



TU ELECTRIC

Log # TXX-89564  
File # 10010  
914  
Ref. # 10CFR50.34(b)

August 25, 1989

William J. Cahill, Jr.  
Executive Vice President

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSER)  
DOCKET NOS. 50-445 AND 50-446  
ADVANCE FSAR SUBMITTAL  
CONTAINMENT ATMOSPHERE MONITORING SYSTEM & COMBUSTIBLE  
GAS CONTROL SYSTEM PREOPERATIONAL TEST SUMMARIES

Gentlemen:

This letter provides an advance copy of changes to be included in a future FSAR amendment dealing with the Preoperational Test Summaries for the Containment Atmosphere Monitoring System and the Combustible Gas Control System.

The Containment Atmosphere Monitoring System Test Summary has been corrected to reflect the actual system design. The Combustible Gas Control System Test Summary has been clarified by eliminating the description of the testing of the hydrogen analyzer and by describing this testing within the Containment Atmosphere Monitoring System Test Summary.

In order to facilitate NRC staff review of these changes, the enclosure is organized as follows:

1. Draft revised FSAR pages, with changed portions indicated by a bar in the margin, as they are to appear in a future amendment (additional pages immediately preceding and/or following the revised pages are provided if needed to understand the change).
2. A line-by-line description/justification of each item revised.
3. A copy of related SER/SSER sections.
4. An index page containing the title of "bullets" which consolidates and categorizes similar individual changes by subject and related SER section.

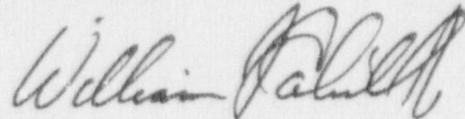
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5. A discussion of each "bullet" which includes:
- The line-by-line description/justification for each item related to the "bullet" which has been screened as a group 1 or 2 item or a group 3 or 4 item which impacts the existing SER/SSER's. (The discussion of these groups is contained in TU Electric's letter TXX-88467 dated June 1, 1988).
  - The bold/overstrike version of the revised FSAR pages referenced by the description/justification for each item identified above. The bold/overstrike version facilitates review of the revisions by highlighting each addition of new text in bold type font and overstriking with a slash (/) the portion of the text that is deleted.

If you have any questions regarding this submittal please contact Richard Berk at (214) 812-8952.

Sincerely,



William J. Cahill, Jr.

RSB/vld  
Enclosure

c - Mr. R. D. Martin, Region IV  
Resident Inspectors, CPSES (3)

Enclosure to TXX-89564  
August 25, 1989

Advance FSAR Change Regarding the Containment Atmosphere  
Monitoring System & Combustible Gas Control System  
Preoperational Test Summaries

Item 1	Draft Revised FSAR Pages	pg. 2 thru 3
Item 2	Description/Justification	pg. 4
Item 3	Related SER/SSER	pg. 5 thru 8
Item 4	Index Page Containing the Title of "Bullets"	pg. 9
Item 5	Description/Justification for Screened FSAR Changes	pg. 10
	Markup of Existing FSAR Pages	pg. 11 thru 13

pg. 1 of 13

CONTAINMENT ATMOSPHERE MONITORING SYSTEM  
TEST SUMMARY

OBJECTIVE

To demonstrate the operability of the Containment Atmosphere Monitoring System.

PREREQUISITES

1. Setpoints for alarms and indicating lights have been set.

TEST METHOD

- |   |       |
|---|-------|
| 1. Demonstrate proper operation of the hydrogen analyzer/monitoring equipment by functional testing from the microprocessor keyboard. | DRAFT |
| 2. Demonstrate proper operation of the temperature and humidity instrumentation.  | DRAFT |
| 3. Demonstrate proper operation of the containment pressure transmitters.   | DRAFT |

ACCEPTANCE CRITERIA

The Containment Atmosphere Monitoring System functions in accordance with design requirements.	Q423.11 DRAFT
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COMBUSTIBLE GAS CONTROL SYSTEMS  
TEST SUMMARY

OBJECTIVE

To demonstrate the proper operation of the Hydrogen Recombiners and the Hydrogen Purge System.

PREREQUISITES

1. The hydrogen recombiners are operable and their associated power panel is energized.
2. The Hydrogen Purge System is operational.

| DRAFT

TEST METHOD

1. Verify the proper operation of the hydrogen recombiners, including the heaters, controllers and temperature indicators.
2. Verify proper operation of the Hydrogen Purge System, including the system fans and filters.

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| DRAFT

ACCEPTANCE CRITERIA

The combustible gas control systems operate in accordance with design criteria. The hydrogen recombiners, system fans and filters perform their design function. Instrumentation, controls, annunciators and interlocks function properly in response to normal or simulated signals.

| Q423.11

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FSAR Page  
(as amended)

Group    Description

Table 14.2-2	2	<p>See Sheet No(s):23 Corrects the Testing Methodology and Acceptance Criteria for the Containment Atmosphere Monitoring System Test Summary. Correction: The FSAR changes were made to more appropriately group related areas of instrumentation testing under the Containment Atmosphere Monitoring System Testing Program. The changes reflect the actual system design. FSAR Change Request Number: 89-489.1 Related SER Section: 14 SER/SSER Impact: Yes Test Summary which the NRC has not reviewed for CPSES.</p>
Table 14.2-2	4	<p>See Sheet No(s):31 Clarification to the Prerequisites and Testing Methodology sections of the Combustible Gas Control Systems Test Summary which eliminates the testing of the hydrogen analyzer. Clarification: The hydrogen analyzer will be more appropriately tested as part of the Containment Atmosphere Monitoring System as described in Table 14.2-2 (Sh.23). See LDCR Checklist No. 89-489.1 for details. FSAR Change Request Number: 89-489.2 Related SER Section: 14 SER/SSER Impact: No</p>

#### 14 INITIAL TEST PROGRAM

The testing activities to be performed on safety-related systems at Comanche Peak are divided into three major phases: prerequisite testing, preoperational testing, and initial startup testing.

Prerequisite testing will be conducted to verify the integrity, proper installation, cleanliness, and functional operability of the system components.

Preoperational testing will be performed to demonstrate the capability of systems, structures, and components to meet safety-related performance requirements. These tests will be performed on plant systems, structures, and components that are designed to perform a nuclear safety-related function. Preoperational testing will be completed before fuel loading with certain limited exceptions where tests or parts of tests will be deferred until the core has been loaded. In such cases, sufficient testing will be performed before fuel loading to provide reasonable assurance that the postloading tests will be successful.

Initial startup tests will be performed beginning with fuel loading and ending with commercial operation. The intent of these tests is to ensure that fuel loading is effected in a safe manner; that the plant is safely brought to rated capacity; that plant performance is satisfactory in terms of established design criteria; and to demonstrate, where practical, that the plant is capable of withstanding anticipated transients and postulated accidents. The staff review concentrated on the administration of the test program and the completeness of the prerequisite, preoperational, and startup tests. For example, the staff's Safety Evaluation Report issued at completion of the Construction Permit review (CP SER) was re-examined to determine the principal design criteria for the plant and to identify any specific concerns or unique design features that would warrant special test consideration. Chapters 1 through 12 of the FSAR were reviewed for familiarization with the facility design and nomenclature. Chapters 13 and 17 were reviewed for familiarization with the applicant's organizational structure, qualifications, administrative controls, and quality assurance program as they apply to or impact the initial test program. Chapter 15 was reviewed to identify assumptions pertaining to performance characteristics that should be verified by testing and to identify all structures, systems, components, and design features that were assumed to function (either explicitly or implicitly) in the accident analysis. Licensee Event Reports for operating reactors of similar design were reviewed to identify potentially serious events and chronic or generic problems that might warrant special test consideration. Standard Technical Specifications for Westinghouse PWRs were reviewed to identify all structures, systems, and components that would be relied upon for establishing conformance with safety limits or limiting conditions for operations. Finally, the Startup Test Reports for other PWR plants were reviewed to identify problem areas that should be emphasized in the Comanche Peak initial test program.

The object of the staff review of FSAR Chapter 14 is to determine whether the acceptance criteria stated in the Standard Review Plan are met. The staff review covered several aspects of the initial test program including the following major considerations:

- (1) The applicant's organization and staff for performing the initial test program were reviewed. The staff concludes that an adequate number of appropriately qualified personnel are assigned to develop test procedures, conduct the tests, and review the results of the tests. Plant staff personnel are utilized to maximize the training benefits of the test program.
- (2) The applicant stated that the test procedures were developed using input from the NSSS vendor, the architect-engineer, the applicant's engineering staff, and other equipment suppliers and contractors as needed. The applicant also stated that a review of operating experiences at similar plants was factored into the development of the test procedures.
- (3) The applicant stated that the tests are being conducted using approved test procedures and that administrative controls cover (a) the completion of test prerequisites, (b) the completion of necessary data sheets and other documentation, and (c) the review and approval of modifications to test procedures. The applicant stated that administrative procedures also cover implementation of modifications or repair requirements identified as being required by the tests and any necessary retesting.
- (4) The applicant stated that the results of each test are reviewed for technical adequacy and completeness by qualified personnel, including NSSS vendor and architect-engineer personnel as appropriate. Preoperational test results are reviewed before fuel loading, and the startup test results from each activity or power level will be reviewed before the next activity or power level.
- (5) The applicant stated that normal plant operating and emergency procedures are used in performing the initial test program, thereby verifying the correctness of the procedures to the extent practical.
- (6) The applicant's schedule for conducting the initial test program allowed adequate time to conduct all preoperational tests and startup tests. The sequential schedule for performing the startup tests established (a) that systems required to prevent, limit, or mitigate the consequences of postulated accidents will be tested before 25% of rated power is exceeded and (b) that the safety of the plant will not be dependent on the performance of untested systems, structures, and components. Preoperational test procedures will be available for IE review at least 30 days before the expected performance of the test, and startup test procedures will be available at least 90 days before fuel loading.
- (7) The abstract of each test procedure presented in Chapter 14 of the FSAR was reviewed. The staff verified that there are test abstracts for those structures, systems, components, and design features that: (a) will be used for shutdown and cooldown of the reactor under normal plant conditions and for maintaining the reactor in a safe condition for an extended shutdown period; (b) will be used for shutdown and cooldown of the reactor under transient (infrequent or moderately frequent events) conditions and postulated accident conditions and for maintaining the reactor in a safe condition for an extended shutdown period following such conditions; (c) will be used for establishing conformance with safety limits of

limiting conditions for operation that will be included in the facility technical specifications; (d) are classified as engineered safety features or will be relied on to support or ensure the operations of engineered safety features within design limits; (e) are assumed to function or for which credit is taken in the accident analysis of the facility, as described in the FSAR; and (f) will be used to process, store, control, or limit the release of radioactive materials.

- (8) The test objective, prerequisites, test methods, and acceptance criteria for each test abstract were reviewed in sufficient detail to establish that the functional adequacy of the structures, systems, components, and design features will be demonstrated.
- (9) The test program's conformance with applicable Regulatory Guides was reviewed. The review included: Regulatory Guides 1.20, 1.41, 1.52, 1.68, 1.68.2, 1.79, 1.80, and 1.108.

The applicant made a number of changes to the initial test program because of the staff's comments. Examples of these changes include

- (1) Administrative controls were added to ensure that all test procedure modifications that alter the acceptance criteria or test intent would be appropriately reviewed.
- (2) Additional (five consecutive, cold quick starts) testing of the steam-driven auxiliary feedwater pumps was added to further demonstrate system reliability.
- (3) Testing to verify that the reactor cooled pipe penetration cooling system will maintain the pipe tunnel concrete temperature within design limits was added.
- (4) The acceptance criteria for certain preoperational and startup tests involving reactor protection system hardware instrumentation delay time, remote plant shutdown validation, diesel generator starting requirements, snubber inspection, battery charger capacity, containment spray flowpath verification, sampling system flowpath and holdup, and power-operated relief valve capacities were modified. Modified acceptance criteria were required to more accurately reflect the actual test conditions and to provide assurance that system performance will be in conformance with design predictions.
- (5) The minimum qualifications for personnel who direct or supervise the conduct of testing were upgraded to conform with acceptable industry standards.
- (6) Certain system tests were expanded to ensure that comprehensive system and component testing was scheduled. Example systems included station service water, component cooling water, vent and drain, spent fuel pool cooling, residual heat removal, chemical and volume control, safety injection, containment ventilation, diesel generator compartment ventilation, ac and dc power distribution, reactor protection, rod control, steam generator safety and relief valves, main steam and feedwater isolation valves, auxiliary feedwater, pressurizer safety and relief valves, and engineered safety features.

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Based on its review, including the items discussed above, the staff concludes that the initial test program described in the application meets the acceptance criteria of SRP Section 14.2 and that the successful completion of the program will demonstrate the functional adequacy of plant structures, systems, and components. The staff also has concluded that the initial test program described meets the test requirements of GDC 1 and Section XI of 10 CFR 50 Appendix B.

SECTION 14 - INITIAL TEST PROGRAM

- PQEB 16. The FSAR has been revised to describe the design configuration of the Containment Atmosphere Monitoring system, as it pertains to testing, to reflect plant as-built conditions. (77)
- PQEB 17. The FSAR has deleted reference to the Hydrogen Analyzer systems from the Combustible Gas Control system test summary.

**FSAR Page  
(as amended)**

**Group Description**

Table 14.2-2

2

See Sheet No(s):23

Corrects the Testing Methodology and Acceptance  
Criteria for the Containment Atmosphere Monitoring  
System Test Summary.

Correction:

The FSAR changes were made to more appropriately group  
related areas of instrumentation testing under the  
Containment Atmosphere Monitoring System Testing  
Program. The changes reflect the actual system design.

FSAR Change Request Number: 89-489.1

Related SER Section: 14

SER/SSER Impact: Yes

Test Summary which the NRC has not reviewed for CPSES.

CONTAINMENT ATMOSPHERE MONITORING SYSTEM  
TEST SUMMARY

OBJECTIVE

To demonstrate the operability of the Containment Atmosphere Monitoring System.

PREREQUISITES

1. Setpoints for alarms and indicating lights have been set.

TEST METHOD

1. Demonstrate proper operation of the hydrogen analyzer/monitoring equipment by functional testing from the microprocessor keyboard.
2. Demonstrate proper operation of the temperature and humidity instrumentation.
3. Demonstrate proper operation of the containment pressure transmitters.
- 1/ Demonstrate proper operation of the system pump unit, including the pump, flow meter, flow control valve, and high and low flow alarms.
- 2/ Verify capability of the selector valves to select the desired sample for monitoring, and to block sample flow to and from a sampling area for which the sampling channel is in a maintenance or a purging condition.
- 3/ Demonstrate proper functioning of the flow control panel, including the remote operation of the pump and selector valves, and the indicating lights.

ACCEPTANCE CRITERIA

The Containment Atmosphere Monitoring System functions in accordance with design requirements. The ability to select one sample area and block other sample areas is demonstrated. The system pump and controls function properly.

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COMBUSTIBLE GAS CONTROL SYSTEMS  
TEST SUMMARY

OBJECTIVE

To demonstrate the proper operation of the Hydrogen Recombiners and the Hydrogen Purge System.

PREREQUISITES

1. The hydrogen recombiners are operable and their associated power panel is energized.
2. The Hydrogen Purge System *including the hydrogen analyzer systems* is operational.

TEST METHOD

- |  |    |
|--|----|
| 1. Verify the proper operation of the hydrogen recombiners, including the heaters, controllers and temperature indicators.             | 76 |
| 2. Verify proper operation of the Hydrogen Purge System, including the system fans, <i>and filters, and hydrogen analyzer systems.</i> | 76 |

ACCEPTANCE CRITERIA

The combustible gas control systems operate in accordance with design criteria. The hydrogen recombiners, system fans and filters perform their design function. Instrumentation, controls, annunciators and interlocks function properly in response to normal or simulated signals.

0423.11  
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