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November 30, 1982

Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Re: McGuire Nuclear Station Unit 1
Docket No. 50-369

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-369/82-74. This report concerns T.S. 3.6.1.3, "Each containment airlock shall be operable...". This incident was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Hal B. Tucker

Hal B. Tucker

PBN:jfw
Attachment

cc: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Senior Resident Inspector-NRC
McGuire Nuclear Station

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

DUKE POWER COMPANY
McGUIRE NUCLEAR STATION
REPORTABLE OCCURRENCE REPORT NO. 82-74

REPORT DATE: November 30, 1982

FACILITY: McGuire Unit 1, Cornelius, NC

IDENTIFICATION: Various Door Seals Failed on Both the Upper and Lower Personnel Airlocks (PAL)

DESCRIPTION: There were four door seal failures while Unit One was in Mode 1 t 50% power. All of these failures are reportable pursuant to Technical Specification 3.6.1.3, and are the result of Component Failure/Malfunction. mmediate corrective action for each of these incidents involved securing the operable door closed and initiating replacement of the failed seal.

On October 14, 1982, personnel performing the Air Lock Operability Test noticed that the seals' annulus pressure was increasing on the reactor building door of the upper PAL. This prompted the seal integrity portion of the Upper Personnel Airlock Leak Rate Test to be conducted on the reactor building door seals. The small seal was found to be leaking above the allowable limits as a result of a blister on the seal, and the upper PAL was declared inoperable. The failed door seal was replaced, the new seal passed its leak rate test and the PAL was declared operable on October 15.

While working in the area on October 19, 1982, Maintenance personnel noticed that the large seal on the auxiliary building door of the upper PAL appeared to be dragging. Further investigation revealed that a section of rubber was torn from the seal, revealing the fabric. The upper PAL was declared inoperable on October 20, 1982. The failed seal was replaced, the new seal passed its leak rate test and the PAL was declared operable on October 21.

On October 25, 1982, when the reactor building door of the upper PAL was being closed, the door seals inflated before the door was completely closed, and the small seal failed. The upper PAL was declared inoperable. The seal was replaced, the new seal passed its leak rate test, and the PAL declared operable on October 28, 1982.

On October 28, 1982, when Operations personnel discovered that the sealing rubber on the large seal on the auxiliary building door of the lower PAL was peeling off the surface of the seal, the lower PAL was declared inoperable. The seal was replaced, the new seal passed its leak rate test, and the PAL was declared operable the same day.

EVALUATION: There have been several seal failures on the PAL's at McGuire (ref. LER's RO-369/81-176, 81-190, 82-05, and 82-61). The most recent failures were determined to be the result of the seal inflation stem being overtightened into an oversized hole in the door frame and damaging the seal. However, the hole size has since been corrected, and all the damaged seals were replaced with new seals. This corrective action should habe prevented further seal failures of this kind. As with past seals, the number of actual cycles for the new failures was only a fraction of the 50,000 guaranteed cycles; therefore the seals were not over cycled.

The seal which failed on 10/14/82 was manufactured by Sealmaster Corporation. Air was discovered to be leaking into the area between the seals on the door. No distinguishable leaks were found on the seal, but a small blister was identified. Despite these failings, the seal was capable of maintaining containment integrity as long as an air supply was available to keep the seal inflated. This failure is almost identical to the last seal failure occurrence which was reported in LER 369/82-61.

The seal which failed on 10/19/82 was also manufactured by Sealmaster Corporation. A piece of rubber was torn from the seal, exposing the seal cords. It was thought that the door seal was the reason for the door dragging; but after a new improved Pressray seal was installed on the door it still dragged. Further investigation revealed that the problem resulted from the door being out of alignment.

The seal which failed on 10/25/82 was manufactured by Presray Corporation and was in service for eleven days. The reactor building door was not closed when the seals inflated. The small seal which was manufactured by Presray ruptured, but the large seal which was manufactured by Sealmaster did not fail. The Presray seals are not designed to withstand the forces of being inflated unrestrained. There is no continuous fabric support within the Presray seal as there is in the Sealmaster. Therefore, when the seal inflates unrestrained, the Presray seal will distort, weaken, or fail. Failure due to damage is inevitable, but it is impossible to determine the time. In this case, failure was immediate. There is no evidence that such unrestrained inflations damage the Sealmaster seals. There are limit switches on the doors which are supposed to prevent inflating the seals with the doors open, but there have been problems with adjustment of these switches and the hydraulics on the doors. If the door closes too fast, the switch can be made and then the door will bounce open. It could not be determined why these seals were inflated with the door open. Other possibilities for the door seals inflating with the door open are someone doing it manually or power to the door being lost, but neither of these are suspected. An examination of the seal did not reveal a visible blow out, but a bubble was identified on the sealing surface.

The seal which failed on 10/28/82 was manufactured by Presray Corporation. The sealing rubber on the surface of the seal was peeling off the seal, and the seal ruptured at one of these areas. It is unknown why the sealing rubber was peeling or why the seal ruptured. This sealing rubber serves no structural function but is used because it provides a better sealing surface than the rubber used in the body of the seal. The ruptured area of the seal looked as though the seal was over-inflated until it failed. The seal was discovered in this condition with the door closed, so it is not possible to determine how or why the seal failed. It is possible that the seal was inadvertently inflated with the door open at one time, and the seal was damaged. It could have then ruptured later at this damaged area.

Both of the Presray seals which failed were due to blow outs, but only the failure on 10/25/82 was known to have occurred while the door was open. Sealmaster seals were the companion seals on the doors with the failed Presray seals when they failed. Any damage to the Sealmaster seals due to inflation

with the doors open has not been evident. This is due to the construction of the seals. Although the door seals are not supposed to be inflated with the doors open, the occurrence has been frequent enough to warrant the need for door seals to be able to withstand such an accident.

The two Sealmaster seals which failed were replaced with Presray seals, one of which failed after 11 days of service due to being inflated with the door open. One of the Sealmaster seals failed its surveillance test due to a blister which developed on the seal. The cause was unknown. The other Sealmaster was damaged due to an alignment problem with the door. It is possible that such a problem could be contributing to all of the seal failures.

SAFETY ANALYSIS: The loss of one of the airlock doors reduces the means of isolating the containment vessel from the atmosphere, but the ability to maintain integrity was never lost because the redundant operable door was locked closed.

The health and safety of the public were not affected by these events.

CORRECTIVE ACTION: In all of the failures the immediate corrective action was to secure the operable airlock door of the respective air lock, and replace the failed seal. At present all of these failed seals have been replaced, inspected by Quality Assurance, passed their leak rate tests, and declared operable.

The door whose seal is dragging due to sagging hinges is having the seals lubricated until permanent adjustments can be made to the doors. Duke Power Company is in the process of setting up a meeting with the W. J. Wooley Co., the manufacturer of the air locks, to discuss present problems concerning the air locks. Included in the dialog between Duke, Wooley, and Presray is the possibility of expanding the design criteria of the Presray seals to withstand unrestrained inflations. By the end of January 1983 Duke will have met with the Wooley Co. and will have plans for further corrective actions. In addition, Sealmaster seals will be used as replacements if possible for any further failures, since they have given (by far) better service than Presray seals.