

ATTACHMENT 1

**TECHNICAL SPECIFICATION CHANGE
REQUEST NOTICE 213, SUPPLEMENT 1**

Replacement Technical Specification pages 3.4-21B, B 3.4-52E and B 3.4-52H

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action E.1 not met within the required Completion Time.	F.1 Close and maintain closed the makeup control valve and its associated isolation valve.	12 hours
	AND F.2 Stop RCS heatup.	12 hours
G. PORV inoperable.	G.1 Restore PORV to OPERABLE status.	1 hour
H. Required Action G.1 not met within the required Completion Time.	H.1 Reduce makeup tank level to ≤ 88 inches.	12 hours
	AND H.2 Deactivate low low makeup tank level interlock to the borated water storage tank suction valves.	12 hours

(continued)

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

Pressurizer Level Performance

Analyses of operator response time show that the pressurizer level must be maintained ≤ 100 inches to provide the 10 minute action time for correcting transients. (Ref. 3)

The pressurizer level limit will also be re-evaluated for compliance each time P/T limit curves are revised based on the results of the vessel material surveillance.

RCS Vent Performance

With the RCS depressurized, analyses show a vent of 0.75 square inches is capable of mitigating the transient resulting from full opening of the makeup control valve while the makeup pump is providing RCS makeup. The capacity of a vent this size is greater than the flow resulting from this credible transient.

The RCS vent size will also be re-evaluated for compliance each time P/T limit curves are revised based on the results of the vessel material surveillance.

The vent is passive and is not subject to active failure.

(continued)

BASES

ACTIONS
(continued)

E.1, F.1 and F.2

With the pressurizer level more than 160 inches, the time for operator action in a pressure increasing event is reduced. The postulated event most affected in the LTOP MODES is failure of the makeup control valve, which fills the pressurizer relatively rapidly. Restoration is required within 1 hour.

If restoration within 1 hour cannot be accomplished, Required Actions F.1 and F.2 must be performed within 12 hours. Actions F.1 and F.2 limit the makeup capability by closing the makeup control valve and its isolation valve, which is not required with a high pressurizer level, and permit cooldown and depressurization to continue. When the makeup is isolated, RCS heatup must be stopped because heat addition decreases the reactor coolant density and increases the pressurizer level. Operations such as starting RC pumps and reducing decay heat removal should not be performed when in this condition.

G.1, H.1, and H.2

With the PORV inoperable, overpressure relieving capability is lost, and restoration of the PORV within 1 hour is required. If that cannot be accomplished, the ability of the Makeup System to add water must be limited within the next 12 hours.

If restoration cannot be completed within 1 hour, Required Action H.1 and Required Action H.2 must be performed to limit RCS water addition capability. Makeup is not required to be deactivated since it may be needed to maintain the RCS coolant level. Required Action H.1 and Required Action H.2 require reducing the makeup tank level to 88 inches and deactivating the low low makeup tank level interlock to the borated water storage tank. This makes the available makeup water volume insufficient to exceed the LTOP limit by a makeup control valve full opening.

(continued)

U.S Nuclear Regulatory Commission
3F0997-25
Attachment 2

ATTACHMENT 2

**TECHNICAL SPECIFICATION CHANGE
REQUEST NOTICE 213, SUPPLEMENT 1**

Replacement pages 2, 5, and 6 to substitute those pages in
Attachment A of TSCRN 213, Revision 0

when the reactor vessel head is not completely detensioned. Operation of the RCS in LTOPS condition includes the following limitations; a maximum of one Makeup pump capable of injecting into the RCS, High Pressure Injection (HPI) deactivated, the Core Flood Tanks (CFT) isolated, limiting Pressurizer water level to ≤ 160 inches, and an OPERABLE Power Operated Relief Valve (PORV) with a lift setpoint of ≤ 464 psig. Action statements are provided for individual inoperable components or features, as well as for a condition in which the LTOPS safety function is lost (e.g., Pressurizer water level > 160 inches and the PORV is inoperable, or; with the LTOPS inoperable for any reason other than for the listed conditions for which there are acceptable required action statements that can be met), in which case the RCS must be depressurized and a RCS vent ≥ 0.75 square inch established in 12 hours.

None of the LTOP limits/values listed in the new LTOPS Technical Specification are adjusted for instrument uncertainty and will therefore not be used for plant operations. This fact has been noted by the statement, "uncorrected for instrument uncertainty" within this change request where applicable. The LTOP limits/values used for plant operations will be adjusted for instrument uncertainty and placed in the plant operating procedures.

Surveillance Requirements are specified with frequencies which have been shown by operating experience at other facilities and industry accepted practice to be sufficient to regularly assess conditions for potential degradation of components and to verify operation within the requirements discussed above.

The new LTOPS Technical Specification for CR-3 is consistent with the standard technical specification for LTOP referenced above, and includes changes for plant specific details which are not considered to be safety significant. These changes are discussed below.

With regard to RCS temperature measurement, CR-3 takes the measurement from a cold leg with Reactor Coolant Pumps (RCP) operating and from the decay heat outlet when no RCPs are operating. With the CR-3 reactor vessel head completely detensioned (i.e., the pre-stress relieved from all the studs, and the nuts free spinning), overpressurization is not possible. Therefore, LTOPS applicability includes Mode 6 without the reactor vessel head completely detensioned.

Surveillances are included to ensure LTOP System component operability whenever entering an RCS temperature condition requiring low temperature overpressure protection of the RCS. Two LTOPS surveillance frequency requirements have been revised, and a new surveillance has been added to verify PORV operability. CR-3 RCS vents may be other than valves (e.g., a OTSG manway cover, or a handhole cover), and therefore, surveillance frequency requirements for RCS vents have been appropriately clarified to be for vent openings rather than for vent valves. To preclude operation with an inoperable PORV, the PORV channel functional test frequency is specified to be accomplished within 12 hours before or after

startup of the first and second RCP. The analysis also assumed that the third RCP would not be started prior to an RCS temperature of 225 degrees F and the fourth pump after 253 degrees F. The RCS temperatures assumed in the analysis are well within the actual starting temperatures allowed by procedures. The results of this analysis are discussed in Attachment B, FPC Calculation F97-0003, (See Reference 3 of the new LTOPS Technical Specification Bases B3.4.11).

Based on the LTOP analyses, the enable temperature for CR-3 is 253 degrees F (uncorrected for instrument uncertainty). Below this temperature, the LTOP limits will be implemented. These limits are based on protecting the reactor vessel from overpressurization due to an RCS transient. Several transients were evaluated for CR-3 (See LTOP ITS Bases B3.4.11, Reference 5, B&W (FTI) Document 51-1176431-01; Section 5.0). This analysis report was earlier submitted to the NRC by FPC letter 3F1089-23, dated October 31, 1989, to support CR-3 Technical Specification Change Request No. 174. The transient evaluations in Section 5.0 of this report are applicable to and support the bases for this change request. If a condition is identified in which the RCS response to a transient would not allow at least 10 minutes for operator action, equipment is deactivated to preclude this transient from occurring. Of the remaining transients that could not be precluded by deactivations, the most limiting transient for CR-3 is a stuck full-open Makeup valve with one Makeup pump operating. The time available to mitigate this most limiting transient is determined by the makeup flow into the RCS and the initial RCS Pressurizer level.

Inadvertent HPI injection and Core Flood Tank discharge into the RCS are the transients which were evaluated as requiring deactivation of equipment to preclude RCS overpressurization. Actions have been included to ensure that, under required conditions, all but one HPI pump (i.e., one Makeup pump) is made inoperable, that flow through the HPI injection valves is blocked, and that the CFTs are isolated or operated below the LTOP limits. With these controls in place, adequate protection from these transients exists.

In the unlikely event a small break LOCA does occur subsequent to the High Pressure Injection (HPI) deactivation required for LTOPS, HPI can be restored by operator action. An engineering evaluation is being prepared by FPC in order to determine the decay heat removal requirements of the ECCS in Mode 4 (See TSCRN 210 submittal to the NRC by FPC letter 3F0697-10, dated June 14, 1997). This evaluation includes modeling operation of HPI and LPI systems in LTOPS Mode 4 and may lead to revisions of Technical Specification 3.5.3, "ECCS-Shutdown," or 3.7.5, "Emergency Feedwater (EFW) System." Any such revisions will preserve all of the LTOP requirements of this TSCRN.

The Pressurize level upper limit for LTOP is determined by the requirement to provide 10 minutes for operator action during an RCS transient with the PORV inoperable. The limiting transient analyzed for CR-3 is a stuck full-open Makeup valve with one Makeup pump operating. The starting points for this transient are the maximum pressures and temperatures allowed by the PTLR or PORV operating limits. The ending point of the transient after 10 minutes must be below the LTOP limits as analyzed per Code Case N-514. An initial Pressurizer water level of no greater than 160 inches (uncorrected for instrument uncertainty) ensures that the operators have at least 10 minutes to mitigate the transient before the LTOP limits are exceeded.

As an LTOP safety factor, Pressurizer water level has been analyzed and will be lowered based on the acceptable criteria discussed above to provide a compressible vapor space that can accommodate a coolant insurge and prevent a rapid pressure increase to the RCS due to uncontrolled mass addition. Although the lower water level reduces the operators abilities to maneuver during cooldown, heatup, or any anticipated operational occurrence through the LTOP modes, they have enough margin to accomplish the actions needed to control these occurrences without violating LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits."

In addition to deactivating equipment and limiting the Pressurizer level, the PORV low pressure setpoint is set to open at or below the minimum RCS pressure determined by the LTOP analysis. The RCS pressure at this point is 464 psig (uncorrected for instrument uncertainty). The relief capacity of the PORV was also analyzed and determined to be greater at this pressure than the makeup flow resulting from the stuck open Makeup valve transient. Thus, the PORV can provide the required protection at low temperatures.

If the PORV is inoperable due to the PORV itself or due to the block valve, additional controls are implemented to limit the capability to overpressurize the RCS. Analysis has determined that a Makeup tank level of no greater than 88 inches (uncorrected for instrument uncertainty) limits the available water inventory below what is needed to exceed the LTOP limits. In these cases, the Makeup tank which is the suction source for the Makeup pump will be controlled to maintain this limit.

If the PORV is inoperable when LTOP is applicable (due to the PORV block valve being closed and deenergized per the PORV ITS LCO 3.4.10), it can be made operable by reenergizing and opening the PORV block valve at this time. Should the PORV block valve not open at this time of lower RCS temperature due to thermal binding, the PORV would remain inoperable for LTOP. The required actions for an inoperable PORV in LTOP are to reduce Makeup tank level and to deactivate the low low Makeup tank level interlock to the borated water storage tank, thereby minimizing coolant addition capability to preclude overpressuring the RCS. This is an acceptable limitation for LTOP.

Action statements for each LCO provide allowable times to implement the actions and controls described above. These times range from immediately to 12 hours. The times are based on operational and industry experience and regulatory recommendations. The times are intended to balance the time necessary to accomplish the actions and the likelihood of experiencing a limiting transient during the action.

If for any reason, the LTOP controls described above cannot be implemented within the times specified after RCS temperature is reduced below 253°F, the RCS will be depressurized and a vent established such that overpressurization cannot occur. When a vent is established under these conditions, controls will be implemented such as, locking or deactivating power to the component. A minimum vent size of 0.75 square inch has been specified. The relief capacity of this vent was also analyzed and determined to be greater at the limiting LTOP pressure than the