

February 24, 2005

MEMORANDUM TO: Dale F. Thatcher, Chief
Quality and Maintenance Section
Plant Support Branch
Division of Inspection Program Management

FROM: Steven R. Jones, Acting Chief */RA/*
Balance of Plant Systems Section
Plant Systems Branch
Division of Systems Safety and Analysis

SUBJECT: DRAFT SAFETY EVALUATION INPUT REGARDING THE LICENSE
AMENDMENT REQUEST FOR EXTENDED POWER UPRATE POWER
ASCENSION TESTING FOR THE WATERFORD STEAM ELECTRIC
STATION UNIT 3 (TAC NO. MC1355)

The Plant Systems Branch has reviewed the information provided by Entergy concerning post-EPU transient testing for Waterford 3. The review was performed in accordance with the guidance given in Standard Review Plan 14.2.1, "Generic Guidelines for Extended Power Uprate Testing." Attached are the results of our review.

Attachment: As stated

CONTACT: A. Stubbs
415-4013

Docket No.: 05000382

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NAME	AStubbs	JTatum	SJones				
DATE	2/24/05	2/24/05	2/24/05				

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Draft Safety Evaluation Input Regarding the
Waterford Steam Electric Station Unit 3
Extended Power Uprate Test Plan

In Waterford 3 Extended Power Uprate License Amendment Request NPF- 38-249, dated November 13, 2003, and in Entergy letter W3F1-2004-004, dated January 29, 2004, Entergy described the planned equipment modifications and the planned extent of the Waterford 3 test program for extended power uprate. The proposed testing included individual component tests, monitoring during power ascension, and monitoring during a maneuvering transient, but the test plan did not include any large transient test. The equipment modifications included physical modifications to equipment with little potential to affect the response of the plant to a large transient (e.g., modifications to the drain collection tank level control valves) and setpoint changes to equipment that mitigates the challenge to safety systems following anticipated operating transients (e.g., the steam bypass control system, the feedwater control system, and the atmospheric dump valve control system). The licensee stated that the initial startup power ascension test program for Waterford 3 included a full power turbine trip test, which was satisfied by a manual turbine trip from 84 percent of the original licensed power in response to an operational event during initial power ascension.

Standard Review Plan Section 14.2.1, "Generic Guidelines for Extended Power Uprate Test Programs," specifies that the EPU test program should re-perform initial power ascension tests or justify proposed deviations, and ensure that functions important to safety that rely on the integrated operation of multiple systems and components are adequately demonstrated. In reviewing the licensee's submittal, the staff found that the initial application and the first testing supplement lacked sufficient justification for not including a large transient test (i.e., the turbine trip test) as part its EPU post modification test program to verify proper performance of balance-of-plant components and systems, and issued a request for additional information (RAI) regarding the justification for not performing the large transient test.

In a letter dated November 8, 2004, the licensee submitted its response to the staff's RAI in the form of a supplement to their license amendment request. In the supplement the applicant provided additional justification for not performing a large transient test. The information provided included an overview of the Westinghouse Long Term Cooling (LTC) code, a discussion of its capability to model and predict plant steady state and transient performance, information on the benchmarking of the LTC code for Waterford 3, and applicable industry experience that involved the use of the LTC code to predict transient response post power uprate for another combustion engineering plant (ANO Unit 2). The response also included a description of the planned modifications, the extent the modifications may affect the transient response of the plant, and the testing that was planned to verify proper implementation of the modifications.

In evaluating the licensee's justification to not perform the large transient test, the staff considered the modifications planned to support the EPU, planned component and system level post modification tests, and the information provided by the licensee in its response to the staff's RAI. Implementation of the EPU requires only minor modifications to the secondary side of the plant, and planned testing of the modified components will demonstrate proper

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implementation of the modifications and proper operation of the components in response to the plant maneuvering transient test. Recent operating transients, including a turbine trip from 100 percent rated power (92.5 percent of post-EPU rated power) on February 14, 2003, provides reasonable assurance that key balance of plant components have adequate physical capacity to perform acceptably in service during operation at the uprated power level. The LTC model, which was used to select appropriate setpoints for balance of plant system controllers and predict transient performance for Waterford, was benchmarked against actual plant data that was gathered from plant operation at steady state for the current rated power level and from three separate major plant transients. The licensee found that the LTC code accurately modeled the plant response to recent plant transients. In their justification for not performing large transient tests, the licensee also cited their use of the LTC code to successfully predict key parameters with good accuracy when ANO2 experienced a post-EPU unplanned scram. Based on the information in the licensee's submittal, and the additional justification given in their RAI response, the staff finds that adequate justification for not performing large transient tests included within the initial test program for the plant has been provided in accordance with the acceptance criteria given in Standard Review Plan (SRP) 14.2.1 "Generic Guidelines for Extended Power Uprate Testing," and that there is reasonable assurance that the balance-of-plant systems and components affected by the planned EPU modifications will perform satisfactorily in service.