UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

PDR

AUG 3 1972

Docket No. 50-263

John O'Leary, Director
Directorate of Licensing

MONTICELLO BLOWDOWN INCIDENT AND HPCI BYPASSING

The following information is in response to your inquiry concerning the bypassing of an engineered safety feature at Monticello.

Region III, Regulatory Operations was informed(1) that as a result of a turbine trip and relieving of primary system pressure at the Monticello reactor on July 11, 1972, the containment drywell was pressurized to 2 psig causing the emergency core cooling systems, with the exception of the High Pressure Coolant Injection System (HPCIS), to be actuated. The HPCIS did not start because it was isolated at the time of the incident for performing surveillance testing.

The HPCIS was provided to assure adequate core cooling for all break sizes less than those for which the Low Pressure Coolant Injection System (LPCIS) or Core Spray Cooling Systems (CSCS) can adequately protect the core without assistance from the Automatic Pressure Relief System (ARS), the Reactor Core Isolation Cooling System (RCICS) or the normal electrically operated feedwater supply system.

The HPCIS was designed to pump 3000 gpm of cooling water into the reactor vessel at 1125 to 150 psig using a steam driven turbine under loss of coolant conditions that do not result in rapid depressurization of the pressure vessel, such as the loss of reactor feedwater, or small breaks less than about 0.07 ft^2, without reliance on external power or water source. The HPCIS plays no role in a large size primary coolant break. The HPCIS has been designed so that each component of the system can be tested on a periodic basis. Whenever the HPCIS is determined to be inoperable, the Technical Specifications require that the RCICS, LPCIS, and CSCS be demonstrated to be operable immediately. The ARS (3 auto relief valves) was operable at the time of the containment pressurization incident. This procedure was followed by NSPCo when the HPCIS was isolated 49 minutes prior to the containment incident to perform tests on the HPCIS turbine steam line high flow set point, as required by the Technical Specifications.

---

(1) See enclosure.

If a small primary system leak had occurred or if the offsite power had failed with the HPCIS isolated causing loss of the electrically driven feedwater pump that normally provides the water to keep the core covered, the reactor vessel water level would decrease to the steam turbine driven RCICS initiation level at which time the RCICS would have started automatically to add makeup water to the vessel. If there were further degradation because the RCICS failed or was only partially effective in providing makeup water, automatic depressurization would have occurred when the drywell pressure reached 2 psig coincident with a low reactor water level and emergency core cooling would have been provided by the LPCIS or CSCS.

To satisfy the AEC Interim Acceptance Criteria for ECCS, the General Electric calculations assumed that the HPCIS was inoperative and that emergency core cooling was provided by two low pressure CSCS after automatic depressurization. The resultant peak fuel clad temperatures for the small intermediate breaks were 1950°F, acceptably lower than the AEC 2300°F interim criterion. If the HPCIS were operative at the time of the incident, the coolant would have been injected automatically to maintain reactor vessel water level.

It can be seen from the above discussion that multiple sources of core cooling existed at the time of this incident, even though the HPCIS was out of service for surveillance. It is our position that the added reliability achieved by periodic surveillance of engineered safety features outweighs the small risk accepted by allowing a portion of a safety system to be removed from service under controlled conditions for short periods of time for testing. The HPCIS is normally isolated for a total of 4-8 hours per month to perform routine surveillance tests. The Technical Specifications actually permit the HPCIS to be inoperable 7 days from the time it is made or found to be inoperable for any reason. The practice of permitting redundant safety systems out of service for testing and for specified periods of time for maintenance is not unique to Monticello or to Boiling Water Reactors.

A. Giambusso

A. Giambusso, Deputy Director
for Reactor Projects
Directorate of Licensing

Enclosure:
Directorate of Regulatory Operations
Notification of an Incident or
Occurrence

No. 61 Date 7/13/72

DIRECTORATE OF REGULATORY OPERATIONS
NOTIFICATION OF AN INCIDENT OR OCCURRENCE

Facility: NORTHERN STATES POWER COMPANY (MONTICELLO)

Problem:

RO Region III (Chicago) was informed by the licensee by telephone on July 11, 1972, that a primary system safety valve had actuated following a reactor scram at the Monticello reactor on July 10. Actuation of the safety valve resulted in release of some primary steam to the containment drywell. The following preliminary information was provided by the licensee:

> At 3:50 P.M. on July 10, 1972, while operating at full power (550 Mwe), a turbine trip and reactor scram resulted from a loss of generator excitation. A Group I isolation signal of undetermined cause was received about one second later. This resulted in closure of the main steam isolation valves. During the ensuing pressure transient, the reactor pressure reached a maximum level of 1140 psig. The "A", "B" and "C" relief valves opened in accordance with design, however, the "D" relief valve failed to operate. The "A" safety valve also operated (setpoint 1210 psig) and the thermocouple for the "D" safety valve showed a temperature increase indicating that it may also have leaked a small amount of steam. The reactor water level remained above the low low level alarm and well below the elevation of the main steam lines. No feedwater control problems were encountered during the transient.
>
> Immediately following the safety valve operation, the high drywell pressure alarm, which is set to actuate at 2 psig, was received. The peak drywell pressure was 2 psig and the maximum drywell temperature was 215° F. The emergency core cooling systems, with the exception of the High Pressure Coolant Injection System (HPCI), started automatically in accordance with design; however, injection of core cooling water did not occur because reactor pressure and reactor water level were above the levels required to cause injection into the reactor vessel. The HPCI system did not start because it was isolated at that time for surveillance testing.
>
> Inspection within the drywell, approximately 16 hours after the scram, revealed no visual damage. No significant radioactivity releases to the environs or personnel exposures resulted from the occurrence.

The plant is presently in cold shutdown condition. Dr. Joseph Thie, a private consultant and member of the Monticello Safety Audit Committee, is at the site to assist in the investigation of the safety valve operation. The licensee has also obtained the services of Franklin Institute and General Electric to assist in the analysis.

The occurrence appears to be similar in magnitude to the primary system release that took place on May 4, 1972 at Dresden 3 (reference Notification of an Incident or Occurrence No. 54, dated May 5, 1972). A written report will be submitted by NSP to Licensing within 10 days in accordance with their license.

Action:

1. RO inspectors are at the site to obtain detailed information on the occurrence. Further action by RO will be based on the results of the inspection.

2. Commissioner Ramey's Technical Assistant, Commissioner Doub's Technical Assistant, the staff of the Joint Committee on Atomic Energy, and the AEC Public Information Office have been informed by telephone.

3. The Minnesota State Board of Health was notified of the event by the licensee on July 12.

Contact:

Further information on this problem can be obtained from:

R. J. McDermott - X7421
J. G. Keppler - X7421
R. H. Engelken - X7356

Distribution

Chairman Schlesinger
Commissioner Ramey
Commissioner Larson
Commissioner Doub
L. M. Muntzing, DR
E. J. Bloch, DDR
C. K. Beck, DRGL
S. H. Hanauer, DRTA
J. O. Wilson, DR
V. Gilinsky, DR
E. J. Bauser, JCAE
General Manager (2)
J. H. Rubin, AGM
General Counsel (2)
Secretary (2)
J. Fouchard, IS
M. Shaw, RDT
J. A. Harris, IS
J. D. Anderson, INS
M. Biles, OS
R. F. Fraley, ACRS (3)
L. R. Rogers, RS
J. J. Davis, RS
R. B. Minogue, RS
J. O'Leary, L
E. G. Case, L
J. Hendrie, L
A. Giambusso, L
R. Schroeder, L
S. H. Smiley, L
R. S. Boyd, L
D. J. Skovholt, L
R. C. DeYoung, L
D. R. Muller, L
D. F. Knuth, L
R. R. Maccary, L
R. L. Tedesco, L
H. R. Denton, L
D. A. Nussbaumer, L
R. E. Cunningham, L
F. E. Kruesi, RO
P. A. Morris, RO
H. Thornburg, RO
T. R. Wilson, RO
R. H. Engelken, RO
R. D. O'Neill, OCR
J. R. Totter, BM
J. D. Goldstein, BM
G. A. Arlotto, RS
S. Levine, OEA
D. L. Ziemann, L
RO Regional Offices
DR Reading File
REG Central File