter from J. A. Olshinski to R. A. Alto, 11/1/81

Gentlemen:

Your letter of November 1, 1981 indicated that evaluation of two apparent violations of NRC requirements was continuing.

In the interim, progress on our computer data processing system for material control and accounting (for which development was started in 1979) has continued. We now have in place and tested features which strengthen the program in a number of areas including those addressed by the apparent violations.

With regard to Violation B, we understand that upon further review of our response and the circumstances of the activity, it is your intent to withdraw the violation. We have recognized that our system for detection of potential diversion can be beneficially improved with the now available data processing capability, and have implemented the appropriate changes. Attached is a detailed discussion entitled Tamperseal Verification for Inventory which embodies the improvements.

Our prior correspondence relative to Violation C discussed a portion of our item control system in detail as it related to the apparent violation. Through our continued discussion of the principles involved, and using our upgraded data processing capability, we have been able to address the concerns.

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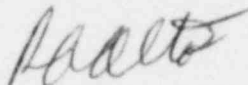
The attached detailed discussion, Data System, provides specific information regarding the corrective action which has been completed.

Since response to the inspection findings is exempt from disclosure under the provisions of 10 CFR 2.790(d), specific discussions of the findings are being forwarded as attachments to this letter.

If further questions arise during your review, please feel free to contact me.

Sincerely,

BABCOCK & WILCOX COMPANY  
COMMERCIAL NUCLEAR FUEL PLANT



R. A. Alto, Manager  
Virginia Operations

RAA:cmr

cc: D. W. Zeff  
W. Powers  
J. T. Ford

Attachments

TAMPERSEAL VERIFICATION FOR INVENTORY

During SNM physical inventory, verification of tamperseals will be performed as described below. Provisions for performing these verifications will be included in written inventory instructions.

Tampersafed, Prelisted Items Whose Seal Number(s) Appear(s) on the Prelist:

During inventory data collection, each seal will be examined to verify intactness and to determine if any data recorded on the seal has been disturbed. Also, at that time, serial numbers of seal(s) will be verified to the seal numbers recorded on the prelist.

Tampersafed, Prelisted Items Whose Seal Number(s) Do Not Appear on the Prelist:

During inventory data collection, each seal will be examined to verify intactness and to determine if any data recorded on the seal has been disturbed. Serial number(s) of seal(s) will be added by hand to the prelist. Within the 30 day inventory reconciliation period, the hand recorded seal number(s) will be verified to the file copy of the multi-part item ticket or to the tamperseal log.

Tampersafed Items Which Have Not Been Prelisted:

During inventory data collection, each seal will be examined to verify intactness and to determine if any data recorded on the seal has been disturbed. Relevant inventory data including tamperseal number(s) will be hand listed for each item. Within the 30 day reconciliation period, hand recorded tamperseal numbers will be verified to the file copy of the multi-part item ticket or to the tamperseal log.

In any case above, if a seal is broken, and it is found that any data recorded on a tamperseal has been disturbed, an investigation will be performed and appropriate action taken.

DATA SYSTEMIntroduction

In September of 1979, the CNFP began development of an automated Nuclear Materials Control System to provide item control (perpetual inventory) data for discrete SNM on hand. Data entry for pellet, powder, and scrap type items began in February of 1981 and a partial computer prelist of these items was generated for use on the July 1981 SNM physical inventory. In January of 1982, data entry for fuel rods began to the portion of the system which provides capability for perpetual inventory data for fuel rods, fuel rod channels, and fuel assemblies. A discussion of the rod, channel and assembly portion of the system follows:

Process Description

The processing interval covered by the data system begins with the fuel rod loading operation where  $UO_2$  pellets are weighed to within predetermined tolerance limits and are then inserted, along with other components, into fuel rod tubing which has been sealed on one end by an end cap welded to the tubing and which has had a serialized identification number stamped on this end. After loading, the second end of the tube is sealed by welding on an end cap containing a stamped letter code identifying the enrichment of fuel contained in the rod. The loaded rods then flow through several intermediate processing and inspection steps to a final inspection station. At any of these inspection steps, rods may be found which deviate from product specifications. Such deviated rods are removed from the routine flow and maintained in a special storage area. At the final inspection station, completed fuel rods are placed into storage units called channels. Each channel is a grouping of fuel rods which will be built into a fuel assembly. After a period of storage, channels are moved to the assembly area where the fuel assemblies are built. Completed fuel assemblies are moved from the assembly area, to an inspection area, and then to a storage and shipping area where they are stored in racks or in shipping containers. The assembly storage and shipment area is the end of the processing flow covered by the data system.

DATA SYSTEMItem Control System Description

During fuel rod loading, each fuel pellet stack is weighed and the rod identification, fuel pellet lot identification, contract number, enrichment identification and stack weight ( $UO_2$ ) is entered at a work station terminal to the data collection system. At appropriate times, the diskette containing the information is removed from the data collection portion of the system and taken to the data processing center where the rod loading data is entered to the central computer to update the rod perpetual inventory.

For rods exiting the processing flow (i.e., for rods deviated and channels generated) periodic batch data entries are made to denote status change. In the case of deviated rods, the entry changes the material type code of the rod as it is identified within the system. In the case of channels generated, the entry identifies those individual rods making up each channel and thereby relieves those rods from the rod perpetual inventory and enters that information to the channel perpetual inventory. Also, for channels issued from storage to bundle assembly, appropriate data entries are made to associate fuel assembly identification number with channel number. This entry also relieves the affected channel from the channel perpetual inventory and enters the new fuel assembly to the fuel assembly perpetual inventory. For fuel assemblies shipped offsite, an entry is made which removes the shipped assemblies from the fuel assembly perpetual inventory.

Physical Inventory Prelist

Prior to each SNM physical inventory, listings of rods, channels, and assemblies on hand are generated from perpetual inventory data contained in the system. Prelistings of fuel rods consist of one listing identifying fuel rods between rod loading and final rod inspection, another listing identifying deviated rods, and a final listing identifying archive and measurement standard rods.

DATA SYSTEMPhysical Inventory Prelist (continued)

The channel prelist identifies those fuel rod channels which are in storage and have not yet been issued for assembly fabrication; additionally, this prelist identifies individual fuel rods contained in the channels. The fuel assembly prelist identifies assemblies in the assembly fabrication area, the fuel assembly inspection area, and the fuel assembly storage and shipping area. The fuel assembly prelist does not contain detailed fuel rod data since the fuel assembly is considered a discrete item. Items on the prelist are identified by individual fuel rod identification, channel identification, or fuel assembly identification, as appropriate.

During the inventory, as each item is located, identification numbers of rods, channels, or assemblies are verified to the computer prelists. In the case of fuel rods, individual rod identification numbers are verified against the prelist, a rod count is performed on each channel, and ten fuel rod numbers within each channel are verified at the time of inventory data collection. Within the 30 day inventory reconciliation period, a 100% rod number verification is performed on each channel. For fuel assemblies not in tamper safed shipping containers, the identification number of each assembly is verified against the prelist. For fuel assemblies stored in tamper safed shipping containers, the shipping container identification number and the tamper seal integrity are verified.

In order to insure a more efficient inventory and to protect product quality during the inventory, groupings of items may be verified and tamper safed prior to the beginning of inventory activities. Examples of these groupings are fuel assembly storage racks, loaded fuel assembly shipping containers, and fuel rod groupings. Other situations may arise similar to these where preverification and tamper safing may be used. In each case, tamper seals on the containers, racks, retorts, etc., will be verified against sealing records. Perpetual inventory data for those items will then be accepted based on this seal verification.