

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

1	M	I	D	C	C	2	2	0	0	0	0	0	0	0	0	0	0	0	0	3	4	1	1	1	1	4	5				
LICENSEE CODE						LICENSE NUMBER						LICENSE TYPE						CAT 58													
1	L	6	0	5	0	0	0	3	1	6	7	1	1	2	1	7	8	8	1	2	1	2	7	8	9						
REPORT SOURCE						DOCKET NUMBER						EVENT DATE						REPORT DATE													
EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)																															
WITH RHR IN OPERATION, LEAKAGE WAS OBSERVED COMING FROM A FEW OF THE UPPER CONTAINMENT SPRAY NOZZLES. IT WAS DETERMINED THAT THE LEAKAGE RESULTED FROM INCOMPLETE CLOSURE OF VALVES. WHILE INVESTIGATING THIS PROBLEM, IT WAS OBSERVED THAT NO LEAKAGE WAS DISCHARGING FROM THE LOWER CTS HEADER NOZZLES, INDICATING FLOW BLOCKAGE IN THE LOWER SPRAY HEADER. FURTHER INVESTIGATION REVEALED THAT THE CHECK VALVES IN THE LOWER CTS HEADER WERE INSTALLED BACKWARDS. ON 11-28-78 AN ENGINEERING EVALUATION INDICATED THAT THIS EVENT REQUIRED PROMPT NOTIFICATION.																															
9	S	A	11	D	12	Z	13	V	A	L	V	E	X	14	C	15	A	16													
SYSTEM CODE				CAUSE CODE				CAUSE SUBCODE				COMPONENT CODE				COMP. SUBCODE				VALVE SUBCODE											
17	7	8	1	0	9	0	1	0	1	0	1	0	1	0	1	0	1														
LER/RO REPORT NUMBER				EVENT YEAR				SEQUENTIAL REPORT NO.				OCCURRENCE CODE				REPORT TYPE				REVISION NO.											
18	X	19	X	20	Z	21	Z	22	0	0	0	0	23	Y	24	N	25	A	26	W	27	0	28	3	29	0					
ACTION TAKEN				EFFECT ON PLANT				SHUTDOWN METHOD				HOURS				ATTACHMENT SUBMITTED				NPRD-4 FORM SUB.				PRIME COMP. SUPPLIER				COMPONENT MANUFACTURER			
CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)																															
VALVES CTS-127E AND CTS-127W ARE THE FINAL CHECK VALVES INSIDE THE CONTAINMENT TO THE LOWER CONTAINMENT SPRAY NOZZLES FROM THE EAST AND WEST CONTAINMENT SPRAY HEAT-EXCHANGERS. WITH THESE VALVES INSTALLED BACKWARDS, THERE WAS NO CAPABILITY TO PROVIDE SPRAY WATER TO THE LOWER CONTAINMENT SPRAY HEADERS IN THE EVENT OF AN ACCIDENT. (SEE SUPPLEMENT)																															
5	G	28	0	0	0	29	NA	30	A	31	OPERATOR OBSERVATION	32																			
FACILITY STATUS				% POWER				OTHER STATUS				METHOD OF DISCOVERY				DISCOVERY DESCRIPTION															
6	Z	33	Z	34	NA	35	NA	36																							
ACTIVITY RELEASED				CONTENT OF RELEASE				AMOUNT OF ACTIVITY				LOCATION OF RELEASE																			
7	0	0	0	37	Z	38	NA	39																							
PERSONNEL EXPOSURES				TYPE				DESCRIPTION																							
8	0	0	0	40	NA	41																									
PERSONNEL INJURIES				NUMBER				DESCRIPTION																							
9	0	0	0	42	NA	43																									
LOSS OF OR DAMAGE TO FACILITY				TYPE				DESCRIPTION																							
9	Z	42	NA	43																											
PUBLICATION				DESCRIPTION				ISSUED																							
0	N	44	NA	45																											

PAGE 1 OF 2

ATTACHMENT TO LER#78-090/01T-0

SUPPLEMENT TO CAUSE DESCRIPTION

THESE VALVES WERE REMOVED AND REINSTALLED CORRECTLY ON NOVEMBER 22, 1978, RETURNING THE LOWER CONTAINMENT SPRAY HEADER TO AN OPERABLE STATUS.

INVESTIGATION REVEALED THAT THESE VALVES WERE INSTALLED CORRECTLY DURING THE CONTAINMENT INTEGRATED LEAK RATE TEST, BUT WERE REMOVED FOR THE INSTALLATION OF TEMPORARY PIPING TO THE CONTAINMENT RECIRCULATION SUMP. THIS PROVIDED A FLOW PATH FOR TESTING THE CTS PUMPS DURING PREOPERATIONAL TESTING. AFTER THE COMPLETION OF THE CTS SYSTEM TESTING, THE TEMPORARY PIPING WAS USED IN FLUSHING THE CONTAINMENT RECIRCULATION SUMP. THE TEMPORARY PIPING WAS THEN REMOVED AND THE CTS CHECK VALVES REINSTALLED INCORRECTLY BY CONSTRUCTION PERSONNEL, WITH WORK COMPLETED ON DECEMBER 12, 1977.

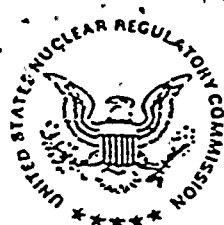
AN EVALUATION WAS MADE BY THE AMERICAN ELECTRIC POWER SERVICE CORPORATION CONSIDERING THE POSTULATED EFFECTS OF THIS EVENT. CONSIDERATION WAS GIVEN TO: CONTAINMENT PRESSURE RESPONSE; CONTAINMENT ISOLATION; AND CTS IODINE REMOVAL AND ITS EFFECT ON OFF-SITE DOSES. ALL EVALUATIONS CONSIDERED THE SINGLE FAILURE CRITERIA AS DEFINED IN 10CFR50, APPENDIX A.

ALTHOUGH THE SPRAY SYSTEM WAS NOT REQUIRED DURING THIS PERIOD, THIS ANALYSIS CONCLUDED THAT THE SUBJECT CONDITION WOULD NOT HAVE RESULTED IN A SIGNIFICANT HAZARD TO THE HEALTH AND SAFETY OF THE PUBLIC, HAD AN ACCIDENT OCCURRED.

CAUSE DESCRIPTION (CONT.)

TO PREVENT RECURRENCE, SEVERAL AREAS WERE EVALUATED:

- 1) A DESIGN CHANGE ELIMINATING THE NECESSITY OF REMOVING THESE VALVES FOR TESTING PURPOSES IN THE FUTURE IS PRESENTLY IN PROGRESS.
- 2) THE EXISTING SURVEILLANCE PROCEDURE VERIFIES AIR FLOW THROUGH THESE CHECK VALVES. THE PROCEDURE OBJECTIVE WILL BE CHANGED TO SPECIFICALLY INCLUDE VERIFICATION OF PROPER FLOW THROUGH ALL OF THE FINAL CONTAINMENT SPRAY CHECK VALVES.
- 3) A REVIEW OF PLANT MANAGER'S INSTRUCTIONS WAS MADE AND IT WAS VERIFIED THAT PROCEDURAL REQUIREMENTS DO NOW EXIST REQUIRING OPERABILITY VERIFICATION WHICH REDUCES THE LIKELIHOOD OF SIMILAR EVENTS DURING NORMAL OPERATION, AS WELL AS INSTANCES WHERE CONSTRUCTION PERSONNEL ARE INVOLVED.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

C. J. DeBevec

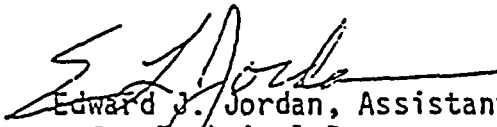
MAR 6 1979

MEMORANDUM FOR: R. S. Boyd, Director, DPM, NRR
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FROM: E. L. Jordan, Assistant Director for Technical Programs,
Division of Reactor Operations Inspection, Office of
Inspection and Enforcement

SUBJECT: DRAFT CIRCULAR - INFORMATION SUPPLEMENTING PREVIOUS
CIRCULAR REGARDING PROPER INSTALLATION OF CHECK VALVES

The enclosed draft IE Circular is transmitted for your review and comment. Comments received by March 19, 1979, will be considered in the final version.


Edward J. Jordan, Assistant Director
for Technical Programs
Division of Reactor Operations
Inspection
Office of Inspection and Enforcement

Enclosure:
Draft Circular

CONTACT: C. J. DeBevec, IE
49-28180

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

March , 1979

IE Draft Circular No. 79-

INFORMATION SUPPLEMENTING PREVIOUS CIRCULAR REGARDING PROPER
INSTALLATION OF CHECK VALVES

Description of Circumstances:

Following issuance of IE Circular No. 78-15, "Tilting Disk Check Valves Fail to Close with Gravity in Vertical Position," on July 20, 1978, an additional event occurred on November 21, 1978 at the D.C. Cook Unit 2 facility involving a reversed installation of check valves. The reversed installation was detected by a review of system performance following an accidental operation of the containment spray system.

This event resulted from the reinstallation of check valves in a backward orientation after testing on December 12, 1977 of portions of the containment spray system. The orientation of valves was corrected on November 22, 1978. The licensee reported that his investigation revealed that the valves were initially installed correctly, but were removed for the installation of temporary piping associated with preoperational testing of the containment spray system. When the temporary piping was removed the check valves were reinstalled backwards. These check valves are located in the lower containment spray system header, and as designed can not be flow tested. The licensee analysis of the consequences of the improper

installation concluded that the condition would not have resulted in a significant hazard to the health and safety of the public had an accident occurred because only the lower header of the spray system was affected.

Recommended Actions for Licensee's Consideration:

All holders of operating licenses or construction permits should be particularly aware of the potential for malfunction or making inoperable safety-related systems by improper installation of check valves. This action may be implemented through the following considerations:

1. Tilting disk check valve installations should be inspected to verify that all such valves in critical systems are installed only in the orientation specified by the manufacturer.
2. Where system maintenance requires the removal and reinstallation of check valves, procedural requirements should include verification of proper orientation and where possible a verification of proper operational function of the system after the maintenance. In instances in which a functional test of the system is not possible, additional quality assurance measures should be considered to further assure system operability.

IE Draft Circular No. 79-

March , 1979

No written response to this Circular is required. If you require additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

Enclosure:
List of IE Circulars
Issued in the Last
Twelve Months

JUN 22 1979