
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.: 458-8569
SRP Section: 09.01.02 – New and Spent Fuel Storage
Application Section: 9.1.2
Date of RAI Issue: 04/13/2016

Question No. 09.01.02-51

In RAI 79-7990, Question 9.1.2-3, the staff requested the applicant to include in the DCD the design description that demonstrates that the new fuel storage pit (NFSP) drain system is capable of handling the maximum flow from the rupture of the largest water pipe in the area; therefore preventing conditions that may lead to an unintentional criticality event.

The applicant stated that there is no piping in the upper area of the NFSP and that the top of the NFSP is provided with a curb, with a height of approximately 4 inches, which would deny water from going into the pit.

The staff evaluated the applicant's response and determined that additional information is needed since the response did not provided the sizing criteria (drain size and maximum design flow) for the drainage system as requested in the original RAI. The applicant response states that there are no pipes located in the NFSP, but it does not address pipes located nearby whose failure could still spill water into the pit (such as fire protection piping).

The applicant is requested to:

- a. provide the sizing criteria (drain size and maximum design flow) for the drainage of the NFSP. Even if there are no pipes in the NFSP vicinity this information must be provided.
- b. consider any pipes nearby the NFSP (such as fire protection piping) that could fail and spill water that could reach the NFSP, and how the NFSP drainage system together with the curb design would work to prevent fluid in the pit from reaching the bottom of the fuel assemblies.

Response

Generated flow from the fire protection system located nearby the new fuel storage area is estimated at approximately 56 gpm and three 4 inch floor drains are installed at the working

floor outside the new fuel storage pit. It is expected that the flood height caused by the fire protection system would be less than 1 inch. (Refer to the below table.)

For information, the flow rate through the floor drains is based on Fire Protection Handbook 15th Edition, NFPA, 1981, tests for typical floor drains having 4 inch diameter outlets.

Depth of Water (inch)	Discharge flow rate (gpm)
1	33
2	71
3	132
4	188
5	218
6	245

The height of fuel bottom in the new fuel storage racks is approximately 8.25 inch from the NFSP bottom. In case that the fluid from the fire protection system inflows directly inside the pit, the flood height is expected to be less than 2 inches because a 4 inch drain pipe is installed in the new fuel storage pit.

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.