Enclosure 1

DESCRIPTION AND SAFETY ANALYSIS
OF PROPOSED CHANGE NPF-10/15-410

Proposed Change Number (PCN) 410 is a request to revise Technical Specification 3/4.4.5 "Reactor Coolant System Leakage."

Existing Specifications:

Unit 2: See Attachment "A"
Unit 3: See Attachment "B"

Proposed Specifications:

Unit 2: See Attachment "C"
Unit 3: See Attachment "D"

SUMMARY of CHANGE

PCN 410 is a request to revise Technical Specification (TS) 3.4.5 "Reactor Coolant System Leakage." PCN 410 proposes to change Surveillance Requirement (SR) 4.4.5.2.1.c. The current SR 4.4.5.2.1.c requires a water inventory balance every 72 hours. This requires transient evolutions such as a heat-up, a cooldown, or a power change to be interrupted and plant conditions stabilized every 72 hours. A power transient evolution will cause a Xenon transient which can last up to 36 hours. This 36 hours has to be a holding period for the plant to stabilize. This proposed change will allow the transient evolution to continue for an additional limited period of time before stabilizing the plant is required following completion of the transient evolution. The water inventory balance will be performed within 120 hours of the last water inventory balance and the reactor coolant system leakage will continue to be monitored during the transient by the three remaining surveillances specified in SR 4.4.5.2.1.c.

DESCRIPTION of CHANGE

PCN 410 is a request to change TS 3.4.5 "Reactor Coolant System Leakage," SR 4.4.5.2.1.

The relevant part of SR 4.4.5.2.1 reads:

> Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:
>
> c. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours.

PCN 410 requests the following change to SR 4.4.5.2.1 c. for both Units 2 and 3:

c. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation. If a transient evolution is occurring 72 hours from the last water inventory balance, then a water inventory balance shall be performed within 120 hours of the last water inventory balance.

SYSTEM DESCRIPTION

The Reactor Coolant System Boundary Leakage Detection System is designed to ensure that expected leakage is limited, monitored, and separated from unidentified leakage. TS 3/4.4.5.2, "Reactor Coolant System - Operational Leakage," requires monitoring Reactor Coolant System (RCS) leakage, thereby providing additional assurance of detecting an impending failure of the RCS boundary.

The basis for TS 3/4.4.5.2 "Operational Leakage" is to ensure the unidentified portion of the leakage from the RCS is less than a threshold value of 1 gpm. This threshold value is sufficiently low to ensure early detection of leakage. The limit of 10 gpm of identified leakage provides allowances for a limited amount of leakage from known sources whose presence will not interfere with the detection of unidentified leakage and will be considered as a portion of the allowable limit.

DISCUSSION

The current SR 4.4.5.2.1.c requires a water inventory balance every 72 hours. To perform an accurate water inventory balance, the following plant conditions must be met:

- Makeup operations to the volume control tank are secured.
- Sampling of the RCS and interconnected systems are secured.
- Venting and draining of the RCS and interconnected systems are secured.
- Boration and dilution operations are secured.
- Purification ion exchangers and back-flushable filters shall not be shifted.
- Letdown to radwaste diversion is secured.
- Reactor power level variations are minimized.
- RCS temperature variations are minimized.

- Pressurizer level setpoint is not to be changed during the performance of the water inventory balance.

- Safety injection tank levels shall be low enough to ensure that draining will not be required for the duration of the water inventory balance.

To meet these requirements, transient evolutions such as heat-ups, cooldowns or power changes are interrupted and plant conditions stabilized every 72 hours. A transient power evolution, which is expected to be the limiting case, will cause a Xenon transient which can last up to 36 hours. San Onofre Units 2 and 3 perform transient evolutions as part of normal operations. During a plant startup Xenon will build up and will take an additional 36 hours to reach equilibrium after reactor power is stabilized. This same phenomenon occurs when the reactor is returned to full power following the heat treatment of the circulating water system, which is performed every 6 weeks. These evolutions must be interrupted to allow for Xenon equilibrium to occur prior to performing the water inventory balance. This 36 hours has to be a holding period for the plant to stabilize. This proposed change will allow the transient evolution to continue for an additional limited period of time before stabilizing the plant is required following the completion of the transient evolution. In the worst case this change would allow 72 hours for the transient evolution, 36 hours for stabilizing the plant, and 12 hours for performing the water inventory balance. Therefore, a water inventory balance will be performed within 120 hours of the last water inventory balance.

The main plant transients which are affected are plant startups and power changes for the circulating water system heat treatments. The plant startup causes the largest Xenon oscillation. The power transients to support a heat treatment of the circulating water system would not normally cause as long a delay as a startup evolution, but they are performed every six weeks, a much greater frequency than a plant startup.

New wording for SR 4.4.5.2.1.c proposes to allow the transient evolution to continue and the required water inventory balance to be performed within 120 hours of the last water inventory balance. RCS leakage will be monitored during this time by the other three surveillances specified in Surveillance Requirement 4.4.5.2.1, which are:

a. Monitoring the containment atmosphere gaseous or particulate radioactivity monitor at least once per 12 hours.

b. Monitoring the containment sump inlet flow at least once per 12 hours.

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

The experience at San Onofre indicates that transients are not a primary cause of RCS leakage. However, the potential does exist for transient induced leakage due to the transient stresses and fatigue. More importantly, the water inventory balance is not the first indicator of a leak because it is only performed once every 72 hours. The three additional methods will

continue to be employed, and if the leak rate limit is exceeded, as detected by any one method, the plant will be shutdown as directed by TS 3.4.5. Additionally, experience shows the first indication of a leak is normally an increase in the containment sump level.

The containment sump level increases as a result of an accumulation of water, monitoring this level increase is much more sensitive than the water inventory balance. The containment sump sensitivity is nine gallons per percent increase. Therefore, a 1 gpm leak would result in a ten percent increase in 90 minutes. The operators monitor their board indication each shift, and the critical functions monitoring system would alarm within 30 minutes with a 1 gpm leak rate. This provides two proven opportunities to observe leakage in less than 72 hours.

The next instrumentation that will detect a leak will be the containment noble gas radiation monitors. These monitors, two for each containment, undergo a surveillance once each shift and their readings are evaluated for indication of any increase in RCS leakage. With one or more failed fuel pins in the reactor core these monitors should reach alarm levels in much less than 72 hours following the initiation of a 1 gpm RCS leak.

In summary, the three surveillances listed above provide the primary means of leak detection and we have demonstrated these will identify leaks in much less than 72 hours. Therefore, the water inventory balance is a confirmation method rather than an initial leak detection method.

SAFETY ANALYSIS

The proposed change described above shall be deemed to involve a significant hazards consideration if there is a positive finding in any one of the following areas:

1. Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   A revision to SR 4.4.5.2.1 c is proposed to allow the transient evolution to continue and the required water inventory balance to be performed within 120 hours of the last water inventory balance. RCS leakage will be monitored during this time by the following three remaining required surveillances:

   a. Monitoring the containment atmosphere gaseous or particulate radioactivity monitor at least once per 12 hours.

   b. Monitoring the containment sump inlet flow at least once per 12 hours.

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

The water accumulation methods have proven to detect leaks before the water inventory balance and before the containment radioactivity monitoring system. Therefore, operation of the facility in accordance with this proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes do not involve any alterations to the plant's physical structure or to the way in which it is operated. Leak detection will continue to be monitored by three of four methods. Therefore, the proposed revision to the technical specifications will not create the possibility of a new or different kind of accident from any previously evaluated accident.

3. Will operation of the facility in accordance with this proposed change involve a significant reduction in margin of safety?

Response: No

A revision to SR 4.4.5.2.1.c is proposed to allow the transient evolution to continue and the required water inventory balance to be performed within 120 hours of the last water inventory balance. RCS leakage will be monitored during this time by the following three remaining required surveillances:

a. Monitoring the containment atmosphere gaseous or particulate radioactivity monitor at least once per 12 hours.

b. Monitoring the containment sump inlet flow at least once per 12 hours.

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

The maximum allowable leak rate of 1 gpm is not changed, and as discussed above, leak detection monitoring will occur using the other methods available. The water accumulation methods have proven to detect leaks before the water inventory balance and before the containment radioactivity monitoring system. Therefore, the

proposed revision to the technical specifications will not involve a significant reduction in a margin of safety.

Safety and Significant Hazards Determination

Based on the above Safety Analysis, it is concluded that: (1) the proposed change does not constitute a significant hazards consideration as defined by 10 CFR 50.92; and (2) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (3) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

ATTACHMENT "A"

EXISTING SPECIFICATIONS
UNIT 2

SURVEILLANCE REQUIREMENTS (Continued)

c. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours.

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

4.4.5.2.2 Each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1 shall be demonstrated OPERABLE by verifying valve leakage to be within its limit:

a. At least once per refueling interval.

b. Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 72 hours or more and if leakage testing has not been performed in the previous 9 months.

c. Prior to declaring the valve operable following maintenance, repair or replacement work on the valve.

d. Within 48 hours following valve actuation due to automatic or manual action or flow through the valve (for valves in Section B of Table 3.4-1).

The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4.

ATTACHMENT "B"

EXISTING SPECIFICATIONS
UNIT 3

SURVEILLANCE REQUIREMENTS (Continued)

c. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours.

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

4.4.5.2.2 Each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1 shall be demonstrated OPERABLE by verifying valve leakage to be within its limit:

a. At least once per refueling interval.

b. Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 72 hours or more and if leakage testing has not been performed in the previous 9 months.

c. Prior to returning the valve to service following maintenance, repair or replacement work on the valve.

d. Within 24 hours following valve actuation due to automatic or manual action or flow through the valve (for valves in Section B of Table 3.4-1).

The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4.

ATTACHMENT "C"

REVISED SPECIFICATIONS
UNIT 2

SURVEILLANCE REQUIREMENTS (Continued)

c.> ~~Performance of a Reactor Coolant System water inventory balance at least once per 72 hours.~~

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

4.4.5.2.2 Each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1 shall be demonstrated OPERABLE by verifying valve leakage to be within its limit:

a. At least once per refueling interval.

b. Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 72 hours or more and if leakage testing has not been performed in the previous 9 months.

c. Prior to declaring the valve operable following maintenance, repair or replacement work on the valve.

d. Within 48 hours following valve actuation due to automatic or manual action or flow through the valve (for valves in Section 3 of Table 3.4-1).

The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4.

Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation. If a transient evolution is occurring 72 hours from the last water inventory balance, then a water inventory balance shall be performed within 120 hours of the last water inventory balance.

ATTACHMENT "D"

REVISED SPECIFICATIONS
UNIT 3

SURVEILLANCE REQUIREMENTS (Continued)

c. ~~Performance of a Reactor Coolant System water inventory balance at least once per 72 hours.~~

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

4.4.5.2.2 Each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1 shall be demonstrated OPERABLE by verifying valve leakage to be within its limit:

a. At least once per refueling interval.

b. Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 72 hours or more and if leakage testing has not been performed in the previous 9 months.

c. Prior to returning the valve to service following maintenance, repair or replacement work on the valve.

d. Within 24 hours following valve actuation due to automatic or manual action or flow through the valve (for valves in Section B of Table 3.4-1).

The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4.

Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation. If a transient evolution is occurring 72 hours from the last water inventory balance, then a water inventory balance shall be performed within 120 hours of the last water inventory balance.