

November 17, 2000

MEMORANDUM TO: John A. Grobe, Director
Division of Reactor Safety
Region III

FROM: Suzanne C. Black, Deputy Director */RA/*
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: DONALD C. COOK (D. C. COOK), UNITS 1 AND 2 - TASK INTERFACE
AGREEMENT (TIA) 2000-12 - EVALUATION OF THE ENGINEERED
SAFETY FEATURES SAFEGUARDS TEST CABINET (TAC NOS. MA9327
AND MA9328)

By memorandum dated June 8, 2000, Region III requested technical assistance from the Office of Nuclear Reactor Regulation (NRR) in evaluating whether a failure in a redundant engineered safety features (ESF) safeguards test cabinet (STC) could prohibit operation of an ESF actuation circuit in response to a valid ESF signal.

Specifically, Region III requested resolution of the following issues:

Is it acceptable to call an undetected failure of a K800 test relay contact the single-failure that the licensee assumes to occur in the accident analysis, or is it necessary to assume a separate single-failure?

Attached is the NRR staff safety evaluation. Based on the staff's review, the staff found that the failure of a K800 relay in the safeguard test circuitry is not a non-detectable failure. A failure of a K800 relay can be detected and its failure will not affect more than one ESF train operation. Therefore, a failure of a K800 relay will not prohibit the proper operation of an ESF actuation circuit in response to a valid ESF signal.

A preliminary E-mail response was provided to Region III on June 12, 2000. This completes NRR's review and evaluation efforts under TIA 2000-12 and TAC Nos. MA9327 and MA9328. If you have any questions regarding this issue, please contact J. Stang of my staff at (301) 415-1345.

Docket Nos. 50-315 and 50-316

Attachment: Safety Evaluation

cc w/att: W. Lanning, Region I
C. Casto, Region II
A. Howell, Region IV

CONTACT: J. Stang, NRR
(301) 415-1345

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

IN RESPONSE TO TASK INTERFACE AGREEMENT 2000-12 REGARDING

ENGINEERED SAFETY FEATURES SAFEGUARDS TEST CABINET

FOR D. C. COOK NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 BACKGROUND

During the week of June 5, 2000, Region III conducted an inspection at D. C. Cook to determine whether a failure in the redundant engineered safety features (ESF) safeguards test cabinets (STC) could prohibit the proper operation of an ESF actuation circuit in response to a valid ESF signal. The inspection identified that a failure of the majority of components within the STC would have no effect on ESF circuit operation; however, noticeable exceptions included the main steam isolation circuits and feed pump turbine trip circuits. As a result of the above inspection finding, Region III requested the Office of Nuclear Reactor Regulation (NRR) review the following:

“Is it acceptable to call an undetected failure of a K800 test relay contact the single-failure that the licensee assumes to occur in the accident analysis, or is it necessary to assume a separate single-failure?”

2.0 EVALUATION

Institute of Electrical and Electronics Engineers' Standard 603-1998, Section 5.1, has defined the “single-failure criterion” in part as “the safety system shall perform all safety functions required for a design basis event in the presence of any single detectable failure within the safety systems concurrent with all identifiable but non-detectable failures....” Therefore, a non-detectable failure itself is not assumed as the single-failure.

The staff has reviewed the safeguard “block testing” description and the wiring diagrams and found that there is a white test lamp on the safeguards test cabinet that provides an indication on the status of a K800 relay. Therefore, the failure of a K800 relay is detectable. There is no design deficiency of the safeguard circuitry. The licensee could verify the status of a K800 relay by a proper procedure. The K800 relay is in the test circuitry, not in the ESF actuation circuitry. A failure in a K800 relay will not affect the operation of the ESF actuation circuits.

ATTACHMENT

3.0 CONCLUSION

Based on its review, the staff found that the failure of a K800 relay in the safeguard test circuitry is not a non-detectable failure. A failure of a K800 relay can be detected and its failure will not affect more than one ESF train operation. Therefore, a failure of a K800 relay will not prohibit the proper operation of an ESF actuation circuit in response to a valid ESF signal, such as the main steam isolation function or the feed pump turbine trip function. The licensee's assumption on a K800 test relay contact failure as a single-failure in the accident analysis is acceptable.

Principal Contributor: H. Li

Date: November 17, 2000