TUELECTRIC

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Ref. # Reg Guide 1.52
Reg Guide 1.140

William J. Cahill, Jr.
Executive Vice President

August 3, 1989

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 and 50-446
ADVANCE FSAR SUBMITTAL
LABORATORY TESTING CRITERIA FOR ACTIVATED CARBON

Gentlemen:

This letter provides an advance copy of changes to be included in a future FSAR amendment. These changes revise the exception taken to Regulatory Guides 1.52 (Part C.6) and 1.140 (Part C.6) concerning laboratory testing criteria for activated carbon.

In order to facilitate NRC Staff review of these changes, the attachment 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.

2. A detailed description/justification for the changes.

3. A copy of a related SER section.

4. A page containing the title of a "bullet" which consolidates and categorizes similar individual changes by subject and related SER section.

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5. The bold/overstrike version of the revised FSAR pages referenced by the detailed description/justification for the changes identified above. The bold/overstrike version facilitates review of the revision by highlighting each addition of new text in bold type font and overstriking with a slash (/) the portion of the text that is deleted.

Sincerely,

William J. Cahill, Jr.

William J. Cahill, Jr.

By: Roger D. Walker

Roger D. Walker
Manager, Nuclear Licensing

JLR/mas
Attachment

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

Attachment to TXX-89551
August 3, 1989

Advance FSAR Submittal Concerning
Laboratory Testing Criteria for Activated Carbon

7) Parts C.5.c and C.5.d, In-Place Testing Criteria: | 76

ANSI/ASME N509-1980 and ANSI/ASME N510-1980 will be issued for field testing activities in place of the older versions of these codes referenced in this Regulatory Guide. | 59

Atmospheric cleanup trains installed at CPSES have two high efficiency filter banks in series. In-place testing of only upstream HEPA bank will be performed. | 59 | 76

In-place testing of the HEPA filter banks and adsorber will not be required following painting, fire and chemical release described in position C.5.c and C.5.d of this guide. Only laboratory testing will be performed for carbon efficiencies. This design conforms to the intent of NRC Regulatory Guide 1.52, Revision 2 (03/78). | 76 | 59 | 66

8) Part C.6, Laboratory Testing Criteria for Activated Carbon: | 76

Laboratory testing of activated carbon will be in accordance with ANSI N509 and N510-1980 (which refers to ASTM D3803-79), except for the determination of the efficiency of charcoal to remove radioiodine. The parameters applicable to new and used charcoal at CPSES shall be applied in the lab test as follows: | DRAFT

<u>New Charcoal</u>	<u>Used Charcoal</u>	76
4" Beds	4" Beds	DRAFT
40 ft/min	40 ft/min	DRAFT
30°C & 95% RH	30°C & 70% RH	DRAFT
Pre-equilibrated	Non-pre-equilibrated	DRAFT
		DRAFT

The allowable methyl iodide penetration for 99% efficient units shall be 0.2% instead of 0.175% as shown in Table 2 of the Regulatory Guide. | 76

In-place testing of high efficiency filter banks and adsorber will not be required following painting, fire and chemical release described in position C.5.c and C.5.d of this guide. Only laboratory testing will be performed for carbon efficiencies. This design conforms to the intent of NRC Regulatory Guide 1.140 (03/78). | 76

5) Part C.6, Laboratory Testing Criteria for Activated Carbon: | 76

Laboratory testing of activated carbon will be in accordance with ANSI N509 and N510-1980 (which refers to ASTM D3803-79), except for the determination of the efficiency of charcoal to remove radioiodine. The parameters applicable to new and used charcoal at CPSES shall be applied in the lab test as follows: | DRAFT

New and Used Charcoal	DRAFT
4" Beds	76
40 ft/min	76
30°C & 95% RH	DRAFT
Pre-equilibrated	DRAFT
	DRAFT

The allowable methyl iodide penetration for these units shall be 10% as shown in Table 2 of the Regulatory Guide. | 76

This design conforms to the intent of NRC Regulatory Guide 1.140 (03/78). | 76

Regulatory Guide 1.141

Containment Isolation Provisions for Fluid Systems | 8
| Q400.3

Discussion | 8

This regulatory guide is not applicable to CPSES; however, the containment isolation is discussed in Section 6.2. | 8

FSAR Page (as amended)	Group	Description
1A(B)-25	2	Revises exception taken to Regulatory Guide 1.52 concerning laboratory testing criteria for activated carbon.

Revision:

TU Electric revised the criteria for the laboratory testing of activated carbon via TXX-89200 dated 5/1/89 (FSAR Amendment 76). As part of this change, laboratory testing of activated carbon is per ANSI N509- and and N510-1980, since it was no longer necessary to test the carbon as described in ANSI N509-1976. (New charcoal was purchased in 1986 and this charcoal could be tested per ANSI N509- and N510-1980 standards.) It was also noted that CPSES would test the used charcoal to 30 C and 70% RH instead of 80 C and 95% RH; the latter temperature/relative humidity combination is specified in ASTM D3803-79 as one of the methods (Method B) for testing of methyl iodide penetration. ASTM D3803-79 is referenced in both ANSI N509- and N510-1980.

NRC Information Notice 87-32, "Deficiencies in the Testing of Nuclear-Grade Activated Carbon," identified deficiencies in ASTM D3803-79. Details of the identified deficiencies are contained in Idaho Nuclear Engineering Laboratories (INEL) final report No. EGG-CS-7653, "Final Technical Evaluation Report for the NRC/INEL Activated Carbon Testing Program," dated April 1987. ASME/ANSI AG-1a-1989 Addenda to ASME/ANSI AG-1a-1988, "Code on Nuclear Air and Gas Treatment," accepted on an interim basis the protocol developed by INEL (and presented in EGG-CS-7653) for determination of the efficiency of charcoal to remove radioiodine.

The criteria for testing presented in this change, which differs from ASTM D3803-79, is taken from this accepted protocol, except for the relative humidity for used charcoal and the fact that the used charcoal will not require a pre-equilibration period.

CPSES will test used charcoal at 70% RH instead of 95% RH specified in the protocol. This is acceptable, since all ESF units at CPSES contain safety-related (Class 1E) heaters designed to ensure a maximum of 70% RH at all times.

The charcoal in these units is expected to remove radioiodine immediately upon activation; therefore, it is not necessary to expose used charcoal to a 16-hour pre-equilibration period prior to testing efficiency.

FSAR Change Request Number: 89-546.1

Related SER Section: 6.5.1

SER/SSER Impact: Yes

The INEL protocol has been deemed an acceptable alternative to deficiencies found in ASTM D3803-79 re: determination of the efficiency of charcoal to remove radioiodine. The protocol, dated April 1987, was not

FSAR Page (as amended)	Group	Description
		part of the review within SER 6.5.1.
1A(B)-81	2	Revises exception taken to Regulatory Guide 1.140 concerning laboratory testing criteria for activated carbon. Revision: TU Electric revised the criteria for the laboratory testing of activated carbon via TXX-89200 dated 5/1/89 (FSAR Amendment 76). As part of this change, laboratory testing of activated charcoal is per ANSI N509- and N510-1980, since it was no longer necessary to test the carbon as described in ANSI N509-1976. (New charcoal was purchased in 1986 and this charcoal could be tested per ANSI N509- and N510-1980 standards.) It was also noted that CPSES would test the used charcoal to 30 C and 95% RH instead of 80 C and 95% RH; the latter temperature/relative humidity combination is specified in ASTM D3803-79. ASTM D3803-79 is referenced in both ANSI N509- and N510-1980. NRC Information Notice 87-32, "Deficiencies in the Testing of Nuclear Grade Activated Carbon," identified deficiencies in ASTM D3803-79. Details of the identified deficiencies are contained in Idaho Nuclear Engineering Laboratories (INEL) final report No. EGG-CS-7653, "Final Technical Evaluation Report for the NRC/INEL Activated Carbon Testing Program," dated April 1987. ASME/ANSI AG-1a-1989 Addenda to ASME/ANSI AG-1a-1988, "Code on Nuclear Air and Gas Treatment," accepted on an interim basis the protocol developed by INEL (and presented in EGG-CS-7653) for determination of the efficiency of charcoal to remove radioiodine. The criteria for testing presented in this change, which differs from ASTM D3803-79, is taken from this accepted protocol. The footnote, "CPSES will test the used charcoal to 30 C in lieu of 80 C as specified in ASTM D3803," is being deleted because ASTM D3803-79 includes five (5) testing methodologies. Though the criteria are used, all five (5) methodologies do not specify 30 C. 30 C is recommended for use in the accepted protocol. FSAR Change Request Number: 89-546.2 Related SER Section: 6.5.1 SER/SSER Impact: No

The two units at Comanche Peak share a common control room (a divider is available when needed). However, the control room habitability systems are sufficiently capable, diverse, and redundant so that the ability to perform safety funtions will not be impaired, including, in event of an accident at one unit, an orderly shutdown of the other unit. Thus, the staff finds that Comanche Peak meets the requirements of GDC 5.

The staff has evaluated the control room doses following a LOCA. The resultant radiation doses of 10.9 rem thyroid and 1.69 rem whole body are within the guidelines of GDC 19 and, based on this finding and those above, the staff concludes that the control room habitability system is appropriately designed.

6.5 Engineered-Safety-Feature Atmosphere Cleanup System

The engineered-safety-feature (ESF) atmosphere cleanup systems for Comanche Peak consist of process equipment instrumentation to control the release of radioactive material in gaseous effluents (radioiodine and particulate matter) following a DBA. In the Comanche Peak application, there are three filtration systems designed for this purpose: the fuel handling building ventilation system, the auxiliary building and radwaste area ventilation system, and the control room area ventilation filtration and pressurization systems. The Technical Specifications for the operation of these sytems will require testing in accordance with the guidelines of Regulatory Guide 1.52 (Revision 2, March 1978).

6.5.1 System Description and Evaluation

6.5.1.1 Fuel Handling Building Ventilation System

The function of the fuel handling building ventilation system is to collect and process the leakage of radioactive materials from the spent fuel pool and operating areas in the auxiliary building following a fuel handling accident. The system is designed to maintain a slight negative pressure in the area following an accident. The ESF standby exhaust sytem for each unit is designed as an alternate to the other, a dual/shared system. Each train has a design capacity of 15,000 cfm and includes the following components: demister, heating coil, high efficiency particulate air (HEPA) filter, carbon adsorber (4-in. deep bed), HEPA filter, and fan. The equipment and components are designed to Quality Group C and seismic Category I, and are located in a seismic Category I structure. The staff has determined that the spent fuel pool area standby exhaust system is designed in accordance with the guidelines of Regulatory Guide 1.52 (Rev. 1), July 1976. The HEPA filters and charcoal adsorbers will be tested in place in conformance with ANSI N.510. Consequently, they will meet the present guidelines in Regulatory Guide 1.52 (Rev. 2). In its evaluation, the staff has assigned the system decontamination efficiencies of 99% for elemental and organic iodine and 99% for particulates. Based on this evaluation, the staff finds that the system is designed to control the releases of radioactive materials in gaseous effluents in accordance with applicable regulations following a postulated DBA.

6.5.1.2 Auxiliary Building and Radwaste Area Ventilation System

The auxiliary building radwaste area ventilation system (controlled access area) is designed as an ESF atmospheric cleanup system utilizing the standby

exhaust system trains for each unit described in Section 6.5.1.1. This design feature allows the controlled access area exhaust to be transferred from the plant ventilation system to an ESF filtration system in the event of LOCA conditions. The staff finds that the system is designed to control the releases of radioactive materials in gaseous effluents following a postulated DBA, meets the recommendations of Regulatory Guide 1.52, and therefore is acceptable.

6.5.1.3 Control Room Area Ventilation Filtration and Pressurization Systems

The function of the control room area ventilation (habitability) system is to supply nonradioactive air to the control, cable, and equipment rooms after a DBA and to pressurize the control room. These systems will permit operating personnel to remain in the control room following a DBA. The control room area ventilation filtration system is a redundant system, with each system having a filter design capacity of 8000 cfm of air and recirculating design capacity of at least 50,000 cfm of air. Makeup air to pressurize the control room is provided at a maximum of 800 cfm from outside air treated and pressurized through redundant filtration trains. Each system contains the following components: prefilter, HEPA filter, carbon adsorber (4-in. deep bed), and fan. Recirculation air heating and cooling coils are also provided, together with a humidifier, for relative humidity control. The equipment and components are designed to Quality Group C and seismic Category I and are located in a seismic Category I structure. The staff has determined that the control room area ventilation habitability system is designed in accordance with the guidelines of Regulatory Guide 1.52 (Rev. 1). The HEPA filters and charcoal adsorbers will be inplace tested in conformance with ANSI N510, and therefore meet the present guidelines in Regulatory Guide 1.52 (Rev. 2). In its evaluation, the staff has assigned the system decontamination efficiencies of 99% for elemental and organic iodine and 99% for particulates. Based on this evaluation, the staff finds that the system is designed to maintain a suitable control, cable, and equipment room environment following a DBA.

6.5.2 Containment Spray System

The containment spray system has the dual function of removing heat and fission products, especially radioactive iodine, from the postaccident containment atmosphere. The system, with its chemical additive subsystem, is designed to maintain proper water chemistry in the containment spray during the injection phase following a DBA and to ensure that appropriate methods are available to raise or maintain the pH of the mixed solution in the containment sump during the recirculation of the containment spray. The chemical additives are provided to enhance iodine fission product removal (SRP Section 6.5.2) and to reduce the likelihood of stress corrosion cracking of austenitic stainless steel after an accident (SRP Section 6.1.1 and BTP MTEB 6-1).

The containment spray system is designed as two independent and redundant trains, either or both of which would be acceptably efficient at fission product removal from the containment atmosphere in the event of a design-basis release. The containment spray is actuated automatically at 20 psig containment pressure, or it may be actuated by the operator from the control room.

SECTION 6 - ENGINEERED SAFETY FEATURES

6.5.1 System Description and Evaluation

SPLB 4. The exception to Regulatory Guides 1.52 and 1.140 concerning laboratory testing criteria for activated carbon has been revised. (77)

76 | 7) Parts C.5.c and C.5.d, In-Place Testing Criteria:

59 | ANSI/ASME N509-1980 and ANSI/ASME N510-1980 will be issued for field testing activities in place of the older versions of these codes referenced in this Regulatory Guide.

59 | Atmospheric cleanup trains installed at CPSES have two high
76 | efficiency filter banks in series. In-place testing of only upstream HEPA bank will be performed.

76 | In-place testing of the HEPA filter banks and adsorber will not be required following painting, fire and chemical release described in position C.5.c and C.5.d of this guide. Only
59 | laboratory testing will be performed for carbon efficiencies.
66 | This design conforms to the intent of NRC Regulatory Guide 1.52, Revision 2 (03/78).

76 | 8) Part C.6, Laboratory Testing Criteria for Activated Carbon:

76 | Laboratory testing of activated carbon will be in accordance with ANSI N509 and N510-1980 **(which refers to ASTM D3803-79), except for the determination of the efficiency of charcoal to remove radioiodine.** The parameters applicable to **new and** used charcoal at CPSES shall be applied in the lab test as follows:

76	<u>New Charcoal</u>	<u>Used Charcoal</u>
76	4" Beds	**4" Beds**
76	40 ft/min	**40 ft/min**
76	30°C & ~~95%~~ 70% RH*	**30°C & 70% RH**
76	~~Non~~/Pre-equilibrated	**Non-pre-equilibrated**

76 | * *CPSES will test the used charcoal to 30°C and 70% RH in lieu of 80°C and 95% RH as specified in ASTM D3803.*

76 | The allowable methyl iodide penetration for 99% efficient units shall be 0.2% instead of 0.175% as shown in Table 2 of the Regulatory Guide.

76 In-place testing of high efficiency filter banks and adsorber will not be required followirg painting, fire and chemical release described in position C.5.c and C.5.d of this guide. Only laboratory testing will be performed for carbon efficiencies. This design conforms to the intent of NRC Regulatory Guide 1.140 (03/78).

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76 Laboratory testing of activated carbon will be in accordance with ANSI N509 and N510-1980 **(which refers to ASTM D3803-79), except for the determination of the efficiency of charcoal to remove radioiodine.** The parameters applicable to **new and** used charcoal at CPSES shall be applied in the lab test as follows:

76 New and Used Charcoal
76 4" Beds
76 40 ft/min
76 30°C & 95% RH#
76 ~~New~~/Pre-equilibrated
76 # *CPSES will test the used charcoal to 30°C in lieu of 80°C as specified in ASTM D3803.*

76 The allowable methyl iodide penetration for these units shall be 10% as shown in Table 2 of the Regulatory Guide.

76 This design conforms to the intent of NRC Regulatory Guide 1.140 (03/78).

Regulatory Guide 1.141

8 Containment Isolation Provisions for Fluid Systems
Q400.3
8 Discussion

8 This regulatory guide is not applicable to CPSES; however, the containment isolation is discussed in Section 6.2.