Entergy

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Thomas A. Marlow
Director,
Nuclear Safety Assurance

2CAN090602

September 26, 2006

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Supplement to Amendment Request
to Allow One-Time Extension of Containment Spray System
Allowable Outage Time
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

REFERENCES:

1. Entergy Letter to the NRC dated September 19, 2005 License Amendment Request to Allow One-Time Extension of Containment Spray System Allowable Outage Time (2CAN090502)

2. Entergy Letter to the NRC dated February 28, 2006 Supplement to Amendment Request to Allow One-Time Extension of Containment Spray System Allowable Outage Time (2CAN020602)

3. Entergy Letter to the NRC dated May 31, 2006 Supplement to Amendment Request to Allow One-Time Extension of Containment Spray System Allowable Outage Time (2CAN050603)

Dear Sir or Madam:

By letter (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications (TSs) to amend TS 3.6.2.1 "Containment Spray System." The proposed change will allow a one-time extension of the allowable outage time (AOT) for the Containment Spray System from 72 hours to a maximum of 7 days.

On September 25, 2006, Entergy and members of your staff held a call to discuss the method of handling the supporting commitments. The NRC requested that the commitments be maintained in the TS bases. A markup of the TS bases for ANO-2 TS 3.6.2.1 is included in Attachment 1.

A-001

There are no technical changes proposed. The original no significant hazards consideration included in Reference 1 is not affected by any information contained in the supplemental letter. There are no new commitments contained in this letter.

If you have any questions or require additional information, please contact Dana Millar at 601-368-5445.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 26, 2006.

Sincerely,

Thomas A. Marlow

TAM/DM

Attachments:
1. Markup of Technical Specification Bases Pages (For Information Only)

cc: Dr. Bruce S. Mallett
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Arkansas Nuclear One
P. O. Box 310
London, AR 72847

U. S. Nuclear Regulatory Commission
Attn: Mr. Drew Holland
MS O-7 D1
Washington, DC 20555-0001

Mr. Bernard R. Bevill
Director Division of Radiation
Control and Emergency Management
Arkansas Department of Health and Human Services
P. O. Box 1437
Slot H-30
Little Rock, AR 72203-1437

Attachment 1

To

2CAN090602

Markup of Technical Specification Bases Pages
(For Information Only)

3/4.6.2 DEPRESSURIZATION, COOLING, AND pH CONTROL SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses.

The containment spray system and the containment cooling system provide post accident cooling and mixing of the containment atmosphere; however, the containment cooling system is not redundant to the containment spray system. The containment spray system also provides a mechanism for removing iodine from the containment atmosphere and therefore the time requirements for restoring an inoperable spray system to OPERABLE status have been maintained consistent with that assigned other inoperable ESF equipment.

- INSERT 1 -

3/4.6.2.2 TRISODIUM PHOSPHATE (TSP)

A hydrated form of granular trisodium phosphate (TSP) is employed as a passive form of pH control for post LOCA containment spray and core cooling water to ensure that iodine, which may be dissolved in the recirculated reactor cooling water following a loss of coolant accident (LOCA), remains in solution. TSP also helps inhibit stress corrosion cracking (SCC) of austenitic stainless steel components in containment during the recirculation phase following an accident. Baskets of TSP are placed on the floor of the containment building to dissolve from released reactor coolant water and containment sprays after a LOCA. Recirculation of the water for core cooling and containment sprays then provides mixing to achieve a uniform solution pH.

Fuel that is damaged during a LOCA will release iodine in several chemical forms to the reactor coolant and to the containment atmosphere. A portion of the iodine in the containment atmosphere is washed to the sump by containment sprays. The emergency core cooling water is borated for reactivity control. This borated water causes the sump solution to be acidic. In a low pH (acidic) solution, dissolved iodine will be converted to a volatile form. The volatile iodine will evolve out of solution into the containment atmosphere, significantly increasing the levels of airborne iodine. The increased levels of airborne iodine in containment contribute to the radiological releases and increase the consequences from the accident due to containment atmosphere leakage.

After a LOCA, the components of the core cooling and containment spray systems will be exposed to high temperature borated water. Prolonged exposure to the core cooling water combined with stresses imposed on the components can cause SCC. The SCC is a function of stress, oxygen and chloride concentrations, pH, temperature, and alloy composition of the components. High temperatures and low pH, which would be present after a LOCA, tend to promote SCC. This can lead to the failure of necessary safety systems or components.

Adjusting the pH of the recirculation solution to levels above 7.0 prevents a significant fraction of the dissolved iodine from converting to a volatile form. The higher pH thus decreases the level of airborne iodine in containment and reduces the radiological consequences from containment atmosphere leakage following a LOCA. Maintaining the solution pH above 7.0 also reduces the occurrence of SCC of austenitic stainless steel components in containment. Reducing SCC reduces the probability of failure of components.

Insert 1

When applying the extended 7-day AOT, the following actions shall be satisfied:

1. While performing maintenance on the CSS train components, do not disable other components that are used for the containment heat removal.
2. Prior to performing maintenance on one CSS equipment train, assure that the backup train is properly aligned and would be expected to perform its function if required.
3. Conduct a briefing with appropriate plant personnel to ensure that they are aware of the impact associated with unavailable components and flow paths.
4. If a maintenance action or repair is to be performed, pre-stage parts and tools to minimize outage time.
5. Consider actions which could be taken to return the affected train to functional use, if not full operability, if the need arises or plan for backup systems (e.g., containment fan coolers) to be available.
6. In repairing and/or testing components (particularly valves), define the appropriate valve position (open/closed) that provides the greater level of safety and "if practical" establish that position for the repair.
7. Do not commence maintenance activities on the CSS for an extended AOT if any of the following conditions exist:
   - Seismic Event (earthquake) as indicated by the earthquake trigger or noticeable abnormal vibrations in major structures
   - Tornado watch or warning for Pope, Yell, Logan, or Johnson counties is in effect
   - Tornado is sighted locally
   - Loss of Dardanelle Reservoir is forecast
   - Flooding or forecasted flooding of Lake Dardanelle
8. When performing maintenance activities on either train of the CSS, the redundant CSS train and the containment cooling system (CCS) will be protected (i.e., no testing or maintenance activities will be allowed).
9. Ensure the ignition source probability is as low as possible in the Turbine Building to maintain the availability of off-site power by posting an hourly roving fire watch in that area.
10. Post a roving fire watch in other risk significant areas which include: the operable CSS train, the CCS, the high pressure safety injection (HPSI) system, both emergency feedwater (EFW) trains, and the auxiliary feedwater (AFW) system.