

TU ELECTRIC

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July 10, 1992

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI)
CONCERNING THE STARTUP TESTING PROGRAM

The following information is provided in response to the NRC RAI dated June 22, 1992, concerning the CPSES startup testing program.

Question 1

Table 14.2-3, Initial Startup Test Summaries, Sheet 33, Automatic Reactor Control System Test, indicates this test will be conducted at 50 percent power. Section 1A(B), Conformance to Regulatory Guide (RG) 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants," is unclear regarding the power level at which this test is to be conducted. The Initial Startup Test Schedule shown in Figure 14.2-4 does not provide information regarding this test. Clarify test conditions regarding the Automatic Reactor Control System Test.

Response to Question 1

See attached revised page 1A(B)-43 and Figure 14.2-4.

Question 2

FSAR Section 1A(B), Conformance to Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," was revised to clarify the requirements of Regulatory Positions C.2.a.5, C.2.a.9, C.2.d, and C.3.b and to describe testing exceptions taken for Regulatory Positions C.2.a.3, C.2.c.2, and C.2.d (Amendment 78). The response to Q423.4, which requested justification for any exceptions to RG 1.108, states that CPSES complies with RG 1.108 as discussed in Appendix 1A(B) and the response to Q423.25. The response to Q423.12, Item 14 states that the Diesel Generators Test Summary has been expanded to conform to Regulatory Positions 2.a and 2.b of RG 1.108 (Rev. 1, August 1977). The response to Q423.25 states that the Diesel Generator Test Summary has been

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expanded to conform to Regulatory Positions 2.a.(5) and 2.b of RG 1.108 (Rev.1, August 1977). Modify FSAR Section 1A(B), FSAR Table 14.2-2 (Sheet 34, "Diesel Generator Test Summary"), and the responses to Q423.4, Q423.12, Item 14, and Q423.25, as appropriate, to address the following concerns:

- 2a. Certain comments regarding Regulatory Positions specified in RG 1.108 are referred to as "clarifications" when they in fact are either alternate approaches or exceptions. These comments should be described as such and categorized in the appropriate discussion area.

Response to Question 2a

Clarifications and exceptions to RG 1.108 have been recategorized in the appropriate sections as shown on attached revised pages 1A(B)-70 and 71.

- 2b. Initial testing should demonstrate full-load-carrying capability for an interval of not less than 24 hours, of which 22 hours should be at a load equivalent to the continuous rating of the diesel generator and 2 hours at a load equivalent to the 2-hour rating of the diesel generator in accordance with RG 1.108, Regulatory Position C.2.a(3). Testing at a lower-than-rated load is not adequate for initial testing, but may be adequate for subsequent testing dependent upon Technical Specification surveillance requirements.

Response to Question 2b

See attached revised page 1A(B)-70.

- 2c. Design-accident-loading-sequence to design-load requirements are applicable for emergency diesel generator initial testing performed pursuant to RG 1.108, Regulatory Position C.2.a(5), rather than shutdown-loading sequence to shutdown-load requirements.

Response to Question 2c

See attached revised page 1A(B)-70.

- 2d. The number of valid tests with no failures for each emergency diesel generator unit are to be from consecutive tests in accordance with RG 1.108, Regulatory Position C.2.a(9). Valid tests and failures are as defined in Regulatory Position C.2.e.

Response to Question 2d

See attached revised page 1A(B)-71.

- 2e. Failures that are the seventh or greater in the last 100 valid tests should be reported as such and should include an assessment of the impact and applicability of these failures and their causes on the overall emergency power supply system availability and reliability and reliability, including implications for the other emergency diesel generator units, consistent with RG 1.108, Regulatory Position C.3.b(1) through (5).

Response to Question 2e

See attached revised page 1A(B)-70.

Question 3

The response to Q423.2 describing preoperational testing was revised to delete test completion of the Nuclear Incore Instrumentation subsequent to fuel load and states that the Reactor Control System Test is the only preoperational test to be completed after fuel load (Amendment 78). The response to Q423.10 does not identify any additional preoperational tests intended to be completed after initial fuel load. The response to Q423.23, Item 1 states that Figure 14.2-3 has been revised to correctly reflect the response to Q423.10. Figure 14.2-3 shows that the following additional preoperational tests will be completed after initial fuel load:

- * Incore Nuclear Instrumentation
- * Auxiliary Startup Instrumentation
- * Operational Vibration Tests

For each of these tests, either modify Figure 14.2-3 to show that these tests will be completed prior to fuel load, or modify the response to Q423.10 to: (1) state what portions of each test will be delayed until after fuel loading, (2) provide technical justification for delaying these portions, and (3) state when each test will be completed (key responses to operating modes defined in Technical Specifications or to power ascension test power levels defined in Chapter 14).

Response to Question 3

The descriptions of "Incore Nuclear Instrumentation" and "Auxiliary Startup Instrumentation" testing were relocated under the Initial Startup program and included in Table 14.2-3 in a previous FSAR amendment. Figures 14.2-3 and 14.2-4 were inadvertently not updated to reflect these changes at that time. Updated Figures 14.2-3 and 14.2-4 are attached. Also, see attached revised responses to Q423.2 and Q423.10 (pages 423-2, 3, 4 and 19) for requested information related to "Operational Vibration Test".

Question 4

The response to Q423.16, Item 2 was revised to state that the performance of process and area radiation monitoring equipment shall be demonstrated during startup testing for Unit 1 by comparison of monitor indication with the results of radiochemical analysis, and refers to Table 14.2-2, Sheet 24A and Table 14.2-3, Sheet 13A for Unit 2 (Amendment 81).

These changes remove the demonstration of process and area radiation monitoring equipment under operating conditions for Unit 2. Either modify Table 14.2-3 and the response to Q423.16, Item 2, as appropriate to reinstate demonstration of this capability for Unit 2 or provide technical justification for this exception to RG 1.68, Appendix A, Item 5.2 in FSAR Section 1A(B).

Response to Question 4

See attached revised page 1A(B)-43.

Question 5

The changes in conformance to Regulatory Positions C.1.a and C.3 of Regulatory Guide 1.68.2, "Initial Startup Test Program to Demonstrate Remote Shutdown Capability for Water-Cooled Nuclear Power Plants," described in TU Electric letter TXX-92146 dated March 31, 1992, are unacceptable. The demonstration of remote shutdown capability for Unit 2 should conform to the guidance provided in RG 1.68.2.

Response to Question 5

The request for modification of this test in TU Electric letter TXX-92146 is withdrawn. The demonstration of remote shutdown for Unit 2 will be conducted in conformance with RG 1.68.2 as currently described in applicable FSAR sections.

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For ease of identification, the proposed changes to FSAR text included in the attachment to this letter are printed in bold face type. Figure changes are hand marked. These changes will be incorporated into FSAR Amendment 86.

Sincerely,

William J. Cahill, Jr.

William J. Cahill, Jr.

By: *Roger D. Walker*

Roger D. Walker
Manager of Regulatory
Affairs for NEO

BSD/bsd
Attachment

c - Mr. J. L. Milhoan, Region IV
Resident Inspectors, CPSES (2)
Mr. B. E. Holian, NRR
Mr. T. A. Bergman, NRR

The unit load transient at approximately 30% RTP will be performed following completion of 50% RTP plateau testing to assure proper control system response.

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The Automatic Reactor Control System test is performed at 50% RTP and intended as a precursor to the first Unit Load Transient test. It is designed to ensure that the automatic rod control system can restore the Reactor Coolant System (RCS) temperature to within a ± 1.5 Deg-F deadband of the reference temperature. Prior to 50% RTP, proper operation of this function would be demonstrated by observation during the normal power escalation, where the control rods will be in automatic and already controlling the RCS temperature to within the deadband.

Response to
question 1

21. Appendix A, subparagraph 5.z

For Unit 2, each radiation monitor and detector will be calibrated in lieu of only performing a radiation check as part of the preoperational test program (Table 14.2-2, Sheet 24A). The calibration of the monitors and detectors meet the intent of RG 1.6B, Revision 2, Sections 4.g and 5.z (see FSAR 11.5.2.11) and provides a more accurate method for demonstration of their proper operation.

Response to
question 4

Regulatory Guide 1.6B.1

Preoperational and Initial Startup Testing of Feedwater and Condensate Systems for Boiling Water Reactor Power Plants

Discussion

This regulatory guide is not applicable to the CPSES

78 | 2) The requirements of Regulatory Positions are clarified as described below:

Response to question 2e

Regulatory Position C.2.d

If the number of failures in the last 100 valid tests is seven or more for an individual diesel generator unit, the reliability of that diesel generator requires special evaluation (i.e., the reliability of both diesel generators is not impacted).

78 | 3) The CPSES periodic testing program meets the intent of the regulatory guide with the following exceptions:

Response to question 2b

78 | a. Regulatory Position C.2.a.3

During preoperational testing, testing will be conducted at the full-load-carrying capability for an interval of not less than 24 hours, of which 22 hours will be at the continuous rating capability of the diesel generator and 2 hours at a load equivalent to the two hour rating of the diesel generator. At least once every 18 months, testing will be conducted to demonstrate full-load-carrying capability for an interval of not less than 24 hours, of which 22 hours will be at a load which exceeds the maximum expected diesel generator load requirements and 2 hours at a load which is approximately 110% of this maximum expected load.

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78 | b. Regulatory Position C.2.a.5

Demonstrate functional capability at full load temperature conditions by rerunning the test phase outlined in Regulatory Position C.2.a.1 and by demonstrating proper operation for shutdown-loading-sequence to shutdown-load requirements immediately following the performance of C.2.a.3, except during preoperational testing when the proper operation for the design-accident-loading-sequence to design-load requirements will be demonstrated.

Response to question 2c

CPSES/FSAR

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| c. | Regulatory Position C.2.a.9 | 78 |
| | Demonstrate the reliability of the Emergency Diesel Generator by performing at least a total of 69 (but no less than 23 per Emergency Diesel Generator) consecutive valid start and load tests on the Emergency Diesel Generators from cold ambient conditions to at least 50 percent continuous rating for at least 1 hour with no failures. These tests need not be performed as part of the pre-operational test program, but may be performed at any time prior to the required operability of the Emergency Diesel Generator. | 78 |
| | | Response to question 2d |
| d. | Regulatory Position C.2.c.2 | 78 |
| | Periodic testing of the diesel generator units during normal plant operation to demonstrate full-load-carrying capability will be conducted at a load which exceeds the maximum expected diesel generator load requirements. During this test, loading to the diesel generator is accomplished in accordance with vendor recommendations. | 78 |
| e. | Regulatory Position C.2.d | 78 |
| | For the purposes of determining the required test frequency, the previous test failure count may be reduced to zero if a complete diesel overhaul to like-new condition is completed, provided that the overhaul, including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. | 78 |
| | The interval for periodic testing of an individual diesel generator will be determined on a per diesel generator basis rather than on the basis of the nuclear unit's collective diesel generator performance. | 78 |

Figure 14.2-3 PREOPERATIONAL TEST SCHEDULE

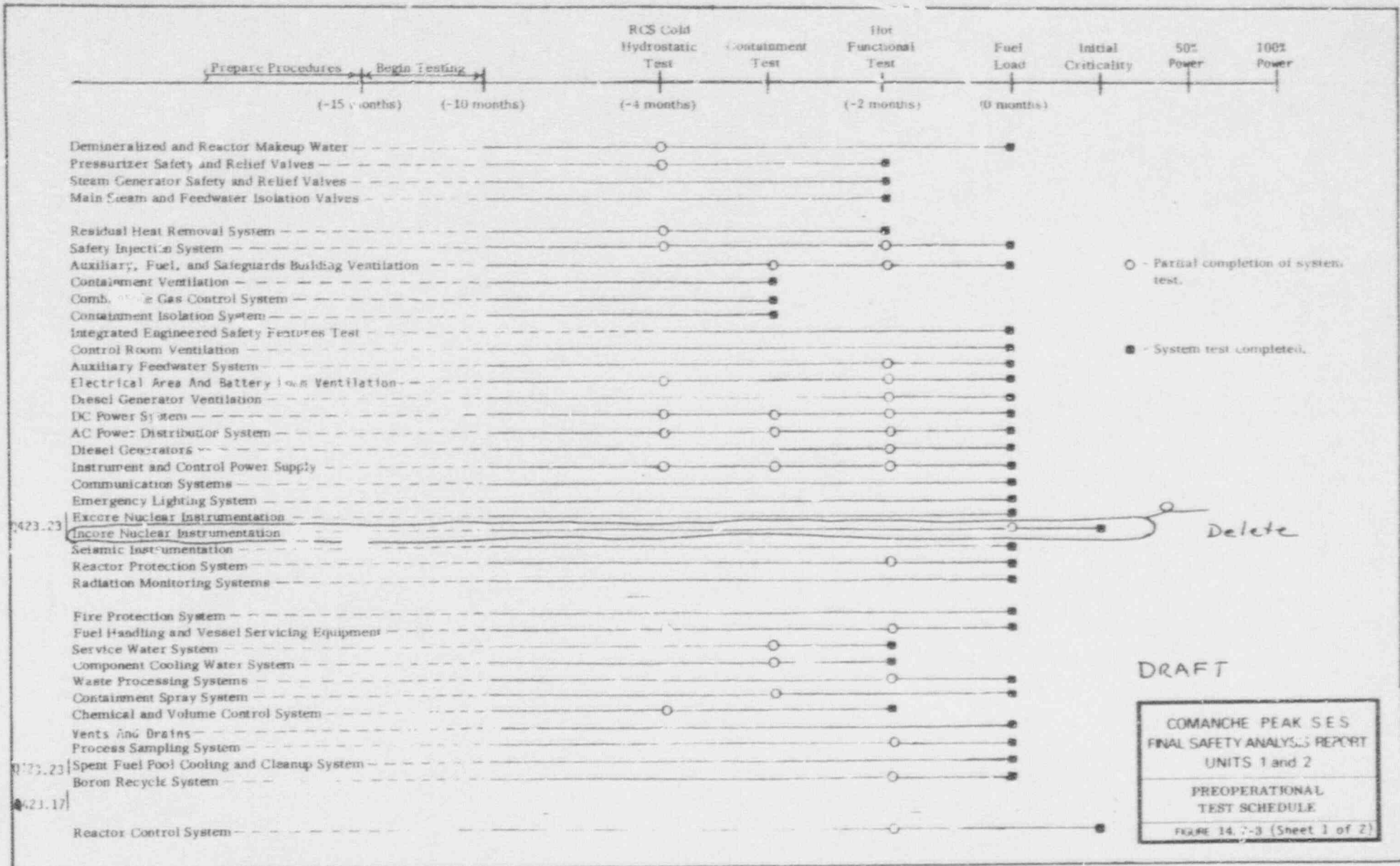


Figure 14.2-3 PREOPERATIONAL TEST SCHEDULE

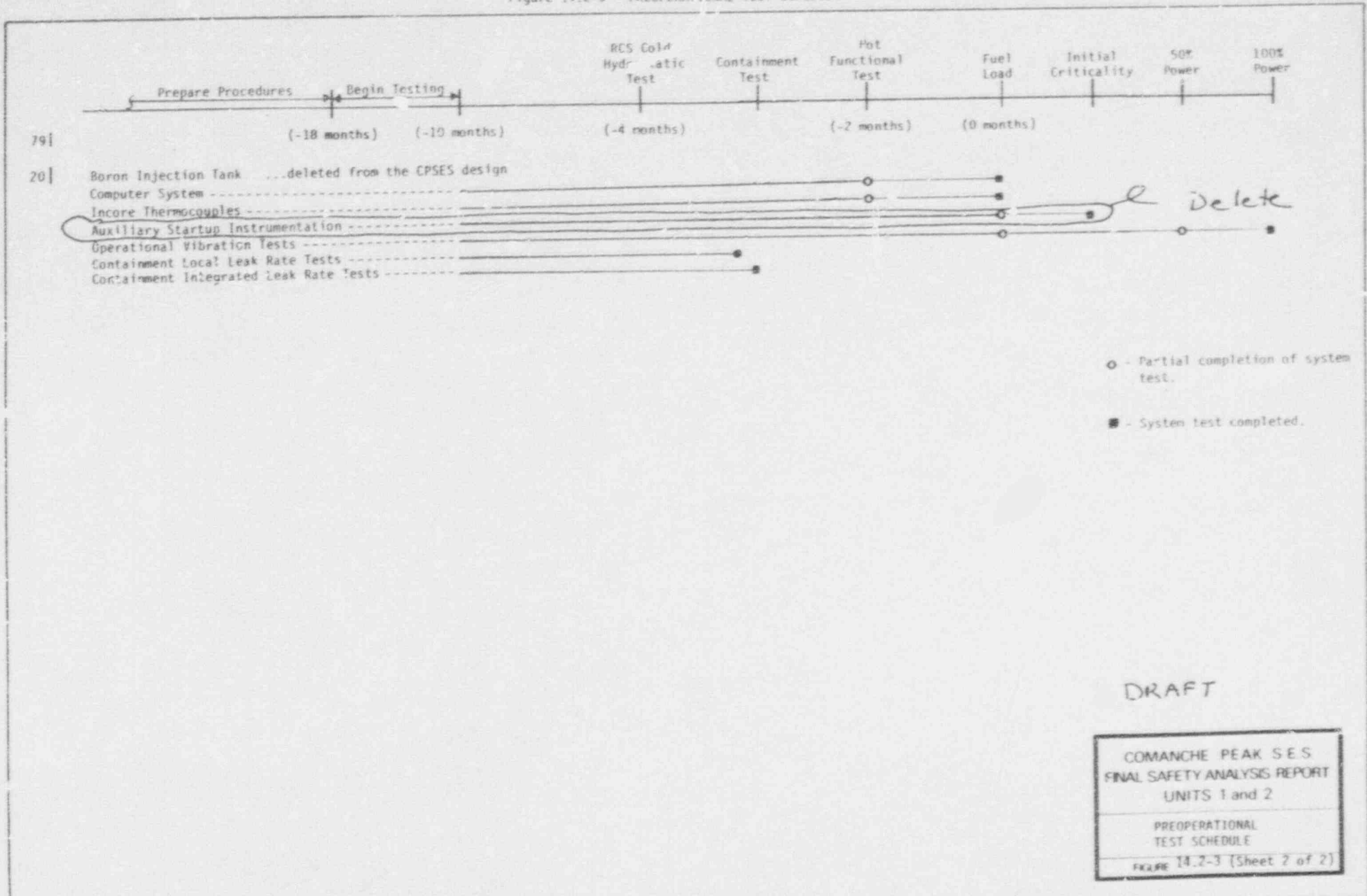
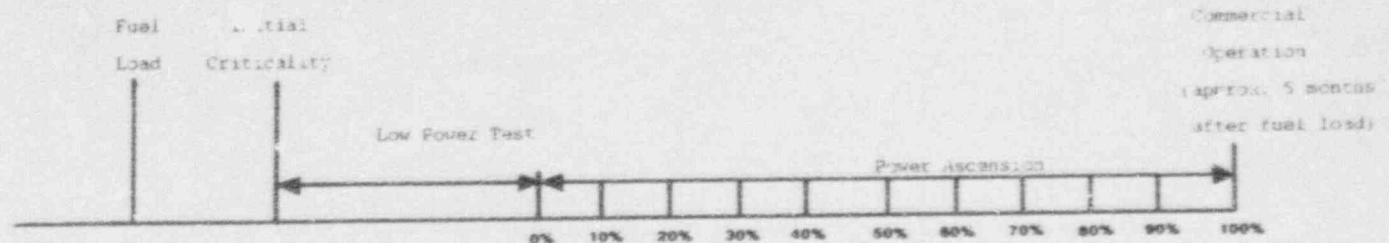


FIGURE 14.2-4 INITIAL STARTUP TEST SCHEDULE



Reactor Trip System	-----	-----	X		
Boron Reactivity Worths	-----	-----	-----	X	
Rod Drop Tests	-----	-----	X		
Automatic Reactor Control System Test	-----	-----	X	-----	X (add)
Reactor Coolant Flow Tests	-----	-----	X		
Reactor Coolant Flow Coastdown	-----	-----	X		
Control Rod Drive Tests	-----	-----	X	-----	X
Rod Position Indicators	-----	-----	X		
Moderator Temperature Reactivity Coefficient	-----	-----	-----	X	
Control Rod Reactivity Worths	-----	-----	-----	X	
Auxiliary Startup Instrumentation	-X	(add)			
Chemical Tests	-----	X	-----	X	-----
Flux Distribution Measurements	-----	-----	-----	X	X
Remote Shutdown	-----	-----	-----	X	
Calibration of Nuclear Instrumentation	-X	X	-----	X	-----
Radiation Survey	-----	-----	-----	X	-----
Process and Effluent Monitoring	-----	-----	-----	-----	-----
Core Reactivity Balance	-----	-----	-----	-----	X
Loss of Offsite Power	-----	-----	-----	-----	X
Turbine Trip	-----	-----	-----	-----	X
Core Performance Evaluation	-----	-----	-----	-----	X
Unit Load Transients	-----	-----	-----	-----	X
IN-CORE NUCLEAR INSTRUMENTATION	-----	X	-----	X	(add)
Reactor Coolant Leak Test	-----	-----	-----	X	
Rod Control System Test	-----	-----	-----	X	

X - Test required to be performed at this power.

NOTE: ABOVE CHANGES APPLY TO BOTH UNITS 1 & 2. (i.e., Figures 14.2-4A and 14.2-4B)

Section 14.2.5 states that the JTG will review and approve the results of "required" tests before fuel loading. If portions of any preoperational tests are intended to be conducted, or their results approved, after fuel loading: (1) list each test; (2) state what portions of each test will be delayed until after fuel loading; (3) provide technical justification for delaying these portions; and (4) state when each test will be completed (key to operating modes defined in your technical specifications, or to power ascension test power levels defined in Chapter 14). Note that any test that you do not intend to begin prior to fuel loading should be included in your startup test phase instead of the preoperational test phase.

R423.2

(1) Tests:

- a. Reactor Control System Test
- b. Operational Vibration Test

Response to
question 3

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NOTE: Testing deferred from preoperational testing along with open testing deficiencies will be identified for Initial Startup Testing. Deferred testing and open testing deficiencies, will not be identified on the Preoperational Test Summary Sheets.

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(2) Portions of Test Being Delayed

- a. Reactor Control System Test

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The test summary table 14.2.3 (Sheet 33 of 35), is to be modified to incorporate the following test method whose performance

will be delayed until after fuel loading. "A functional demonstration at approximately 50% power to verify the Reactor Control System automatically maintains the proper reactor coolant average temperature conditions".

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b. Operational Vibration Test

This test will be performed at most major test plateaus during preoperational and initial startup testing with final completion during transient testing from 100% RTP.

Response to question 3

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(3) Justification

a. Reactor Control System Test

The functional test portion is being delayed because the actual signals and conditions required to perform the functional test cannot be obtained prior to fuel loading.

b. Operational Vibration Test

Additional data collection and evaluation must be made periodically during power ascension and during the turbine trip test from 100% RTP.

Response to question 3

(4) Test Completion

a. Reactor Control System Test

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The functional demonstration shall be completed while in mode 1 at a steady state power level of approximately 50%.

b. Operational Vibration Test

Response to
question 3

Completion of this test will be during transient tests from 100% RTP.

Q423.10

Your response to item 423.2 states that portions of two preoperational tests will be performed during the startup tests phase of the initial test program (after fuel loading). However, Figure 14.2-3 shows that five preoperational tests will be completed after fuel load. For the four tests that are not addressed in 423.2, (1) state what portions of each test will be delayed until after fuel loading, (2) provide technical justification for delaying these portions, and (3) state when each test will be completed (key to operating modes defined in technical specifications or to power ascension test power levels defined in Chapter 14). Also, modify Figure 14.2-3 to show that the preoperational tests of the Reactor Control System will be completed after fuel load (as stated in response to item 423.2).

R423.10

Figure 14.2-3 has been revised as follows:

- a. The Reactor Trip System has been deleted (refer to question 423.17 response)
- b. The Excore Nuclear Instrumentation, Spent Fuel Pool Cooling and Cleanup System tests shall be completed prior to fuel load.
- c. Reactor Control System test shall be completed after fuel load.
- d. The Incore Nuclear Instrumentation test has been moved to the initial startup phase.
- e. The Auxiliary Startup Instrumentation test has been moved to the initial startup phase.

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Response to
question 3