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CALVERT CLIFFS NUCLEAR POWER PLANT DEPARTMENT
CALVERT CLIFFS NUCLEAR POWER PLANT
LUSBY, MARYLAND 20687

April 19, 1989

U.S. Nuclear Regulatory Commission
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Docket No. 50-317
License No. DPR 53

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1
Penetration Fire Barrier Special Report,
Technical Specification 3.7.12a

Dear Sirs:

Per the requirements of Technical Specification 3.7.12a, we hereby submit the following Special Report concerning penetration fire barriers, specifically an inoperable purge exhaust fire damper.

Very truly yours,

L. B. Russell
Manager-Calvert Cliffs Nuclear Power Plant Department

LBR:MDM:llw

cc: William T. Russell
Director, Office of Management Information and Program Control
Messrs: G. C. Creel
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ATTACHMENT 1

PENETRATION FIRE BARRIER SPECIAL REPORT

BACKGROUND

On March 13, 1989 at 1630 hours, personnel performing work in the East Penetration Room of Unit 1 discovered that the damper portion of a fire damper was out of its guide tracks and was hanging inside its associated duct. It was later determined that the linkage which holds the blade up in position had broken causing the damper to shut. The damper was located in the duct work for the Containment Purge Exhaust Fan. Apparently, when the Unit shut down and performed a containment purge, the pressure difference created by the fan suction forced the fire damper curtain out of its tracks and into the duct. The fire damper is 51 x 46 inches, manufactured by Air Balance. The damper was not designed to withstand the estimated differential pressure it was subjected to (approximately 5 inches of H₂O) with the fan running.

The damper is a component of the fire barrier which separates the 27' Unit 1 East Penetration Room (Room 316) and the 5' Radiation Exhaust Vent Equipment Room (Room 225). The configuration of the duct work is such that the damper is actually located in the east wall of Room 316. After the duct passes through the wall, it is enclosed in a concrete masonry unit (CMU) shaft in which the duct turns downward and penetrates the floor into Room 225. There is no fire damper where the duct passes through the floor at the 27' elevation since the CMU enclosure around the duct provides rated separation up to the point where the duct penetrates the East Wall of Room 316. Both Room 316 and Room 225 are protected by automatic wet pipe sprinkler systems and smoke detection systems which alarm to the Control Room. The combustible loadings in both rooms are minimal and have equivalent fire severities of less than one hour.

EFFECT ON UNIT OPERATION

Upon discovery of the inoperable fire barrier penetration (damper), appropriate actions were taken to satisfy the ACTION Statement for T.S. 3/4.7.12 "PENETRATION FIRE BARRIERS." At the present time Calvert Cliffs is in the ACTION Statement which permits continued operation of the facility indefinitely as long as the ACTION requirements are met. This is based upon the premise that the continued operation of the facility is not restricted by the time limits of the ACTION Requirements and conformance to the Action Requirements provides an acceptable level of safety for continued operation. Reliance on the ACTION Statement does not restrict Unit startup because T.S. 3.0.4. does not apply. Thus, the inoperable fire damper shall have no effect upon Unit operation as long as the provisions of the ACTION Statement are satisfied.

TASKS TO ASSURE FUTURE COMPLIANCE

The CCNPP Unit 1 T.S. 3/4.7.12 ACTION Statement requires the penetration to be returned to operability within 7 days or to issue a Special Report to the Commission with the next 30 days outlining specific actions taken, the cause of

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the inoperable penetration, and plans and schedules for restoring the fire barrier penetration to operable status. As described above, upon discovery of the inoperable damper T.S. 3/4.7.12 ACTION Statement was entered which required verification of the operability of the automatic sprinkler systems on both sides of the barrier. The verification is repeated every 24 hours. The cause of the inoperable penetration was the failure of the linkage which holds the damper blade in the ready position. It should be noted that the linkage failure was caused by a mechanical failure of a metal strap, not by separation of the heat sensitive link. The actual failure mechanism of the metal strap cannot be determined until the damper is replaced. The extreme air flow to which the damper was exposed is limited to only those times when containment purge is operating which, per the Technical Specifications, occurs only when the reactor is not at power. In order to prevent a future occurrence, each containment purge duct was inspected and verified to be in the correct position with the linkage showing no visible signs of wear. The operators have been instructed to isolate the appropriate containment purge fans upon receipt of smoke detection alarms in either Rooms 316 and 225 for Unit 1, or either Rooms 310 and 204 for Unit 2. Since a smoke detector alarm in either room is anticipated well in advance of sufficient heat in the duct to melt the fusible link, isolation of the fans will eliminate the high air flow concern in terms of proper damper closure.

A replacement damper has been ordered and will be installed in a timely manner upon receipt. It is anticipated that the new damper will be installed by May 1, 1989. Upon replacement of the damper, the old damper metal strap mechanism shall be evaluated to determine its failure mechanism. Additional corrective actions shall be performed as dictated by the results of this analysis. In the meantime the compensatory measures required by the ACTION Statement will remain in effect.