UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TEXAS 76011

November 24, 1980

MEMORANDUM FOR: Those Listed Below

FROM: W. C. Seidle, Chief, RC&ES Branch

SUBJECT: IE BULLETIN NO. 80-24

The attached Office of Inspection and Enforcement Bulletin No. 80-24, "Prevention of Damage Due to Water Leakage Inside Containment (October 17, 1980 Indian Point 2 Event)," has been sent to the following licensees with a construction permit:

Kansas Gas and Electric Co. (Wolf Creek, Unit 1) DN STN 50-482
Louisiana Power and Light Co. (Waterford, Unit 3) DN 50-382
Houston Lighting and Power Company (South Texas Project, Units 1 & 2)
DN 50-498; 50-499
Texas Utilities Generating Company (Comanche Peak, Units 1 & 2)
DN 50-445; 50-446
Gulf States Utilities (River Bend Station, Units 1 & 2)
DN 50-458; 50-459

Distribution has been made in accordance with PI 0600/5.

W. C. Seidle, Chief
Reactor Construction and
Engineering Support Branch

Attachment:
IE Bulletin No. 80-24

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UNITED STATES
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

IE Bulletin No. 80-24
November 21, 1980

PREVENTION OF DAMAGE DUE TO WATER LEAKAGE INSIDE CONTAINMENT
(OCTOBER 17, 1980 INDIAN POINT 2 EVENT)

Description of Circumstances:

On October 24, 1980, IE Information Notice No. 80-37 described an event that occurred at the Indian Point Unit 2 (IP-2) facility. On October 17, 1980, upon containment entry for repair to a nuclear instrument, it was discovered that several inches of water had accumulated on the containment floor without the operators' knowledge. This accumulation was later determined to have amounted to over 100,000 gallons which flooded the reactor vessel pit and wetted the lower nine feet of the reactor vessel while the reactor was at operating temperature.

The flooded condition resulted from the following combination of conditions: (1) There were significant multiple service water leaks from piping and fan coolers onto the containment floor. This system had a history of leakage; (2) Both containment sump pumps were inoperable, one due to blown fuses and the other due to binding of its float switch; (3) The significance of two containment sump level indicating lights which indicated that the water level was continuously above the pump-down level was not recognized by the operators; (4) There was no high water level alarm and the range of sump level indicating lights failed to indicate the overflowing sump level; (5) The moisture level indicators for the containment atmosphere did not indicate high moisture levels, apparently due to an error in calibration and/or ranging which made them insensitive to the moisture levels resulting from relatively small cold water leaks; (6) The hold-up tanks which ultimately receive water pumped from the containment sump also received water from other sources (Unit 1 process water, lab drain water, etc). These other water sources masked the effect of cessation of water flows from the Unit 2 sump; (7) The fan cooler condensate wier level measuring instruments were not properly calibrated; (8) There was no water level instrumentation in the reactor vessel pit and the pumps were ineffective since they discharge to the containment floor for ultimate removal by the containment sump pumps.

This Bulletin is issued to enable the NRC staff to formulate requirements for long term generic corrective actions which will be the subject(s) of future NRC actions. The bulletin requires short term actions which will preclude IP-2 type events at other plants in the interim before the longer term generic actions are accomplished.

Actions to be Taken by Licensees:

1. Provide a summary description of all open* cooling water systems present inside containment. Your description of the cooling water systems must include: (a) Mode of operation during routine reactor operation and in response to a LOCA; (b) Source of water and typical chemical content of water; (c) Materials used in piping and coolers; (d) Experience with system leakage; (e) History and type of repairs to coolers and piping systems (i.e., replacement, weld, braze, etc.); (f) Provisions for isolating portions of the system inside containment in the event of leakage including vulnerability of those isolation provisions to single failure; (g) Provisions for testing isolation valves in accordance with Appendix J to 10 CFR 50 (h) Instrumentation (pressure, dew point, flow, radiation detection, etc.) and procedures in place to detect leakage; and (i) Provisions to detect radioactive contamination in service water discharge from containment.

2. For plants with open cooling water systems inside containment take the following actions:

   a. Verify existence or provide redundant means of detecting and promptly alerting control room operators of a significant accumulation of water in containment (including the reactor vessel pit if present).

   b. Verify existence or provide positive means for control room operators to determine flow from containment sump(s) used to collect and remove water from containment.

   c. Verify or establish at least monthly surveillance procedures, with appropriate operating limitations, to assure plant operators have at least two methods of determining water level in each location where water may accumulate. The surveillance procedures shall assure that at least one method to remove water from each such location is available during power operation. In the event either the detection or removal systems become inoperable it is recommended that continued power operation be limited to seven days and added surveillance measures be instituted.

   d. Review leakage detection systems and procedures and provide or verify ability to promptly detect water leakage in containment, and to isolate the leaking components or system. Periodic containment entry to inspect for leakage should be considered.

* An Open system utilizes an indefinite volume, such as a river, so that leakage from the system could not be detected by inventory decrease. In addition, a direct radioactive pathway might exist to outside containment in the event of a LOCA simultaneous with a system leak inside containment. A closed system utilizes a fixed, monitored volume such that leakage from the system could be detected from inventory decrease and a second boundary exists to prevent loss of containment integrity as a result of a system leak inside containment.

e. Beginning within 10 days of the date of this bulletin, whenever the reactor is operating and until the measures described in (a) through (d) above are implemented, conduct interim surveillance measures. The measures shall include where practical (considering containment atmosphere and ALARA considerations) a periodic containment inspection or remote visual surveillance to check for water leakage. If containment entry is impractical during operation, perform a containment inspection for water leakage at the first plant shutdown for any reason subsequent to receipt of this bulletin.

f. Establish procedures to notify the NRC of any service water system leaks within containment via a special licensee event report (24 hours with written report in 14 days) as a degradation of a containment boundary.

3. For plants with closed cooling water systems inside containment provide a summary of experiences with cooling water system leakage into containment.

4. Provide a written report, signed under oath or affirmation, under the provisions of Section 182a of the Atomic Energy Act of 1954, in response to the above items within 45 days of the date of this bulletin. Include in your report where applicable, your schedule for completing the actions in response to items 2 (a) through (d). Your response should be sent to the Director of the appropriate Regional Office with a copy forwarded to the Director, NRC, Office of Inspection and Enforcement, Washington, D.C. 20555.

If you desire additional information regarding this matter please contact the appropriate IE Regional Office.

Approved by GAO, B180225 (R0072); clearance expires November 30, 1980. Approval was given under a blanket clearance specifically for identified generic problems.