



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

July 31, 2012
NOC-AE-12002883
10 CFR 54
STI: 33571358
File: G25

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Amendment to the South Texas Project License Renewal
Application in Response to LR-ISG-2011-01 (TAC Nos. ME4936 and ME4937)

- References:
1. STPNOC letter dated October 25, 2010, from G. T. Powell to NRC Document Control Desk, "License Renewal Application" (NOC-AE-10002607) (ML103010257)
 2. Final License Renewal Interim Staff Guidance LR-ISG-2011-01, "Aging Management of Stainless Steel Structures and Components in Treated Borated Water" (ML12034A047)

By Reference 1, STP Nuclear Operating Company (STPNOC) submitted a License Renewal Application (LRA) for South Texas Project (STP) Units 1 and 2. Reference 2 provides guidance as to one acceptable approach to managing the effects of aging during the period of extended operation of stainless steel structures and components exposed to treated borated water within the scope of the License Renewal Rule. Reference 2 is directed to current applicants for license renewal.

The Nuclear Regulatory Commission staff determined that boron should not be credited as a corrosion inhibitor for stainless steel components in treated borated water. The recommendations in the License Renewal Standard Review Plan and the Generic Aging Lessons Learned Report is revised by LR-ISG-2011-01 to include the following additional aging management activities to align the guidance for treated borated water with that for treated water:

- Add the One-Time Inspection program to verify the effectiveness of the Water Chemistry program to manage loss of material due to pitting and crevice corrosion and cracking due to stress corrosion cracking in treated borated water. The revised guidance applies to stainless steel structures and components exposed to treated borated water environments that are not actively controlled to oxygen levels less than 5 ppb.

A147
NRR

- Add reduction of heat transfer due to fouling as an aging effect for stainless steel heat exchanger tubes exposed to treated borated water, and manage this aging effect with the Water Chemistry and One-Time Inspection programs.

A review of the STPNOC LRA determined the following:

- The application provides for a One-Time Inspection program to verify the effectiveness of the Water Chemistry program to manage loss of material due to pitting and crevice corrosion and cracking due to stress corrosion cracking in treated borated water.
- Changes are required to address the aging effect of reduction of heat transfer for stainless steel heat exchangers. Additionally, during this review all heat exchangers were reviewed regardless of material. LRA Tables 2.3.3-6, 2.3.3-17, 2.3.3-19, 3.3.2-6, 3.3.2-17 and 3.3.2-19 are revised to add the effect of reduction of heat transfer for stainless steel and copper alloy heat exchangers.

The enclosure to this letter provides a revision to the STP LRA depicted by line-in/line-out annotations.

There are no regulatory commitments in this letter.

Should you have any questions regarding this letter, please contact either Arden Aldridge, STP License Renewal Project Lead, at (361) 972-8243 or Ken Taplett, STP License Renewal Project regulatory point-of-contact, at (361) 972-8416.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 7-31-2012
Date



G. T. Powell
Vice President,
Generation

KJT

Enclosure: STPNOC LRA Changes with Line-in/Line-out Annotations

cc:

(paper copy)

Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
1600 East Lamar Boulevard
Arlington, Texas 76011-4511

Balwant K. Singal
Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North (MS 8B1)
11555 Rockville Pike
Rockville, MD 20852

Senior Resident Inspector
U. S. Nuclear Regulatory Commission
P. O. Box 289, Mail Code: MN116
Wadsworth, TX 77483

C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

John W. Daily
License Renewal Project Manager (Safety)
U.S. Nuclear Regulatory Commission
One White Flint North (MS O11-F1)
Washington, DC 20555-0001

Tam Tran
License Renewal Project Manager
(Environmental)
U. S. Nuclear Regulatory Commission
One White Flint North (MS O11F01)
Washington, DC 20555-0001

(electronic copy)

A. H. Gutterman, Esquire
Kathryn M. Sutton, Esquire
Morgan, Lewis & Bockius, LLP

John Ragan
Chris O'Hara
Jim von Suskil
NRG South Texas LP

Kevin Pollo
Richard Pena
City Public Service

Peter Nemeth
Crain Caton & James, P.C.

C. Mele
City of Austin

Richard A. Ratliff
Alice Rogers
Texas Department of State Health Services

Balwant K. Singal
John W. Daily
Tam Tran
U. S. Nuclear Regulatory Commission

Enclosure

STPNOC LRA Changes with Line-in/Line-out Annotations

List of Revised LRA Sections

Affected LRA Section
Table 2.3.3-6
Table 2.3.3-17
Table 2.3.3-19
Table 3.3.2-6
Table 3.3.2-17
Table 3.3.2-19

Note: Only affected portions of the above tables are provided.

Table 2.3.3-6 Component Cooling Water System

Component Type	Intended Function
Closure Bolting	Leakage Boundary (spatial) Pressure Boundary Structural Integrity (attached)
Flexible Hoses	Pressure Boundary
Flow Element	Leakage Boundary (spatial) Pressure Boundary Structural Integrity (attached)
Heat Exchanger (CCW Heat Exchanger)	Heat Transfer Pressure Boundary
Heat Exchanger (Charging Pump Room)	Heat Transfer Pressure Boundary
Heat Exchanger (RCP Bearing Oil Cooler)	Heat Transfer Pressure Boundary
Heat Exchanger (RCP Motor Air Cooler)	Heat Transfer Pressure Boundary
Heat Exchanger (RCP Thermal Barrier Cooler)	Heat Transfer Pressure Boundary
Orifice	Pressure Boundary Throttle
Piping	Leakage Boundary (spatial) Pressure Boundary Structural Integrity (attached)

Table 2.3.3-17 Fire Protection System

Component Type	Intended Function
Flow Element	Pressure Boundary
Heat Exchanger (Diesel Fire Pump Jacket Water)	Heat Transfer Pressure Boundary
Hydrant	Pressure Boundary

Table 2.3.3-19 Chemical and Volume Control System

Component Type	Intended Function
Heat Exchanger (Concentrated Boric Acid Sample Cooler)	Leakage Boundary (spatial)
Heat Exchanger (CVCS BTRS Letdown Chiller)	Leakage Boundary (spatial) Structural Integrity (attached)
Heat Exchanger (CVCS BTRS Letdown Reheat)	Heat Transfer Pressure Boundary
Heat Exchanger (CVCS BTRS Moderating)	Leakage Boundary (spatial) Structural Integrity (attached)
Heat Exchanger (CVCS Excess Letdown)	Heat Transfer Pressure Boundary
Heat Exchanger (CVCS Letdown)	Heat Transfer Pressure Boundary
Heat Exchanger (CVCS Regenerative)	Heat Transfer Pressure Boundary
Heat Exchanger (CVCS Seal Water Return)	Heat Transfer Pressure Boundary

Table 3.3.2-6 Auxiliary Systems – Summary of Aging Management Evaluation – Component Cooling Water System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat Exchanger (RCP Bearing Oil Cooler)	HT, PB	Copper Alloy	Closed Cycle Cooling Water (Int)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-4	3.3.1.51	D
Heat Exchanger (RCP Bearing Oil Cooler)	HT, PB	Copper Alloy	Closed Cycle Cooling Water (Int)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-2	3.3.1.52	B
Heat Exchanger (RCP Bearing Oil Cooler)	HT, PB	Copper Alloy	Lubricating Oil (Ext)	Loss of material	Lubricating Oil Analysis (B2.1.23) and One-Time Inspection (B2.1.16)	VII.C2-5	3.3.1.26	D
Heat Exchanger (RCP Bearing Oil Cooler)	HT, PB	Copper Alloy	Lubricating Oil (Ext)	Reduction of heat transfer	Lubricating Oil Analysis (B2.1.23) and One-Time Inspection (B2.1.16)	V.A-12	3.2.1.09	B
Heat Exchanger (RCP Bearing Oil Cooler)	PB	Copper Alloy	Lubricating Oil (Int)	Loss of material	Lubricating Oil Analysis (B2.1.23) and One-Time Inspection (B2.1.16)	VII.C2-5	3.3.1.26	D

Table 3.3.2-6 Auxiliary Systems – Summary of Aging Management Evaluation – Component Cooling Water System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat Exchanger (RCP Motor Air Cooler)	HT, PB	Copper Alloy	Closed Cycle Cooling Water (Int)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-4	3.3.1.51	D
Heat Exchanger (RCP Motor Air Cooler)	HT, PB	Copper Alloy	Closed Cycle Cooling Water (Int)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-2	3.3.1.52	B
Heat Exchanger (RCP Motor Air Cooler)	HT, PB	Copper Alloy	Plant Indoor Air (Ext)	None	None	VIII.I-2	3.4.1.41	A
Heat Exchanger (RCP Thermal Barrier Cooler)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Int)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-10	3.3.1.50	B
Heat Exchanger (RCP Thermal Barrier Cooler)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Int)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-3	3.3.1.52	B
Heat Exchanger (RCP Thermal Barrier Cooler)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Cracking	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-5	3.3.1.08	E, 2
Heat Exchanger (RCP Thermal Barrier Cooler)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Loss of material	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-17	3.3.1.91	E, 2

Table 3.3.2-6 Auxiliary Systems – Summary of Aging Management Evaluation – Component Cooling Water System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat Exchanger (RCP Thermal Barrier Cooler)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Reduction of heat transfer	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	None	None	H, 4
Orifice	PB, TH	Stainless Steel	Closed Cycle Cooling Water (Int)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-10	3.3.1.50	B

Notes for Table 3.3.2-6:

Standard Notes:

- A Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP is consistent with NUREG-1801 AMP.
- B Consistent with NUREG-1801 item for component, material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
- D Component is different, but consistent with NUREG-1801 item for material, environment, and aging effect. AMP takes some exceptions to NUREG-1801 AMP.
- E Consistent with NUREG-1801 for material, environment, and aging effect, but a different aging management program is credited or NUREG-1801 identifies a plant-specific aging management program.
- F Material not in NUREG-1801 for this component.
- G Environment not in NUREG-1801 for this component and material.
- H Aging effect not in NUREG-1801 for this component, material and environment combination.

Plant Specific Notes:

- 1 Loss of preload is conservatively considered to be applicable for all closure bolting.
- 2 The Water Chemistry program (B2.1.2) and the One-Time Inspection program (B2.1.16) manage loss of material due to pitting and crevice corrosion and cracking due to stress corrosion cracking. The One-Time Inspection program (B2.1.16) includes selected components at susceptible locations
- 3 Non-inhibited copper alloy >15% zinc SSCs with surfaces exposed to ventilation atmosphere (internal) or plant indoor air (internal) are subject to wetting due to condensation and thus are subject to loss of material due to selective leaching.
- 4 The reduction of heat transfer aging effect is not identified in NUREG-1801 for this component, material, and environment combination. Reduction of heat transfer is not expected in heat exchangers with reactor coolant or treated borated water environments as long as water chemistry is maintained. Reduction of heat transfer is managed with Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16).

Table 3.3.2-17 Auxiliary Systems – Summary of Aging Management Evaluation – Fire Protection System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Flow Element	PB	Carbon Steel (Galvanized)	Raw Water (Int)	Loss of material	Fire Water System (B2.1.13)	VII.G-24	3.3.1.68	B
Heat Exchanger (DFP Jacket Water)	HT, PB	Copper Alloy	Closed Cycle Cooling Water (Int)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	V.A-5	3.2.1.29	B
Heat Exchanger (DFP Jacket Water)	HT, PB	Copper Alloy	Closed Cycle Cooling Water (Int)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	V.A-11	3.2.1.30	B
Heat Exchanger (DFP Jacket Water)	PB	Copper Alloy	Plant Indoor Air (Ext)	None	None	VIII.I-2	3.4.1.41	A
Heat Exchanger (DFP Jacket Water)	HT, PB	Copper Alloy	Raw Water (Ext)	Loss of material	Fire Water System (B2.1.13)	VII.G-12	3.3.1.70	B
Heat Exchanger (DFP Jacket Water)	HT, PB	Copper Alloy	Raw Water (Ext)	Reduction of heat transfer	Open-Cycle Cooling Water System (B2.1.9)	VII.C1-6	3.3.1.83	B
Heat Exchanger (DFP Jacket Water)	PB	Copper Alloy	Raw Water (Int)	Loss of material	Fire Water System (B2.1.13)	VII.G-12	3.3.1.70	B
Hydrant	PB	Cast Iron (Gray Cast Iron)	Atmosphere/ Weather (Ext)	Loss of material	External Surfaces Monitoring Program (B2.1.20)	VII.I-9	3.3.1.58	B

Table 3.3.2-19 Auxiliary Systems – Summary of Aging Management Evaluation – Chemical and Volume Control System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat Exchanger (CVCS BTRS Letdown Reheat)	PB	Stainless Steel	Borated Water Leakage (Ext)	None	None	VII.J-16	3.3.1.99	C
Heat Exchanger (CVCS BTRS Letdown Reheat)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Cracking	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-5	3.3.1.08	E, 2
Heat Exchanger (CVCS BTRS Letdown Reheat)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Loss of material	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-17	3.3.1.91	E, 2
Heat Exchanger (CVCS BTRS Letdown Reheat)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Reduction of heat transfer	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	None	None	H, 4
Heat Exchanger (CVCS BTRS Letdown Reheat)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Cracking	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-5	3.3.1.08	E, 2
Heat Exchanger (CVCS BTRS Letdown Reheat)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Loss of material	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-17	3.3.1.91	E, 2
Heat Exchanger (CVCS BTRS Letdown Reheat)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Reduction of heat transfer	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	None	None	H, 4
Heat Exchanger (CVCS BTRS Moderating)	LBS, SIA	Stainless Steel	Borated Water Leakage (Ext)	None	None	VII.J-16	3.3.1.99	A

Table 3.3.2-19 Auxiliary Systems – Summary of Aging Management Evaluation – Chemical and Volume Control System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat Exchanger (CVCS Excess Letdown)	PB	Stainless Steel	Borated Water Leakage (Ext)	None	None	VII.J-16	3.3.1.99	C
Heat Exchanger (CVCS Excess Letdown)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-10	3.3.1.50	D
Heat Exchanger (CVCS Excess Letdown)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Cracking	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-11	3.3.1.46	D
Heat Exchanger (CVCS Excess Letdown)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-3	3.3.1.52	B
Heat Exchanger (CVCS Excess Letdown)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Cracking	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-59	3.3.1.9807	E, 2
Heat Exchanger (CVCS Excess Letdown)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Loss of material	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-17	3.3.1.91	E, 2
Heat Exchanger (CVCS Excess Letdown)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Reduction of heat transfer	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	None	None	H, 4
Heat Exchanger (CVCS Letdown)	PB	Carbon Steel	Borated Water Leakage (Ext)	Loss of material	Boric Acid Corrosion (B2.1.4)	VII.E1-1	3.3.1.89	A

Table 3.3.2-19 Auxiliary Systems – Summary of Aging Management Evaluation – Chemical and Volume Control System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat Exchanger (CVCS Letdown)	PB	Stainless Steel	Borated Water Leakage (Ext)	None	None	VII.J-16	3.3.1.99	C
Heat Exchanger (CVCS Letdown)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Loss of material	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-10	3.3.1.50	D
Heat Exchanger (CVCS Letdown)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Cracking	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-11	3.3.1.46	D
Heat Exchanger (CVCS Letdown)	HT, PB	Stainless Steel	Closed Cycle Cooling Water (Ext)	Reduction of heat transfer	Closed-Cycle Cooling Water System (B2.1.10)	VII.C2-3	3.3.1.52	B
Heat Exchanger (CVCS Letdown)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Cracking	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-9	3.3.1.07	E
Heat Exchanger (CVCS Letdown)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Loss of material	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-17	3.3.1.91	E, 2
Heat Exchanger (CVCS Letdown)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Reduction of heat transfer	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	None	None	H, 4
Heat Exchanger (CVCS Regenerative)	PB	Stainless Steel	Borated Water Leakage (Ext)	None	None	VII.J-16	3.3.1.99	C
Heat Exchanger (CVCS Regenerative)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Cracking	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-5	3.3.1.08	E, 2
Heat Exchanger (CVCS Regenerative)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Loss of material	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-17	3.3.1.91	E, 2
Heat Exchanger (CVCS Regenerative)	HT, PB	Stainless Steel	Treated Borated Water (Ext)	Reduction of heat transfer	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	None	None	H, 4

Table 3.3.2-19 Auxiliary Systems – Summary of Aging Management Evaluation – Chemical and Volume Control System (Continued)

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat Exchanger (CVCS Regenerative)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Cracking	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-5	3.3.1.08	E, 2
Heat Exchanger (CVCS Regenerative)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Loss of material	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	VII.E1-17	3.3.1.91	E, 2
Heat Exchanger (CVCS Regenerative)	HT, PB	Stainless Steel	Treated Borated Water (Int)	Reduction of heat transfer	Water Chemistry (B2.1.2) and One-Time Inspection (B2.1.16)	None	None	H, 4
Heat Exchanger (CVCS Seal Water Return)	PB	Carbon Steel	Borated Water Leakage (Ext)	Loss of material	Boric Acid Corrosion (B2.1.4)	VII.E1-1	3.3.1.89	A