The Oconee LTOP System provides protection from pressure transients at low temperatures, by limiting the pressure of such a transient to below the limits set by 10CFR 50 Appendix G utilizing a conservative safety factor of 1.5. In addition, the following conditions are imposed by the NRC for the evaluation of the acceptability of LTOP Systems:

a. The most limiting initial conditions must be used.
b. The most limiting single failure, distinct from the initiating event, must be used.
c. No credit can be taken for mitigative operator action until 10 minutes after the operators become aware that a pressure transient is in progress.

For the Oconee units, the most limiting single failure is failure of the single pressurizer PORV to open at its low pressure setpoint. Operator awareness is assumed to be achieved by actuation of control room alarms. The following scenarios have the potential to result in an LTOP event:

1) Makeup Control Valve (HP-120) fails full open.

2) Erroneous opening of a core flood tank (CFT) discharge valve.

3) Erroneous actuation of the HPI system.

4) All pressurizer heaters erroneously energized.

5) Temporary loss of decay heat removal.

6) Thermal expansion of the RCS after starting an RCP due to stored energy in the steam generator.

Specification 3.1.2.9.2 requires that both CFTs and both HPI trains be isolated from the RCS, thus preventing these scenarios. Physical restriction of makeup flow, control of pressurizer level, and alarms ensure that at least 10 minutes are available for operator action to mitigate the remaining events. Units specific values required to meet the 10 minute operator action criterion are provided within the Selected Licensee Commitment Manual.

In order to assure 10 minutes are available for operator action, the operational restrictions of Specification 3.1.2.9.2 must be implemented:

Deactivating train A of HPI is accomplished by one of the following methods:

1) Shutting and deactivating valve HP-26 by tagging open the valve breaker and tagging the valve handwheel in the closed position, shutting valve HP-410 and tagging the valve switch in the closed position.
2) Deactivating all HPI pumps aligned to A HPI train and tagging the pump breakers open.

Deactivating train B of HPI is accomplished by one of the following methods:

1) Shutting and deactivating valve HP-27 by tagging open the valve breaker and tagging the valve handwheel in the closed position, shutting valve HP-409 and tagging the valve switch in the closed position.
2) Deactivating all HPI pumps aligned to B HPI train and tagging the pump breakers open.

Deactivating both core flood tanks is accomplished by shutting valves CF-1 and CF-2, tagging open the valve breaker, and tagging the valves in the closed position. Alternately, core flood tanks may be deactivated by maintaining core flood tank pressure below the maximum allowable RCS pressure for the existing RCS temperature (per Figures 3.1.2-1 and 3.1.2-2).

Makeup flow must be restricted such that 10 minutes are available for operator action to mitigate the event.

Audible alarms must be provided such that 10 minutes are available for operator action to mitigate the event.

The intent of the action statements provided in Specification 3.1.2.9.3 is to place the reactor vessel in a condition in which it is not vulnerable to a LTOP event via the safest and most prompt course of action. In some cases, it may be more prudent to heat up above 325°F (cold leg temperature) rather than depressurize and open an RCS vent.

The allowable outage times (AOTs) provided in Specification 3.1.2.9.3 have been established based on the following considerations:

a. The most rapid LTOP scenarios exist with HPI pumps in operation, or with RCS pressure $\geq$ 100 psig. As such, the 24 hour AOT is sufficiently brief to assure a minimal period of operation while vulnerable to a single failure of the PORV.

b. In the event of '2nd train' inoperabilities, a time period of 4 hours is sufficient to return the train to operable status or to implement the compensatory measures.

REFERENCES

(1) Analysis of Capsule OCII-E from Duke Power Company Oconee Unit 2 Reactor Vessel Materials Surveillance Program, BAW-2051, October, 1988.

(2) Analysis of Capsule OCIII-B from Duke Power Company Oconee Unit 3 Reactor Vessel Materials Surveillance Program, BAW-1697, October, 1981.

(3) Analysis of Capsule OCI-C from Duke Power Company Oconee Unit 1 Reactor Vessel Materials Surveillance Program, BAW-2050, October, 1988.