Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	MAY 07, 1996	NAME:	Jim Winters
TO:	Tom Kenyon	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 6

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COMMENTS:

Tom

HERE IS TODAY'S INSTALLMENT OF INFO FOR THURSDAY'S CALL.

- THE WRITEUP FOR OPEN ITEM 373 WILL GO INTO OITS AS FINAL CLOSURE.
- DRAFT RESPONSE FOR DSER-OI 10.4.9-2 (OITS 1164).
- DRAFT SECTION 14.2.9.1.7 WHICH INCLUDES CLOSURE FOR DSER OI 10.4.7-1 (1162)

Winters, James

From: Winters, James
To: Palinski, Mike
Cc: Butler,John; Cummins, W. Ed; Lindgren, Don; McDermott, Dan; Mcintyre,Brian; Winters, James
Subject: Open Item 373
Date: Monday, May 06, 1996 2:03PM

Mike,
Please show (W) Status for Open Item 373 as: "Closed." Please REPLACE the Status Detail with: "Closed - As indicated in the "Main Feedwater Line" portion of SSAR Section 3B.2.3, Revision 7, the problems of feedwater control valve instability hae been minimized in AP600 by design. The AP600 will use valves with specialized trim specified; variable speed feedwater pumps; startup feedwater control valves and lines to supply feedwater at lower feed (power) demand levels; and a refinement of the standard feedwater control scheme which reduces potential feedwater transients."

Thanks
Jim
x5290

In addition to information contained in SSAR, section 10.4, Revision 6, Appendix 3B, Revision 7, addresses the potential for water hammer in feedwater lines. The "Main Feedwater Line" portion of SSAR subsection 3B.2.3 addresses a number of design features included in the main and startup feedwater system, piping, components and control that minimize the potential for water hammer. The potential for water hammer during startup is minimized by having a startup feedwater system separate from the main feedwater system. This startup system can not add cold water to the hot main feedwater system, is sized appropriately for startup, has control valves and other features designed for startup service, is routed to minimize geometric sources of water hammer, and feeds a steam generator nozzle and feed spray system separate from the main feed ring. This item is closed.

DRAFT RESPONSE FOR
DSER-OI 10.4.9-2

- Refill line connection pressure
- Main control room differential pressure
- Air supply line flow rate
- Main control room pressure relief valves
- Air supply isolation valves

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c) The ability to fill the emergency air storage tanks from both the compressed and instrument air system and from the external fill connection is verified.

d) The proper flow rate of emergency air to the main control room is verified, demonstrating proper sizing of each air flow limiting orifice and proper operation of each air supply pressure regulator.

e) The ability of the emergency air supply to maintain the main control room at the proper positive pressure is demonstrated, verifying proper operation of the main control room pressure relief dampers.

f) The ability of the habitability system to maintain the proper main control room environment, and proper temperatures in the protection and safety monitoring system cabinet and emergency switchgear rooms for three days is verified. **This verification is only required for the first plant.**

14.2.9.1.7 Expansion, Vibration and Dynamic Effects Testing

Purpose

The purpose of the expansion, vibration and dynamic effects testing is to verify that ~~the reactor coolant system~~ components ~~and associated piping within the~~
Safety-related, and high energy piping system

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~~reactor coolant system pressure boundary~~ are properly installed and supported such that expected movement due to thermal expansion during normal heatup and cooldown, and as a result of transients; as well as vibrations or dynamic effects during steady-state and transients do not result in excessive stress or fatigue to safety-related plant systems and equipment, as described in section 3.9.

Prerequisites

The construction testing and preoperational testing at cold conditions have been successfully completed for the reactor coolant system, chemical and volume control system, passive core cooling system, normal residual heat removal system, main feed water system, startup feed water system, steam generator system, and steam generator blowdown system. All piping and components within the reactor coolant system and steam generator system pressure boundaries and their associated supports and restraints have been inspected and determined to be installed as designed. Additionally, permanently installed support devices have been verified to be in their expected cold, static positions and temporary restraining devices such as hanger locking pins have been removed. The instrumentation required for remote measurements for this testing is installed and the as-built locations and orientation of measuring instruments are documented.

General Test Method and Acceptance Criteria

During hot functional testing, tests are performed to verify that safety-related and high-energy piping system components, piping, support, and restraint deflections are unobstructed and within design basis functional requirements. These tests verify that thermal movements for safety-related piping supports, whose system operation temperature exceeds 250°F, are within design specifi-

cations. The high-temperature portions of the following systems are considered for inclusion in this test:

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- reactor coolant system
- chemical and volume control system
- passive core cooling system
- steam generator system (including any safety-related portions of main steam system, main and startup feedwater systems, and steam generator blowdown system)
- normal residual heat removal system

a) Thermal expansion testing during the preoperational testing phase consists of displacement measurements on the above systems during heatup and cooldown of the reactor coolant system and associated systems (including heatup and cooldown of the passive core cooling system). The testing is in accordance with the requirements specified in subsection 3.9.2 and consists of a combination of visual inspections and local and remote displacement measurements. This testing includes the inspection and measurement of deflection data and support thermal movements to verify of support swing clearance at specified heatup and cooldown intervals; that there is no evidence of blocking of the thermal expansion of any piping or components, other than by installed supports, restraints, and hangers; that spring hanger movements remain within the hot and cold setpoints; that moveable supports do not become fully retracted or extended; and that piping and components return to their approximate baseline cold positions.

b) Vibration testing is performed on safety-related and high-energy system piping and components during both cold and hot conditions to demonstrate that steady-state vibrations are within
acceptable limits. This testing is performed in accordance with the

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requirements specified in subsection 3.9.2 and includes visual observation and local and remote monitoring in critical steady-state operating modes. Results are acceptable when visual observation show no signs of excessive vibration and when measured vibration amplitudes are within acceptable levels to assure no failures from fatigue over the life of the plant as calculated based on expected steady-state operations.

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c) Testing for significant dynamic events is conducted during hot functional testing. This testing is conducted to verify that stress analysis of safety-related and high-energy system piping under transient conditions are acceptable. These tests are performed to verify that significant dynamic effects do not occur during transients such as pump starts and stops, valve stroking, and significant process flow changes. These tests also simulate operating conditions and transients that could result in dynamic events such as:

- starting and stopping of feedwater and startup feedwater flow
- opening and closing of ADS valves during blowdown conditions
- core makeup tank operation initiation
- passive residual heat exchanger operation

Deflection measurements during various plant transients are recorded. The movements due to flow-induced loads are demonstrated to not exceed the stress analysis of the monitored points, and that flow-induced movements and loads do not cause malfunctions of plant equipment or instrumentation.

14.2.9.1.8 Reactor Vessel Internals Vibration Testing (This testing is only rquired for the first plant)

Purpose

The AP600 reactor internals testing is part of a comprehensive vibration

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