



TELECOPY

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GE NUCLEAR ENERGY
REGULATORY OPERATIONS
12300 TWINBROOK PARKWAY SUITE 315
ROCKVILLE MD 20852

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Here are the Mark-up's
for Jeff Holmes

FROM: Alan Beard PHONE: 770-5985

23A6100 Rev. 3

ABWR

Standard Safety Analysis Report

supplied with floor drains to route leakage to the basement floor so that control or computer equipment is not subjected to water.

Maximum flooding may occur from leakage in a 700A service water line at a maximum rate of $12.0 \text{ m}^3/\text{min}$. Alarms (two-out-of-four logic) have been installed inside the RCW/RSW¹ exchanger room to warn operators of a flood. The first alarm is 400 mm above the basemat. It will warn the operators of flooding in a division. In the case of a RSW piping failure, a second set of alarms (two-out-of-four logic) are located 1500 mm above basemat. This alarm will only sound in the event of a RSW piping failure inside the control building. The level sensors are powered from their respective divisional Class 1E power supply. These sensors send signals to the corresponding divisions of the RSW systems indicating flooding in that division of the C/B. This signal automatically closes isolation valves, stops the pumps, and alarms the operators in the MCR. The expected release of a service water leak is limited to line volume plus 1500 mm depth of water in a division. Water will be contained inside a division at the bottom level of the control building. A maximum of 5.0m of water is expected assuming 2 km of service water piping out to UHS pump house. Watertight doors will confine the water to a single division.

Insert AA
from March, 7
1994

The failure of a cooling water line in the mechanical rooms of the Control Building may result in a leak of $0.6 \text{ m}^3/\text{min}$. Early detection by control room personnel will limit the extent of flooding. Total release from the chilled water system will be limited to line inventory and surge tank volume, spillage of more than 6 m^3 is unlikely. Elevation differences and separation of the mechanical functions from the remainder of the Control Building prevent propagation of the water to the control area.

Flooding events that may result from the failure of the fire fighting systems within the control building are directed to the basement by the floor drain system.

On all floors, except the basement, water sensitive equipment, outside the control room, will be raised at least 200 mm off the floor to protect them in case of water intrusion due to manual firefighting or other flooding event on their floor. On the basemat the water sensitive components of the RCW pumps will be kept at least 400 mm off the floor for their protection. In the control room the raised computer floor prevents intrusion of water from areas outside the MCR. There are no sprinkler systems in the Control Building. Hose and standpipes are located in the corridors. Service equipment rooms may build up limited water levels from either service water, cooling water, or chilled water leaks, but elevation differences prevent intrusion of water into control areas. Control room responses to those various levels of flooding may extend from system isolation and correction to reduction of plant load or shutdown, but control room capability is not compromised by any of the postulated flooding events.

Replace
with
insert new
paragraph

March 7, 1994

Insert AA to Section 3.4.1.1.2.2

Manual fire fighting in the Control Building with 2 hand held hoses at $0.57 \text{ m}^3/\text{m}$ each ($1.14 \text{ m}^3/\text{m}$ total) ultimately results in the accumulation of water in the basement. The accumulation of water from 1 hour of fire suppression will not affect water sensitive safety-related equipment in the basement which are located at least 400 mm above the floor. Even in the unlikely event that fire suppression activities extend beyond 1 hour there is a substantial period of time before safety-related equipment may be effected. Furthermore, the Division "A" RSW/RCW heat exchanger room in the basement is separated by water tight barriers from the fire water accumulation in the other two divisions and would remain free of water damage and enable the reactor to be shutdown safely.

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to burn out on its own without spreading to other areas. Alternatively, if the fire brigade is required to fight the fire manually the elevated entries into the room can accommodate approximately 30 minutes of additional water/foam application from 2 hand held lines (0.47m³/min per hose) before reaching the lowest door opening. The lowest door opening to these rooms are the exterior equipment doors which could be opened if fire fighting activities necessitate so that any excess water, foam, or diesel fuel would spill outside the building and not spread to other parts of the reactor building.

insert A

- (2) The Control Room Complex has a raised floor with a subfloor area which is used for routing of cables from the Control Room cabinets, panels, and the divisional electrical rooms. Divisional separation of the subfloor cabling is maintained per the requirements of IEEE 384. The subfloor area will include fire detection capability. The subfloor area will not contain a fire suppression system as recommended by the BTP (BTP CMEB 9.5-1, Section 7b).

Justification: Fire Hazard Analysis section 9A.4.2.4.1, item 12 describes why the subfloor area is considered to be low risk fire area. In addition, the effectiveness of a permanently installed fire suppression system in the subfloor area is limited due to the small vertical space and the physical separation between the subfloor and the Control Room. Since the Control Room is continuously manned, manual fire suppression activities can be started quickly once it has been determined that there is a fire in the subfloor area. There are no transient combustibles stored in this area during normal activities to increase the severity of a possible fire. The characteristics of the subfloor cables are such that the probability of a fire ignition are very low and any fire that were to occur would be self-extinguishing or very slow to spread. Since fire resistant cables are required the amount of water needed to extinguish fire in the subfloor is relatively small. Any water that is introduced into the subfloor area can be removed by temporary sump pumps. In the event that a fire in the Control Room were to require evacuation, the Division I and II Remote Shutdown Panels enable the operators to bring the plant to a safe shutdown.

insert B

- (3) The office spaces contained in the Control Room Complex do not have automatic fire suppression systems installed. BTP CMEB 9.5-1, Section 7b recommends that these spaces have automatic suppression.

insert AA
Mar 7 1994
new AP

Justification: The Control Room Complex is continuously manned so that any fire will be quickly detected and manual suppression will be commenced without delay. The amount of combustibles is limited. Papers within the Complex are stored in file cabinets, book cases, or other storage locations except when in use.

March 7, 1994 changes

Insert AA to Section 9.5.1 (2)

Should manual fire fighting in the Control Room complex be necessary, the accumulation and/or drainage of fire water will not affect the ability to safely shutdown the reactor. Using 2 hand held hoses at $0.57 \text{ m}^3/\text{m}$ each ($1.14 \text{ m}^3/\text{m}$ total) the subfloor area in the Control Room will accommodate a minimum of 1 hour accumulation of water with no drainage without affecting safety-related equipment. If the fire water is assumed to transport immediately to the basement of the control building, the resulting accumulation of water will not affect safety-related equipment located in the basement. In either case the fire fighting activities will not prevent the reactor from being safely shutdown.