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BES Ltr. #348-75

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
June 5, 1975

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 ABNORMAL OCCURRENCE PER SECTION 6.6.A OF THE TECHNICAL
SPECIFICATIONS
UNIT-2 OFF-GAS EXPLOSION

- References: 1) Regulatory Guide 1.16 Rev. 1 Appendix A
- 2) Notification os Region III of U. S. Nuclear Regulatory Commission
Telephone: P. Johnson, 1530 hours on May 27, 1975
Telegram: J. Keppler, 0815 hours on May 27, 1975
- 3) Drawing Number

Report Number: 50-237/1975-35

Report Date: June 5, 1975

Occurrence Date: May 26, 1975

Facility: Dresden Nuclear Power Station, Morris, Illinois 60450

IDENTIFICATION OF OCCURRENCE

At 1759 hours on May 26, 1975, an explosion occurred in the "B" off-gas system.

CONDITIONS PRIOR TO OCCURRENCE

Prior to the occurrence Unit-2 was at a steady-state power level of 742 Mwt and 206 MWe.

DESCRIPTION OF OCCURRENCE

At the time of the occurrence, recombiner "A" was being cut in to the off-gas train. The sparging air compressor had operated since 1600 hours with valve AO 5430A open. Following procedure, the operator cut in the steam supply on recombiner preheaters "A" & "B" and the "A" booster air ejector and outlet

While attempting to apply the sparging air, the operator discovered that the sparging air supply header was full of water. As he was draining the header, the control room called, advising that the preheater inlet pressure stood at 15 psig. The operator then opened the recombiner outlet 5499-72A approximately 50% as the procedure specified. When the control room notified him of a decrease in pressure, the operator returned control of the pressure to the sparging air flow controller. After roughly three minutes the explosion occurred. The following alarms annunciated:

1. "B" off-gas system flow hi/lo alarm
2. Off-gas filter hi Δ P
3. SJAE liquid drain hi level
4. Recombiner-pressure drain tank hi-hi level

The chimney gas activity monitors indicated an increase in activity while the off-gas flow monitors showed a decreased flow. Activity in the "B" SJAE room increased immediately.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE

No definitive cause of the explosion can be determined. A check of the recombiner system valving showed that the preheater inlet and outlet manual drains on both trains were closed. These valves should have been open.

This blockage probably caused the 15 psig in the piping. All other valving was normal. It appears unlikely that the recombiner system caused the explosion.

All filters in the off-gas train (including filter "A", which was in service when the explosion occurred) were securely grounded when they were installed.

ANALYSIS OF OCCURRENCE

The safety of plant personnel and the public was not jeopardized as a result of this occurrence. The rupture diaphragm relieved the pressure as designed. All contamination was confined to the "B" SJAE room. A load drop was immediately initiated to minimize any contaminant releases. Damages were limited to the rupture diaphragm and the off-gas filter.

A subsequent DOP test on June 3 showed that the "A" off-gas filter did not pass the test and was probably damaged by the explosion.

The estimated maximum off-gas activity during this time was about 1400-1500 μ Ci/sec. The off-gas spike lasted approximately one hour. The environmental contractor was requested to take soil and water samples in the surrounding area to verify that no outside contamination resulted from this explosion.

CORRECTIVE ACTION

The immediate corrective action was to start a load drop to minimize any releases into the building. "A" SJAE was placed in service by 1805 hours.


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The load drop was halted at 1820 hours at 115 MWe. At 1830 all valves that had been opened while cutting in "A" recombiner were closed. At 1900 the "B" off-gas filter was placed in service. At 1940 hours it was confirmed that the "B" SJAE rupture diaphragm was blown. The "A" recombiner was subsequently cut in with no problems.

Evaluation of the incident by the station will continue. Should any new information develop indicating the cause of the incident or preventative action, a follow-up letter will be submitted.

FAILURE DATA

The "A" off-gas filter is a grounded filter housing assembly, manufactured by the MSA Research Corporation. Similar explosions resulting in filter failures occurred on Unit-2 March 27, 1973 and on Unit-3 February 20, 1974.


B. B. Stephenson
Superintendent

BBS:smp

File/NRC