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FACIL:50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana & 05000316
AUTH.NAME AUTHOR AFFILIATION
RISCHLING,J.L. Indiana & Michigan Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
Region 3, Chicago, Office of the Director

SUBJECT: LER 81-001/04T-0:on 810112,there was no flow through radiation monitor R-19 from steam generator 21.Caused by bad diaphragm in roto-meter flow regulator.Design change initiated to modify flow meters.

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American Electric Power System
INDIANA & MICHIGAN ELECTRIC COMPANY
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P.O. Box 458, Bridgman, Michigan 49106
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February 2, 1981

Mr. J.G. Keppler, Regional Director
Office of Inspection and Enforcement
United States Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Operating License DPR-74
Docket No. 50-316

Dear Mr. Keppler:

Pursuant to the requirements of the Appendix B Technical Specifications, the following report/s are submitted:

AEO 81-001/04T-0.

Sincerely,

D.V. Shaller
Plant Manager

/bab

cc: J.E. Dolan
R.S. Hunter
R.W. Jurgensen
R.F. Kroeger
R.W. Kilburn
E. Swanson/N. DuBry RO:III
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NRC FORM 366
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U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

CONTROL BLOCK: ☐☐☐☐☐☐ ① (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 | M I D C C 2 ② LICENSEE CODE | 0 0 - 0 0 0 0 0 - 0 0 ③ LICENSE NUMBER | 4 1 1 1 1 ④ LICENSE TYPE | ⑤ CAT

CON'T 0 1 | REPORT SOURCE L ⑥ | 0 5 0 0 0 3 1 6 ⑦ DOCKET NUMBER | 0 1 1 2 8 1 ⑧ EVENT DATE | 0 2 0 2 8 1 ⑨ REPORT DATE

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES ⑩

0 2 DURING NORMAL OPERATION, THE SG BLOWDOWN STARTUP FLASH TANK WAS IN SERVICE TO REDUCE
0 3 SECONDARY SYSTEM CHEMICAL CONTAMINATION FROM CONDENSER IN LEAKAGE. ON JAN. 22 IT WAS
0 4 DETERMINED THAT ON JAN. 12 AT APPROXIMATELY 2200 THERE HAD BEEN NO FLOW THROUGH RAD
0 5 MONITOR R-19 FROM NUMBER 21 S.G. THIS IS NON-CONSERVATIVE IN RESPECT TO APPENDIX "B"
0 6 T.S.2.4.2.G. THIS UNIT IS EXPERIENCING A SMALL PRIMARY TO SECONDARY LEAK. BLOWDOWN
0 7 WAS STOPPED ON JAN. 13, AT 0318 AND AT 0334 BLOWDOWN WAS AGAIN ESTABLISHED THROUGH
0 8 THE NORMAL BLOWDOWN TANK WHERE ADDITIONAL EFFLUENT RADIATION MONITORING WAS POSSIBLE.

0 9 | SYSTEM CODE M C ⑪ | CAUSE CODE E ⑫ | CAUSE SUBCODE X ⑬ | COMPONENT CODE I N S T R U ⑭ | COMP. SUBCODE X ⑮ | VALVE SUBCODE Z ⑯

⑰ LER/RO REPORT NUMBER | EVENT YEAR 8 1 | — | SEQUENTIAL REPORT NO. 0 0 1 | / | OCCURRENCE CODE 0 4 | REPORT TYPE T | — | REVISION NO. 0

ACTION TAKEN H ⑱ | FUTURE ACTION F ⑲ | EFFECT ON PLANT Z ⑳ | SHUTDOWN METHOD Z ㉑ | HOURS ㉒ 0 0 0 0 | ATTACHMENT SUBMITTED Y ㉓ | NPRD-4 FORM SUB. Y ㉔ | PRIME COMP. SUPPLIER N ㉕ | COMPONENT MANUFACTURER B 4 4 0 ㉖

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS ㉗

1 0 THE LOSS OF FLOW TO R-19 FROM NUMBER 21 STEAM GENERATOR WAS APPARENTLY DUE TO A BAD
1 1 DIAPHRAM IN THE ROTO-METER'S FLOW REGULATOR, MANUFACTURED BY BROOKS INSTRUMENT
1 2 DIVISION-MODEL NUMBER 1358CC2C1CAA. THE ATTACHED SUPPLEMENT EXPLAINS THIS EVENT
1 3 IN DETAIL.
1 4

1 5 | FACILITY STATUS E ㉘ | % POWER 0 9 9 ㉙ | OTHER STATUS ㉚ N/A | METHOD OF DISCOVERY B ㉛ | DISCOVERY DESCRIPTION ㉜ ROUTINE INSPECTION

1 6 | ACTIVITY RELEASED M ㉝ | CONTENT OF RELEASE M ㉞ | AMOUNT OF ACTIVITY ㉟ SEE CAUSE DESCRIPTION | LOCATION OF RELEASE ㊱ S. G. BLOWDOWN STARTUP FLASH TANK TO ATMOS

PERSONNEL EXPOSURES
1 7 | NUMBER 0 0 0 ㊲ | TYPE Z ㊳ | DESCRIPTION ㊴ N/A

PERSONNEL INJURIES
1 8 | NUMBER 0 0 0 ㊵ | DESCRIPTION ㊶ N/A

LOSS OF OR DAMAGE TO FACILITY ㊸
1 9 | TYPE Z ㊷ | DESCRIPTION N/A

PUBLICITY
2 0 | ISSUED N ㊹ | DESCRIPTION ㊺ N/A | NRC USE ONLY ☐☐☐☐☐☐☐☐☐☐☐☐

NAME OF PREPARER Jack L. Rischling

PHONE: 616-465-5901

GPO 917-926

ATTACHMENT TO LER #81-001/04T-0

SUPPLEMENTAL TO CAUSE DESCRIPTION

This incident was reported to Mr. E. Swanson of the NRC on January 22, 1981.

On January 22, 1981, it was determined that on January 12, at approximately 2200, there was no apparent flow through radiation monitor R-19 from number 21 steam generator. During normal operation, the blowdown effluent would also pass through the steam generator blowdown treatment demineralizers where radiation monitor R-24 is located between the second and third demineralizers. However, while investigating the flow meter problem, the steam generator startup blowdown flash tank was in service, thus making R-19 the only radiation monitor that was monitoring the blowdown effluent. The startup blowdown flash tank was in service to reduce secondary system chemical contamination from condenser inleakage.

As Unit 2 has been experiencing a primary to secondary leak, routine daily samples are taken for leak rate determination and effluent release quantification. The activity of the blowdown from the steam generator number 21 was known prior to the incident and the activity levels were lower than had been determined the previous several months. The startup blowdown flash tank was in service for 5 hours and 18 minutes, during which time the blowdown from only number 21 steam generator was unmonitored prior to release to the environment. Flow from the other three steam generators continued to be monitored during this time period. Releases were calculated based on data taken on January 12, 1981, and the following results obtained:

Parameter	Activity(μ Ci/cc)	Release Concentration(μ Ci/cc)	Total Release (m Ci)
Gross beta gamma	1.94×10^{-5}	2.04×10^{-9}	1.75
Tritium	5.62×10^{-6}	6.07×10^{-10}	0.506
Iodine-131	4.82×10^{-7}	5.20×10^{-11}	0.043

These results are considered conservative as the use of the startup blowdown flash tank has a dilution effect on all parameters by discharging larger blowdown volumes and replacing it via a high makeup flow. This is evident by data taken at 0115 hours on January 13, 1981, during the release, which shows all activities had decreased. These samples were part of the plants routine daily analysis program. The results are listed below:

Parameter	Activity(μ Ci/cc)1-12-81	Activity(μ Ci/cc) 1-13-81
Gross beta-gamma	1.94×10^{-5}	1.33×10^{-5}
Tritium	5.62×10^{-6}	5.37×10^{-6}
Iodine - 131	4.82×10^{-7}	3.13×10^{-7}

During the release, no other alarms or indications of increased primary to secondary leakage were noted. Radiation monitors R-15, steam jet air ejector, and R-33, gland seal exhaust, gave no indication of increased activity.

Estimates of releases were made assuming a constant 500 gallons per day primary to secondary leak rate with coincident 1% failed fuel in the core and using the worst case meteorological data. It was also assumed that all activity remains in solution until reaching the startup blowdown flash tank. Under these hypothetical worst case conditions, the following exposure rates would exist at the site boundary:

8.0×10^{-7} R/hr whole body from noble gases

3.0×10^{-4} R/hr from iodines with a thyroid dose rate of 2.5×10^{-4} R/hr.

These estimates would yeild an integrated whole body dose of 0.0047 mR and an integrated thyroid dose of 1 mR. The estimated release under these hypothetical conditions would be 0.023% of technical specifications or noble gases and 13% of technical specifications for radioiodines. The summation of all radioiodines in the liquid release would be 46.5% of technical specifications.

In an effort to prevent reoccurrence of this problem, a design change (RFC#12-1825) was initiated to modify the flow meters to the radiation monitor, R-19, to include a loss of flow alarm. In addition, a departmental standing order, TSO-021, was written to provide accurate responses if the condition were to exist again prior to completion of the design change. This information has been distributed to all plant departments.

Although the incident allowed unmonitored effluent to be released to the environment, sufficient data is available to indicate that during the release the levels of radioactivity were low enough not to pose a threat to the health and safety of the public.