

LICENSEE EVENT REPORT

[PLEASE PRINT ALL REQUIRED INFORMATION]

CONTROL BLOCK 1 1 1 1 1 6

LICENSEE NAME 01 A L B R F 1	LICENSE NUMBER 0 0 - 0 0 0 0 0 0 - 0 0	LICENSE TYPE 4 1 1 1 1	EVENT TYPE 4 3
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CON'T 01	CATEGORY 57 58	REPORT TYPE T	REPORT SOURCE L	DOCKET NUMBER 0 5 0 - 0 2 5 9	EVENT DATE 0 1 0 4 7 7	REPORT DATE 7 7 - 7 7
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EVENT DESCRIPTION

02	See Attached Sheet	80
03		80
04		80
05		80
06		80

SYSTEM CODE 07 W B	CAUSE CODE E	COMPONENT CODE H T E X C H	PRIME COMPONENT SUPPLIER N	COMPONENT MANUFACTURER P 1 6 0	VIOLATION Y
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CAUSE DESCRIPTION

08	See Attached Sheet	80
09		80
10		80

FACILITY STATUS 11 G	% POWER 0 0 0	OTHER STATUS NA	METHOD OF DISCOVERY A	DISCOVERY DESCRIPTION Alarm and analysis of grab sample
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FORM OF ACTIVITY RELEASED 12 L	CONTENT OF RELEASE M	AMOUNT OF ACTIVITY 0.29 curies total	LOCATION OF RELEASE From RHRSW to Wheeler Reservoir
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PERSONNEL EXPOSURES

NUMBER 13 0 0 0	TYPE Z	DESCRIPTION NA
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PERSONNEL INJURIES

NUMBER 14 0 0 0	DESCRIPTION NA
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OFFSITE CONSEQUENCES

15	NA
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LOSS OR DAMAGE TO FACILITY

TYPE 16 Z	DESCRIPTION NA
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PUBLICITY

17	TV, Radio, Newspaper Releases
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ADDITIONAL FACTORS

18	See Attached Sheet
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19	(Empty line)
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8306240187 770117
PDR ADOCK 05000259
S PDR

NAME: _____ PHONE: _____

Identification of Occurrence

Liquid release from RHR service water heat exchanger 1A.

Conditions Prior to Occurrence

At 0645, 1/4/77, torus-to-drywell vacuum breaker FCV 64-28E remained in an open position following a routine surveillance test. Technical specifications governing this condition required the unit to be placed in a cold shutdown condition within 24 hours. Following a load reduction, unit 1 was scrammed from 420 MWe at 1328, and the unit was placed in the shutdown cooling mode of operation at 1940 hours using the 1A RHR heat exchanger.

Description of Occurrence

At approximately 2050, the radiation monitor on the RHR service water discharge line from 1A heat exchanger showed an increase in radiation levels. A sample of the heat exchanger service water effluent was taken at 2130 for analysis. This analysis, which was completed just prior to 0200, 1/5/77, showed that liquid waste effluent limits were exceeded. 1A RHR heat exchanger was removed from service at 0200 1/5/77; and 1C heat exchanger was placed in service for shutdown cooling. However, because of a communication misunderstanding, the shift engineer did not realize that allowable release limits had been exceeded. Apparently, the chemical laboratory analyst had given the operator both the plant warning value as well as the concentration actually released; and the shift engineer understood and logged in his journal that the release was at the plant warning value well within allowable release limits. (The license release limit for gross activity is $1\text{E}-7\mu\text{Ci/ml}$, but the plant has always observed a warning limit of $7\text{E}-8\mu\text{Ci/ml}$.) It was not until approximately 1000, 1/5/77, that plant management received indication that a release exceeding the license limit had occurred. The assistant plant superintendent, acting as the plant emergency director in the absence of the plant superintendent, initiated applicable portions of the plant radiological emergency plan. This resulted in notification of NRC and State of Alabama officials as well as appropriate TVA emergency personnel. Water sampling was initiated in the river at several locations below the plant.

Designation of Apparent Cause of Occurrence

The release occurred because of a leaking inner head gasket in the 1A heat exchanger. The release was not detected earlier because the operator did not notice the increased activity displayed on the recorder chart in the control room and because he did not acknowledge the annunciation received when the radiation monitor reached the alarm level. Had he recognized the alarm, procedures required him to stop the discharge of the liquid effluent stream. The four hours required for a sample analysis, while not excessive for a routine gross activity analysis, could have been improved had the analyst been aware of the urgency and given it his full attention.

Analysis of the Occurrence

Although the plant release exceeded license limits, the quantity released was so small that no adverse effect on the safety of the public was involved. Subsequent sampling analyses and computations revealed that the total amount of activity released was less than 0.289 curie. This is based on the assumption that the release was continuous between 1940 and 0200 hours while recorded information indicates the release did not commence until approximately 2100. The actual isotopes which exceed the limits contained in 10 CFR 20 are I-131 and I-133. Following the

release, 72 river samples were taken between the plant and a point 11 miles downstream, and none showed activity present above normal background. The most significant adverse aspect of this event is the combination of circumstances which permitted the release to continue over an extended period of time. Records indicate that the 1A RHR heat exchanger was satisfactorily leak tested on April 6, 1976, and had not been in service since. This, together with documentation of previous sampling whenever the heat exchanger had been in service, confirms that the leakage was not an existing condition and probably started after the heat exchanger had been in service for one hour on 1/4/77.

Corrective Action

Inspection reveals that the heat exchanger gasket leak occurred because stud bolts had become loose in service. In repairing the leak and replacing the gasket, locknuts have been installed on each stud bolt to preclude future loosening in service. This modification will be made to all plant RHR heat exchangers when they are opened in the future for maintenance or inspection. The operator failed to notice increasing recorded values of activity and the accompanying alarm. Plant effluent monitors have a history of indicating false values due to high background activity, and this may have contributed to this oversight. In addition, because the unit was in a shutdown condition, a number of abnormal annunciators were displayed because the plant annunciation system is designed to accommodate a unit in power operation. An evaluation will be made to provide a unique alarm for process radiation monitoring annunciators. A design change has been approved and material procurement is in progress to improve the reliability of plant liquid effluent monitors. It is anticipated that this revision will be accomplished on all three units prior to January 1, 1978. In addition, this event is being reviewed by all licensed operators to impress upon them the necessity for prompt action on the first indication of an abnormal condition. This retraining, which will begin immediately, will be completed prior to 2/1/77. Chemical laboratory sampling procedures are being revised to require that an isotopic analysis be conducted on initial effluent samples along with the gross activity analyses. This will reduce the time required to obtain meaningful results since an isotopic analysis can be made under normal conditions in approximately one hour. To preclude the possibility of misunderstanding, the results of the liquid effluent analyses which exceed limits will in the future be given to the shift engineer in a written as well as verbal form.

HJG:MCW
1/17/77



* 259/773

TENNESSEE VALLEY AUTHORITY FILE COPY
CHATTANOOGA, TENNESSEE 37401

January 17, 1977

Mr. Norman C. Moseley, Director
U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II
230 Peachtree Street, NW., Suite 1217
Atlanta, Georgia 30303



Dear Mr. Moseley:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 1 -
DOCKET NO. 50-259 - FACILITY OPERATING LICENSE DPR-33 - REPORTABLE
OCCURRENCE REPORT BPRO-50-259/773

The enclosed report is to provide details concerning liquid release from
RHR service water heat exchanger 1A. This report is submitted in accordance
with Browns Ferry Technical Specifications Section 6. This event occurred
on Browns Ferry Nuclear Plant unit 1.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

H. S. Fox
Director of Power Production

Enclosure (3)

CC (Enclosure):

Director (3)

Office of Management Information and Program Control
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Director (40)

Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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