



Public Service Electric and Gas Company P.O. Box E Hancocks Bridge, New Jersey 08038

Salem Generating Station

July 21, 1982

Mr. R. C. Haynes
Regional Administrator
USNRC
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Haynes

LICENSE NO. DPR-70
DOCKET NO. 50-272
REPORTABLE OCCURRENCE 82-05/01X-1
SUPPLEMENTAL REPORT

Pursuant to the requirements of Salem Generating Station
Unit No. 1 Technical Specifications, Section 6.9.1.9.b,
we are submitting supplemental Licensee Event Report for
Reportable Occurrence 82-05/01X-1.

Sincerely yours,

H. J. Midura
General Manager -
Salem Operations

RF:ks *7/27*

CC: Distribution

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PDR ADDCK 05000272
S PDR

The Energy People

IEU

Report Number: 82-05/01X-1
Report Date: 07-21-82
Occurrence Date: 01-31-82
Facility: Salem Generating Station, Unit 1
Public Service Electric & Gas Company
Hancocks Bridge, New Jersey 08038

IDENTIFICATION OF OCCURRENCE:

Degradation of Fuel Cladding.

This report was initiated by Incident Report 82-023.

CONDITIONS PRIOR TO OCCURRENCE:

Mode 6 - Rx Power 0% - Unit Load 0 MWe

DESCRIPTION OF OCCURRENCE:

On January 31, 1982, the Westinghouse Fuel Inspection Team, while conducting their fuel assembly TV visual and dimensional survey, in accordance with the Planned Fuel Inspection (FP-PSE-FE4) of two optimized assemblies and four additional assemblies, discovered degradation of the fuel cladding on fuel assembly C-04. Based on the video inspection, a fuel pin rupture was observed on fuel pin 9, face 2, fuel assembly C-04, between grid 7 and 8. The assembly C-04 core location for Cycle 3 was F-06. The inspection team reported that fuel pellets were visible during the fuel element scan.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE:

The cause of the fuel pin rupture was diagnosed as excessive rod growth due to fuel lockup. A fuel pellet was wedged in the top several inches of the fuel column, resulting in excessive diametrical strain and swelling. Rod growth was due to Pellet Clad Material Interaction (PCMI)/Ratcheting and Neutron Elongation. Internal tube stress and fission product iodine created crack initiation via stress cracking corrosion. Secondary hydriding completed the failure mode.

ANALYSIS OF OCCURRENCE:

The Westinghouse investigation of the cladding failure produced the following results: the remainder of the assembly showed normal crud buildup and burnup condition. The rod adjacent to and in contact with the failed rod did not fail. The failed rod grew most in Cycle 2 and continued to grow in Cycle 3. The total growth of the failed rod, S/N 09, at the End of Cycle 3, (EOC-3), was 1.0% as compared to .56% for the assembly average.

ANALYSIS OF OCCURRENCE: (continued)

After their reexamination of the EOC-3 video inspection results and the EOC-2 Inspection Report (WCAP 9874), Westinghouse indicated that evidence of a problem had existed. Rod swelling was detected at EOC-2, not rod misalignment as reported in WCAP 9874. Operating chemistry showed that Iodine 131 and 138 were mismatched at EOC-2 and 3, indicating a probable fuel element failure, and hydride lines were evident around contact areas on Rod S/N 09 at EOC-2.

CORRECTIVE ACTION:

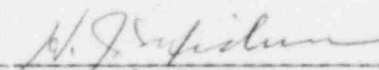
Fuel assembly C-04, which was scheduled to be removed from the core, was placed in the spent fuel pit. As a result of the C-04 inspection results, all C assemblies scheduled to be reused in the core, were inspected. Ten additional assemblies were also inspected. No additional cladding ruptures were discovered.

Westinghouse conducted an evaluation of the cladding failure, and found fuel lockup to be the primary cause. Based on the results of the inspection of the other fuel assemblies, and the results of the Westinghouse evaluation, the following conclusion was reached: Due to the large number of fuel pins in the core, and the lack of similar occurrences of cladding failure in the fuel assemblies inspected, this occurrence is considered to be isolated in nature. No further corrective action is deemed necessary.

FAILURE DATA:

Westinghouse Electric Corporation
Fuel Assembly

Prepared By R. Heller



General Manager -
Salem Operations

SORC Meeting No. 82-69