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SUBJECT: Forwards response to Generic Ltr 91-13, "Request for Info Related to Resolution of Generic Issue 130, 'Essential SWS Failures at Multi-Unit Sites' Pursuant to 10CFR50.54(F)."

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AEP:NRC:1104C

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
GENERIC LETTER 91-13, "REQUEST FOR INFORMATION RELATED TO THE RESOLUTION OF GENERIC ISSUE 130, 'ESSENTIAL SERVICE WATER SYSTEM FAILURES AT MULTI-UNIT SITES' PURSUANT TO 10 CFR50.54(F)"

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

March 13, 1992

Dear Dr. Murley:

Generic Letter 91-13 was issued by the NRC on September 19, 1991. This Generic Letter informs affected licensees and applicants of the technical findings resulting from the NRC resolution of Generic Issue 130, "Essential Service Water System Failures at Multi-Unit Sites." It also requests information from licensees and applicants at affected multi-unit sites relating to the applicability of certain findings regarding their facilities. We have reviewed the Generic Letter from both a licensing and probabilistic risk assessment perspective and our responses are contained in the attachment to this letter.

This letter is submitted pursuant to 10CFR50.54(f) and, as such, an oath of affirmation is also attached.

Sincerely,

E. E. Fitzpatrick
Vice President

tjw

Attachments

A001

cc: D. H. Williams, Jr.
A. A. Blind - Bridgman
J. R. Padgett
G. Charnoff
NFEM Section Chief
A. B. Davis - Region III
NRC Resident Inspector - Bridgman

STATE OF OHIO)
COUNTY OF FRANKLIN)

E. E. Fitzpatrick, being duly sworn, deposes and says that he is the Vice President of licensee Indiana Michigan Power Company, that he has read the foregoing response to Generic Letter 91-13 and knows the contents thereof; and that said contents are true to the best of his knowledge and belief.

E E Fitzpatrick

Subscribed and sworn to before me this 13th

day of March, 1992.

Rita D. Hill
NOTARY PUBLIC

RITA D. HILL
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES 6-28-94

ATTACHMENT TO AEP:NRC:1104C

RESPONSE TO GENERIC LETTER 91-13

The purpose of Generic Letter (GL) 91-13 is to inform licensees and applicants of the technical findings resulting from the NRC's resolution of GI-130 and to request information from licensees and applicants at affected multi-unit sites relating to the applicability of these findings to their facilities. The NRC's findings are presented in NUREG-1421, "Regulatory Analysis for the Resolution of Generic Issue 130: Essential Service Water System Failures at Multi-Unit Sites." The NRC's findings are based largely on studies conducted at Brookhaven National Laboratory (BNL). These studies are documented in NUREG/CR-5526.

The BNL studies examined a generic essential service water (ESW) system using probabilistic risk assessment (PRA) techniques. This approach yielded the dominant contributors to ESW failure and provided the basis for examining ESW recovery actions (recovery from the dominant failures).

American Electric Power Service Corporation also employed PRA techniques during the Level I study (internal events) for the Donald C. Cook Nuclear Plant Individual Plant Examination (IPE) project. As part of the Level I effort, the ESW system unavailability and a loss of ESW initiating event were analyzed. The loss of ESW accident event led to a loss of reactor coolant pump seal cooling and ultimately a small LOCA through the pump seals (if not mitigated). Similar to the BNL studies, the IPE only modeled recovery actions for the most likely failure scenarios in the ESW system.

Overall, the loss of ESW accident event was not found to be a dominant accident in the IPE project for Cook Nuclear Plant. The core damage frequency (CDF) for the BNL loss of ESW initiating event was 1.52E-04, whereas this value was 6.04E-07 for the Cook Nuclear Plant IPE. The IPE results for Cook Nuclear Plant will be formally transmitted to the NRC in April, 1992. When comparing the Cook Nuclear Plant ESW system to that modeled by BNL, a few important differences were noted:

1) The BNL model included cooling towers and associated valves, whereas Cook Nuclear Plant draws cooling water from Lake Michigan. Also, Cook Nuclear Plant is flood protected to a level of 11 feet above maximum (monthly mean) high lake water level (USFAR, Chapter 10, Section 10.6.2), thus making a loss of ESW pumps due to a water source flooding event very unlikely (addressed in NUREG/CR-5526). These two features improve the availability of the ESW intake structure at Cook Nuclear Plant over that examined by BNL in NUREG/CR-5526. Intake structure unavailabilities accounted for 35% of the loss of ESW operating events examined by BNL (NUREG/CR-5526, page 10).

2) The BNL model addressed the ESW unit-to-unit cross-tie valves as initially being shut. These valves could either fail to open mechanically or due to operator error (failure to open the cross-ties). The Cook Nuclear Plant ESW systems operate with the cross-tie valves open (see Figure 1), even when shutdown. This allows the standby pump train within each ESW header (which is in the opposite unit) to provide flow to that header should the operating pump train fail. Low ESW header pressure automatically starts a standby ESW pump. The emergency and normal operating procedures for the ESW systems are written assuming that the cross-tie valves are open. The ESW surveillance procedures are conducted with the cross-tie valves closed, but return the cross-ties to the open position upon completion of testing (two-person verified).

Items 1) and 2) above both contribute to a lower loss of ESW initiating event frequency at Cook Nuclear Plant and result in the ESW systems being more available than the ESW system modeled by BNL. (The respective loss of ESW initiating event frequencies are 3.73E-05 for Cook Nuclear Plant and from 1.0E-03 to 1.0E-02 for the BNL analysis.) As noted in Item 2), the loss of ESW procedures at Cook Nuclear Plant (1 & 2 - OHP 4023.019.001) are written assuming that the ESW cross-tie valves are open. Checking (and correcting) cross-tie valve position for proper alignment is part of these procedures.

As shown in Figure 1, the ESW system also cools the component cooling water system (CCW). The CCW system, in turn, cools the high pressure charging pumps, which also provide cooling to the reactor coolant pump (RCP) seals. Manual cross-tie valves exist between the CCW systems at Cook Nuclear Plant. However, it was discovered during the development of the Cook Nuclear Plant IPE that the use of the CCW cross-tie valves was not specifically included in the loss of CCW procedures (1 & 2 OHP 4023.016.001). The CCW cross-ties are, however, included in the Cook Nuclear Plant emergency remote shutdown procedures (1 & 2 - OHP 4023.001.001). Including the CCW cross-tie valves in the loss of component cooling water procedures will be considered as one of the IPE program enhancements. This action to supply CCW from the opposite unit in the event of a loss of ESW to one unit further reduces the effects of this postulated accident at Cook Nuclear Plant.

Also addressed as a concern affecting ESW availability within NUREG/CR-5526 is the partial degradation of ESW due to biological fouling and/or sediment deposition. Such issues were addressed for Cook Nuclear Plant in its response (AEP:NRC 1104) to Generic Letter 89-13 (Service Water System Problems Affecting Safety Related Equipment). Cook Nuclear Plant has specifically implemented the actions outlined in AEP:NRC:1104 to keep the intake structure clear, keep the ESW system and ESW-serviced loads clear of plugging, and implement chlorination procedures, when needed, to prevent the spread of microbiological growth in the ESW systems. Since that time, Cook Nuclear Plant has also implemented procedures to prevent

time, Cook Nuclear Plant has also implemented procedures to prevent zebra mussel plugging of the ESW systems (12-THP 6020 ENV.101, "Mollusk Biofouler Sampling and Analysis" and 12-THP 6020 ENV.107, "Application of Biocide for Zebra Mussel Control in the Essential Service Water System").

In addition to the above, a comparison of the ESW technical specifications currently in place at Cook Nuclear Plant with those suggested by the NRC in Generic Letter 91-13 reveals that the Cook Nuclear Plant technical specifications already cover the intent of the NRC's proposed technical specifications. The NRC technical specifications are designed, in part, to ensure that adequate cross-unit ESW cooling exists to support an operating unit (Modes 1-4) from a shutdown unit (Modes 5-6). Per Cook Nuclear Plant ESW technical specifications, cross-unit ESW cooling is ensured to an operating unit (Modes 1-4) from the opposite unit regardless of the mode of operation of the opposite unit. This requirement was implemented to address Appendix R concerns. This technical specification feature, combined with the fact that Cook Nuclear Plant operates with the ESW cross-tie valves open, envelopes the intent of the NRC proposed ESW technical specifications.

In conclusion, the proposed modifications identified in Generic Letter 91-13 would not appreciably reduce core damage risk at Cook Nuclear Plant because:

1) The initiating event frequency for a loss of ESW event at Cook Nuclear Plant is very low (3.73E-05) compared to the initiating event frequencies calculated by BNL (1.0E-03 to 1.0E-02 range, NUREG-5526, Table 4.3b).

2) The current loss of ESW procedures at Cook Nuclear Plant include steps to verify the unit cross-tie valves open.

3) The Cook Nuclear Plant IPE Level I results show that a loss of ESW is not a significant contributor to core damage risk.

4) The current ESW technical specifications, in conjunction with the operating philosophy to maintain ESW cross-tie valves open, meet the intent of the proposed technical specifications and thus account for any reduction to core damage risk.

5) The IPE program will recommend that the CCW unit cross-ties be specifically included in the loss of CCW procedures. This would be effective in mitigating a loss of ESW to one unit.

Based on the above, the intent of Generic Letter 91-13 (i.e., to ensure a highly reliable ESW system) is currently being met at Cook Nuclear Plant and no further action is planned to modify plant procedures or technical specifications pursuant to the Generic Letter recommendations.

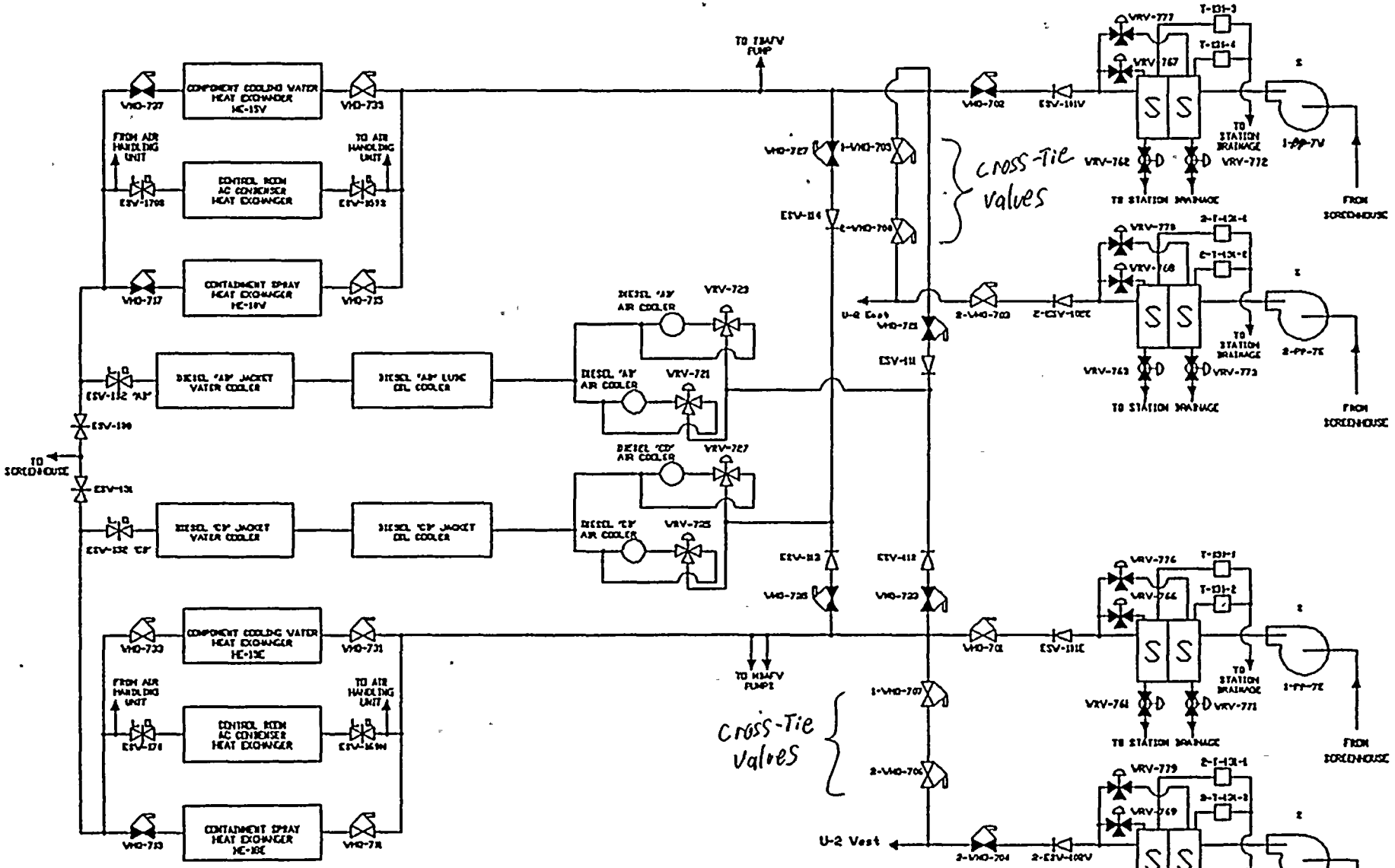

FIGURE 1
DONALD C. COOK NUCLEAR PLANT
ESSENTIAL SERVICE WATER SYSTEM
SIMPLIFIED FLOW DIAGRAM

NOTES
1. VALVE NOTATION DEFINITIONS
   ○ L. O. = LOCKED OPEN

REFERENCE DRAWINGS