5/18/96
Date

6.2 Calibration of Underfrequency Relay 81-1A (continued)

[9] ADJUST voltage to approximately 120Vac on frequency test set. [✓]

[10] VARY frequency of test set as necessary, AND

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56.994 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

[11] ADJUST frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 56Hz @ 120Vac. [✓]

[12] MEASURE, AND RECORD "As Found" time delay for relay Pick-up below.

As Found trip time: 215 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

[13] DETERMINE if relay time response was greater than 300 msec.

[14] IF time in step 6.2 [12] exceeds 300 msec, INITIATE a Test Deficiency THEN

PERFORM step 6.2 [15]. [NA]

NOTE Step 6.2 [15] may be N/A if time did not exceed 300 msec in step 6.2 [12].

HOLD
POINT

[15] PERFORM engineering evaluation, AND

IF FSAR table 7.2.1-5, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) THEN

DOCUMENT evaluation on Problem Evaluation Report.

NA
Test Director

Attachment No. 17 Sheet 18 of 33
Identifier SQN-EEB-MS-TI28-0076

5/8/96
Date

6.2 Calibration of Underfrequency Relay 81-1A (continued)

NOTE Steps 6.2 [16] and [17] test the undervoltage detector.

[16] ADJUST frequency test set output to 120 volts, AND

VERIFY UF relay picks up at approximately 56Hz.

[17] DECREASE frequency test set output voltage source as required until relay drops out, THEN

RECORD undervoltage detector drop out voltage.

Dropout Voltage: 60 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.2 [18] if no calibration and record as left data in step 6.2 [19].

[18] CALIBRATE UF relay 81-1A to tolerance specified in step 6.2 [19].

[19] RECORD as left data below.

As Left Pick-up Frequency: 56.99 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.2 [20] if no calibration required and record as left data in step 6.2 [21].

[20] ADJUST frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, AND

CALIBRATE UF relay device 81-1A to tolerance specified in step 6.2 [21].

NA
[ ]

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Identifier SQN-EEB-MS-TI28-0076

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Date

6.3 Calibration of Underfrequency Relay 81-1B (continued)

[9] ADJUST voltage to approximately 120Vac on frequency test set. [✓]

[10] VARY frequency of test set as necessary, AND

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56.99 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

gtn

[11] ADJUST frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 36Hz @ 120Vac. [✓]

[12] MEASURE, AND RECORD "As Found" time delay for relay Pick-up below.

gtn 5/16/96
As Found trip time: ~~219~~ 213 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

gtn

[13] DETERMINE if relay time response was greater than 300 msec.

gtn

[14] IF time in step 6.3 [12] exceeds 300 msec,
INITIATE a Test Deficiency THEN

PERFORM step 6.3 [15].

NA

NOTE Step 6.3 [15] may be N/A if time did not exceed 300 msec in step 6.3 [12].

HOLD POINT

[15] PERFORM engineering evaluation, AND

IF FSAR table 7.2.1-3, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) THEN

DOCUMENT evaluation on Problem Evaluation Report.

NA

Test Director

Attachment No. 17 Sheet 20 of 33
Identifier SQN-EEB-MS-TI28-0076

5/18/96
Date

6.3 Calibration of Underfrequency Relay 81-1B (continued)

NOTE Steps 6.3 [16] and [17] test the undervoltage detector.

[16] **ADJUST** frequency test set output to 120 volts, **AND**

VERIFY UF relay picks up at approximately 56Hz.

[17] **DECREASE** frequency test set output voltage source as required until relay drops out, **THEN**

RECORD undervoltage detector drop out voltage.

Dropout Voltage: 60 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.3 [18] if no calibration and record as left data in step 6.3 [19].

[18] **CALIBRATE** UF relay 81-1B to tolerance specified in step 6.3 [19]. NA

[19] **RECORD** as left data below.

As Left Pick-up Frequency: 56.99 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.3 [20] if no calibration required and record as left data in step 6.3 [21].

[20] **ADJUST** frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, **AND**

CALIBRATE UF relay device 81-1B to tolerance specified in step 6.3 [21]. NA

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Identifier SQN-EEB-MS-TI28-0076

5/13/96
Date

6.4 Calibration of Underfrequency Relay 81-2A (continued)

[10] VARY frequency of test set as necessary, AND

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56.99 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

[11] ADJUST frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 56Hz @ 120Vac.

[12] MEASURE, AND RECORD "As Found" time delay for relay Pick-up below.

As Found trip time: ~~218~~ 213 5/14/96 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

[13] DETERMINE if relay time response was greater than 300 msec.

[14] IF time in step 6.4 [12] exceeds 300 msec, INITIATE a Test Deficiency THEN

PERFORM step 6.4 [15].

N/A

NOTE Step 6.4 [15] may be N/A if time did not exceed 300 msec in step 6.4 [12].

HOLD
POINT

[15] PERFORM engineering evaluation, AND

IF FSAR table 7.2.1-5, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) THEN

DOCUMENT evaluation on Problem Evaluation Report.

N/A

Test Director

Attachment No. 17 Sheet 22 of 33
Identifier SQN-EEB-MS-TI28-0076

5/10/90
Date

6.4 Calibration of Underfrequency Relay 81-2A (continued)

NOTE Steps 6.4 [16] and [17] test the undervoltage detector.

[16] **ADJUST** frequency test set output to 120 volts, **AND**

VERIFY UF relay picks up at approximately 56Hz.

[17] **DECREASE** frequency test set output voltage source as required until relay drops out, **THEN**

RECORD undervoltage detector drop out voltage.

Dropout Voltage: 60 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.4 [18] if no calibration and record as left data in step 6.4 [19].

[18] **CALIBRATE** UF relay 81-2A to tolerance specified in step 6.4 [19]. N/A

[19] **RECORD** as left data below.

As Left Pick-up Frequency: 56.99 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.4 [20] if no calibration required and record as left data in step 6.4 [21].

[20] **ADJUST** frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, **AND**

CALIBRATE UF relay device 81-2A to tolerance specified in step 6.4 [21]. N/A

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Identifier SQN-EEB-MS-TI28-0076

5/18/96
Date

6.5 Calibration of Underfrequency Relay 81-2B (continued)

[10] VARY frequency of test set as necessary, AND

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56.99 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

gtg

[11] ADJUST frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 56Hz @ 120Vac.

[12] MEASURE, AND RECORD "As Found" time delay for relay Pick-up below.

As Found trip time: 209 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

~~[illegible]~~ 209 gtm
5/18/96

[13] DETERMINE if relay time response was greater than 300 msec.

gtg

[14] IF time in step 6.5 [12] exceeds 300 msec, INITIATE a Test Deficiency THEN

PERFORM step 6.5 [15].

NOTE Step 6.5 [15] may be N/A if time did not exceed 300 msec in step 6.5 [12].

HOLD
POINT

[15] PERFORM engineering evaluation, AND

IF FSAR table 7.2.1-5, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) THEN

DOCUMENT evaluation on Problem Evaluation Report.

N/A
Test Director

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Identifier SQN-EEB-MS-TI28-0076

5/18/96
Date

6.5 Calibration of Underfrequency Relay 81-2B (continued)

NOTE Steps 6.5 [16] and [17] test the undervoltage detector.

[16] **ADJUST** frequency test set output to 120 volts, **AND**

VERIFY UF relay picks up at approximately 56Hz.

[17] **DECREASE** frequency test set output voltage source as required until relay drops out, **THEN**

RECORD undervoltage detector drop out voltage.

Dropout Voltage: 60 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.5 [18] if no calibration and record as left data in step 6.5 [19].

[18] **CALIBRATE** UF relay 81-2B to tolerance specified in step 6.5 [19].

[19] **RECORD** as left data below.

As Left Pick-up Frequency: 56.99 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.5 [20] if no calibration required and record as left data in step 6.5 [21].

[20] **ADJUST** frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, **AND**

CALIBRATE UF relay device 81-2B to tolerance specified in step 6.5 [21].

NA
[ ]

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Identifier SQN-EEB-MS-TI28-0076

10/8/97
Date

6.2 Calibration of Underfrequency Relay 81-1A (continued)

[9] **ADJUST** voltage to approximately 120Vac on frequency test set. [ ]

[10] **VARY** frequency of test set as necessary, **AND**

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56.98 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

[11] **ADJUST** frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 56Hz @ 120Vac. [ ]

[12] **MEASURE, AND RECORD** "As Found" time delay for relay Pick-up below.

As Found trip time: 207.58 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

[13] **DETERMINE** if relay time response was greater than 300 msec.

[14] **IF** time in step 6.2 [12] exceeds 300 msec, INITIATE a Test Deficiency **THEN**

PERFORM step 6.2 [15]. N/A [ ]

NOTE Step 6.2 [15] may be N/A if time did not exceed 300 msec in step 6.2 [12].

HOLD POINT

[15] **PERFORM** engineering evaluation, **AND**

IF FSAR table 7.2.1-5, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) **THEN**

DOCUMENT evaluation on Problem Evaluation Report.

NA

Test Director

Attachment No. 17 Sheet 26 of 33
Identifier SQN-EEB-MS-TI28-0076

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Date

6.2 Calibration of Underfrequency Relay 81-1A (continued)

NOTE Steps 6.2 [16] and [17] test the undervoltage detector.

[16] **ADJUST** frequency test set output to 120 volts, **AND**

VERIFY UF relay picks up at approximately 56Hz.

[17] **DECREASE** frequency test set output voltage source as required until relay drops out, **THEN**

RECORD undervoltage detector drop out voltage.

Dropout Voltage: 60.1 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.2 [18] if no calibration and record as left data in step 6.2 [19].

[18] **CALIBRATE** UF relay 81-1A to tolerance specified in step 6.2 [19].

[19] **RECORD** as left data below.

As Left Pick-up Frequency: 56.98 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.2 [20] if no calibration required and record as left data in step 6.2 [21].

[20] **ADJUST** frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, **AND**

CALIBRATE UF relay device 81-1A to tolerance specified in step 6.2 [21].

N/A
[ ]

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Identifier SQN-EEB-~~TI28~~-TI28-0076
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gjm
11-4-97

10/4/97
Date

6.3 Calibration of Underfrequency Relay 81-1B (continued)

[9] **ADJUST** voltage to approximately 120Vac on frequency test set. ☑

[10] **VARY** frequency of test set as necessary, **AND**

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56.98 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

[11] **ADJUST** frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 56Hz @ 120Vac. ☑

[12] **MEASURE, AND RECORD** "As Found" time delay for relay Pick-up below.

As Found trip time: 206.68 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

[13] **DETERMINE** if relay time response was greater than 300 msec.

[14] IF time in step 6.3 [12] exceeds 300 msec, INITIATE a Test Deficiency **THEN**

PERFORM step 6.3 [15]. N/A [ ]

NOTE Step 6.3 [15] may be N/A if time did not exceed 300 msec in step 6.3 [12].

HOLD POINT

[15] **PERFORM** engineering evaluation, **AND**

IF FSAR table 7.2.1-5, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) **THEN**

DOCUMENT evaluation on Problem Evaluation Report.

N/A
Test Director

Attachment No. 17 Sheet 28 of 33
Identifier SQN-EEB-MS-TI28-0076

10/8/97
Date

6.3 Calibration of Underfrequency Relay 81-1B (continued)

NOTE Steps 6.3 [16] and [17] test the undervoltage detector.

[16] **ADJUST** frequency test set output to 120 volts, **AND**

VERIFY UF relay picks up at approximately 56Hz.

[17] **DECREASE** frequency test set output voltage source as required until relay drops out, **THEN**

RECORD undervoltage detector drop out voltage.

Dropout Voltage: 60.2 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.3 [18] if no calibration and record as left data in step 6.3 [19].

[18] **CALIBRATE** UF relay 81-1B to tolerance specified in step 6.3 [19].

NA

[19] **RECORD** as left data below.

As Left Pick-up Frequency: 56.98 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.3 [20] if no calibration required and record as left data in step 6.3 [21].

[20] **ADJUST** frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, **AND**

CALIBRATE UF relay device 81-1B to tolerance specified in step 6.3 [21].

NA
[ ]

Attachment No. 17 Sheet 29 of 33
Identifier SQN-EEB-MS-TI28-0076

10/8/91
Date

6.4 Calibration of Underfrequency Relay 81-2A (continued)

[10] **VARY** frequency of test set as necessary, **AND**

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56,98 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

[11] **ADJUST** frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 56Hz @ 120Vac. [✓]

[12] **MEASURE, AND RECORD** "As Found" time delay for relay Pick-up below.

As Found trip time: 207,74 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

[13] **DETERMINE** if relay time response was greater than 300 msec.

[14] IF time in step 6.4 [12] exceeds 300 msec, INITIATE a Test Deficiency **THEN**

PERFORM step 6.4 [15]. [ ] N/A

NOTE Step 6.4 [15] may be N/A if time did not exceed 300 msec in step 6.4 [12].

HOLD POINT

[15] **PERFORM** engineering evaluation, **AND**

IF FSAR table 7.2.1-5, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) **THEN**

DOCUMENT evaluation on Problem Evaluation Report.

N/A
Test Director

Attachment No. 17 Sheet 30 of 33
Identifier SQN-EEB-MS-TI28-0076

10/8/97
Date

6.4 **Calibration of Underfrequency Relay 81-2A** (continued)

NOTE Steps 6.4 [16] and [17] test the undervoltage detector.

[16] **ADJUST** frequency test set output to 120 volts, **AND**

VERIFY UF relay picks up at approximately 56Hz.

[17] **DECREASE** frequency test set output voltage source as required until relay drops out, **THEN**

RECORD undervoltage detector drop out voltage.

Dropout Voltage: 60.5 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.4 [18] if no calibration and record as left data in step 6.4 [19].

[18] **CALIBRATE** UF relay 81-2A to tolerance specified in step 6.4 [19].

N/A

[19] **RECORD** as left data below.

As Left Pick-up Frequency: 56.98 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.4 [20] if no calibration required and record as left data in step 6.4 [21].

[20] **ADJUST** frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, **AND**

CALIBRATE UF relay device 81-2A to tolerance specified in step 6.4 [21].

N/A [ ]

Attachment No. 17 Sheet 31 of 33
Identifier SQN-EEB-MS-TI28-0076

10/3/97
Date

6.5 Calibration of Underfrequency Relay 81-2B (continued)

[10] **VARY** frequency of test set as necessary, **AND**

RECORD "As Found" pick up frequency.

As Found Pick-up Frequency: 56.98 Hz.
Acceptance Criteria: 57 Hz ± 0.1 Hz (56.9 to 57.1Hz.)

[11] **ADJUST** frequency test set for normal frequency of 60Hz @ 120V and fault frequency of 56Hz @ 120Vac. [ ]

[12] **MEASURE, AND RECORD** "As Found" time delay for relay Pick-up below.

As Found trip time: 208.02 msec.
Acceptance Criteria: 216 msec ± 10 msec (206 to 226 msec.)
(13 cycles ± 0.6 cycles (12.4 to 13.6 cycles)

[13] **DETERMINE** if relay time response was greater than 300 msec.

[14] **IF** time in step 6.5 [12] exceeds 300 msec, INITIATE a Test Deficiency **THEN**

PERFORM step 6.5 [15]. N/A [ ]

NOTE Step 6.5 [15] may be N/A if time did not exceed 300 msec in step 6.5 [12].

HOLD POINT

[15] **PERFORM** engineering evaluation, **AND**

IF FSAR table 7.2.1-5, item 17 was exceeded, (greater than 600 msec, 36 cycles, total loop response time) **THEN**

DOCUMENT evaluation on Problem Evaluation Report.

N/A
Test Director

Attachment No. 17 Sheet 32 of 33
Identifier SQN-~~DE-V~~ EER-MS TI28-0076
RDM 11-4-97

0206E/bsm

10/8/97
Date

6.5 Calibration of Underfrequency Relay 81-2B (continued)

NOTE Steps 6.5 [16] and [17] test the undervoltage detector.

[16] **ADJUST** frequency test set output to 120 volts, **AND**

VERIFY UF relay picks up at approximately 56Hz.

[17] **DECREASE** frequency test set output voltage source as required until relay drops out, **THEN**

RECORD undervoltage detector drop out voltage..

Dropout Voltage: 60,0 Vac.
Acceptance Criteria: 55 to 75Vac.

NOTE N/A step 6.5 [18] if no calibration and record as left data in step 6.5 [19].

[18] **CALIBRATE** UF relay 81-2B to tolerance specified in step 6.5 [19].

NA

[19] **RECORD** as left data below.

As Left Pick-up Frequency: 56,98 Hz.
Setpoint: 57 Hz.
Acceptance Criteria: (56.95 to 57.05)

NOTE N/A step 6.5 [20] if no calibration required and record as left data in step 6.5 [21].

[20] **ADJUST** frequency test set for normal/frequency to 60Hz @ 120V and fault frequency to 56Hz @ 120Vac, **AND**

CALIBRATE UF relay device 81-2B to tolerance specified in step 6.5 [21].

NA [ ]

PROPOSED TECHNICAL SPECIFICATION CHANGE OR LICENSE AMENDMENT REQUEST

Form Instruction: This form is not complete until all sections (i.e., questions, check boxes and prescribed concurrences) are addressed.

Requested Priority: ____ Emergency ____ Exigent X Routine	Actual Assigned by Site Licensing Priority: ____ Emergency ____ Exigent X Routine ____ Reject (Justification Attached)	Tracking No. 11-08 (assigned by Site Licensing)

A. Affected portion(s) of Tech Spec (attach marked-up pages):
Table 2.2-1 Reactor Trip System Instrumentation Trip Setpoints, item No. 16 Underfrequency-Reactor Coolant Pumps.

B. Reason Tech Spec change is necessary:
The underfrequency relays were replaced and the calculated demonstrated accuracy values were changed and caused the setpoint and allowable values to change. This change should have been made when the Tech Spec was revised to remove inequalities.

C. Why change is justifiable (attach any analysis/correspondence to support the justification):
Demonstrated Accuracy Calculation determined values and DCNs M10396A & D10441A.

D. Milestone dates requested/required and basis for milestone or date:
PER action 248460-001 date is 6/15/2011 to evaluate and submit change request.

E. Cost/Benefit Information (as necessary):
Must fix the Tech Spec.

F. Any known FSAR Impact:
The actual values are not used in the FSAR.

GRB ADT

G. Originator Signature Gregory H. Mailen May 4, 2011
Date

H. Department Manager Joe D Williams 5/6/2011
Date

I. Accepted ☒
Rejected ☐
6/2/11
Date

Basis for rejection:

Technical Lead Sponsor and Co-Sponsors

TVA 40526 [10-2008]

NLDP-1-1 [10-22-2008]

Attachment No. 18 Sheet 1 of 1
Loop #/Identifier SQN-EEB-MS-TI28-0076

Licensee Response/NRC Response/NRC Question Closure

Id	**16**
NRC Question Number	**CSS-001**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation. Follow-up question is KAB001.**
Question Closure Date	**4/24/2014**
Notification	**Scott Bowman** **Kristy Bucholtz** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Lynn Mynatt** **Lisa Regner** **Carl Schulten** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**4/24/2014 3:59 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**29**
NRC Question Number	**CSS-002**
Category	**Technical**
ITS Section	**3.0**
ITS Number	
DOC Number	**L-1**
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

In order to adopt Technical Specification Task Force (TSTF) Improved Standard Technical Specification (STS) Change Traveler, TSTF-427, "Allowance for Non-Technical Specification Barrier Degradation on Supported System OPERABILITY" (LCO 3.0.9) as part of the Sequoyah conversion, the licensee will need to supplement the application to meet the requirements of the approved TSTF-427.

The availability of the model safety evaluation for this TS improvement was announced in the Federal Register on October 3, 2006 (71 FR 58444) as part of the Consolidated Line Item Improvement Process (CLIIP). The approved TSTF-427 CLIIP identified those requirements that licensees needed to meet in order to receive approval to adopt TSTF-427. It appears that TVA did not provide all of the required information to adopt TSTF-427 in its conversion license amendment request. Specifically, TVA needs to address the following:

1) **The licensee needs to either state that the change is consistent with NRC approved Revision 2 toTSTF-427 with no deviations from improved STS, or provide the list of deviations and the technical basis for each deviation;**
2) **The licensee needs to state that they have reviewed the TSTF-427 documentation and the technical justifications presented in the model SE prepared by the NRC staff, and that the technical justifications presented in the model SE are applicable to Sequoyah Units 1 & 2; and**
3) **The licensee needs to state that the Technical Specification Bases for**

LCO 3.0.9 will be adopted with the license amendment.

In addition, as discussed in the notice of availability published in the Federal Register on October 3, 2006 for this TS improvement, plant-specific regulatory commitments shall be made when adopting TSTF-427, as follows:

1) **The licensee commits to the guidance of NUMARC 93–01, Revision 3, Section 11, which provides guidance and details on the assessment and management of risk during maintenance, and**
2) **The licensee commits to the guidance of NEI 04–08, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY (TSTF–427) Industry Implementation Guidance," March 2006.**

Please either revise your application to provide the supporting information/commitments for adoption of TSTF-427, or remove the TSTF-427 elements from your conversion application.

Attach File 1	
Attach File 2	
Issue Date	**5/6/2014**
Added By	**Khadijah Hemphill**
Date Modified	
Modified By	
Date Added	**5/6/2014 5:07 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id **94**

NRC Question Number **CSS-002**

Select Application **Licensee Response**

Attachment 1 **Attachment 1 draft revised 3.0.9 DOC L01.pdf** (17KB)

Attachment 2

Response Statement

SQN is adopting TSTF-427, Revision 2, as incorporated in NUREG-1431, Revision 4, with no deviations from Specification LCO 3.0.9. TVA has reviewed the TSTF-427 documentation and the technical justifications presented in the model application safety evaluation prepared by the NRC staff and find that the technical justifications presented are applicable to SQN Units 1 and 2. In addition, TVA will be adopting the LCO 3.0.9 Bases, as indicated in the ITS conversion submittal. The only deviations to the LCO 3.0.9 Bases have been made for clarity and are justified in the Bases Justification for Deviations.

Enclosure 8, Regulatory Commitments, of the ITS submittal contains commitments associated with TSTF-427, as required by the Reviewer's Note in NUREG-1431 Bases for LCO 3.0.9. The two commitments included within Enclosure 8 for adoption of TSTF-427 are:

7. Sequoyah Unit 1 & Unit 2 will incorporate the guidance of NUMARC 93-01 Section 11, which provides guidance and details on the assessment of risk during maintenance.

8. Sequoyah Unit 1 & Unit 2 will revise procedures to ensure that the risk assessment and management process described in NEI 04-08 is used whenever a barrier is considered unavailable and the requirements of LCO 3.0.9 are to be applied, in accordance with an overall configuration risk management program (CRMP) to ensure that potentially risk-significant configurations resulting from maintenance and other operational activities are identified and avoided

The due dates for the commitments are upon implementation.

Additionally, discussion of change DOC L01 will be revised to include the following paragraph.

SQN is adopting TSTF-427, Revision 2, as incorporated in NUREG-1431, Revision 4, with no deviations from Specification LCO 3.0.9. TVA has reviewed the TSTF-427 documentation and the technical justifications presented in the model application safety evaluation prepared by the NRC staff and find that the technical justifications presented are applicable to

SQN Units 1 and 2. In addition, TVA will be adopting the LCO 3.0.9 Bases, as indicated in the ITS conversion submittal. The only deviations to the LCO 3.0.9 Bases have been made for clarity and are justified in the Bases Justification for Deviations.

See Attachment 1 for the draft revised DOC L01.

Response Date/Time	**6/5/2014 4:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**6/5/2014 3:01 PM**
Date Modified	
Modified By	

which the first performance demonstrates the acceptability of the current condition. Such demonstrations should be accomplished within the specified Frequency without extension in order to avoid operation in unacceptable conditions. This change is designated as more restrictive because an allowance to extend Frequencies by 25 percent is eliminated for some Surveillances.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 CTS Section 3.0 does not contain an allowance when barriers cannot support their support function. The proposed change to CTS 3.0, "LCO Applicability" adds a new LCO 3.0.9. The addition of LCO 3.0.9 to the CTS is to address barriers which cannot perform their related support function for Technical Specification systems. ITS LCO 3.0.9 allows barriers to be able to not perform their safety function for up to 30 days before declaring the supported system inoperable. Furthermore, due to this addition, an allowance is also needed in LCO 3.0.1. This allowance has been added.

Barriers are defined as doors, walls, floor plugs, curbs, hatches, installed structures or components, or other devices, not explicitly described in Technical Specifications, which are designed to provide for the performance of the safety function for the Technical Specification system after the occurrence of one or more initiating events.

The barrier which cannot perform its related support function will be evaluated and managed under the Maintenance Rule plant configuration control requirement, 10 CFR 50.65(a)(4), and the associated industry guidance (NUMARC 93-01, Revision 3). This provision is applicable whether the barrier is affected due to planned maintenance or due to a discovered condition. Should the risk assessment and risk management actions for a specific plant configuration or emergent condition not support the 30 day allowed time, the Maintenance Rule risk management determined allowed time and actions must be implemented or the supported system’s LCO be considered not met.

Application of LCO 3.0.9 is dependent on the OPERABILITY of at least one train or subsystem of the supported Technical Specification system and the system's ability to mitigate the consequences of the specified initiating events. However, during the 30 day period allowed by LCO 3.0.9, there exists the possibility that the train or subsystem required to be OPERABLE will unexpectedly become inoperable. Absent any further consideration, this would likely result in both trains of a Technical Specification required system being declared inoperable

DISCUSSION OF CHANGES
ITS 3.0, LCO AND SR APPLICABILITY

(i.e., the train supported by the barriers to which LCO 3.0.9 was being applied and the emergent condition of the inoperable train). This would likely result in entering LCO 3.0.3 and a rapid plant shutdown. While this scenario is of low likelihood, it is of very high consequence to the licensee and, therefore, should be avoided unless necessary to avoid an actual plant risk. As a result, LCO 3.0.9 contains a provision which addresses the emergent condition of the required OPERABLE train or subsystem becoming inoperable while LCO 3.0.9 is being used. LCO 3.0.9 provides 24 hours to either restore the inoperable train or subsystem or to cease relying on the provisions of LCO 3.0.9 to consider the train or subsystem supported by the affected barrier(s) OPERABLE. This 24 hour period is not based on a generic risk evaluation, as it would be difficult to perform such an analysis in a generic fashion. Rather, plant risk during this 24 hour allowance is managed using the contemporaneous risk assessment and management required by 10 CFR 50.65(a)(4) and recognizes the unquantified advantage to plant safety of avoiding a plant shutdown with the associated transition risk.

A risk impact of the 30 day allowance for barriers was performed. All Sequoyah initiating events are located on the table depicted in TSTF-427 OR Sequoyah has evaluated the use of LCO 3.0.9 for a barrier protecting against an initiating event not on the table located in TSTF-427 and calculated the frequency ranges within the ranges in the table so the above analysis is applicable for those initiators. Therefore, LCO 3.0.9 can be utilized when inoperable barriers affect Systems, Structures, or Components (SSCs).

Insert 1 →

L02 CTS 4.0.2 states, "Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the specified surveillance interval." ITS SR 3.0.2 states, " The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications." This changes the CTS by adding, " If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance." The remaining changes to CTS 4.0.2 are discussed in DOC A10 and DOC M01.

This change is acceptable because the 25 percent Frequency extension given to provide scheduling flexibility for Surveillances is equally applicable to Required Actions that must be performed periodically. The initial performance is excluded because the first performance demonstrates the acceptability of the current condition. Such demonstrations should be accomplished within the specified Completion Time with extension in order to avoid operation in unacceptable conditions. This change is designated as less restrictive because addition time is provided to perform some periodic Required Actions.

Insert 1

SQN is adopting TSTF-427, Revision 2, as incorporated in NUREG-1431, Revision 4, with no deviations from Specification LCO 3.0.9. TVA has reviewed the TSTF-427 documentation and the technical justifications presented in the model application safety evaluation prepared by the NRC staff and find that the technical justifications presented are applicable to SQN Units 1 and 2. In addition, TVA will be adopting the LCO 3.0.9 Bases, as indicated in the ITS conversion submittal. The only deviations to the LCO 3.0.9 Bases have been made for clarity and are justified in the Bases Justification for Deviations.

Licensee Response/NRC Response/NRC Question Closure

Id	**174**
NRC Question Number	**CSS-002**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**7/16/2014**
Notification	**Robert Elliott** **Khadijah Hemphill** **Caroline Tilton**
Added By	**Caroline Tilton**
Date Added	**7/16/2014 12:47 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**31**
NRC Question Number	**CSS-003**
Category	**Technical**
ITS Section	**2.0**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	**1**
Page Number (s)	**21, 22**
NRC Reviewer Supervisor	**Select**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Sequoyah ITS Section 2.0 Reactor Core SL Bases Background Section

Insert 3 references JFD 1 for changes to the Reactor Core Safety Limits Bases Background section. Bases are added that provide in depth discussion (6 new paragraphs) on DNB and its correlation to RCS temperature and pressure. In general, Bases provide a summary statement of the reasons for the technical specification requirements.

JFD1 justifies the changes as: Changes made to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

Please provide the staff the source document reference pertaining to the language added to the RC SL Bases for the staff to verify the Bases are applicable licensing basis description.

Attach File 1	
Attach File 2	
Issue Date	**5/8/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/8/2014 2:29 PM**
Notification	**Scott Bowman** **Michelle Conner** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**30**
NRC Question Number	**CSS-003**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	
Response Statement	**The new paragraphs (Insert 3 in the ITS submittal) added to the Bases Background Section of ITS 2.1.1, Reactor Core SLs, reflect the SQN CTS Bases revised as part of SQN's license amendment to allow the use of Areva Advanced W17 High Thermal Performance Fuel. The NRC issued Amendments 331 (Unit 1) and 324 (Unit 2) (ML12249A394) on September 26, 2012, in response to SQN's application dated June 17, 2011 (ML11172A071), as supplemented by letters dated July 27, 2011 (ML11210B531), November 14, 2011 (ML11320A003), March 23 (ML12088A170), April 26 (ML12118A165), May 15 (ML12137A297), May 24 (ML12153A377), and June 26, 2012 (ML121850009).** **The paragraphs in the SQN CTS Bases reference Figure 2.1-1. As discussed in DOC LA01, Figure 2.1-1 is being moved to the COLR. Therefore, in the ITS Bases, the reference to Figure 2.1-1 was replaced with a reference to the COLR.**
Response Date/Time	**5/16/2014 2:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**5/16/2014 12:53 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**329**
NRC Question Number	**CSS-003**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/10/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**9/10/2014 1:29 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**33**
NRC Question Number	**CSS-004**
Category	**Technical**
ITS Section	**3.0**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	**3**
Page Number(s)	**54**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Sequoyah ITS Section 3.0 Bases for LCO 3.0.9

LCO 3.0.9 Bases is revised by JFD3 with the addition of the underlined text below.

Barriers are doors, walls, floor plugs, curbs, hatches, installed structures or components, or other devices, not explicitly described in Technical Specifications, that support the performance of the safety function of systems described in the Technical Specifications. This LCO states that the supported system is not considered to be inoperable solely due to required barriers not capable of performing their related support because discovered function(s) under the described conditions. LCO 3.0.9 allows 30 days before declaring the supported system(s) inoperable and the LCO(s) associated with the supported system(s) not met. A maximum time is placed on each use of this allowance to ensure that as required barriers are found or are otherwise made unavailable, they are restored. However, the allowable duration may be less than the specified maximum time based on the risk assessment.

JFD3 stated the change is made for clarity. The TVA proposed changes are not in accordance with the approved ITS. Please adopt the ITS, and clarify the sentence to read:

> **"A maximum time is placed on each use of this allowance to ensure that required barriers are restored."**

Attach File 1	
Attach File 2	
Issue Date	**5/8/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/8/2014 2:35 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**31**
NRC Question Number	**CSS-004**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 draft revised Bases pages for RAI CSS-004.pdf** (25KB)
Attachment 2	
Response Statement	**In response to CSS-004, the proposed change to the ITS Bases for LCO 3.0.9 will be made. Specifically, the ISTS sentence, “A maximum time is placed on each use of this allowance to ensure that as required barriers are found or are otherwise made unavailable, they are restored,” will be revised in ITS to state, “A maximum time is placed on each use of this allowance to ensure that required barriers are restored.”** **See Attachment 1 for the draft revised Bases pages.**
Response Date/Time	**5/16/2014 6:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**5/16/2014 12:57 PM**
Date Modified	
Modified By	

BASES

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Adoption of LCO 3.0.9 requires the licensee to make the following commitments:~~

~~1. [LICENSEE] commits to the guidance of NUMARC 93-01, Revision 3, Section 11, which provides guidance and details on the assessment and management of risk during maintenance.~~ ⑥

~~2. [LICENSEE] commits to the guidance of NEI 04-08, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY (TSTF-427) Industry Implementation Guidance," March 2006.~~
~~--~~

LCO 3.0.9 LCO 3.0.9 establishes conditions under which systems described in the Technical Specifications are considered to remain OPERABLE when required barriers are not capable of providing their related support function(s).

Barriers are doors, walls, floor plugs, curbs, hatches, installed structures or components, or other devices, not explicitly described in Technical Specifications, that support the performance of the safety function of systems described in the Technical Specifications. This LCO states that the supported system is not considered to be inoperable solely ~~due to~~ because required barriers not capable of performing their related support function(s) under the described conditions. LCO 3.0.9 allows 30 days before declaring the supported system(s) inoperable and the LCO(s) associated with the supported system(s) not met. A maximum time is placed on each use of this allowance to ensure that ~~as~~ required barriers are ~~found or are otherwise~~ ~~discovered~~ ~~made unavailable, they are~~ restored. However, the allowable duration may be less than the specified maximum time based on the risk assessment. ③ ③

If the allowed time expires and the barriers are unable to perform their related support function(s), the supported system's LCO(s) must be declared not met and the Conditions and Required Actions entered in accordance with LCO 3.0.2.

This provision does not apply to barriers which support ventilation systems or to fire barriers. The Technical Specifications for ventilation systems provide specific Conditions for inoperable barriers. Fire barriers are addressed by other regulatory requirements and associated plant programs. This provision does not apply to barriers ~~which~~ that are not required to support system OPERABILITY (see NRC Regulatory Issue Summary 2001-09, "Control of Hazard Barriers," dated April 2, 2001). ③

BASES

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Adoption of LCO 3.0.9 requires the licensee to make the following commitments:~~

~~1. [LICENSEE] commits to the guidance of NUMARC 93-01, Revision 3, Section 11, which provides guidance and details on the assessment and management of risk during maintenance.~~ ⑥

~~2. [LICENSEE] commits to the guidance of NEI 04-08, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY (TSTF-427) Industry Implementation Guidance," March 2006.~~
~~---~~

LCO 3.0.9

LCO 3.0.9 establishes conditions under which systems described in the Technical Specifications are considered to remain OPERABLE when required barriers are not capable of providing their related support function(s).

Barriers are doors, walls, floor plugs, curbs, hatches, installed structures or components, or other devices, not explicitly described in Technical Specifications, that support the performance of the safety function of systems described in the Technical Specifications. This LCO states that the supported system is not considered to be inoperable solely ~~due to~~ because required barriers not capable of performing their related support function(s) under the described conditions. LCO 3.0.9 allows 30 days before declaring the supported system(s) inoperable and the LCO(s) associated with the supported system(s) not met. A maximum time is placed on each use of this allowance to ensure that ~~as~~ required barriers are ~~found or are otherwise made unavailable, they are~~ ~~discovered~~ restored. However, the allowable duration may be less than the specified maximum time based on the risk assessment. ③ ③

If the allowed time expires and the barriers are unable to perform their related support function(s), the supported system's LCO(s) must be declared not met and the Conditions and Required Actions entered in accordance with LCO 3.0.2.

This provision does not apply to barriers which support ventilation systems or to fire barriers. The Technical Specifications for ventilation systems provide specific Conditions for inoperable barriers. Fire barriers are addressed by other regulatory requirements and associated plant programs. This provision does not apply to barriers ~~which~~ that are not required to support system OPERABILITY (see NRC Regulatory Issue Summary 2001-09, "Control of Hazard Barriers," dated April 2, 2001). ③

Licensee Response/NRC Response/NRC Question Closure

Id	**223**
NRC Question Number	**CSS-004**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Caroline Tilton**
Added By	**Caroline Tilton**
Date Added	**8/4/2014 4:07 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**32**
NRC Question Number	**CSS-005**
Category	**Technical**
ITS Section	**2.0**
ITS Number	
DOC Number	
JFD Number	
JFD Bases Number	**1**
Page Number(s)	**25**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

Sequoyah ITS Section 2.0 Reactor Coolant System Pressure SL Bases Background Section

The SQN 1 & 2 Pressure SL is 2735 psig. 2735 psig is 110% of the design pressure of 2500 psia as presented in the iSTS Bases, i.e., ((2500 psia x 110%) -15 psi)) = 2735 psig. The Background section markup change JFD1 (shown below) converted the design pressure 2500 psia to psig. However, 110% of the design pressure in psig would calculate a Pressure Safety Limit of 2733.5 psig (110% of 2485 psig is 2733.5 psig). Please revise the Bases to retain 2500 psia as the design pressure of the RCS.

BACKGROUND

The design pressure of the RCS is 2485 psig. During normal operation and AOOs, RCS pressure is limited from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code (Ref. 2). To ensure system integrity, all RCS components are hydrostatically tested at 125% of design pressure, according to the ASME Code requirements prior to initial operation when there is no fuel in the core. Following inception of unit operation, RCS components shall be pressure tested, in accordance with the requirements of ASME Code, Section XI (Ref. 3).

SAFETY LIMIT

The maximum transient pressure allowed in the RCS pressure vessel under the ASME Code, Section III, is 110% of design pressure. The maximum transient pressure allowed in the RCS piping, valves, and fittings under [USAS, Section B31.1 (Ref. 6)] is 120% of design pressure.

The most limiting of these two allowances is the 110% of design pressure; therefore, the SL on maximum allowable RCS pressure is 2735 psig.

Attach File 1	
Attach File 2	
Issue Date	**5/8/2014**
Added By	**Carl Schulten**
Date Modified	**5/8/2014 3:14 PM**
Modified By	**Ray Schiele**
Date Added	**5/8/2014 2:31 PM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**34**
NRC Question Number	**CSS-005**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 ITS 2.1.2 Bases markup.pdf** (33KB)
Attachment 2	
Response Statement	**In response to CSS-005, the proposed change to the Background Section of the Reactor Coolant System Pressure SL Bases will be made. Specifically, the Bases will be revised to state, "The design pressure of the RCS is 2500 psia." Additionally, the JFD indicator in the right hand margin will be removed.** **See Attachment 1 for the draft ITS 2.1.2 Bases markup.**
Response Date/Time	**5/23/2014 9:30 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**5/23/2014 8:27 AM**
Date Modified	
Modified By	

B 2.0 SAFETY LIMITS (SLs)

B 2.1.2 Reactor Coolant System (RCS) Pressure SL

BASES

BACKGROUND

The SL on RCS pressure protects the integrity of the RCS against overpressurization. In the event of fuel cladding failure, fission products are released into the reactor coolant. The RCS then serves as the primary barrier in preventing the release of fission products into the atmosphere. By establishing an upper limit on RCS pressure, the continued integrity of the RCS is ensured. According to 10 CFR 50, Appendix A, GDC 14, "Reactor Coolant Pressure Boundary," and GDC 15, "Reactor Coolant System Design" (Ref. 1), the reactor coolant pressure ~~coolant~~ boundary (RCPB) design conditions are not to be exceeded during normal operation and anticipated operational occurrences (AOOs). Also, in accordance with GDC 28, "Reactivity Limits" (Ref. 1), reactivity accidents, including rod ejection, do not result in damage to the RCPB greater than limited local yielding. ③

stet ~~2485 psig~~

The design pressure of the RCS is ~~2500 psia~~. During normal operation and AOOs, RCS pressure is limited from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code (Ref. 2). To ensure system integrity, all RCS components are hydrostatically tested at 125% of design pressure, according to the ASME Code requirements prior to initial operation when there is no fuel in the core. Following inception of unit operation, RCS components shall be pressure tested, in accordance with the requirements of ASME Code, Section XI (Ref. 3). ~~①~~

Overpressurization of the RCS could result in a breach of the RCPB. If such a breach occurs in conjunction with a fuel cladding failure, fission products could enter the containment atmosphere, raising concerns relative to limits on radioactive releases specified in 10 CFR 100, "Reactor Site Criteria" (Ref. 4).

APPLICABLE SAFETY ANALYSES

The RCS pressurizer safety valves, the main steam safety valves (MSSVs), and the reactor high pressure trip have settings established to ensure that the RCS pressure SL will not be exceeded.

The RCS pressurizer safety valves are sized to prevent system pressure from exceeding the design pressure by more than 10%, as specified in Section III of the ASME Code for Nuclear Power Plant Components (Ref. 2). The transient that establishes the required relief capacity, and hence valve size requirements and lift settings, is a complete loss of

B 2.0 SAFETY LIMITS (SLs)

B 2.1.2 Reactor Coolant System (RCS) Pressure SL

BASES

BACKGROUND

The SL on RCS pressure protects the integrity of the RCS against overpressurization. In the event of fuel cladding failure, fission products are released into the reactor coolant. The RCS then serves as the primary barrier in preventing the release of fission products into the atmosphere. By establishing an upper limit on RCS pressure, the continued integrity of the RCS is ensured. According to 10 CFR 50, Appendix A, GDC 14, "Reactor Coolant Pressure Boundary," and GDC 15, "Reactor Coolant System Design" (Ref. 1), the reactor coolant pressure ~~coolant~~ boundary (RCPB) design conditions are not to be exceeded during normal operation and anticipated operational occurrences (AOOs). Also, in accordance with GDC 28, "Reactivity Limits" (Ref. 1), reactivity accidents, including rod ejection, do not result in damage to the RCPB greater than limited local yielding. ③

stet ~~2485 psig~~

The design pressure of the RCS is ~~2500 psia~~. During normal operation and AOOs, RCS pressure is limited from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code (Ref. 2). To ensure system integrity, all RCS components are hydrostatically tested at 125% of design pressure, according to the ASME Code requirements prior to initial operation when there is no fuel in the core. Following inception of unit operation, RCS components shall be pressure tested, in accordance with the requirements of ASME Code, Section XI (Ref. 3). ~~①~~

Overpressurization of the RCS could result in a breach of the RCPB. If such a breach occurs in conjunction with a fuel cladding failure, fission products could enter the containment atmosphere, raising concerns relative to limits on radioactive releases specified in 10 CFR 100, "Reactor Site Criteria" (Ref. 4).

APPLICABLE SAFETY ANALYSES

The RCS pressurizer safety valves, the main steam safety valves (MSSVs), and the reactor high pressure trip have settings established to ensure that the RCS pressure SL will not be exceeded.

The RCS pressurizer safety valves are sized to prevent system pressure from exceeding the design pressure by more than 10%, as specified in Section III of the ASME Code for Nuclear Power Plant Components (Ref. 2). The transient that establishes the required relief capacity, and hence valve size requirements and lift settings, is a complete loss of

Licensee Response/NRC Response/NRC Question Closure

Id	**300**
NRC Question Number	**CSS-005**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/26/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/26/2014 2:16 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**73**
NRC Question Number	**CSS-006**
Category	**Technical**
ITS Section	**3.2**
ITS Number	**3.2.3**
DOC Number	**A-4**
JFD Number	
JFD Bases Number	
Page Number (s)	**181**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

ITS 3.2.3 „Ÿ Axial Flux Difference

1. Page 181, DOC A04 states, in part:

> **This change is acceptable because the requirements have not changed. *CTS 3.0.4 and ITS 3.0.4 prohibit entering the MODE of Applicability of a Technical Specification unless the requirements of the LCO are met.* …. [Emphasis added]**

The italic typed text does not accurately describe either CTS 3.0.4 or ITS 3.0.4 requirements.

Please revise the DOC to accurately reflect LCO 3.0.4 requirements. An example revision is provided below.

> **CTS 3.0.4 and ITS 3.0.4 specify conditions for entering the MODE of Applicability of a Technical Specification when the LCO is not met.**

Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 9:35 AM**

Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id **69**

NRC Question Number **CSS-006**

Select Application **Licensee Response**

Attachment 1 **Attachment 1 revised 3.2.3 DOC A04.pdf** (24KB)

Attachment 2

Response Statement

In response to CSS-006, discussion of change (DOC) A04, on page 181 of Enclosure 2, Volume 7, will be revised. Specifically, the sentence, "CTS 3.0.4 and ITS 3.0.4 prohibit entering the MODE of Applicability of a Technical Specification unless the requirements of the LCO are met." will be revised to, "CTS 3.0.4 and ITS 3.0.4 specify conditions for entering the MODE of Applicability of a Technical Specification when the LCO is not met."

See Attachment 1 for the draft revised DOC A04.

Response Date/Time **5/29/2014 4:00 PM**

Closure Statement

Question Closure Date

Notification
Scott Bowman
Kristy Bucholtz
Michelle Conner
Khadijah Hemphill
Andrew Hon
Ray Schiele
Carl Schulten

Added By **Scott Bowman**

Date Added **5/29/2014 2:55 PM**

Date Modified

Modified By

DISCUSSION OF CHANGES
ITS 3.2.3, AXIAL FLUX DIFFERENCE (AFD)

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG - 1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.2.1 states "The indicated AXIAL FLUX DIFFERENCE (AFD) shall be maintained within the limits specified in the COLR." CTS 3.2.1 ACTION a provides ACTIONs to take when the indicated AFD is outside the limits. CTS 4.2.1.1 requires a determination that the indicated AFD is within limits. CTS 4.2.1.2 states that the indicated AFD shall be considered outside the limits when at least 2 OPERABLE excore channels are indicating the AFD to be outside the limits. ITS LCO 3.2.3 states "The AFD in % flux difference units shall be maintained within the limits specified in the COLR." ITS LCO 3.2.3 is modified by a Note specifying when AFD is considered to be outside the limits. ITS SR 3.2.3.1 requires verification that AFD is within limits. This changes the CTS by deleting "indicated" and adding "% flux difference units" to the LCO statement.

The purpose of CTS 3.2.1 is to ensure the AFD remains within the limits specified in the COLR. AFD is the difference in normalized flux signals between the top and bottom excore detectors, therefore, this is a presentation change. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 3.2.1 Applicability contains a footnote (footnote *) which states "See Special Test Exception 3.10.2." ITS 3.2.3 Applicability does not contain this footnote. This changes the CTS by not including Footnote*.

The purpose of Footnote * is to alert the Technical Specification user that a Special Test Exception exists that may modify the Applicability of this Specification. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.2.1 ACTION b states "THERMAL POWER shall not be increased above 50% of RATED THERMAL POWER unless the indicated AFD is within the limits specified in the COLR." ITS 3.2.3 does not contain a similar requirement. This changes the CTS by eliminating a prohibition contained in the CTS.

CSS-006

This change is acceptable because the requirements have not changed. CTS 3.0.4 and ITS 3.0.4 ~~prohibit~~ specify conditions for entering the MODE of Applicability of a Technical Specification when ~~unless the requirements of~~ the LCO is not ~~are~~ met. CTS 3.2.1 and ITS 3.2.3 are applicable in MODE 1 with THERMAL POWER > 50% RTP (CTS) and ≥ 50 RTP (ITS). Therefore, both the CTS and ITS prohibit exceeding

Licensee Response/NRC Response/NRC Question Closure

Id	**260**
NRC Question Number	**CSS-006**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/12/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder**
Added By	**Khadijah Hemphill**
Date Added	**8/12/2014 7:12 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**74**
NRC Question Number	**CSS-007**
Category	**Technical**
ITS Section	**3.2**
ITS Number	**3.2.3**
DOC Number	
JFD Number	
JFD Bases Number	**2**
Page Number(s)	**191**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**1. Applicable Safety Analyses Bases Page 191, JFD2, deleted text (shown below) is not replaced with an equivalent level of detail even though AFD restrictions apply to analyses of Condition 3 and 4 events.** **Please replace the deleted text with plant-specific Bases.** **ThelimitsontheAFDensurethattheHeatFluxHotChannelFactor ($F_Q(Z)$)isnotexceededduringeithernormaloperationorintheeventof xenonredistributionfollowingpowerchanges.Thelimitson theAFDalso restricttherangeofpowerdistributionsthatare usedasinitialconditions intheanalysesofCondition2,3,or4events.Thisensuresthatthefuel claddingintegrityismaintainedforthesepostulatedaccidents.~~Themost importantCondition4eventistheLOCA.ThemostimportantCondition3 eventisthelossofflowaccident.ThemostimportantCondition2eve areuncontrolledbankwithdrawalandborationordilutionaccidents.~~ Condition2accidentssimulatedtobeginfromwithintheAFDlimitsare usedtoconfirmtheadequacyoftheOverpower∆TandOvertemperature ∆Ttripsetpoints.**
Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 9:42 AM**
Notification	**Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id **114**

NRC Question Number **CSS-007**

Select Application **Licensee Response**

Attachment 1 **Attachment 1 3.2.3 revised ASA Bases R1.docx.pdf** (936KB)

Attachment 2

Response Statement

In response to CSS-007, the ISTS Applicable Safety Analyses (ASA) Bases Section, on pages 191 and 197 of Enclosure 2, Volume 7, will be revised. Specifically, the deleted text in the ISTS Bases fourth paragraph will be revised to read, "A Condition 4 event significantly affected by the initial axial power distribution, as indicated by AFD, is the LOCA. A Condition 3 event significantly affected by AFD is the Complete Loss of RCS Flow event. A Condition 2 event significantly affected by AFD is the Uncontrolled RCCA Bank Withdrawal at Power event."

See Attachment 1 for a draft revised ASA Bases for ITS 3.2.3 AFD.

Response Date/Time **6/12/2014 4:45 AM**

Closure Statement

Question Closure Date

Notification
Scott Bowman
Michelle Conner
Khadijah Hemphill
Andrew Hon
Ray Schiele
Carl Schulten

Added By **Scott Bowman**

Date Added **6/12/2014 3:46 AM**

Date Modified

Modified By

BASES

APPLICABLE SAFETY ANALYSES

The AFD is a measure of the axial power distribution skewing to either the top or bottom half of the core. The AFD is sensitive to many core related parameters such as control bank positions, core power level, axial burnup, axial xenon distribution, and, to a lesser extent, reactor coolant temperature and boron concentration.

The allowed range of the AFD is used in the nuclear design process to confirm that operation within these limits produces core peaking factors and axial power distributions that meet safety analysis requirements.

~~The RAOC methodology (Ref. 2) establishes a xenon distribution library with tentatively wide AFD limits. One dimensional axial power distribution calculations are then performed to demonstrate that normal operation power shapes are acceptable for the LOCA and loss of flow accident, and for initial conditions of anticipated transients. The tentative limits are adjusted as necessary to meet the safety analysis requirements.~~ ①

The limits on the AFD ensure that the Heat Flux Hot Channel Factor (F_Q(X, Y, Z)) is not exceeded during either normal operation or in the event of xenon redistribution following power changes. The limits on the AFD also restrict the range of power distributions that are used as initial conditions in the analyses of Condition 2, 3, or 4 events. This ensures that the fuel cladding integrity is maintained for these postulated accidents. ~~The most important Condition 4 event is the LOCA. The most important Condition 3 event is the loss of flow accident. The most important Condition 2 events are uncontrolled bank withdrawal and boration or dilution accidents.~~ ② ②

A Condition 4 event significantly affected by the initial axial power distribution, as indicated by AFD, is the LOCA. A Condition 3 event significantly affected by AFD is the Complete Loss of RCS Flow event. A Condition 2 event significantly affected by AFD is the Uncontrolled RCCA Bank Withdrawal at Power event.

Condition 2 accidents, simulated to begin from within the AFD limits are used to confirm the adequacy of the Overpower ΔT and Overtemperature ΔT trip setpoints. ⑥

The limits on the AFD satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The shape of the power profile in the axial (i.e., the vertical) direction is largely under the control of the operator through the manual operation of the control banks or automatic motion of control banks. The automatic motion of the control banks is in response to temperature deviations resulting from manual operation of the Chemical and Volume Control System to change boron concentration or from power level changes.

Signals are available to the operator from the Nuclear Instrumentation System (NIS) excore neutron detectors (Refs. 1 and 2 ~~3~~). Separate signals are taken from the top and bottom detectors. The AFD is defined as the difference in normalized flux signals between the top and bottom excore detectors in each detector well. For convenience, this flux difference is converted to provide flux difference units expressed as a percentage and labeled as %Δ flux or %ΔI. ② ⑥

BASES

APPLICABLE SAFETY ANALYSES

The AFD is a measure of the axial power distribution skewing to either the top or bottom half of the core. The AFD is sensitive to many core related parameters such as control bank positions, core power level, axial burnup, axial xenon distribution, and, to a lesser extent, reactor coolant temperature and boron concentration.

The allowed range of the AFD is used in the nuclear design process to confirm that operation within these limits produces core peaking factors and axial power distributions that meet safety analysis requirements.

~~The RAOC methodology (Ref. 2) establishes a xenon distribution library with tentatively wide AFD limits. One dimensional axial power distribution calculations are then performed to demonstrate that normal operation power shapes are acceptable for the LOCA and loss of flow accident, and for initial conditions of anticipated transients. The tentative limits are adjusted as necessary to meet the safety analysis requirements.~~ ①

X, Y, ②

The limits on the AFD ensure that the Heat Flux Hot Channel Factor (F_Q(Z)) is not exceeded during either normal operation or in the event of xenon redistribution following power changes. The limits on the AFD also restrict the range of power distributions that are used as initial conditions in the analyses of Condition 2, 3, or 4 events. This ensures that the fuel cladding integrity is maintained for these postulated accidents. ~~The most important Condition 4 event is the LOCA. The most important Condition 3 event is the loss of flow accident. The most important Condition 2 events are uncontrolled bank withdrawal and boration or dilution accidents.~~ ② ⑥ Condition 2 accidents simulated to begin from within the AFD limits are used to confirm the adequacy of the Overpower ΔT and Overtemperature ΔT trip setpoints.

A Condition 4 event significantly affected by the initial axial power distribution, as indicated by AFD, is the LOCA. A Condition 3 event significantly affected by AFD is the Complete Loss of RCS Flow event. A Condition 2 event significantly affected by AFD is the Uncontrolled RCCA Bank Withdrawal at Power event.

,

The limits on the AFD satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The shape of the power profile in the axial (i.e., the vertical) direction is largely under the control of the operator through the manual operation of the control banks or automatic motion of control banks. The automatic motion of the control banks is in response to temperature deviations resulting from manual operation of the Chemical and Volume Control System to change boron concentration or from power level changes.

s

1 and 2 ② ⑥

Signals are available to the operator from the Nuclear Instrumentation System (NIS) excore neutron detectors (Ref. ~~3~~). Separate signals are taken from the top and bottom detectors. The AFD is defined as the difference in normalized flux signals between the top and bottom excore detectors in each detector well. For convenience, this flux difference is converted to provide flux difference units expressed as a percentage and labeled as %Δ flux or %ΔI.

Licensee Response/NRC Response/NRC Question Closure

Id	**261**
NRC Question Number	**CSS-007**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/12/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder**
Added By	**Khadijah Hemphill**
Date Added	**8/12/2014 7:13 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id **75**

NRC Question Number **CSS-008**

Category **Technical**

ITS Section **3.2**

ITS Number **3.2.4**

DOC Number

JFD Number

JFD Bases Number **3**

Page Number(s) **235**

NRC Reviewer Supervisor **Select**

Technical Branch POC **Add Name**

Conf Call Requested **N**

NRC Question

ITS 3.2.4 „Ÿ Quadrant Power Tilt Ratio

1. **ACTIONS, A.3 Bases Page 235, JFD3, discussion (shown below) on SRs required to be performed by Required Action A.3 incorrectly modifies the bases.**

> **Ifthesepeakingfactorsare notwithintheirlimits,theRequiredActionsof the applicable LCOs ~~theseSurveillances~~provide anappropriateresponsefortheabnormalcondition.**

Please revise the ITS Bases to address the ISTS basis fact that Required Action A.3 states: "Perform SR 3.2.1.1, SR 3.2.1.2, SR 3.2.1.3, SR 3.2.2.1 and SR 3.2.2.2. An example revision is provided below.

> **If these peaking factors are not within their limits, the Required Actions of the applicable LCOs of these Surveillances provide an appropriate response for the abnormal condition.**

Attach File 1

Attach File 2

Issue Date **5/19/2014**

Added By **Carl Schulten**

Date Modified

Modified By

Date Added	**5/19/2014 9:46 AM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**93**
NRC Question Number	**CSS-008**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 revised ITS 3.2.4 Bases A.3.pdf** (62KB)
Attachment 2	
Response Statement	**In response to CSS-008, the ITS Bases for Required Action A.3, on pages 235 and 242 of Enclosure 2, Volume 7, will be revised. Specifically, the sentence, “If these peaking factors are not within their limits, the Required Actions of the applicable LCOs provide an appropriate response for the abnormal condition.” will be revised to, “If these peaking factors are not within their limits, the Required Actions of the applicable LCOs of these Surveillances provide an appropriate response for the abnormal condition.”** **See Attachment 1 for the draft revised ITS Bases for Required Action A.3.**
Response Date/Time	**6/4/2014 10:45 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**6/4/2014 9:42 AM**
Date Modified	
Modified By	

ACTIONS (continued)

A.2

After completion of Required Action A.1, the QPTR alarm may still be in its alarmed state. As such, any additional changes in the QPTR are detected by requiring a check of the QPTR once per 12 hours thereafter. A 12 hour Completion Time is sufficient because any additional change in QPTR would be relatively slow.

A.3

The peaking factors F_Q(X, Y, Z)~~, as approximated by $F^C_Q(Z)$ and $F^W_Q(Z)$,~~ and ~~$F^N_{\Delta H}$~~ $F_{\Delta H}$(X, Y) are of primary importance in ensuring that the power distribution remains consistent with the initial conditions used in the safety analyses. Performing SRs on ~~$F^N_{\Delta H}$~~ $F_{\Delta H}$(X, Y) and F_Q(X, Y, Z) within the Completion Time of 24 hours after achieving equilibrium conditions from a Thermal Power reduction per Required Action A.1 ensures that these primary indicators of power distribution are within their respective limits. Equilibrium conditions are achieved when the core is sufficiently stable at intended operating conditions to support flux mapping. A Completion Time of 24 hours after achieving equilibrium conditions from Thermal Power reduction per Required Action A.1 takes into consideration the rate at which peaking factors are likely to change, and the time required to stabilize the plant and perform a flux map. If these peaking STET factors are not within their limits, the Required Actions of the applicable LCOs of ~~these Surveillances~~ provide an appropriate response for the abnormal condition. If the QPTR remains above its specified limit, the peaking factor surveillances are required each 7 days thereafter to evaluate ~~$F^N_{\Delta H}$~~ $F_{\Delta H}$(X, Y) and F_Q(X, Y, Z) with changes in power distribution. Relatively small changes are expected due to either burnup and xenon redistribution or correction of the cause for exceeding the QPTR limit.

① ① CSS-008 ③ ①

A.4

Although ~~$F^N_{\Delta H}$~~ $F_{\Delta H}$(X, Y) and F_Q(X, Y, Z) are of primary importance as initial conditions in the safety analyses, other changes in the power distribution may occur as the QPTR limit is exceeded and may have an impact on the validity of the safety analysis. A change in the power distribution can affect such reactor parameters as bank worths and peaking factors for rod ①

BASES

ACTIONS (continued)

A.2

After completion of Required Action A.1, the QPTR alarm may still be in its alarmed state. As such, any additional changes in the QPTR are detected by requiring a check of the QPTR once per 12 hours thereafter. A 12 hour Completion Time is sufficient because any additional change in QPTR would be relatively slow.

A.3

The peaking factors F_Q(X, Y, Z)~~, as approximated by $F^C_Q(Z)$ and $F^W_Q(Z)$,~~ and ① $F_{\Delta H}(X, Y)$ ~~$F^N_{\Delta H}$~~ are of primary importance in ensuring that the power distribution remains consistent with the initial conditions used in the safety analyses. Performing SRs on $F_{\Delta H}(X, Y)$ ~~$F^N_{\Delta H}$~~ and F_Q(X, Y, Z) within the Completion Time of ① 24 hours after achieving equilibrium conditions from a Thermal Power reduction per Required Action A.1 ensures that these primary indicators of power distribution are within their respective limits. Equilibrium conditions are achieved when the core is sufficiently stable at intended operating conditions to support flux mapping. A Completion Time of 24 hours after achieving equilibrium conditions from Thermal Power reduction per Required Action A.1 takes into consideration the rate at which peaking factors are likely to change, and the time required to stabilize the plant and perform a flux map. If these peaking factors are not within their limits, the Required Actions of the applicable LCOs of ~~these Surveillances~~ provide an appropriate response for the abnormal condition. If the QPTR remains above its specified limit, the peaking factor surveillances are required each 7 days thereafter to evaluate $F_{\Delta H}(X, Y)$ ~~$F^N_{\Delta H}$~~ and F_Q(X, Y, Z) with changes in power distribution. Relatively small changes are expected due to either burnup and xenon redistribution or correction of the cause for exceeding the QPTR limit.

CSS-008

STET ③

①

A.4

Although $F_{\Delta H}(X, Y)$ ~~$F^N_{\Delta H}$~~ and F_Q(X, Y, Z) are of primary importance as initial conditions in ① the safety analyses, other changes in the power distribution may occur as the QPTR limit is exceeded and may have an impact on the validity of the safety analysis. A change in the power distribution can affect such reactor parameters as bank worths and peaking factors for rod

Licensee Response/NRC Response/NRC Question Closure

Id	**262**
NRC Question Number	**CSS-008**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/12/2014**
Notification	**Scott Bowman** **Michelle Conner** **Lynn Mynatt** **Ray Schiele** **Roger Scott** **Pete Snyder**
Added By	**Khadijah Hemphill**
Date Added	**8/12/2014 7:14 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id **76**

NRC Question Number **CSS-009**

Category **Technical**

ITS Section **3.6**

ITS Number **3.6.1**

DOC Number **A-4**

JFD Number

JFD Bases Number

Page Number (s) **18**

NRC Reviewer Supervisor **Rob Elliott**

Technical Branch POC **Add Name**

Conf Call Requested **N**

NRC Question

ITS 3.6.1 „Ÿ Containment

1. Page 18, DOC A04 states, in part:

> **In addition, deletion of the current Actions of CTS 3.6.1.6 is acceptable, because CTS 4.0.4 (ITS SR 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met.**

Please revise this DOC statement to correctly reflect the requirements of CTS 4.0.4. An example revision is provided below.

> **In addition, deletion of the current Actions of CTS 3.6.1.6 is acceptable, because CTS 4.0.4 (ITS SR 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met in accordance with the requirements of LCO 3.0.4.**

Attach File 1

Attach File 2

Issue Date **5/19/2014**

Added By **Carl Schulten**

Date Modified

Modified By

Date Added **5/19/2014 9:48 AM**

Notification
Scott Bowman
Michelle Conner
Khadijah Hemphill
Andrew Hon
Lynn Mynatt
Lisa Regner
Ray Schiele
Carl Schulten
Roger Scott

Licensee Response/NRC Response/NRC Question Closure

Id	**71**
NRC Question Number	**CSS-009**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 revised 3.6.1 DOC A04.pdf** (17KB)
Attachment 2	
Response Statement	**In response to CSS-009, discussion of change (DOC) A04 on page 18 of Enclosure 2, Volume 11, will be revised. Specifically, the sentence, "In addition, deletion of the current Actions of CTS 3.6.1.6 is acceptable, because CTS 4.0.4 (ITS SR 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met." will be revised to read, "In addition, deletion of the current Actions of CTS 3.6.1.6 is acceptable, because CTS 4.0.4 (ITS SR 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met in accordance with the requirements of LCO 3.0.4."** **See Attachment 1 for the draft revised DOC A04.**
Response Date/Time	**5/29/2014 4:05 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**5/29/2014 3:02 PM**
Date Modified	
Modified By	

A03 CTS 4.6.1.1.c requires performance of visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program. ITS SR 3.6.1.1 requires this same test, but adds an exception for containment air lock testing. This changes the CTS by excluding the containment air lock testing in the required CTS surveillance.

This change is acceptable because ITS SR 3.6.2.1 requires performance of air lock leakage rate testing. Furthermore, ITS SR 3.6.2.1 is required to be evaluated against the acceptance criteria that are applicable to SR 3.6.1.1. This will ensure the airlock barrel leakage is accounted for in determining the combined Type B and C containment leakage rate. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 3.6.1.6, ACTION, states, "With the structural integrity of the containment vessel not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F." CTS 3.6.1.6 ACTION does not state what action to take if the structural integrity limits are not met while in MODE 1, 2, 3, or 4. Thus, entry into CTS 3.0.3 is required if CTS 3.6.1.6 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in HOT STANDBY (ITS MODE 3) within the next 6 hours, HOT SHUTDOWN (ITS MODE 4) within the following 6 hours, and Cold Shutdown (similar to ITS MODE 5) within the subsequent 24 hours (37 hours total). ITS 3.6.1 ACTION A requires that if the containment is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.1 ACTION B requires that if the Required Action and associated Completion Time are not met (i.e., the containment is not restored to OPERABLE status in 1 hour), the unit must be in MODE 3 within 6 hours and MODE 5 within 36 hours (37 hours total). This changes CTS by stating the ACTIONS rather than deferring to CTS 3.0.3. In addition, it deletes the CTS Actions to restore the limits prior to increasing the Reactor Coolant System temperature above 200°F.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.1.6 is silent on these actions, deferring to CTS 3.0.3 for the actions to accomplish this. This change is acceptable because the ACTIONS specified in ITS 3.6.1 adopt ISTS structure for placing the unit outside the MODE of Applicability while changing the time specified to enter MODE 3 and MODE 5 but still within the plants ability to safely shutdown. In addition, deletion of the current Actions of CTS 3.6.1.6 is acceptable, because CTS 4.0.4 (ITS SR 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met~~.~~ Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.1. This change is designated as administrative because it does not result in technical changes to the CTS.

CSS-009

in accordance with the requirements of LCO 3.0.4.

MORE RESTRICTIVE CHANGES

None

Licensee Response/NRC Response/NRC Question Closure

Id	**244**
NRC Question Number	**CSS-009**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/7/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/7/2014 11:16 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**77**
NRC Question Number	**CSS-010**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.1**
DOC Number	
JFD Number	
JFD Bases Number	**5**
Page Number (s)	**31**
NRC Reviewer Supervisor	**Select**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**1. Page 31, Bases 3.6.1, Reference 4 (ASME Code, Section XI, Subsection IWL) is deleted using JFD5 (Page 38) as the justification for deviation from the ISTS. JFD5 regards the Containment Tendon Surveillance Program.** **Please revise JFD5 to justify deleting the ASME Code reference to Subsection IWL.**
Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 9:50 AM**
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**73**
NRC Question Number	**CSS-010**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 revised 3.6.1 Bases JFD 5.pdf** (901KB)
Attachment 2	
Response Statement	**In response to CSS-010, justification for deviation (JFD) 5, on page 38 of Enclosure 2, Volume 11, will be revised. Specifically, JFD 5 will be revised to, "The ISTS bracketed requirement regarding Containment Tendon Surveillance Program is deleted because it is not applicable to SQN Unit 1 and Unit 2. Reference 4, ASME Code, Section XI, Subsection IWL, is associated with the Containment Tendon Surveillance Program. Therefore, it is not applicable to SQN, and the reference is deleted. The SQN containments do not utilize containment tendons."** **See Attachment 1 for the draft revised JFD 5.**
Response Date/Time	**5/29/2014 4:20 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**5/29/2014 3:19 PM**
Date Modified	
Modified By	

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.1 Bases, CONTAINMENT

1. The heading for ISTS 3.6.1 includes the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the Sequoyah Nuclear (SQN) Plant ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

4. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

5. The ISTS ~~This~~ bracketed requirement regarding Containment Tendon Surveillance Program is deleted because it is not applicable to SQN Unit 1 and Unit 2. The SQN containments do not utilize containment tendons.

CSS-010

6. The SQN Safety Analysis Report (SAR) is titled, "Sequoyah Nuclear Plant Updated Final Safety Analysis Report." Therefore, the proper acronym is UFSAR and is changed to reflect the SQN title.

Reference 4, ASME Code, Section XI, Subsection IWL, is associated with the Containment Tendon Surveillance Program. Therefore, it is not applicable to SQN, and the reference is deleted.

Licensee Response/NRC Response/NRC Question Closure

Id	**226**
NRC Question Number	**CSS-010**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/4/2014 5:01 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**78**
NRC Question Number	**CSS-011**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.2**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	**n/a**
NRC Reviewer Supervisor	**Select**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**No RAIs**
Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 9:51 AM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**224**
NRC Question Number	**CSS-011**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/4/2014 4:14 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id **79**

NRC Question Number **CSS-012**

Category **Technical**

ITS Section **3.6**

ITS Number **3.6.3**

DOC Number

JFD Number

JFD Bases Number

Page Number (s) **85**

NRC Reviewer Supervisor **Rob Elliott**

Technical Branch POC **Add Name**

Conf Call Requested **N**

NRC Question

1. **A DOC was not provided. Page 85, CTS 3.6.3, ACTION e applies to containment purge supply and/or exhaust isolation valves not within leakage limits. CTS ACTION e remedial actions become ITS Condition G Required Actions G.1 and G.3.**

   CTS ACTION e states, in part:

   > **[I]solate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 24 hours. […].. Perform SR 4.6.3.6 once per 92 days for the valve used to isolate the affected penetration flow path.**

   ITS Required Action G.1 requires:

   > **Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.**

   ITS Required Action G.3 requires:

   > **Perform SR 3.6.3.5 for the *resilient seal purge valves closed* to comply with Required Action G.1. [Emphasis added]**

   Please provide a discussion of change for the language added to CTS ACTION e in ITS Required Action G.3.

Attach File 1

Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 9:56 AM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**100**
NRC Question Number	**CSS-012**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 3.6.3 resilient revision.pdf** (37KB)
Attachment 2	
Response Statement	**CTS 4.6.3.6 requires the performance of leakage rate testing of each containment purge supply and exhaust isolation valve. The equivalent test in ITS is SR 3.6.3.5. ITS SR 3.6.3.5 only applies to containment purge valves with resilient seals. This change, as discussed in discussion of change (DOC) A07, is appropriate as each of the purge supply and exhaust isolation valves at SQN has a resilient seal. Because CTS 3.6.3 Action e requires the performance of CTS 4.6.3.6, the same change applies to ITS 3.6.3 Required Action G.3 with regard to the performance of SR 3.6.3.5. Therefore, ITS 3.6.3 DOC A07 will be revised to include a discussion of the change to CTS 3.6.3 Action e, as it applies to the performance of SR 3.6.3.5 for the resilient purge valves closed to comply with Required Action G.1.** **See Attachment 1 for the changes to the CTS 3.6.3 markup (pages 85 and 93 of Enclosure 2, Volume 11) and ITS 3.6.3 DOC A07 (page 102).**
Response Date/Time	**6/5/2014 5:00 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**6/5/2014 3:55 PM**
Date Modified	
Modified By	

CONTAINMENT SYSTEMS

ACTIONS (continued)

ACTION D

b. With more than one pair of containment purge lines open

or

Condition B Note

ACTION B

with one or more penetration flow paths with two containment isolation valves inoperable for reasons other than:
1. leakage rate limits of containment purge isolation valve(s),
2. leakage rate limit of shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~, or
3. inoperable containment vacuum relief isolation valve(s),

A05

ACTION B, ACTION D

ACTION A

isolate the affected penetration within 1 hour by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange and verify# the affected penetration flow path is isolated once per 31 days.

A04

L02

ACTION E

c. With one or more containment vacuum relief isolation valve(s) inoperable, the valve(s) must be returned to OPERABLE status within 72 hours.

ACTION F

d. With one or more shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~ not within limit, restore within limit within 4 hours.

A05

ACTION G

e. With one or more penetration flow paths with one or more containment purge supply and/or exhaust isolation valves not within leakage limits, isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 24 hours. Verify# the affected penetration flow path is isolated once per 31 days for isolation devices outside containment and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment. Perform SR 4.6.3.6 once per 92 days for the resilient seal purge valve used to isolate the affected penetration flow path.

A07

A08

ACTION A
ACTION C

f. With one or more penetration flow paths of a closed system design with one containment isolation valve inoperable, isolate the affected penetration flow path within ~~72 hours~~ Add proposed Categories and Completion Times by use of at least one closed and de-activated automatic valve, check valve, closed manual valve, or blind flange, and verify# the affected penetration is isolated once per 31 days.

M01

L03

L04

ACTION H

g. With any of the above ACTIONS not met, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.2, SR 3.6.3.3

--- NOTE ---

* Valves and blind flanges in high radiation areas may be verified by use of administrative means.

SR 3.6.3.1

4.6.3.1 Verify each purge supply and/or exhaust isolation valve is closed, except when containment purge valves (only one set of supply and one set of exhaust valves) are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open, ~~at least once per 31 days~~ In accordance with the Surveillance Frequency Control Program.

LA01

CONTAINMENT SYSTEMS

ACTIONS (continued)

ACTION D
Condition B Note
ACTION B

b. With more than one pair of containment purge lines open

or

with one or more penetration flow paths with two containment isolation valves inoperable for reasons other than:

1. leakage rate limits of containment purge isolation valve(s), shield building
2. leakage rate limit of BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~, or A05
3. inoperable containment vacuum relief isolation valve(s),

ACTION B, ACTION D
ACTION A

isolate the affected penetration within 1 hour by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange and verify# the affected penetration flow path is isolated once per 31 days. A04 L02

ACTION E

c. With one or more containment vacuum relief isolation valve(s) inoperable, the valve(s) must be returned to OPERABLE status within 72 hours.

ACTION F

d. With one or more shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~ not within limit, restore within limit within 4 hours. A05

resilient seal purge A07

ACTION G

e. With one or more penetration flow paths with one or more containment purge supply and/or exhaust isolation valves not within leakage limits, isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 24 hours. Verify# the affected penetration flow path is isolated once per 31 days for isolation devices outside containment and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment. Perform SR 4.6.3.6 once per 92 days for the resilient seal purge valve used to isolate the affected penetration flow path.

A08

ACTION A
ACTION C

f. With one or more penetration flow paths of a closed system design with one containment isolation valve inoperable, isolate the affected penetration flow path within ~~72 hours~~ Add proposed Categories and Completion Times by use of at least one closed and de-activated automatic valve, closed manual valve, check valve, or blind flange, and verify# the affected penetration is isolated once per 31 days. M01 L03

ACTION H

g. With any of the above ACTIONS not met, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L04

SURVEILLANCE REQUIREMENTS

SR 3.6.3.2, SR 3.6.3.3

-- NOTE --

* Valves and blind flanges in high radiation areas may be verified by use of administrative means.

SR 3.6.3.1

4.6.3.1 Verify each purge supply and/or exhaust isolation valve is closed, except when containment purge valves (only one set of supply valves and one set of exhaust valves) are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open, ~~at least once per 31 days~~ In accordance with the Surveillance Frequency Control Program. LA01

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

This change is designated as administrative since it does not result in a technical change to the CTS.

A06 CTS 4.6.3.3 requires the isolation time of each power operated or automatic containment isolation valve to be determined to be within limits when tested pursuant to Specification 4.0.5. ITS SR 3.6.3.4 requires the isolation time of each automatic power operated containment isolation valve to be verified within limits with a Frequency of "In accordance with the Inservice Testing Program." This changes the CTS by stating containment isolation valve testing is performed at a Frequency that is in accordance with the Inservice Testing Program.

The purpose of CTS 4.6.3.3 is to verify the isolation time of each power operated or automatic containment isolation valve is within limit pursuant to Specification 4.0.5, which provides the requirements for the Inservice Testing Program. This change is acceptable, because the Frequency regarding the containment isolation valve testing remains the same. The inservice testing requirements of CTS 4.0.5 have been moved to the Inservice Testing Program contained in Section 5.5 of the ITS. This change is designated as administrative, because it does not result in a technical change to the CTS.

A07 CTS 4.6.3.6 requires a performance of a leakage rate test for each containment purge supply and exhaust isolation valve at least once per 3 months. ITS SR 3.6.3.5 requires performance of a leakage rate test for containment purge valves with resilient seals at a Frequency of "In accordance with the Surveillance Frequency Control Program." This changes the CTS by specifying that the leakage rate test is only required to be performed on isolation valves with resilient seals. Moving the specified Surveillance Frequency to the Surveillance Frequency Control Program is discussed in DOC LA01.

CTS 3.6.3 Action e requires, in part, performance of SR 4.6.3.6 for a valve used to isolate a penetration flow path with one or more containment purge supply and/or exhaust isolation valves not within leakage limits. ITS 3.6.3 Required Action G.3 requires performance of SR 3.6.3.5 for the resilient purge valves closed to isolate one or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.

The purpose of CTS 4.6.3.6 is to verify the leakage rate of each containment purge supply and exhaust isolation valve is within limits. CTS 4.6.3.6 do~~es~~ not specify that the Surveillance Requirement only applies to containment purge supply and exhaust isolation valves with resilient seals, because each of the purge supply and exhaust isolation valves at SQN has a resilient seal. Specifying within ITS SR 3.6.3.5 that the SR only applies to containment purge valves with resilient seals, aligns the text with the ISTS, and is consistent with the Bases justifying the increased leakage test Frequency for purge valves with resilient seals. This change is designated as administrative, because it does not result in a technical change to the CTS.

CTS 3.6.3 Action e and

3.6.3 Required Action G.1 and

CTS 3.6.3 ACTION a, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths with two containment isolation valves. CTS 3.6.3 ACTION f, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths of a closed system design. ITS 3.6.3 ACTION A, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths. This changes the CTS by combining the required actions for one inoperable containment isolation valve in penetration flow paths with either one or two containment isolation valves.

Licensee Response/NRC Response/NRC Question Closure

Id	**245**
NRC Question Number	**CSS-012**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/7/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/7/2014 11:26 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id **80**

NRC Question Number **CSS-013**

Category **Technical**

ITS Section **3.6**

ITS Number **3.6.3**

DOC Number **A-8**

JFD Number

JFD Bases Number

Page Number (s) **102**

NRC Reviewer Supervisor **Rob Elliott**

Technical Branch POC **Add Name**

Conf Call Requested **N**

NRC Question

1. **Page 102, DOC A08 states, in part:**

> ***CTS 3.6.3 ACTION a, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths with two containment isolation valves.*** **[Emphasis added] CTS 3.6.3 ACTION f, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths of a closed system design.**

DOC A08 applies only to CTS 3.6.3 ACTION f. Please revise DOC A08 to only reference the applicable CTS section.

Page 120, Insert 2 (JFD 6) ITS Condition E, One or more containment vacuum relief isolation vales inoperable is CTS ACTION c.

Please explain why the vacuum relief containment isolation valves are not evaluated as a plant-specific application of TSTF-446 CIV Category 1 through 14 containment isolation valves of ITS Condition A.

Attach File 1

Attach File 2

Issue Date **5/19/2014**

Added By **Carl Schulten**

Date Modified

Modified By	
Date Added	**5/19/2014 9:58 AM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id **101**

NRC Question Number **CSS-013**

Select Application **Licensee Response**

Attachment 1

Attachment 2

Response Statement

In response to CSS-013, part 1, ITS 3.6.3 discussion of change (DOC) A08 discusses the formation of ITS 3.6.3 ACTION A from the combination of parts of CTS 3.6.3 Action a (as it applies to an inoperable containment isolation valve in one or more penetration flow paths with two containment isolation valves) and parts of CTS 3.6.3 Action f (as it applies to one or more penetration flow paths of a closed system with one containment isolation valve inoperable). The parts of CTS 3.6.3 Action a and CTS 3.6.3 Action f that are not combined to form ITS 3.6.3 ACTION A (two or more penetration flow paths with inoperable containment isolation valve), are combined to form ITS 3.6.3 ACTION C. Therefore, ITS 3.6.3 DOC A08 is correct as written.

In response to CSS-013, part 2, CTS 3.6.3 Action c was approved April 28, 1995, by license amendments 197 and 188 for SQN Units 1 and 2, respectively. The change clarified the LCO requirements applicable to the dual function of the containment vacuum relief (VR) isolation lines by indicating the actions that would be required should one or more of the VR lines be incapable of performing its containment isolation function or incapable of performing its VR function. More specifically, the change revised CTS 3.6.3, "Containment Isolation Valves," and CTS 3.6.6, "Vacuum Relief Valves," action statements to separate the containment isolation requirements from the vacuum relief requirements.

Prior to the license amendment, CTS 3.6.3 Action b would require that an inoperable vacuum relief lines be isolated within 4 hours. Isolation of the line would involve closing the isolation valve and removing electrical power in order to fulfill the isolation requirement. However, this conflicted with CTS 3.6.6, which requires the vacuum relief lines be open for operability of the vacuum relief system. The change to CTS 3.6.3 added an action (Action c) to allow one or more of the containment vacuum relief isolation valves to be inoperable for 72 hours prior to requiring a unit shut down. Therefore, because of the dual function of the containment vacuum relief isolation valves, the CTS 3.6.3 Action and associated completion time for one or more inoperable vacuum relief containment isolation valves has been retained in ITS 3.6.3 ACTION E.

Response Date/Time **6/6/2014 6:35 AM**

Closure Statement

Question Closure Date

Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**6/6/2014 5:32 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**345**
NRC Question Number	**CSS-013**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/22/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**9/22/2014 3:12 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**81**
NRC Question Number	**CSS-014**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.3**
DOC Number	
JFD Number	
JFD Bases Number	**15**
Page Number (s)	**168**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**1. Page 168, Bases Insert 6, JFD15, Bases Table 3.6.3-1, Containment Isolation Valve Completion Times. The Categories in the table under “Pressure Boundary Maintained” and “Pressure Boundary Compromised” are identified using a numerical value between 1 and 14.** **Please add a key to Table 3.6.3-1 which explains the meaning of each numerical category.**
Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 10:01 AM**
Notification	**Scott Bowman** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id **192**

NRC Question Number **CSS-014**

Select Application **Licensee Response**

Attachment 1

Attachment 2

Response Statement

In response to CSS-014, SQN has reviewed ITS 3.6.3 Bases Table B 3.6.3-1 and determined that a “table key” to explain the meaning of each numerical category is not required. ITS Table B 3.6.3-1 indicates the relationship between a valve’s unique identifier (UNID) to the associated Penetration number and one of two potential Categories and Completion Times based on the status of the Pressure Boundary.

Each containment penetration will have two different categories based on the penetration pressure boundary status. If the pressure boundary status is “maintained,” the numerical category would be 1-7 based on the associated completion times. If the pressure boundary status is “compromised,” then, the numerical category would be 8-14 based on the associated completion times. Therefore, based on the information already provided in ITS Table B 3.6.3-1, no change is required.

Response Date/Time **7/17/2014 5:25 AM**

Closure Statement

Question Closure Date

Notification
Scott Bowman
Michelle Conner
Khadijah Hemphill
Andrew Hon
Ray Schiele
Caroline Tilton

Added By **Scott Bowman**

Date Added **7/17/2014 4:26 AM**

Date Modified

Modified By

Licensee Response/NRC Response/NRC Question Closure

Id	**268**
NRC Question Number	**CSS-014**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/20/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/20/2014 9:15 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**82**
NRC Question Number	**CSS-015**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.4**
DOC Number	**A-2**
JFD Number	
JFD Bases Number	
Page Number(s)	**235**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

ITS 3.6.4 „Ÿ Containment Pressure

1. **Page 235, DOC A02, states CTS 3.6.1.4 in part, states:**

> **"Primary containment internal pressure shall be maintained between -0.1 and 0.3 psig…" ITS 3.6.4 states "Containment pressure shall be ≥ -0.1 and ≤ +0.3 psig." Additionally, the title for CTS 3.6.1.4 is "Internal Pressure." The title for ITS 3.6.4 is "Containment Pressure. This changes the CTS by changing the title and changing the LCO statement."**

10 CFR 50.36(b), states, in part "The technical specifications shall be derived from the analyses and evaluation included in the safety analysis report, […].
SQN document S3-01.doc describes in Section 3.1, Conformance with NRC General Design Criteria, Criterion 41 – Containment Atmosphere Cleanup on page 3.1-24 "The Shield Building, surrounding the *primary containment*, serves as a secondary containment." Table 1.3.1-1 Design comparison with D.C. Cook and Trojan states Sequoyah uses a "freestanding steel *primary containment vessel*. [Emphasis added]

The FSAR shows Sequoyah design includes a primary containment volume and a secondary containment volume. The ISTS contains design information and/or values that are generic to Westinghouse vintage plants.

Please verify that the proposed Sequoyah TS are derived from the analyses and evaluation as required under 10 CFR 50.36(b) and that the language used in ITS is consistent with the language in the analysis from which the TS is derived.

Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 10:04 AM**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**125**
NRC Question Number	**CSS-015**
Select Application	**Licensee Response**
Attachment 1	
Attachment 2	

Response Statement

In response to CSS-015, the following information is provided to describe the Sequoyah Nuclear Plant (SQN) containment design and confirm that the information provided in ITS LCO 3.6.4, Containment Pressure, reflects the design basis of the plant and is consistent with the analyses and language in the updated final safety analysis report (UFSAR) as required by 10 CFR 50.36(b).

As described in UFSAR Section 6.2.1, the containment consists of a containment vessel and a separate shield building enclosing the containment vessel and annulus. The containment vessel is a freestanding, welded steel structure that provides primary containment. The shield building is a reinforced concrete structure similar in shape to the containment vessel that protects the containment vessel from external events.

The inner steel containment and its penetrations establish the leakage limiting boundary of the containment. Maintaining the containment OPERABLE limits the leakage of fission product radioactivity from the containment to the environment. During a loss of coolant accident, the shield building acts as a secondary containment enclosure by providing a barrier to airborne, primary containment leakage from air-filled automatic isolating penetrations. The Emergency Gas Treatment System (EGTS) maintains the secondary containment at a negative pressure during the post-accident period. The EGTS also collects and processes the secondary containment atmosphere prior to release to the environment. The EGTS and shield building function to keep out-leakage minimal, but are not factors in determining the design leak rate.

Therefore, the proposed ITS containment Specifications accurately describe the SQN containment design, reflect the design basis of the plant, and are consistent with the analyses and language in the updated final safety analysis report (UFSAR) as required by 10 CFR 50.36(b).

Response Date/Time	**6/17/2014 1:25 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon**

	Ray Schiele **Carl Schulten** **Roger Scott**
Added By	**Scott Bowman**
Date Added	**6/17/2014 12:23 PM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**269**
NRC Question Number	**CSS-015**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/20/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/20/2014 9:16 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**83**
NRC Question Number	**CSS-016**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.4**
DOC Number	**LA-1**
JFD Number	
JFD Bases Number	
Page Number(s)	**235**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

1. **Page 235, DOC LA01 in part states:**

> **CTS 3.6.1.4 states that the Primary containment internal pressure shall be maintained between -0.1 and 0.3 psig relative to the *annulus pressure*. [Emphasis added] ITS LCO 3.6.4 includes a similar requirement, but does not specify that it is relative to the annulus pressure. […]this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS LCO 3.6.4 still provides a requirement to maintain containment pressure within limits.**

The Emergency Gas Treatment System and the Auxiliary Building Gas Treatment System establish and maintain the air pressure below atmospheric in the Shield Building annulus and the Auxiliary Building Secondary Containment Enclosure (ABSCE), respectively to ensure compliance with GDC-41, Containment Atmosphere Cleanup . These systems reduce the concentration of radioactive nuclides in the air released from the annulus and the ABSCE.

Please provide discussion to show that having TS primary containment internal pressure not referenced to annulus pressure does not result in a change to the SQN licensing basis for meeting GDC-41. The discussion should describe the location of the

pressure sensors used to detect differences between the primary containment gage pressure and annulus gage pressure.

Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 10:07 AM**
Notification	**Scott Bowman** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**144**
NRC Question Number	**CSS-016**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 3.6.4 LCO.pdf** (2MB)
Attachment 2	
Response Statement	**In response to CSS-016, ITS LCO 3.6.4, on pages 238 and 239 of Enclosure 2, Volume 11, will be revised to reflect that the containment pressure limit values are relative to the annulus pressure. Revisions to ITS 3.6.4 include changes to the CTS 3.6.1.4 markups (pages 233 and 234) to reflect the retention of "relative to the annulus pressure," deletion of discussion of change (DOC) LA01 (page 235), and addition of "relative to the annulus pressure" to the ISTS 3.6.4 LCO statement.** **See Attachment 1 for the draft ITS 3.6.4 changes discussed above.**
Response Date/Time	**6/23/2014 1:25 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**6/23/2014 12:22 PM**
Date Modified	
Modified By	

A01

CONTAINMENT SYSTEMS

CONTAINMENT

~~INTERNAL~~ PRESSURE

A02

LIMITING CONDITION FOR OPERATION

A02

LCO 3.6.4 3.6.1.4 ~~Primary~~ containment ~~internal~~ pressure shall be maintained between -0.1 and 0.3 psig ~~relative to the annulus pressure~~.

Keep

~~LA01~~

Keep

Applicability **APPLICABILITY**: MODES 1, 2, 3 and 4.

ACTION:

ACTION A

ACTION B

With the containment internal pressure outside of the limits above, restore the internal pressure to within the limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1 4.6.1.4 The primary containment internal pressure shall be determined to within the limits ~~at least once per 12 hours~~.

In accordance with the Surveillance Frequency Control Program

LA02

A01

CONTAINMENT SYSTEMS

CONTAINMENT A02

~~INTERNAL~~ PRESSURE

LIMITING CONDITION FOR OPERATION

A02

LCO 3.6.4 3.6.1.4 ~~Primary~~ containment ~~internal~~ pressure shall be maintained between -0.1 and 0.3 psig ~~relative to the annulus pressure~~. ~~LA01~~

Keep

Keep

Applicability APPLICABILITY: MODES 1, 2. 3 and 4.

ACTION:

ACTION A ACTION B With the containment internal pressure outside of the above limits, restore the internal pressure to within the limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1 4.6.1.4 The primary containment internal pressure shall be determined to within the specified limits ~~at least once per 12 hours~~.

In accordance with the Surveillance Frequency Control Program LA02

DISCUSSION OF CHANGES
ITS 3.6.4, CONTAINMENT PRESSURE

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.1.4 states, in part, "Primary containment internal pressure shall be maintained between -0.1 and 0.3 psig…" ITS 3.6.4 states "Containment pressure shall be ≥ -0.1 and ≤ +0.3 psig." Additionally, the title for CTS 3.6.1.4 is "Internal Pressure." The title for ITS 3.6.4 is "Containment Pressure." This changes the CTS by changing the title and changing the LCO statement.

This change is a wording preference that does not change the requirements for Containment Pressure. This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

Not used.

LA01 ~~*(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.1.4 states that the Primary containment internal pressure shall be maintained between -0.1 and 0.3 psig relative to the annulus pressure. ITS LCO 3.6.4 includes a similar requirement, but does not specify that it is relative to the annulus pressure. This changes the CTS by moving the detail that the containment pressure limits are relative to the annulus pressure to the Bases.~~

~~The removal of this detail, which is related to system design, from the CTS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS LCO 3.6.4 still provides a requirement to maintain containment pressure within limits. Also, this change is acceptable because these types of details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are~~

~~properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the CTS.~~

LA02 *(Type 5 – Removal of SR Requirement to the Surveillance Frequency Control Program)* CTS 4.6.1.4 requires the primary containment internal pressure to be determined to be within limits at least once per 12 hours. ITS SR 3.6.4.1 requires a similar Surveillance, but specifies the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

3.6 CONTAINMENT SYSTEMS

3.6.4~~A~~ Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

3.6.1.4 LCO 3.6.4~~A~~ Containment pressure shall be ≥ ~~[~~-0.~~3]~~ 1 psig and ≤ ~~[~~+~~1.5]~~ 0.3 psig relative to the annulus pressure. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.1.4	SR 3.6.4~~A~~.1 Verify containment pressure is within limits.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④

3.6 CONTAINMENT SYSTEMS

3.6.4~~A~~ Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

3.6.1.4 LCO 3.6.4~~A~~ Containment pressure shall be ≥ ~~[~~-0.~~3]~~1 psig and ≤ ~~[~~+~~1.5]~~0.3 psig. ③

relative to the annulus pressure

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.1.4	SR 3.6.4~~A~~.1 Verify containment pressure is within limits.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④

Licensee Response/NRC Response/NRC Question Closure

Id	**276**
NRC Question Number	**CSS-016**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/21/2014 8:12 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**84**
NRC Question Number	**CSS-017**
Category	**FYI**
ITS Section	**3.6**
ITS Number	**3.6.5**
DOC Number	
JFD Number	
JFD Bases Number	
Page Number(s)	
NRC Reviewer Supervisor	**Select**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**No RAIs**
Attach File 1	
Attach File 2	
Issue Date	**5/19/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/19/2014 10:08 AM**
Notification	**Scott Bowman** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**225**
NRC Question Number	**CSS-017**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/4/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/4/2014 4:15 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**112**
NRC Question Number	**CSS-018**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.6**
DOC Number	
JFD Number	
JFD Bases Number	**2**
Page Number(s)	**306**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

1. Page 306, JFD 2, 2nd paragraph of Applicable Safety Analyses (ASA). This paragraph (as shown below) states the maximum containment atmosphere temperature results from the DBA SLB analysis. JFD 2 deletes ISTS ASA bases not in brackets (with the exception of the statement "[for a few seconds]") that discuss the basis of the containment design temperature. Please provide Sequoyah-specific ASA bases for the containment design temperature in an equivalent level of detail to the deleted ISTS Bases discussion.

> **TheDBAanalysesshowthatthemaximumpeakcontainmentpressureof [44.1]psigresultsfromtheLOCAanalysis,andiscalculatedtobeles**
> **thanthecontainmentdesignpressure.Themaximumpeakcontainment atmospheretemperatureof[385]°FresultsfromtheSLBanalysis~~an~~**
> **~~wascalculatedtoexceedthecontainmentdesigntemperature[forafew seconds]duringtheDBASLB.Thebasisofthecontainmentdesign~~**
> **~~temperature,however,istoensuretheOPERABILITYofsafetyrelated equipmentinsidecontainment(Ref.3).Thermalanalysesshowedthat~~**
> **~~thetimeintervalduringwhichthecontainmentatmospheretemperature exceedthecontainmentdesigntemperaturewasshortenoughthat~~**
> **~~equipmentsurfacetemperaturesremainedbelowthedesigntemperature. Therefore,itisconcludedthatthecalculatedtransientcontainme~~**
> **~~atmospheretemperaturesareacceptablefortheDBASLB~~.**

Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/30/2014 2:32 PM**
Notification	**Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**135**
NRC Question Number	**CSS-018**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 3.6.6 ASA revision.pdf** (3MB)
Attachment 2	
Response Statement	**In response to CSS-018, ITS 3.6.6 Bases Applicable Safety Analysis (ASA) Section on pages 306 and 317 of Enclosure 2, Volume 11, will be revised to provide a Sequoyah-specific discussion that reflects the peak calculated containment temperature and its relationship to the design containment temperature. Specifically, the second paragraph of the ASA Section will be revised to read, in part, “The basis of the containment design temperature (327°F) is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). The maximum peak containment atmosphere temperature of 325.6°F results from the SLB analysis. Therefore, the calculated peak containment atmosphere temperature is acceptable for the DBA SLB.”** **See Attachment 1 for the draft revised ITS 3.6.6 Bases change discussed above.**
Response Date/Time	**6/20/2014 5:15 AM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**6/20/2014 4:16 AM**
Date Modified	
Modified By	

BASES

BACKGROUND (continued)

The operation of the Containment Spray System, together with the ice condenser, is adequate to assure pressure suppression during the initial blowdown of steam and water from a DBA. During the post blowdown period, the Air Return System (ARS) is automatically started. The ARS returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam through the ice condenser, where heat is removed by the remaining ice. ②

The Containment Spray System limits the temperature and pressure that could be expected following a DBA. Protection of containment integrity limits leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment OPERABILITY are the loss of coolant accident (LOCA) and the steam line break (SLB). The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of ~~the~~ Containment Spray ~~System~~, ~~the~~ RHR ~~System~~, and ~~the ARS~~ an ARS fan being rendered inoperable (Ref. 2). ②

The DBA analyses show that the maximum peak containment pressure of ~~[44.1]~~ 11.33 psig results from the LOCA analysis, and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature of ~~[385]~~ 325.6°F results from the SLB analysis. ~~and was calculated to exceed the containment design temperature [for a few seconds] during the DBA SLB. The basis of the containment design temperature, however, is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). Thermal analyses showed that the time interval during which the containment atmosphere temperature exceed the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment atmosphere temperatures are acceptable for the DBA SLB.~~ ④ ②

The basis of the containment design temperature (327°F) is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3).

Therefore, the calculated peak containment atmosphere temperature is acceptable for the DBA SLB.

The modeled Containment Spray ~~System~~ trains actuation from the containment analysis is based on a response time associated with exceeding the containment ~~High-3~~ High - High pressure signal setpoint to achieving full flow through the containment spray train nozzles. A delayed response time initiation ②

BASES

BACKGROUND (continued)

The operation of the Containment Spray System, together with the ice condenser, is adequate to assure pressure suppression during the initial blowdown of steam and water from a DBA. During the post blowdown period, the Air Return System (ARS) is automatically started. The ARS returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam through the ice condenser, where heat is removed by the remaining ice. ②

The Containment Spray System limits the temperature and pressure that could be expected following a DBA. Protection of containment integrity limits leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment OPERABILITY are the loss of coolant accident (LOCA) and the steam line break (SLB). The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of ~~the~~ Containment Spray ~~System~~, ~~the~~ RHR ~~System~~, and ~~the ARS~~ an ARS fan being rendered inoperable (Ref. 2). ②

The DBA analyses show that the maximum peak containment pressure of ~~[44.1]~~ 11.33 psig results from the LOCA analysis, and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature of ~~[385]~~ 325.6°F results from the SLB analysis. ~~and was calculated to exceed the containment design temperature [for a few seconds] during the DBA SLB. The basis of the containment design temperature, however, is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). Thermal analyses showed that the time interval during which the containment atmosphere temperature exceed the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment atmosphere temperatures are acceptable for the DBA SLB.~~ ④ ②

The basis of the containment design temperature (327°F) is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3).

Therefore, the calculated peak containment atmosphere temperature is acceptable for the DBA SLB.

The modeled Containment Spray trains ~~System~~ actuation from the containment analysis is based on a response time associated with exceeding the containment High - High ~~High-3~~ pressure signal setpoint to achieving full flow through the containment spray train nozzles. A delayed response time initiation ②

Licensee Response/NRC Response/NRC Question Closure

Id	**277**
NRC Question Number	**CSS-018**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/21/2014 8:14 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**113**
NRC Question Number	**CSS-019**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.7**
DOC Number	**M-1**
JFD Number	
JFD Bases Number	
Page Number(s)	**338**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**
NRC Question	**1. Page 338, DOC M01, describes the CTS change as** **"[…] adding new Surveillance Requirements to verify annulus negative pressure is within limits and to verify the shield building access door in each access opening is closed. […] ITS SR 3.6.7.1 verif[ies] every 12 hours that annulus negative pressure is within the limit assumed in the containment analysis. […] ITS SR 3.6.7.2 is added to verify every 31 days that the door in each access opening is closed, so that the shield building boundary is not breached at any time when the shield building boundary is required.** **Please add discussion to DOC M01 stating the basis for the SR 3.7.6.1 12 hour and SR 3.6.7.2 31 day surveillance frequencies.**
Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/30/2014 2:33 PM**
Notification	**Khadijah Hemphill**

Andrew Hon
Lynn Mynatt
Lisa Regner
Ray Schiele
Carl Schulten
Roger Scott

Licensee Response/NRC Response/NRC Question Closure

Id	**217**
NRC Question Number	**CSS-019**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 3.6.7 DOC M01.pdf** (25KB)
Attachment 2	
Response Statement	**In response to CSS-019, ITS 3.6.7 discussion of change (DOC) M01, on page 338 of Enclosure 2, Volume 8, will be revised to include the basis for the stated Frequencies for ITS SR 3.6.7.1 and ITS SR 3.6.7.2. Concerning SR 3.6.7.1, a sentence will be added to DOC M01 to state, "The 12 hour Frequency is based on industry operating experience related to shield building annulus pressure variations and pressure instrument drift during the applicable MODES." For SR 3.6.7.2, a sentence will be added to DOC M01 to state, "The 31 day Frequency is based on engineering judgment and is considered adequate in view of other indications of door status available to the operator."** **See Attachment 1 for the draft revised ITS 3.6.7 DOC M01.**
Response Date/Time	**7/31/2014 12:10 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Caroline Tilton**
Added By	**Scott Bowman**
Date Added	**7/31/2014 11:06 AM**
Date Modified	
Modified By	

DISCUSSION OF CHANGES
ITS 3.6.7, SHIELD BUILDING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.1.7 does not provide an ACTION to take if the shield building is inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the shield building be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Therefore, entry into CTS 3.0.3 is required if CTS 3.6.1.7 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 requires action to be initiated within 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. When the shield building is inoperable and not restored to an OPERABLE status within the specified Completion Time (see DOC L01), ITS 3.6.7 ACTION B requires the unit be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by stating the ACTIONS within the Specification rather than deferring to CTS 3.0.3. In addition, it deletes the Action to restore the LCO prior to entering MODE 4.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.1.7 is silent on these actions, deferring to CTS 3.0.3 for the actions. This change is acceptable because the ACTIONS specified in ITS 3.6.7 adopt ISTS structure for placing the unit outside the MODE of Applicability without changing the time specified to enter MODE 3 and MODE 5. In addition, deletion of the current Action of CTS 3.6.1.7 is acceptable because CTS 3.0.4 (ITS LCO 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.7. This change is designated as administrative, because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 ITS SR 3.6.7.1 requires verification that annulus negative pressure is greater than 5 inches water gauge every 12 hours. ITS SR 3.6.7.2 requires verification that the shield building access door in each access opening is closed every 31 days. CTS 3.6.1.7 does not contain these Surveillance Requirements. This changes the CTS by adding new Surveillance Requirements to verify annulus negative pressure is within limits and to verify the shield building access door in each access opening is closed. (See DOC LA03 for moving the "12 hour" and "31 day" Frequencies for these Surveillance Requirements to the Surveillance Frequency Control Program.)

DISCUSSION OF CHANGES
ITS 3.6.7, SHIELD BUILDING

The shield building surrounds the containment vessel and forms an annulus between the containment vessel and the inner wall of the shield building. This annular space collects containment leakage that may occur following a loss of coolant accident. A negative pressure is maintained in the annulus between the shield building and the steel containment vessel by the Emergency Gas Treatment System (EGTS). The release of radioactive contaminants to the environment is controlled via filters in the EGTS trains. The purpose of CTS 3.6.1.7 is to ensure the shield building is OPERABLE in MODES 1, 2, 3, and 4 to ensure the release of radioactive material from the containment atmosphere is restricted to the leakage paths assumed in the accident analysis. Since shield building access door position and annulus pressure are integral to shield building OPERABILITY, ITS 3.6.7 adds a specific Surveillance Requirement (ITS SR 3.6.7.1) to verify every 12 hours that annulus negative pressure is within the limit assumed in the containment analysis. Additionally, a specific Surveillance Requirement (ITS SR 3.6.7.2) is added to verify every 31 days that the door in each access opening is closed, so that the shield building boundary is not breached at any time when the shield building boundary is required. This change is designated as more restrictive because new Surveillance Requirements have been added to ensure the shield building OPERABILITY is maintained.

(The 12 hour Frequency is based on industry operating experience related to shield building annulus pressure variations and pressure instrument drift during the applicable MODES.)

(The 31 day Frequency is based on engineering judgment and is considered adequate in view of other indications of door status available to the operator.)

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.1.7 requires that the structural integrity of the shield building be maintained at a level consistent with the acceptance criteria in CTS 4.6.1.7. CTS 4.6.1.7 requires the structural integrity of the shield building to be determined by a visual inspection of the exposed shield building interior and exterior surfaces and verifying no apparent changes in concrete surface appearance or other abnormal degradation. ITS LCO 3.6.7 requires the shield building to be OPERABLE. This changes the CTS by moving the detail of what constitutes shield building OPERABILITY to the Bases.

The removal of these details, related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirements that the shield building be OPERABLE. Also, this changes is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

Licensee Response/NRC Response/NRC Question Closure

Id	**282**
NRC Question Number	**CSS-019**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/21/2014 2:20 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**114**
NRC Question Number	**CSS-020**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.7**
DOC Number	**LA-2**
JFD Number	
JFD Bases Number	
Page Number(s)	**340**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

1. **Page 340, DOC LA02, describes the CTS change as:**

> **CTS 4.6.1.7 requires the structural integrity of the shield building to be determined by a visual inspection of the exposed shield building interior and exterior surfaces and *verifying no apparent changes in concrete surface appearance or other abnormal degradation* [emphasis added].**

DOC LA02 states ITS SR 3.6.7.3 retains the TS requirement to [verify] shield building structural integrity visual inspection verification of exposed interior and exterior surfaces, but does not include the details of what the inspection entails.

DOC LA02 states removal of the details (i.e., verifying that no apparent changes in concrete surface appearance or other abnormal degradation) which are related to methods of surveillance test performance, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety.

The NRC staff disagree that the details being removed are related to methods of surveillance test performance. Instead, the details are related to acceptance criteria for establishing shield building structural integrity operability. Please provide a revised DOC

LA02 that discusses the removal of shield building structural integrity operability acceptance criteria.

Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/30/2014 2:35 PM**
Notification	**Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**146**
NRC Question Number	**CSS-020**
Select Application	**Licensee Response**
Attachment 1	**Attachment 1 3.6.7 DOC LA02.pdf** (19KB)
Attachment 2	
Response Statement	**In response to CSS-020, ITS 3.6.7 discussion of change (DOC) LA02, on page 340 of Enclosure 2, Volume 11, will be revised to reflect that the shield building integrity inspection Surveillance Requirement acceptance criteria are being moved to the ITS Bases.** **See Attachment 1 for the draft revised DOC LA02.**
Response Date/Time	**6/23/2014 1:30 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Carl Schulten**
Added By	**Scott Bowman**
Date Added	**6/23/2014 12:27 PM**
Date Modified	
Modified By	

DISCUSSION OF CHANGES
ITS 3.6.7, SHIELD BUILDING

3 - Removing Procedural Details for Meeting TS Requirements or Reporting Requirements

inspection acceptance criteria

inspection acceptance criteria

LA02 (Type ~~4 – Removal of LCO, SR, or other TS Requirements to the TRM, UFSAR, ODCM, NQAP, CLRT Program, IST Program, or ISI Program)~~ CTS 4.6.1.7 requires the structural integrity of the shield building to be determined by a visual inspection of the exposed shield building interior and exterior surfaces and verifying no apparent changes in concrete surface appearance or other abnormal degradation. ITS SR 3.6.7.3 includes the shield building structural integrity visual inspection verification of exposed interior and exterior surfaces, but does not include the ~~details of what the inspection entails~~. This changes the CTS by moving the ~~details of the shield building inspection~~ to the TS Bases.

acceptance criteria

The removal of these details, which are related to ~~methods of~~ surveillance test ~~performance~~, from the Technical Specifications, is acceptable because this ~~type of~~ information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirements for verifying integrity of the shield building. Also, this changes is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because ~~information relating to methods of surveillance test performance is~~ being removed from the Technical Specifications.

procedural details for meeting Technical Specification requirements are

LA03 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.1.8.d.4 requires verification that each Emergency Gas Treatment System produces a negative pressure within limits in the annulus within 1 minute after a start signal. ITS SR 3.6.7.4 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequency for this SR and associated Bases to the Surveillance Frequency Control Program. (The change of the requirement to perform the Surveillances ON A STAGGERED TEST BASIS is discussed in DOC L02). Additionally, ITS SR 3.6.7.1 has been added to verify the annulus negative pressure is within limits every 12 hours, and ITS SR 3.6.7.2 has been added to verify the shield building access door in each access opening is closed every 31 days. (See DOC M01 for the discussion on adding these SRs.) The "12 hour" and "31 day" Frequencies for these Surveillances have been relocated to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in

Licensee Response/NRC Response/NRC Question Closure

Id	**284**
NRC Question Number	**CSS-020**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**8/21/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**8/21/2014 2:21 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**115**
NRC Question Number	**CSS-021**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.7**
DOC Number	**L-2**
JFD Number	
JFD Bases Number	
Page Number(s)	**340**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

1. **Page 340, DOC L02, describes the CTS change as:**

> **CTS 4.6.1.8.d.4 requires a drawdown of the shield building annulus by each Emergency Gas Treatment System (EGTS) train to within limits at least once per 18 months. The [ITS] specified Surveillance Frequency that is being moved to the Surveillance Frequency Control Program is "18 months on a STAGGERED TEST BASIS for each Emergency Gas Treatment System train." This changes the CTS by allowing the drawdown test for each EGTS train to be performed less frequently (i.e., on a STAGGERED TEST BASIS). […] Staggering use of the EGTS trains every 18 months will ensure both trains are capable of performing the test. This change is acceptable because *performing the drawdown test using one train of EGTS every 18 months will adequately verify shield building integrity* (emphasis added).**

Provide data to demonstrate extending the STI to 18 months on a Staggered Test Basis meets the programmatic requirements of the Surveillance Frequency Control Program. Otherwise, deleted DOC L02 and retain CTS 18 month surveillance test interval in the SFCP.

Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**

Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/30/2014 2:37 PM**
Notification	**Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id **218**

NRC Question Number **CSS-021**

Select Application **Licensee Response**

Attachment 1

Attachment 2

Response Statement

ITS 3.6.7 discussion of change (DOC) L02, on page 342 of Enclosure 2, Volume 11, describes the change in the Frequency of CTS 4.6.1.8.d.4 (drawdown test of shield building annulus using one train of Emergency Gas Treatment System (EGTS)). ISTS SR 3.6.8.4 (ITS SR 3.6.7.4) proposes two options for the Surveillance Frequency, “18 months on a STAGGERED TEST BASIS for each Shield Building Air Cleanup System [Emergency Gas Treatment System] OR In accordance with the Surveillance Frequency Control Program.” SQN proposes to adopt the ISTS Frequency of 18 months on a STAGGERED TEST BASIS (STB) and then relocate the Frequency (18 months on a STB) to the Surveillance Frequency Control Program.

Justification for the change in Frequency from "at least once per 18 months" to "18 months on a STAGGERED TEST BASIS," as stated in DOC L02, relies on the Surveillance Requirement being a test of the shield building boundary by ensuring the shield building annulus can be rapidly drawn to a negative pressure of at least 0.5 inches of water gauge. This test is used to ensure shield building integrity using only one train of the EGTS Air Cleanup Subsystem. Because this Surveillance Requirement is a shield building boundary integrity test, it does not need to be performed with each EGTS Air Cleanup Subsystem train. The EGTS Air Cleanup Subsystem train used for this surveillance is staggered to ensure that in addition to the requirements of ITS LCO 3.6.10, either train will perform this test. The primary purpose of this test is to ensure shield building integrity. The secondary purpose is to ensure that the EGTS Air Cleanup Subsystem train being tested functions as designed. OPERABILITY of the EGTS Air Cleanup Subsystem is maintained through the Surveillance Requirements of ITS 3.6.10.

Therefore, staggering use of the EGTS Air Cleanup Subsystem trains every 18 months will ensure both trains are capable of performing the test. This change is acceptable because performing the drawdown test using one train of the EGTS Air Cleanup Subsystem every 18 months will adequately verify shield building integrity.

Note: In response to RAI CSS-041, ITS 3.6.10 is being revised to rename the Emergency Gas Treatment System as the Emergency Gas Treatment System (EGTS) Air Cleanup Subsystem. All references to the Emergency Gas Treatment System and EGTS will be revised to reflect this nomenclature. The changes will affect ITS 3.6.7 and will be reflected in the response to RAI CSS-041.

Response Date/Time **8/4/2014 6:45 AM**

Closure

Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Ray Schiele** **Caroline Tilton**
Added By	**Scott Bowman**
Date Added	**8/4/2014 5:44 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**324**
NRC Question Number	**CSS-021**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/4/2014**
Notification	**Mark Blumberg** **Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Caroline Tilton**
Date Added	**9/4/2014 3:49 PM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**116**
NRC Question Number	**CSS-022**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.12**
DOC Number	**A-2**
JFD Number	
JFD Bases Number	
Page Number(s)	**508**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

1. **Page 508, DOC A02. We are retaining a Confirmatory open item in your RAIs for the following two under review LARs which are still under NRC review, but are also incorporated in ITS 3.6.12, Ice Bed. The staff will need to complete its review of both of these LARs before we can complete our review of Section 3.6.12 of the ITS. Any changes made to the CTS to address staff concerns during these reviews may result in the need for conforming changes to the ITS:**
   - **TS-SQN-12-04, "Application to Modify Ice Condenser Technical Specifications to Address Revisions in Westinghouse Mass and Energy Release Calculation (TS-SQN-12-04)," submitted to the USNRC for approval in a letter from J.W. Shea (TVA), dated July 3, 2012 (ADAMS Accession No. ML13199A281); and**
   - **TS-SQN-12-04 requested an approval date of May 31, 2014.**

Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/30/2014 2:38 PM**
Notification	**Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**436**
NRC Question Number	**CSS-022**
Select Application	**Licensee Response**
Attachment 1	**CSS-022 Attachment 1.pdf** (2MB)
Attachment 2	
Response Statement	**The ITS submittal reflects proposed changes to the CTS based on the July 3, 2013, license amendment request (LAR), "Application to Modify Ice Condenser Technical Specifications to Address Revisions in Westinghouse Mass and Energy Release Calculation (SQN–TS–12–04)." By letter dated April 10, 2015, TVA submitted proposed changes to the aforementioned LAR. Therefore, the ITS submittal will be revised to incorporate changes based on the revised LAR.**

The ITS submittal will be revised as discussed below:

1. **The ITS 3.6.4 (Containment Pressure) Bases Applicable Safety Analyses (ASA) Section will be revised. The second sentence in the second paragraph will be revised to state, "This resulted in a maximum peak <u>compression</u> pressure of 7.18 psig in the upper containment from a LOCA." Additionally, the final sentence in the second paragraph will be revised to state, "The maximum containment pressure resulting from the worst case LOCA, <u>11.48</u> psig, does not exceed the containment design pressure, 12 psig." (Pages 242 and 245 of Enclosure 2, Volume 11)**

2. **The ITS 3.6.6 (Containment Spray System) Bases ASA Section will be revised. The first sentence of the second paragraph will be revised to state, "The DBA analyses show that the maximum peak containment pressure of <u>11.48</u> psig results from the LOCA analysis,**

and is calculated to be less than the containment design pressure." (Pages 306 and 317 of Enclosure 2, Volume 11)

3. The CTS markups for ITS 3.6.12 (Ice Bed) will be revised. CTS 3.6.5.1.d will be revised to state, "A total ice weight of at least 2,247,250 pounds at a 95% level of confidence, and." This change incorporates two changes to the CTS. Based on the Ice Condenser LAR, CTS 3.6.5.1.d is changed to 2,610,792 (as-left value). Based on ITS 3.6.12, the total ice mass value is an as-found value and will be changed to 2,247,250. These changes are justified by Discussion of Changes (DOCs) A02 and L01. Additionally, the markups for CTS 4.6.5.1.d will be revised to reflect that for the CTS Surveillance the weight per ice basket is 1343 pounds. However, in ITS the Surveillance is based on a total ice mass per radial zone, therefore, the 1343 is struck-through. This change is justified in DOCs A02 and L01. (Pages 500, 501, 504, and 505 of Enclosure 2, Volume 11)

4. DOC M01 for ITS 3.6.12 (Ice Bed) will be revised to reflect changes based on the revised Ice Condenser LAR. (Page 508 of Enclosure 2, Volume 11)

5. DOC L01 for ITS 3.6.12 (Ice Bed) will be revised to reflect changes based on the revised Ice Condenser LAR. (Pages 510 and 511 of Enclosure 2, Volume 11)

6. The ISTS markups for ITS 3.6.12 (Ice Bed) will be revised. ITS SR 3.6.12.2 will be revised to state, in part, "Verify total mass of stored ice is ≥ 2,247,250 lbs." Additionally, the total ice mass per radial zone will be revised to require a mass ≥ 749,084 lbs. These changes are based on the revised Ice Condenser LAR. (Pages 515 and 518 of Enclosure 2, Volume 11)

7. The ITS 3.6.12 Bases will be revised to align with

changes made to the Specification based on the revised Ice Condenser LAR. (Pages 522, 528, 534, and 540 of Enclosure 2, Volume 11)

See Attachment 1 for the draft revised ITS submittal affected by the changes discussed above.

Response Date/Time	**4/22/2015 4:20 PM**
Closure Statement	
Question Closure Date	
Notification	**Scott Bowman** **Michelle Conner** **Robert Elliott** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Caroline Tilton**
Added By	**Michelle Conner**
Date Added	**4/22/2015 3:23 PM**
Date Modified	
Modified By	

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4~~A~~ Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

BASES

BACKGROUND

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the ~~outside atmosphere~~ annulus pressure in the event of inadvertent actuation of the Containment Spray System. ②

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the input conditions used in the containment functional analyses ~~and the containment structure external pressure analysis~~. Should operation occur outside these limits coincident with a Design Basis Accident (DBA), post accident containment pressures could exceed calculated values. ②

APPLICABLE SAFETY ANALYSES

Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst case SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was ~~[17.7] psia ([3.0]~~ 0.3 psig~~)~~. This resulted in a maximum peak compression pressure of 7.18 psig in the upper containment from a LOCA ~~of [53.9] psig~~. The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure, P_a, results from the limiting LOCA. ③ The maximum containment pressure resulting from the worst case LOCA, ~~[44.1]~~ ~~11.33~~ 11.48 psig, does not exceed the containment design pressure, ~~[55]~~ 12 psig. ③

The containment was also designed for an external pressure load equivalent to ~~[-2.5]~~ 0.5 psig. ③ The inadvertent actuation of the Containment Spray System and Air Return System was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was ~~[-0.3] psig~~ 0.1 psi less than annulus pressure. This resulted in a minimum pressure inside containment of ~~[-2.0] psig~~ 0.49 psi less than annulus pressure, which is less than the design load. ③

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4A Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

BASES

BACKGROUND

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the ~~outside atmosphere~~ annulus pressure in the event of inadvertent actuation of the Containment Spray System. ②

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the input conditions used in the containment functional analyses ~~and the containment structure external pressure analysis~~. Should operation occur outside these limits coincident with a Design Basis Accident (DBA), post accident containment pressures could exceed calculated values. ②

APPLICABLE SAFETY ANALYSES

Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst case SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was ~~[17.7] psia ([3.0]~~ 0.3 psig~~)~~. This resulted in a maximum peak compression pressure of 7.18 psig in the upper containment from a LOCA ~~of [53.9] psig~~. The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure, P_a, results from the limiting LOCA. The maximum containment pressure resulting from the worst case LOCA, ~~[44.1]~~ ~~11.33~~ 11.48 psig, does not exceed the containment design pressure, ~~[55]~~ 12 psig. ③ ③

The containment was also designed for an external pressure load equivalent to ~~[-2.5]~~ 0.5 psig. The inadvertent actuation of the Containment Spray System and Air Return System was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was ~~[-0.3] psig~~ 0.1 psi less than annulus pressure. This resulted in a minimum pressure inside containment of ~~[-2.0] psig~~ 0.49 psi less than annulus pressure, which is less than the design load. ③ ③

BASES

BACKGROUND (continued)

The operation of the Containment Spray System, together with the ice condenser, is adequate to assure pressure suppression during the initial blowdown of steam and water from a DBA. During the post blowdown period, the Air Return System (ARS) is automatically started. The ARS returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam through the ice condenser, where heat is removed by the remaining ice. ②

The Containment Spray System limits the temperature and pressure that could be expected following a DBA. Protection of containment integrity limits leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment OPERABILITY are the loss of coolant accident (LOCA) and the steam line break (SLB). The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of ~~the~~ Containment Spray ~~System~~, ~~the~~ RHR ~~System~~, and ~~the ARS~~ an ARS fan being rendered inoperable (Ref. 2). ②

The DBA analyses show that the maximum peak containment pressure of 11.48 → ~~11.33~~ ~~[44.1]~~ psig results from the LOCA analysis, and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature of 325.6 ~~[385]~~°F results from the SLB analysis. ~~and was calculated to exceed the containment design temperature [for a few seconds] during the DBA SLB. The basis of the containment design temperature, however, is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). Thermal analyses showed that the time interval during which the containment atmosphere temperature exceed the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment atmosphere temperatures are acceptable for the DBA SLB.~~ ④ ②

The modeled Containment Spray trains ~~System~~ actuation from the containment analysis is based on a response time associated with exceeding the High - High containment ~~High-3~~ pressure signal setpoint to achieving full flow through the containment spray train nozzles. A delayed response time initiation ②

BASES

BACKGROUND (continued)

The operation of the Containment Spray System, together with the ice condenser, is adequate to assure pressure suppression during the initial blowdown of steam and water from a DBA. During the post blowdown period, the Air Return System (ARS) is automatically started. The ARS returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam through the ice condenser, where heat is removed by the remaining ice. ②

The Containment Spray System limits the temperature and pressure that could be expected following a DBA. Protection of containment integrity limits leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment OPERABILITY are the loss of coolant accident (LOCA) and the steam line break (SLB). The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of ~~the~~ Containment Spray ~~System~~, ~~the~~ RHR ~~System~~, and ~~the ARS~~ being rendered inoperable (Ref. 2). ②

an ARS fan

11.48 ~~11.33~~

The DBA analyses show that the maximum peak containment pressure of ~~[44.1]~~ psig results from the LOCA analysis, and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature of ~~[385]~~°F results from the SLB analysis ~~and was calculated to exceed the containment design temperature [for a few seconds] during the DBA SLB. The basis of the containment design temperature, however, is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). Thermal analyses showed that the time interval during which the containment atmosphere temperature exceed the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment atmosphere temperatures are acceptable for the DBA SLB~~. ④ ②

325.6

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trains

The modeled Containment Spray ~~System~~ actuation from the containment analysis is based on a response time associated with exceeding the containment ~~High-3~~ pressure signal setpoint to achieving full flow through the containment spray nozzles. A delayed response time initiation ②

High - High

train

A01

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

LCO 3.6.12 3.6.5.1. The ice bed shall be OPERABLE with:

SR 3.6.12.5 a. The stored ice having a boron concentration of ≥ 1800 ppm and ≤ 2500 ppm boron ~~as sodium tetraborate~~ and a pH of 9.0 to 9.5, LA01

SR 3.6.12.4 b. Flow channels through the ice condenser,

SR 3.6.12.1 c. A maximum ice bed temperature of less than or equal 27°F,

SR 3.6.12.2 d. A total ice weight of at least ~~2,225,880~~ pounds at a 95% level of confidence, and

2,247,250
~~2,187,250~~ L01
~~2,540,808~~ A02
~~2,610,792~~

~~e. 1944 ice baskets.~~ LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least
ACTION B HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

SR 3.6.12.1 a. ~~At least once per 12 hours by~~ verifying that the maximum ice bed temperature is less than or equal to 27°F. LA02

SR 3.6.12.4 b. ~~At least once per 18 months by~~ verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section. LA02

In accordance with the Surveillance Frequency Control Program LA02

ITS

A01

3.6.12

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

In accordance with the Surveillance Frequency Control Program

LA02

SR 3.6.12.6

INSERT 1

c. ~~At least once per 40 months by~~ lifting and visually inspecting ~~the accessible portions of~~ at least two ice baskets from each ~~1/3~~ of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. ~~The ice baskets shall be raised at least 10 feet for this inspection.~~

L02

SR 3.6.12.2

d. ~~At least once per 18 months by:~~

In accordance with the Surveillance Frequency Control Program

LA02

1. Deleted.

Add proposed zone requirements.

2. ~~Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1145 lbs of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1145 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1145 pounds/basket at a 95% level of confidence.~~

~~1307~~ 1343 A02

~~1307~~ 1343 A02

~~The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1145 pounds/basket at a 95% level of confidence.~~

~~1307~~ 1343 A02

~~The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,225,880 pounds.~~

~~2,540,808~~ 2,610,792 A02

L01

SR 3.6.12.5

e. ~~At least once per 54 months by~~ chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay verify:

In accordance with the Surveillance Frequency Control Program

LA02

1. Ice bed boron concentration is ≥ 1800 ppm and ≤ 2500 ppm ~~as sodium tetraborate~~ and;

LA01

2. pH is ≥ 9.0 and ≤ 9.5

SR 3.6.12.5 Note

NOTE: The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified above.

SR 3.6.12.7

f. Each ice addition verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 4.6.5.1.e.

SR 3.6.12.7 Note

NOTE: The chemical analysis may be performed on either the liquid solution or the resulting ice.

Add proposed SR 3.6.12.3 ~~at a Frequency of 18 months.~~

M01

In accordance with the Surveillance Frequency Control Program

LA02

A01

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

LCO 3.6.12 3.6.5.1 The ice bed shall be OPERABLE with:

SR 3.6.12.5 a. The stored ice having a boron concentration of ≥ 1800 ppm and ≤ 2500 ppm boron ~~as sodium tetraborate~~ and a pH of 9.0 to 9.5, LA01

SR 3.6.12.4 b. Flow channels through the ice condenser,

SR 3.6.12.1 c. A maximum ice bed temperature of less than or equal to 27°F,

SR 3.6.12.2 d. A total ice weight of at least ~~2,225,880~~ pounds at a 95% level of confidence, and

2,247,250

~~2,187,250~~ L01

~~2,540,808~~ A02

2,610,792

~~e. 1944 ice baskets.~~ LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours

ACTION B or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

SR 3.6.12.1 a. ~~At least once per 12 hours~~ verifying that the maximum ice bed temperature is less than or equal to 27°F. LA02

SR 3.6.12.4 b. ~~At least once per 18 months~~ by verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section. LA02

In accordance with the Surveillance Frequency Control Program LA02

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

In accordance with the Surveillance Frequency Control Program LA02

SR 3.6.12.6 INSERT 1 c. ~~At least once per 40 months~~ by lifting and visually inspecting ~~the accessible portions of~~ at least two ice baskets from each ~~1/3~~ of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. ~~The ice baskets shall be raised at least 10 feet for this inspection.~~ L02

d. ~~At least once per 18 months~~ by:

In accordance with the Surveillance Frequency Control Program LA02

1. Deleted.

~~1343~~

SR 3.6.12.2 2. ~~Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1145 lbs of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1145 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1145 pounds/basket at a 95% level of confidence.~~ ~~1307~~ A02

Add proposed zone requirements.

~~1343~~ ~~1307~~ A02 L01

~~The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1145 pounds/basket at a 95% level of confidence.~~

~~1307~~ ~~1343~~ A02

~~The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,225,880 pounds.~~

~~2,540,808~~ ~~2,610,792~~ A02

SR 3.6.12.5 e. ~~At least once per 54 months~~ by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay verify:

In accordance with the Surveillance Frequency Control Program LA02

1. Ice bed boron concentration is ≥ 1800 ppm and ≤ 2500 ppm ~~as sodium tetraborate~~ and; LA01

2. pH is ≥ 9.0 and ≤ 9.5

SR 3.6.12.5 Note NOTE: The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified above.

SR 3.6.12.7 f. Each ice addition verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 4.6.5.1.e.

SR 3.6.12.7 Note NOTE: The chemical analysis may be performed on either the liquid solution or the resulting ice

Add proposed SR 3.6.12.3 ~~at a Frequency of 18 months.~~ M01

In accordance with the Surveillance Frequency Control Program LA02

DISCUSSION OF CHANGES
ITS 3.6.12, ICE BED

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 This change is provided consistent with Technical Specification Amendment request TS-SQN-12-04, "Application to Modify Ice Condenser Technical Specifications to Address Revisions in Westinghouse Mass and Energy Release Calculation (TS-SQN-12-04)," submitted to the USNRC for approval in a letter from J.W. Shea (TVA), dated July 3, 2012 (ADAMS Accession No. ML13199A281). In addition, letter TS-SQN-12-04 requested an approval date of May 31, 2014. As it is anticipated that the SQN ITS Conversion License Amendment Request (LAR) will not be approved by the NRC before this date, any revisions made to CTS markups included in letter TS-SQN-12-04 prior to its approval will be reflected in the SQN ITS Conversion LAR. As such, these changes are administrative.

MORE RESTRICTIVE CHANGES

M01 CTS 4.6.5.1.d.2 requires weighing a sample of at least 144 ice baskets and verifying each basket contains at least ~~1307~~ 1343 lbs of ice. CTS 4.6.5.1.d.2 also specifies that if any ice basket contains less than ~~1307~~ 1343 lbs of ice, additional ice baskets must be weighed. ITS SR 3.6.12.2 requires a verification of the total ice mass by calculating the mass of stored ice in each of three radial zones by selecting, at random, 30 ice baskets in each radial zone. It also verifies that each radial zone contains the required ice mass. (See DOC A02 for the discussion of changes related to changing the individual ice basket weight from 1145 lbs of ice to 1343 ~~1307~~ lbs of ice. See DOC L01 for the discussion of changes for eliminating the requirement to verify each sampled basket contains at least ~~1307~~ 1343 lbs of ice, and for eliminating the requirement for weighing additional ice baskets if one or more ice baskets do not contain at least ~~1307~~ 1343 lbs of ice.) ITS 3.6.12.3 adds a new Surveillance to verify that the ice mass of each basket sampled in SR 3.6.12.2 is at least 600 lbs every 18 months. This changes the CTS by adding the additional Surveillance verification. (See DOC LA02 for moving the 18 month Frequency for this Surveillance Requirement to the Surveillance Frequency Control Program.)

The containment ice bed provides a large heat sink in the event of a release of energy from a design basis accident (DBA) in containment. The ice absorbs energy and therefore, limits containment peak pressure and temperature. The ice baskets contain the ice within the ice condenser. The ice baskets position the ice within the ice bed in an arrangement that promotes heat transfer from steam to ice. The arrangement enhances the ice condenser's ability to condense steam temperature is within limits at least once per 12 hours. ITS SR 3.6.12.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.b requires verification that the accumulation of ice on the structural members comprising flow channels through the ice bed is within limits at least once per 18 months. ITS SR 3.6.12.4 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.c requires a verification that the ice baskets are free from detrimental structural wear, cracks, corrosion or other damage at least once per 40 months. ITS SR 3.6.12.6 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.d requires a verification that the total weight of the ice baskets is within limits by weighing a representative sample at least once per 18 months. ITS SR 3.6.12.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.e requires a verification that the boron concentration and pH of a random sampling of ice baskets are within limits at least once per 54 months. ITS SR 3.6.12.5 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program. Additionally, ITS SR 3.6.12.3 has been added to verify that each selected sample basket contains at least 600 lbs of ice in the as-found (pre-maintenance) condition every 18 months. (See DOC M01 for the discussion on adding the SR.) The 18 month Frequency for this Surveillance has been relocated to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.5.1.d.2 requires weighing a sample of at least 144 ice baskets and verifying each ice basket contains at least ~~1307~~ 1343 lbs of ice to determine the total as-left ice condenser ice weight to be not less than ~~2,540,808~~ 2,610,472 lbs at a 95%

confidence level. CTS 4.6.5.1.d.2 specifies the locations of the ice basket to be sampled and, if any ice basket contains less than ~~1307~~ 1343 lbs of ice, additional ice baskets must be weighed. It also requires the weighed baskets to be divided into three groups, with each group averaging ~~1307~~ 1343 lbs of ice per ice basket. ITS SR 3.6.12.2 requires a verification of the total as-found ice mass (~~2,187,250~~ 2,247,250 lbs) by calculating the mass of stored ice in each of three radial zones by selecting, at random, 30 ice baskets in each radial zone. It also verifies that each radial zone contains at least ~~729,084~~ 749,084 lbs of ice (total of ~~2,187,250~~ 2,247,250 divided by three and rounded up for conservatism). ITS SR 3.6.12.3 requires a verification that each ice basket sampled in SR 3.6.12.2 contains at least 600 lbs of ice. This changes the CTS by deleting the requirement to sample six baskets from each of the 24 ice condenser bays. This requirement is replaced with a requirement for a representative sample size of at least 30 baskets in each of three radial zones. This also changes the CTS by requiring verification of an as-found ice basket weight versus an as-left ice basket weight that includes an additional amount of ice to account for ice sublimation during the operating cycle. This change also deletes the requirement to sample additional ice baskets, if any ice basket contains less than ~~1307~~ 1343 lbs of ice. The addition of SR 3.6.12.3 is discussed in DOC M01.

The purpose of CTS 3.6.5.1.d and CTS 4.6.5.1.d.2 is to verify a sufficient ice condenser ice mass is available to provide a heat sink in the event of an energy release in containment from a loss-of-coolant accident (LOCA) or a steam line break (SLB). This change is acceptable because the relaxed Surveillance Requirement acceptance criteria continue to ensure the ice bed can perform its required function. The proposed statistical sampling plan change (ITS SR 3.6.12.2) stratifies the ice bed population into three radial zones that contain rows of ice baskets exhibiting similar characteristics and requires at least 30 random sample ice baskets for ice mass verification in each radial zone. The stratified sampling allows subpopulations to be defined that have similar mean mass characteristics resulting in better estimates of total ice mass. A 30-ice basket random sample from each radial zone maintains a 95% confidence level for calculation of total stored ice. The modified sampling methodology provides the validation of total ice mass and verification of ice mass distribution within the ice bed, in lieu of a limited azimuthal row-group surveillance. The proposed ice bed sub-populations (radial zones) and sample size directly applies Ice Condenser Utility Group (ICUG) ice bed historical operating experience, provides clear linkage to statistical sampling methodology provided in NUREG-1475, "Applying Statistics," and supports validation of total stored ice for the long-term/overall DBA analysis. In addition, the new minimum blowdown ice mass acceptance criteria value for each ice basket sampled (SR 3.6.12.3) ensures that an anomalous gross degradation of the ice bed does not exist, supports the DBA analysis during the blowdown phase, and directly applies the blowdown data from the original Westinghouse Waltz-Mill testing as described in the UFSAR. These changes are designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.5.1.c requires lifting (at least 10 feet) and visually inspecting the accessible portions of at least two ice baskets from each one-third of the ice

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.5.1.d 4.6.5.1.d.2 3.6.5.1.d 3.6.5.1.e	SR 3.6.~~15~~ 12 .2	Verify total mass of stored ice is ≥ ~~[2,200,000]~~ ~~2,187,250~~ 2,247,250 lbs by calculating the mass of stored ice, at a 95% confidence level, in each of three Radial Zones as defined below, by selecting a random sample of ≥ 30 ice baskets in each Radial Zone, and Verify: a ~~1~~. Zone A (radial rows ~~[7,8,9]~~ 1, 2, 3), has a total mass of ≥ ~~[733,400]~~ ~~729,084~~ 749,084 lbs. b ~~2~~. Zone B (radial rows ~~[~~4,5,6~~]~~), has a total mass of ≥ ~~[733,400]~~ ~~729,084~~ 749,084 lbs. c ~~3~~. Zone C (radial rows ~~[1,2,3]~~ 7, 8, 9), has a total mass of ≥ ~~[733,400]~~ ~~729,084~~ 749,084 lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③ ③ ② ④
DOC M01	SR 3.6.~~15~~ 12 .3	Verify that the ice mass of each basket sampled in SR 3.6.~~15~~ 12 .2 is ≥ 600 lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③
4.6.5.1.b	SR 3.6.~~15~~ 12 .4	Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③

CTS

Ice Bed ~~(Ice Condenser)~~
3.6.~~15~~ 12 ①

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.6.5.1.d 4.6.5.1.d.2 3.6.5.1.d 3.6.5.1.e	SR 3.6.~~15~~.2 12 Verify total mass of stored ice is ≥ ~~[2,200,000]~~ ~~2,187,250~~ 2,247,250 lbs by calculating the mass of stored ice, at a 95% confidence level, in each of three Radial Zones as defined below, by selecting a random sample of ≥ 30 ice baskets in each Radial Zone, and Verify: a ~~1~~. Zone A (radial rows ~~[7,8,9]~~ 1, 2, 3), has a total mass of ≥ ~~[733,400]~~ ~~729,084~~ 749,084 lbs. b ~~2~~. Zone B (radial rows ~~[~~4,5,6~~]~~), has a total mass of ≥ ~~[733,400]~~ ~~729,084~~ 749,084 lbs. c ~~3~~. Zone C (radial rows ~~[1,2,3]~~ 7, 8, 9), has a total mass of ≥ ~~[733,400]~~ ~~729,084~~ 749,084 lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③ ③ ② ④
DOC M01	SR 3.6.~~15~~.3 12 Verify that the ice mass of each basket sampled in SR 3.6.~~15~~.2 12 is ≥ 600 lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③
4.6.5.1.b	SR 3.6.~~15~~.4 12 Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~15~~ Ice Bed ~~(Ice Condenser)~~

12 ①

2,247,250

BASES

~~2,187,250~~ ②

BACKGROUND

The ice bed consists of a minimum of ~~[2,200,000]~~ lb of ice stored within the ice condenser. The primary purpose of the ice bed is to provide a large heat sink in the event of a release of energy from a Design Basis Accident (DBA) in containment. The ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

degrees

The ice condenser is an annular compartment enclosing approximately 300~~°~~ of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The lower portion has a series of hinged doors exposed to the atmosphere of the lower containment compartment, which, for normal unit operation, are designed to remain closed. At the top of the ice condenser is another set of doors exposed to the atmosphere of the upper compartment, which also remain closed during normal unit operation. Intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. These doors also remain closed during normal unit operation. The upper plenum area is used to facilitate surveillance and maintenance of the ice bed. ③

1944

~~The~~ ice baskets contain the ice within the ice condenser. The ice bed is considered to consist of the total volume from the bottom elevation of the ice baskets to the top elevation of the ice baskets. The ice baskets position the ice within the ice bed in an arrangement to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA. ④

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condenser limits the pressure and temperature buildup in containment. A divider barrier (i.e., operating deck and extensions thereof) separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑨

12

SR 3.6.~~15~~.3 ①

12

Verifying that each selected sample basket from SR 3.6.~~15~~.2 contains at least 600 lbs of ice in the as-found (pre-maintenance) condition ensures that a significant localized degraded mass condition is avoided.

This SR establishes a per basket limit to ensure any ice mass degradation is consistent with the initial conditions of the DBA by not significantly affecting the containment pressure response. Reference 4 provides insights through sensitivity runs that demonstrate that the containment peak pressure during a DBA is not significantly affected by the ice mass in a large localized region of baskets being degraded below the required safety analysis mean, when the Radial Zone and total ice 12 mass requirements of SR 3.6.~~15~~.2 are satisfied. Any basket identified as containing less than 600 lbs of ice requires appropriately entering the TS Required Action for an inoperable ice bed due to the potential that it may represent a significant condition adverse to quality. ①

1156 ~~1125.13~~
1156 ~~1125.13~~

As documented in Reference 4, maintenance practices actively manage individual ice basket mass above the required safety analysis mean for each Radial Zone. Specifically, each basket is serviced to keep its ice mass above ~~[1132]~~ lbs for Radial Zone A, ~~[1132]~~ lbs for Radial Zone B, and ~~[1132]~~ lbs for Radial Zone C. If a basket sublimates below the safety analysis mean value, this instance is identified within the plant's corrective action program, including evaluating maintenance practices to identify the cause and correct any deficiencies. These maintenance practices provide defense in depth beyond compliance with the ice bed Surveillance Requirements by limiting the occurrence of individual baskets with ice mass less than the required safety analysis mean. ②

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~15~~ 12 Ice Bed ~~(Ice Condenser)~~ ①

BASES ②

BACKGROUND

The ice bed consists of a minimum of ~~[2,200,000]~~ ~~2,187,250~~ 2,247,250 lb of ice stored within the ice condenser. The primary purpose of the ice bed is to provide a large heat sink in the event of a release of energy from a Design Basis Accident (DBA) in containment. The ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The ice condenser is an annular compartment enclosing approximately 300~~°~~ degrees of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The lower portion has a series of hinged doors exposed to the atmosphere of the lower containment compartment, which, for normal unit operation, are designed to remain closed. At the top of the ice condenser is another set of doors exposed to the atmosphere of the upper compartment, which also remain closed during normal unit operation. Intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. These doors also remain closed during normal unit operation. The upper plenum area is used to facilitate surveillance and maintenance of the ice bed. ③

~~The~~ 1944 ice baskets contain the ice within the ice condenser. The ice bed is considered to consist of the total volume from the bottom elevation of the ice baskets to the top elevation of the ice baskets. The ice baskets position the ice within the ice bed in an arrangement to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA. ④

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condenser limits the pressure and temperature buildup in containment. A divider barrier (i.e., operating deck and extensions thereof) separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

12
SR 3.6.~~15~~.3 ①

12
Verifying that each selected sample basket from SR 3.6.~~15~~.2 contains at least 600 lbs of ice in the as-found (pre-maintenance) condition ensures that a significant localized degraded mass condition is avoided.

This SR establishes a per basket limit to ensure any ice mass degradation is consistent with the initial conditions of the DBA by not significantly affecting the containment pressure response. Reference 4 provides insights through sensitivity runs that demonstrate that the containment peak pressure during a DBA is not significantly affected by the ice mass in a large localized region of baskets being degraded below the required safety analysis mean, when the Radial Zone and total ice mass requirements of SR 3.6.~~15~~.2 are satisfied. Any basket identified as containing less than 600 lbs of ice requires appropriately entering the TS Required Action for an inoperable ice bed due to the potential that it may represent a significant condition adverse to quality. 12 ①

1156 ~~1125.13~~
1156 ~~1125.13~~

As documented in Reference 4, maintenance practices actively manage individual ice basket mass above the required safety analysis mean for each Radial Zone. Specifically, each basket is serviced to keep its ice mass above ~~[1132]~~ lbs for Radial Zone A, ~~[1132]~~ lbs for Radial Zone B, and ~~[1132]~~ lbs for Radial Zone C. If a basket sublimates below the safety analysis mean value, this instance is identified within the plant's corrective action program, including evaluating maintenance practices to identify the cause and correct any deficiencies. These maintenance practices provide defense in depth beyond compliance with the ice bed Surveillance Requirements by limiting the occurrence of individual baskets with ice mass less than the required safety analysis mean. ②

Licensee Response/NRC Response/NRC Question Closure

Id	**440**
NRC Question Number	**CSS-022**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**4/27/2015**
Notification	**Scott Bowman** **Margaret Chernoff** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Roger Scott**
Added By	**Khadijah Hemphill**
Date Added	**4/27/2015 8:53 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**117**
NRC Question Number	**CSS-023**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.12**
DOC Number	**LA-1**
JFD Number	
JFD Bases Number	
Page Number(s)	**509**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

1. **Page 509, DOC LA01 describes the CTS change as:**

   - **CTS 3.6.5.1.e requires the ice bed to be OPERABLE with 1944 baskets. CTS 3.6.5.1 and CTS 4.6.5.1.e state that the boron being used to meet the limit for stored ice boron concentration is in the form of sodium tetraborate. ITS SR 3.6.12.5 specifies an upper and lower limit (≥ 1800 ppm and ≤ 2500 ppm) for stored boron concentration, but does not include the form of the boron (i.e., sodium tetraborate). This changes the CTS by moving the details that the ice bed contains 1944 ice baskets, and that the boron must be in the form of sodium tetraborate to the Bases.**

     The removal of these details, which are related to system design limits, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS LCO 3.6.12 still requires the ice bed to be OPERABLE, and ITS SR 3.6.12.5 still retains the requirement concerning the boron concentration limits.

The NRC staff agrees that the number of ice baskets that must contain ice is a design feature. This value is however an important operational limit because it requires 1944 installed baskets to contain (in plain language inference) their allocated share of the required mass of the ice bed. The staff disagrees that retaining boron concentration limits in the LCO but not the form of stored boron

(i.e., sodium tetraborate) will retain an equivalent set of CTS operational limits in ITS. The chemical composition of the stored boron, i.e., sodium borate, sodium pentaborate or sodium tetraborate, affects the concentration of boron available and the mass of ice needed to meet the TS concentration. Please revise SR 3.6.12.5 to require 1944 ice baskets with the stored ice containing equal to or greater than 1800 ppm or equal to or less than 2500 ppm "sodium tetraborate."

Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**
Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/30/2014 2:42 PM**
Notification	**Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**155**
NRC Question Number	**CSS-023**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This comment is withdrawn.**
Question Closure Date	**6/27/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten** **Roger Scott**
Added By	**Carl Schulten**
Date Added	**6/27/2014 8:45 AM**
Date Modified	
Modified By	

Licensee Response/NRC Response/NRC Question Closure

Id	**158**
NRC Question Number	**CSS-023**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is withdrawn.**
Question Closure Date	**6/27/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Ray Schiele** **Carl Schulten** **Roger Scott**
Added By	**Carl Schulten**
Date Added	**6/27/2014 8:53 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**118**
NRC Question Number	**CSS-024**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.12**
DOC Number	**L-1**
JFD Number	
JFD Bases Number	
Page Number(s)	**510**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Containment and Ventilation Branch, DSS**
Conf Call Requested	**N**

NRC Question

1. **Page 510, DOC L01 describes the CTS change as:**

   The CTS requirement to sample six baskets from each of the 24 ice condenser bays is deleted and replaced with a requirement for a representative sample size of at least 30 baskets in each of three radial zones. The CTS also changes by requiring verification of an as-found ice basket weight versus an as-left ice basket weight (which includes an additional amount of ice to account for ice sublimation during the operating cycle). This change also
   deletes the requirement to sample additional ice baskets, if any ice basket contains less than 1307 lbs of ice.

   The proposed ice bed sub-populations (radial zones) and sample size directly applies Ice Condenser Utility Group (ICUG) ice bed historical operating experience, provides clear linkage to statistical sampling methodology provided in NUREG-1475, "Applying Statistics," and supports validation of total stored ice for the long- term/overall DBA analysis.

   The scope of the proposed CTS changes deviate from the current licensing basis and the improved STS. This item will be reviewed by the Containment and Ventilation Branch, DSS.

Attach File 1	
Attach File 2	
Issue Date	**5/30/2014**

Added By	**Carl Schulten**
Date Modified	
Modified By	
Date Added	**5/30/2014 2:44 PM**
Notification	**Khadijah Hemphill** **Andrew Hon** **Lynn Mynatt** **Lisa Regner** **Ray Schiele** **Carl Schulten** **Roger Scott**

Licensee Response/NRC Response/NRC Question Closure

Id	**335**
NRC Question Number	**CSS-024**
Select Application	**NRC Question Closure**
Attachment 1	
Attachment 2	
Response Statement	
Response Date/Time	
Closure Statement	**This question is closed and no further information is required at this time to draft the Safety Evaluation.**
Question Closure Date	**9/16/2014**
Notification	**Scott Bowman** **Michelle Conner** **Khadijah Hemphill** **Caroline Tilton**
Added By	**Khadijah Hemphill**
Date Added	**9/16/2014 8:29 AM**
Date Modified	
Modified By	

ITS NRC Questions

Id	**119**
NRC Question Number	**CSS-025**
Category	**Technical**
ITS Section	**3.6**
ITS Number	**3.6.12**
DOC Number	**L-5**
JFD Number	
JFD Bases Number	
Page Number(s)	**511**
NRC Reviewer Supervisor	**Rob Elliott**
Technical Branch POC	**Add Name**
Conf Call Requested	**N**

NRC Question

1. **Page 511, DOC L02 describes the CTS change as:**

> **The CTS is changed by removing the requirement to raise the ice basket at least 10 feet for the inspection.**

DOC L02 justifies the change as follows:

> **The purpose of CTS 4.6.5.1.c is to verify that a representative sampling of ice baskets has not been degraded by wear, cracks, corrosion, or other damage. The Surveillance Requirement consists of a full-length inspection of a sample of baskets and is intended to monitor the effect of the ice condenser environment on ice baskets. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria continue to ensure the ice bed can perform its required function. These changes are designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.**

Please revise DOC L02 to specifically explain why lifting the baskets 10 feet is no longer needed to assure that the necessary quality of the ice bed is maintained and that the limiting condition for operation will be met.

Attach File 1

Attach File 2