
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.: 456-8566
SRP Section: 09.05.01 – Fire Protection Program
Application Section: 9.5.1 Fire Protection
Date of RAI Issue: 04/05/2016

Question No. 09.05.01-41

In its response to RAI 09.05.01-39 the applicant stated

“The final FHA and FSSA is to be performed considering the effects of fire-induced spurious actuations that may result from heat or fire damage to digital I&C cabinets, if the external connections to those cabinets are made via fiber optic cables.”

The staff noted that in the applicant’s response, there is no mention of the approach that would be used in order to perform the final FHA and FSSA when considering the effects of fire-induced spurious actuations that may result from heat or fire damage to digital I&C cabinets, if the external connections to those cabinets are made via fiber optic cables.

The applicant is requested to:

1. Describe the approach that will be used to evaluate the effects from spurious actuations that may be caused by heat from a fire inside or nearby cabinets that contain digital signal processing circuitry, if the external connections to those cabinets are made via fiber optic cables.
2. Describe any defense in depth measures that are provided to minimize the possibility of damage to circuitry inside cabinets or mitigate the consequences of a spurious actuation, should one occur.

Response

Fire-induced spurious operation analysis was performed in accordance with RG 1.189, Rev.2. For the spurious operation analysis, all cables including fiber optic cables are used as input data. If a cable that is expected to cause a spurious operation is a fiber optic cable, the cable was considered to be “OK, AS IS” without effect due to fire as a result of the analysis. Therefore no further fire protection is needed since a fire is considered to be able to interrupt the signal

through a fiber optic cable, but it cannot cause a spurious signal in the fiber optic cable, since a fiber optic cable greatly reduces the likelihood of hot shorts and spurious actuations.

All fiber optic cables are considered for spurious operation analysis, and the fiber optic cable is screened out based on the reasons stated above. If a concern about spurious operation by fiber optic cables still remains at the final FHA and FSSA phase, fiber optic cables will be evaluated in accordance with RG 1.189, Rev.2 or another methodology, which is recommended by the NRC.

Impact on DCD

There is no impact on the DCD.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical or Environmental Report.