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BBS LTR #699-75

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
October 17, 1975

10-28-75

Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operation-Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: REPORT OF LOSS OF SPECIAL NUCLEAR MATERIAL IN ACCORDANCE WITH 10CFR 70.52

References: 1) Title 10 of Code of Federal Regulations part 70 section 70.52 (a)
2) Notification of Region III of U. S. Nuclear Regulatory Commission
Oral: Mr. P. Johnson, 1100 hours on October 8, 1975

Report Date: October 17, 1975

Occurrence Date: October 8, 1975

Facility: Dresden Nuclear Power Station, Morris, Illinois

IDENTIFICATION OF OCCURRENCE

On October 8, 1975, a portable Fuel Loading Chamber (FLC) containing two grams of Special Nuclear Material (SNM) was declared lost. The SNM was 93.35% enriched uranium - 235.

CONDITIONS PRIOR TO OCCURRENCE

Unit-3 was operating at a power level of 770 MWe following the unit's third partial refueling outage.

DESCRIPTION OF OCCURRENCE

On April 18, 1975, five FLC's were sent from Quad Cities Nuclear Power Station to Dresden. The FLC's were packaged in the following manner:

Three clean FLC's were loaded into one 55-gallon drum; two contaminated FLC's were loaded in a second 55-gallon drum. Two FLC's in each drum were sent with

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associated cables attached to them. The fifth FLC (a clean spare) was put into a plastic bag, wrapped in rags, and placed in the bottom of the drum containing the other two clean FLC's. Both drums were bolted closed.

The FLC's were received at Dresden on April 18, 1975. On April 19 the two drums were transferred to the refueling floor of the reactor building and stored on top of the Unit 2/3 new fuel vault until April 27, 1975.

On April 27, two instrument mechanics (IM's) opened the drums containing the FLC's and inspected the drums' contents. The IM's noted the presence of the four FLC's with cables and the fifth FLC wrapped in rags before leaving the area. On April 28, three IM's were sent to inspect the FLC's prior to installation in the reactor. The IM's unloaded the four FLC's with cables attached but did not look for a fifth FLC. After the four FLC's had been removed, the two 55-gallon drums were stored on the south wall of the Unit-3 refueling floor, between the reactor head storage area and the Unit-3 fuel pool.

From April 27 to August 6, 1975, major activities on the refueling floor included out-of-core sipping, feedwater sparger replacement, and local power range monitor replacement.

On August 6, 1975, as preparations for fuel reloading of Unit-3 were being made, the spare FLC was noted to be missing by the fuel handling foreman. The nuclear materials custodian and assistant superintendent were notified, and a search was made of the reactor building, with negative results. Further searching was postponed until after completion of the Unit-3 fuel loading since fuel handlers were conducting the search.

Extensive searches of the Unit 2/3 reactor building were conducted from August 26 to September 1, again without success. The refueling of Unit-1 in addition to fuel handler personnel radiation exposure problems necessitated delays in the searching schedule. During these delays, drum movements out of the reactor building were restricted.

On October 7 and 8 a complete and thorough search was made of the reactor building, again with negative results. On October 8 at 1000 hours, the missing FLC was declared lost. Notifications of the loss, including an oral report to NRC Region III Inspector P. Johnson who was on-site, were made immediately.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE

The primary cause of the occurrence was the lack of proper storage for the FLC's. Although there is a special storage area set aside for nuclear fuel, special storage is not provided for components which contain small but reportable amounts of uranium. A lack of administrative controls for the packaging, movement, and storage of FLC's was a contributing cause of this occurrence. Commonwealth Edison Nuclear Procedures do not address the problem of handling small, reportable amounts of Special Nuclear Materials.

ANALYSIS OF OCCURRENCE

During the period from April 27 to August 6, the only operation involving the use of a substantial number of 55-gallon drums was the feedwater sparger replacement job. The drums were used for the disposal of dry active waste (DAW) resulting from

the job, and for storage of contaminated tools. Drums containing DAW were sent to the Unit 2/3 radwaste barreling area and were eventually transported to Sheffield, Illinois for burial. Drums used for tool storage were thoroughly inspected without success; however, one of the two FLC shipment drums was discovered during this inspection.

Therefore, it is considered highly probable that either the missing FLC is buried with waste at Sheffield, or it is still on-site at some unknown location. In either case, the consequences to the safety of plant personnel or the public are minimal. This conclusion is based on the following considerations:


a) the amount of uranium involved was small (2 grams); b) the uranium had not been irradiated and consequently had minimal activity (less than one millicurie and a dose rate of less than 0.0 milli-Rem/hour at contact); and c) the uranium was in a solid form, encapsulated in an air-tight container.

Finally, the possibility and significance of illegal diversion of nuclear material in the FLC was examined and ruled out for these reasons: 1. The amount of uranium was small, and the material was in a form which would not concern public safety as a result of illegal diversion (the uranium is coated on a capsule which is then sealed within another capsule) 2. Only a very few management personnel of known reliability were aware that these instruments contained SNM 3. The security of Dresden station is adequate to ensure that the FLC could not easily be taken off-site in any form other than radwaste 4. During the entire investigation of this occurrence, there was no hint of any conscious diversion of the FLC.

CORRECTIVE ACTION

Corrective actions to prevent a similar occurrence are listed below:

1. In the future, Dresden will ship FLC's only if they are properly packaged, including foam rubber for protection from jolts to the container.
2. The FLC's will be stored in the Unit-1 fuel vault upon receipt, unless dose rates are unacceptably high; in that case, FLC's will be stored in a fuel pool.
3. Movement of FLC's on-site will be accomplished under the same types of administrative controls that govern movement of fuel assemblies.
4. FLC inventories will be made on a monthly basis.
5. A revision to CECO nuclear procedures will be initiated; the revision will deal with components containing small but reportable amounts of SNM.


B. B. Stephenson
Superintendent

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