

FEB 22 1994

Docket No. 70-1151
License No. SNM-1107

Westinghouse Electric Corporation
ATTN: Mr. J. A. Fici, Manager
Columbia Plant
Commercial Nuclear Fuel Division
Drawer R
Columbia, SC 29250

Gentlemen:

SUBJECT: MANAGEMENT MEETING SUMMARY

This letter refers to the Management Meeting held at our request on February 9, 1994. The meeting concerned activities at your Columbia facility. The issues discussed at the meeting included the activities of the Root Cause Analysis team you formed to investigate the release of uranium hexafluoride (UF₆) from your ammonium diuranate (ADU) Line 4 on January 26 and the operation of the facility including the use of teflon gaskets in various piping applications. The meeting was beneficial in that everyone gained a better understanding of what may have caused the UF₆ release and how you have used and plan to use teflon gaskets in plant operations at your facility.

A list of attendees and a meeting summary are enclosed.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this matter, please contact us.

Sincerely,

ORIGINAL SIGNED BY
J. PHILLIP STOHR

J. Philip Stohr, Director
Division of Radiation Safety
and Safeguards

Enclosures:

1. List of Attendees
2. Meeting Summary

cc w/encls:

Max Batavia, Chief
Bureau of Radiological Health
S. C. Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC 29201

bcc w/encls: (See page 2)

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

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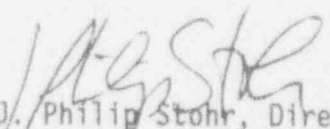
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and Environmental Control
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Columbia, SC 29201

ENCLOSURE 1

MANAGEMENT MEETING ATTENDEES

Westinghouse Electric Corporation

J. A. Fici, Plant Manager
W. L. Goodwin, Manager, Regulatory Affairs
E. E. Keelen, Manager, Manufacturing
S. G. McDonald, Manager, Technical Services
D. C. Goldbach, Manager, Chemical Process Engineering
G. T. Lowder, Manager, Maintenance

Nuclear Regulatory Commission

S. D. Ebnetter, Regional Administrator
J. P. Stohr, Director Division of Radiation Safety and Safeguards (DRSS)
E. J. McAlpine, Section Chief, Radiation Safety Projects Section (RSPS),
Nuclear Material Safety and Safeguards Branch (NMSS), DRSS
C. H. Bassett, Fuel Facility Inspector, RSPS, NMSS, DRSS
E. D. Testa, Fuel Facility Inspector, RSPS, NMSS, DRSS
G. L. Troup, Fuel Facility Inspector, RSPS, NMSS, DRSS

Nuclear Regulatory Commission - Headquarters (Participation By Telecon)

C. W. Emeigh, Branch Chief, Licensing Branch (FCLB), Fuel Cycle Safety and
Safeguards Division (FCSS), Office of Nuclear Material Safety and
Safeguards (ONMSS)
C. N. Smith, Branch Chief, Operations Branch (FCOB), FCSS, ONMSS
J. Roth, Section Chief, Inspection Section, FCOB, FCSS, ONMSS
W. M. Troskoski, Senior Chemical Engineer, Inspection Section, FCOB, FCSS,
ONMSS

ENCLOSURE 2

MANAGEMENT SUMMARY

On February 9, 1994, the Regional Administrator and staff held a management meeting with representatives from Westinghouse Electric Corporation in Atlanta, Georgia. NRC Headquarters personnel from ONMSS also participated in the meeting via telephone. The purpose of the meeting was to discuss the results of the licensee's investigation of a release of uranium hexafluoride (UF_6) from the ammonium diuranate (ADU) Line 4 on January 26, 1994. The investigation was conducted by a Root Cause Analysis team formed immediately following the event. The discussion also included a review of the operation of the facility including the use of teflon gaskets in various piping applications.

Following introductory remarks by J. Fici the Plant Manager, the Manufacturing Manager, E. Keelen, presented a summary of Root Cause Analysis team investigation to date. The Root Cause Analysis Team constructed a time line and developed a set of causal factors for the event. A preliminary root cause was determined to be a high pressure excursion when the eduction line on ADU Line 4 became blocked. Subsequently a gasket ruptured at a flange near a block valve in the eduction line. This conclusion was based on:

- the condition of the gasket,
- an evaluation of the gasket by experts, and,
- a measurable pressure excursion at the time of the gasket rupture. (A pressure gage near the Line 4A vaporizer showed an increase from about 10 psig to 15-16 psig through two closed valves. Following the incident, one of those valves was tested and found to be leaking. The other valve was not tested.)

The various corrective actions that had been taken to date were then summarized.

The Manager of Chemical Process Engineering, D. Goldbach, then presented a discussion of the gaskets used at the facility. Westinghouse currently uses Chesterton 2000 full face gaskets which are made of 100% teflon. The minimum acceptable compression on the sealing surface of the gasket is 12% for 150 psig service. The maximum recommended compression is 40%. Envelope gaskets were used until 1975 and ring gaskets were used until 1987. Since 1987, the full face gaskets have been used. Westinghouse had major releases in 1974 and 1978 due to failed gaskets. There are about 180 gaskets on the ADU lines and 170 gaskets on IDR lines. Mr. Goldbach indicated that over the life of the plant there has been 2450 gasket-years of service with the full face gaskets without incident. The licensee made all their gaskets in-house until 1989.

The gasket that failed (creating the release) was one purchased from the vendor. (At the time of the event, Westinghouse continued to make gaskets in-house when the supply of vendor-supplied gaskets ran out.) The gasket had been in use for 2-5 years. According to a Chesterton expert who performed various tests on the failed gasket, it looked remarkably good. The failed gasket had uneven compression (12% on one side of the sealing surface and 34%

on the other side.) There was about a 1/16-inch misalignment in the flanges on either side of the gasket that failed. The expert who examined the gasket determined that the cause of failure was not a long-term leak (steam cut type.)

The licensee found about 1.5 grams of black material during the disassembly of Line 4 piping. This material has been sent off site for analysis. The initial analysis will be by X-ray diffraction and then destructive chemical analysis will be performed. The licensee stated that the investigation would remain open until the results of the analytical measurements of the material were received and reviewed by the investigation team.

Prior to the event in January, Westinghouse did not have a procedure for installing gaskets or for torquing the bolts joining the flanges. Subsequently, a torquing procedure was developed, approved, and implemented. Mr. Goldbach indicated, however, that the torquing procedure would need to be modified to specify that all four bolts need to be torqued in turn 5-7 times. Mr. Goldbach also indicated that only gaskets purchased from the vendor will be used in the future.