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SUBJECT: Forwards documentation outlining agreements & commitments reached at 820107 meeting w/NRC to resolve potential SER open items from initial test program.

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January 19, 1982
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Mr. A. Schwencer, Director
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2
MINUTES OF THE NRC/WNP-2 MEETING TO RESOLVE POTENTIAL SER OPEN ITEMS FROM THE INITIAL TEST PROGRAM (01/07/82)

Reference: Letter, GD Bouchey to A Schwencer, "Request for Additional Information Regarding the Initial Test Program for WNP-2 SER Open Items", dated December 30, 1981

The referenced letter requested a meeting to resolve disagreements between the Supply System and the NRC on several of the issues forwarded with that letter. The enclosed attachments (7 copies) represent the agreements and commitments reached at the resulting meeting (January 7, 1982). Attachment 1 is a list of attendees, Attachment 2 is the NRC concerns as presented at the meeting by the NRC consultant and Attachment 3 is the agreed upon resolution and commitments corresponding to the concerns in Attachment 2.

Please contact Mr. R.M. Nelson, Project Licensing Manager, WNP-2, if further clarification is required.

Very truly yours,

GD Bouchey

G. D. Bouchey
Deputy Director, Safety and Security

PLP/jca
Attachments (3)

cc: WJ Apley - Battelle
R Auluck - NRC
WS Chin - BPA
R Feil - NRC Site

WNP-2 FSAR CHAPTER 14
NRC SER MEETING 1/7/82

ATTENDEES

A. Wood	SS
Donald C. Fischer	USNRC
W. J. Apley	BNW
Dave Whitcomb	SS
L. D. Kassakatis	SS
P. L. Powell	SS Licensing
G. L. Blackburn	SS
J. J. Bufis	SS
C. M. Powers	SS
G. K. Afflerbach	SS
J. D. Martin	SS
R. A. Feil	NRC

Attachment 1

NRC handout from W. Appleg

1

COMMENTS ON WNP-2 RESPONSES

423.21 Answer does not state if the HPCS will be tested at normal operating pressure.
Req: Reg Guide 1.68,App A,1.h.1.c (p.1.68-9,10)

423.30

1. OK

3a. OK

4. Answer states WNP-2 does not intend to do the Rod Sequence Exchange Startup Test.
Req: Reg Guide 1.68,App A,5.d (p.1.68-14)

6. OK

8. Answer states WNP-2 does not intend to measure bypass valve capacity.
Req: Reg Guide 1.68,App A,5.t(p.1.68-15)

10. Question stated that it was felt that the ± 2 % criteria on total SRV flow was excessively severe, given the +35%, -10% individual valve capacity criteria. This is not a safety question and need not be pursued.

11b. OK

12. Answer states that the reactor scram and MSIV isolation will not be performed from outside the control room, as this is contrary to WNP-2 written procedures.
Req: Reg Guide 1.68.2,Rev 1, Section C.1 & C.3 (p. 1.68.2-2)

13. Answer states that a simultaneous trip of both recirculation pumps at 100% power will not be performed, as it will cause a scram and the same data is obtainable from other tests.
Req: 1.68,Rev 1,App A,5.ii (p.1.68-16)
or
1.68,Rev 0,App A,D.2.r (p. 1.68-7)

14. OK

423.33 STP # 24 has been added to Table 14.2-3, but the test conditions have not been specified.

423.39 Answer states that WNP-2 will not perform an analytical determination of the process variable-to-input response times for the Reactor Protection System (RPS).
Req: 1.68,Rev 1,App A,1.j (p. 1.68-9,10)

423.41

1. Answer appears to be OK but no draft of 14.2.12.1.37 was provided.

2.c Answer appears to be OK but no draft of 14.2.12.1.32 or 14.2.12.1.35 was provided.

2.d Answer states that test acceptance criteria for the hot pipe penetration testing have not been developed to date.

2.e OK

2.g Answer appears to be OK but no draft of 14.2.12.1.48 was provided.

2.i Answer appears to be OK but no draft of 14.2.12.1.17 was provided.

423.41.3 Answer states that the Control / Instrument Air System will be tested using an Acceptance Test. The WNP-2 Control / Instrument Air System is non-safety related and the Acceptance Test meets the intent of Regulatory Guide 1.80.

423.41.4 Answer states that Regulatory Guide 1.108 is not applicable to WNP-2. It is (Rev 1 not Rev 0) and an abstract including the applicable testing will be required.

423.42.7 OK if note 10 is deleted from Table 14.2-4.

Errata

1. OK
2. OK
3. OK
4. OK

AGREEMENTS AND COMMITMENTS

RESULTS FROM WNP-2

FSAR CHAPTER 14

NRC SER MEETING 1/7/82

Attachment 3

423.21 FSAR 14.2.12.1.14c(5) requires High Pressure Core Spray (HPCS) system verification of flow paths and flow rates. The HPCS pump will be operated over the full spectrum of flows and expected discharge pressures, and the results compared to pump curves. This test will show what the flow rate will be under any operating pressure.

423.30

4.0 NRC will evaluate rod sequence exchange tests at plants prior to Browns Ferry 1 and 2 and determine applicability to WNP-2.

(Cooper, Fitzpatrick, Hatch and Peach Bottom plants did not perform the subject tests. WNP-2 contends that the value of the data from the tests is not commensurate with the costs of performing the tests: reduction of power for an extended period.)

WNP-2 will commit to accomplish the subject tests at the first normally scheduled rod sequence exchange evolution.

(Subsequent communication with the NRC staff indicates that this position is acceptable.)

423.30

8.0 WNP-2 will determine turbine bypass valve capacity and compare with developed acceptance criteria based on transient analysis assumptions.

423.30

10 OK

423.30

12 For purposes of this test, reactor scram and MSIV isolation will be accomplished from the control room.

A caution will be added to the WNP-2 emergency procedures to direct an operator to open the RPS MG set output breakers in the event that reactor scram and MSIV isolation cannot be accomplished during control room evacuation.

423.30

13 The WNP-2 position is that the turbine trip at 100% power transient envelopes the simultaneous recirculation pump trip transient. WNP-2 will expand this response to include engineering analysis to demonstrate that the two pump trip is enveloped and not required. (Response attached)

Flow coast down data will be obtained during the turbine trip at 100% power test.

Subsequent NRC review of the attached response indicates this position is acceptable.

423.30.13

The design dynamic response of the plant to a simultaneous trip of both recirculation pumps at 100% power produces a reactor scram. Our test program does not initiate transients solely to confirm that a reactor scram occurs when it should. All data pertinent to a two pump trip from high power transient is obtained in conjunction with other tests (e.g., STI #27 performed @ 100% power). A two recirculation pump trip transient is performed in the test program from Test Condition 3 (approximately 100% reactor core flow and approximately 75% reactor power). The two pump trip is not done at Test Condition 6 (approximately 100% reactor core flow and approximately 100% reactor power) because the turbine trip transient done from that condition is a more severe transient which still yields all the significant data which would be obtained from the pump trip transient.

The specifics of the comparison of the turbine trip transient with bypass capability and the two recirculation pump trip transient are presented in FSAR sections 15.2.3 and 15.3.1 respectively (attached).

Both these analyses start from 105% of rated nuclear boiler steam flow and 100% core flow. Tables 15.2-3 and 15.3-2 list the sequence of events for each of these transients. At 0.01 second into the turbine trip transient the RPT (recirculation pump trip) circuitry initiates the tripping of both recirculation pumps and by 0.14 seconds the pump trip actuation is complete. Also at 4.33 seconds into the recirculation pump trip transient, a turbine trip is initiated by high reactor water level (L8). Thus, both transients proceed toward the same final condition (i.e., a turbine trip).

As is apparent from the information in these sections, the turbine trip is a more severe transient. For the two recirculation pump trip, the turbine is available to take vessel steam flow during the first 4.33 seconds of the transient while the flow coast down is reducing reactor power from 105% down to about 40% at which time the turbine trip and scram takes place and only the turbine bypass capacity remains (see Figure 15.3-2). However, during the turbine trip with bypass transient, the turbine is not available to take steam (beyond the bypass capacity) from the very start and the results from both the vessel pressurization and the core response perspectives are more severe (see Figure 15.2-3). The following lists the significant parameters from the FSAR sections for each transient:

TWO RECIRC PUMP TRIP

MCPR remains at 1.24
Neutron flux decreases
Fuel surface heat flux decreases
Vessel dome pressure increases
by only about 80 psig

423.30.13 (Cont'd)

TURBINE TRIP WITH BYPASS

MCPR falls to 1.18
Neutron flux peaks at 147.5%
Fuel surface heat flux peaks at 101.7%
Vessel dome pressure peaks at 1136 psig

In addition, during the turbine trip transient all of the relevant recirculation system performance parameters will be automatically recorded to document the flow coastdown phenomenon and will be analyzed as appropriate. Thus, the two recirculation pump trip from Test Condition 6 is not a necessary part of this test program and can therefore be excluded.

423.33

The subject table has been modified as attached.

TABLE 14.2-3

STABILLITY TESTS

TEST NO.	TEST TITLE	TEST CONDITION					
	APPROXIMATE POWER (% Rated)	20	40	60-75	60-75	95-100	40-50
	APPROXIMATE CORE FLOW (% Rated)	37	50	100	55	100	NC
21	Core Power - Void Mode Response		X		X		X
22	Press. Reg. Setpoint Changes	X	X	X	X	X	X
22	Press. Reg. Backup Regulator	X	X	X	X	X	X
23	FW System: Water Level Setpoint Change		X	X	X	X	X
23	FW System: Heater Loss					X	
29	Recirculation Flow Control System	X	X	X	X	X	
	Test Condition	1	2	3	5	6	4
24	Turbine Valve Surveillance				X		

423.39 The Reactor Protection System (RPS) is designed to meet the intent of IEEE-279 for nuclear power plant protection systems. The measurement of the response time as required by the Technical Specifications provides assurance that the protective functions ae completed within the time limit assumed in the accident analysis. The time limits in the Technical Specifications are measurements from the input of the sensor to the reactor protection scram solenoids. These limits will be verified in the Reactor Protection System Preoperational Test (14.2.12.1.18).

There are no known requirements for WNP-2 to perform an analytical determination of the process variable-to-input response times and add the delay to the time measured in the reactor protection system preoperational test. Therefore, we are not planning to include this in our surveillance of RPS sensor response.

OK

423.41 1., 2.c, 2.e, 2.g, 2.i. OK

423.41.2.d NRC provided the Grand Gulf commitment on this issue for WNP-2 information. WNP-2 will evaluate the Grand Gulf information and provide similar acceptance criteria specific to WNP-2.

423.41.3 OK

423.41.4 WNP-2 will comply with Reg. Guide 1.108 Rev. 1, 1977. Test abstract (14.2.12.1.37) indicating compliance to Reg. Guide 1.108 Rev. 1, 1977 will be provided (indicating the 69/N start test). attached.

Modify this section as follows:

14.2.12.1.37 Loss of Power and Safety Testing Preoperational Test

a. Purpose

To verify the operaton of the 230/115KV, 6.9KV, 4.16KV and 480V distribution systems.

To verify the integrated ability of the plant electrical distribution and safety systems to operate on normal and standby power sources during accident conditions.

To verify that loss of a single AC or DC distribution system division (exclusive of the HPCS diesel-generator and batteries) will not prevent the remaining systems from actuating during an accident condition.

b. Prerequisites

The System Lineup Tests have been completed and the TWG has reviewed and approved the procedure and the Startup Superintendent has approved the initiation of testing. The 125V DC system and the ECCS are available to support testing. ~~The 69/N starts are completed.~~ and the 69/N coincident starts for the consecutive emergency D/G's

c. General Test Methods and Acceptance Criteria

Verification of the 230/115KV, 6.9KV, 4.16KV and 480V distribution system operability shall be demonstrated by the following:

(1) Demonstration of circuit integrity and integrated operation of circuit breakers, controls and interlocks, instrumentation, automatic transfer features and protective devices and alarms.

(2) Demonstration of proper system response to a loss of the 230KV and 115KV distribution systems independently and simultaneously both with and without LOCA/Containment Isolation signals.

(3) Demonstration of proper system response to a loss of the 230/115KV distribution systems and one individual standby Diesel-Generator during an ECCS/Containment Isolation actuation.

423.42.7 WNP-2 intends to meet the requirement of R.G. 1.68 by performing the MSIV full isolation at test condition 6.

WNP-2 will provide justification for note 10 by 1/9/82. If sufficient justification is not provided, note 10 will be deleted.

(Note 10 has subsequently been deleted. This issue is closed with this action.)

Subsequent to the 1/7/82 meeting the NRC requested a Supply System position on the simulated loss of all A/C power test to be performed at the LaSalle and Grand Gulf Power Stations, subject to the satisfactory safety evaluations. In response, item IG1 of the WNP-2 FSAR Appendix B (Attached) has been modified to indicate the Supply System position.

I.G.1 PREOPERATIONAL AND LOW-POWER TESTING

Position (NUREG-0660)

The objective is to increase the capability of the shift crews to operate facilities in a safe and competent manner by assuring that training for plant changes and off-normal events is conducted. Near-term operating license facilities will be required to develop and implement intensified training exercises during the low-power testing programs. This may involve the repetition of startup tests on different shifts for training purposes. Based on experiences from the near-term operating license facilities, requirements may be applied to other new facilities or incorporated into the plant drill requirement (Item I.A.2.5). Review comprehensiveness of test programs.

NRR will require new operating licensees to conduct a set of low-power tests to accomplish the requirement. The set of tests will be determined on a case-by-case basis for the first few plants. Then NRR will develop acceptance criteria for low-power test programs to provide "hands on" training for plant evaluation and off-normal events for each operating shift. It is not expected that all tests will be required to be conducted by each operating shift. Observation by one shift of training of another shift may be acceptable.

NRR will develop criteria in conjunction with initial near-term operating license reviews.

Licensees will (1) define training plan prior to loading fuel, and (2) conduct training prior to full-power operation.

Clarification

None

WNP-2 Position

The Supply System is committed to meet the intent of NUREG-0660 by performance of a special low power test subprogram which provides supplemental operator training in the areas of response to abnormal plant conditions and familiarity with critical systems. The special subprogram will amplify the well-established training value of the present Startup Test Program (STP) through (1) instruction on the content, goals, and requirements of the existing program, (2) addition of selected special tests to the STP to demonstrate abnormal scenarios and use of critical systems and/or emergency operating procedures to control them, and (3) utili-

zation of the knowledge and experience gained during the STP in the training programs for future operators.

The overall Startup Test Program is outlined in Chapter 14 while the conduct of operations is discussed in Chapter 13. During the preoperational and power ascension test phases, the operations personnel will be intimately involved in the performance of the various test procedures. With the impetus provided by the responsible test phase organization, the operations staff is charged with establishing the required plant/system conditions, initiating and controlling the desired test transient and returning the plant/system to its normal condition. The operations staff provides the physical ability to accomplish the Startup Test Program. In this fashion, the completion of the Startup Test Program provides an unparalleled training opportunity for the operators.

The following outlines those additional actions the Supply System will implement to augment the extensive training benefits inherent in the existing STP program:

I. Development and Implementation of a Training Course on the STP

A. General Classroom Instruction (Prior to testing)

1) STP Overview

a) Organization, Delineation of Responsibilities, Goals

b) Administrative and Emergency Procedures

c) Preop and Power Ascension Test Schedule

2) Review Selected STP Specifics, for example;

a) Pertinent Preop Test Purposes, Procedures, Anticipated Results

b) Integrated System Cold Functional Tests

c) Fuel Loading, Heatup, Power Ascension Test Purposes, Procedures, Anticipated Results

d) Special Test Subprogram Test Purposes, Procedures, Anticipated Results

3) Review Expected Utilization of STP Data

a) Documentation of Plant Safety

b) Feedback/Confirmation of Anticipated Results

B. Test Phase Instruction Performed by Test Director on a Shift Basis (during testing)

1) Review of the Immediate Test Schedule

2) Discussion of the Impending Tests: Procedures, Anticipated results, Precautions

3) Review/Disseminate Plant Response Data from Previous Shift(s)

C. Post-STP Completion Instruction Performed by Test Director (following testing)

1) Review of the Actual STP Results vs. Anticipated Results

2) Review Plant Design Changes/System Modifications Required

II. Development and Performance of a Special Test Subprogram

A. Additional RCIC System Tests

1) RCIC Operation Following Loss of AC Power to the System

2) RCIC Operation to Prove DC Separation

B. Integrated Reactor Vessel Level Instrumentation Functional Test

C. Integrated Containment Pressure Instrumentation Functional Test

D. Simulated Loss of Control and Instrument Air Test

E. Repetition of Some Normal STP Tests, for example:

1) Feedwater Pump Trip/Recirc Runback Demonstration

2) Turbine Trip/Generator Load Rejection Within Bypass Valve Capacity

3) Pressure Regulator Setpoint Changes

4) Recirculation Pump Trips

5) RHR Steam Condensing Mode Operation

6) Feedwater Level Setpoint Changes

III. Utilization of the STP Data

A. Refine the WNP-2 Simulator Response Models, as appropriate

B. Incorporate a Major Plant Transient Response Section in Operator Training Program, as appropriate

C. Update License Program Training and Requalification Material, as appropriate.

It is anticipated that every ~~Specimen~~ participating member of the operations staff will obtain valuable knowledge and experience through participation in the WNP-2 Startup Test Program. Each will receive appropriate classroom instruction and through judicious scheduling of tests, most will ~~obtain personal exposure~~ exposed to a variety of plant/system transient responses (or review of results thereof). ~~and~~ The training received will be continually re-enforced through normal requalification program refinements. Future license candidates will also benefit from the training material upgrades resulting from the STP experience.

With this program outline, the Supply System is meeting the intent of NUREG-0660, Item I.G.1. Specific details of the training program, additional test procedures, and documentation methods will be developed and made available for on-site NRC I&E review ~~prior to July 1982~~.

Additionally, the Supply System will review the results of the simulated loss of all A/C power test to be performed at the La Salle and Grand Gulf Power Stations, subject to satisfactory safety evalutions. The results and merits of performing these tests will be reviewed, an analysis performed, and recommendations forwarded to the NRC as to whether or not the test, or some portion of it, should be repeated at WNP-2.

Based on the Supply System recommendations and the benefits realized on other BWR plants conducting the subject tests WNP-2 and the NRC will determine the scope of those portions of the tests requiring performance at WNP-2.