



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 22, 2001

MEMORANDUM TO: Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management

FROM: Mohan C. Thadani, Senior Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management

SUBJECT: US NUCLEAR REGULATORY COMMISSION (NRC) AND SOUTH
TEXAS PROJECT NUCLEAR OPERATING COMPANY (STPNOC)
CORRESPONDENCE VIA FACSIMILE AND EMAIL (TAC NO. MA8271)

The purpose of this memorandum is to put the attached correspondence between the NRC and STPNOC on the public docket. The correspondence was regarding the issuance of Amendment No. 114 to the South Texas Project Unit 2 license, which permitted the use of 3-volt alternate repair criteria for steam generator tubes repair. The correspondence is listed below.

<u>Attachment No.</u>	<u>Date</u>	<u>Description</u>
1	02/08/01	EMail from NRC's John Tsao to STPNOC's John Conly
2	02/08/01	EMail from STPNOC's John Conly to NRC's John Tsao
3	02/10/01	EMail from NRC's John Tsao to STPNOC's John Conly
4	02/12/01	EMail from STPNOC's John Conly to NRC's John Tsao
5	02/12/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
6	02/13/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
7	02/22/01	EMail from NRC's Mohan Thadani to STPNOC's John Conly
8	02/23/01	Facsimile from STPNOC's John Conly to NRC's Robert Gramm
9	02/26/01	EMail from NRC's Mohan Thadani to STPNOC's John Conly
10	02/26/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
11	02/27/01	Facsimile from STPNOC's John Conly to NRC's Mohan Thadani
12	02/27/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
13	02/27/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
14	02/28/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
15	02/28/01	Facsimile from STPNOC's John Conly to NRC's Mohan Thadani

Attachments: As listed (15)

cc w/o atts: See next page

South Texas, Units 1 & 2

cc:

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South Texas Project Electric
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P. O. Box 289
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From: John Tsao
To: internet:jtonly@stpegs.com
Date: 2/8/01 11:36AM
Subject: 3-volt ARC

John,

with the various new TSP displacements, which displacement should I use in my discussion of your tube burst probability calculations. Should I use the 0.15 inch displacement as in wCAP-15163 or 0.048 inch displacement in the addendum.

I could say that you assumed a 0.15-inch displacement in your burst calculation using materials in WCAP-15165 as a basis for my discussion of your burst probability calculations, but I would state that a 0.048 inch displacement could be achieved with locked tubes.

this is not a regulatory question. I just want to make sure that what I talk about in my safety evaluation is correct.

thx

John

CC: Mohan Thadani

Mail Envelope Properties (3A82CAF5.93D : 7 : 37854)

Subject: 3-volt ARC
Creation Date: 2/8/01 11:36AM
From: John Tsao

Created By: JCT@nrc.gov

Recipients

stpegs.com
jtconly (internet:jtconly@stpegs.com)

owf4_po.OWFN_DO
MCT CC (Mohan Thadani)

Post Office

stpegs.com
owf4_po.OWFN_DO

Route

internet

Files

MESSAGE

Size

1541

Date & Time

02/08/01 11:36AM

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: "John T Conly" <jtconly@stpegs.com>
To: <jct@nrc.gov>
Date: 2/8/01 4:49PM
Subject: Re: 3-volt ARC

John,

The deflection we have to stay under for burst is 0.30 inches. We conservatively cut that deflection value in half to get a design target of no more than 0.15 inches to maintain very low burst probabilities. With the intended expansions to lock support plates C, F, and J, we actually achieve a deflection of no more than 0.048 inches. Addendum Table 2-1 provides this information.

If there are any further questions, please contact me immediately.

Thanks.

>>> "John Tsao" <JCT@nrc.gov> 02/08/01 10:36AM >>>
John,

with the various new TSP displacements, which displacement should I use in my discussion of your tube burst probability calculations. Should I use the 0.15 inch displacement as in wCAP-15163 or 0.048 inch displacement in the addendum.

I could say that you assumed a 0.15-inch displacement in your burst calculation using materials in WCAP-15165 as a basis for my discussion of your burst probability calculations, but I would state that a 0.048 inch displacement could be achieved with locked tubes.

this is not a regulatory question. I just want to make sure that what I talk about in my safety evaluation is correct.

thx

John

CC: <MCT@nrc.gov>

Mail Envelope Properties (3A831461.246 : 22 : 16966)

Subject: Re: 3-volt ARC
Creation Date: 2/8/01 4:10PM
From: "John T Conly" <jtconly@stpegs.com>
Created By: jtconly@stpegs.com

Recipients

nrc.gov
owf4_po.OWFN_DO
MCT CC (Mohan Thadani)

nrc.gov
owf2_po.OWFN_DO
JCT (John Tsao)

Post Office

owf4_po.OWFN_DO
owf2_po.OWFN_DO

Route

nrc.gov
nrc.gov

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MESSAGE	1173	02/08/01 04:10PM
Header	671	

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: John Tsao
To: GWIA:jtconly@[stpegs.com]
Date: 2/10/01 8:03AM
Subject: Re: 3-volt ARC

John,

What is the status on the technical justification for leaving bobbin indications less than 1 volt in the tubes that will be installed with expansion joints?

John

CC: Mohan Thadani

Mail Envelope Properties (3A853C1C.93D : 7 : 37854)

Subject: Re: 3-volt ARC
Creation Date: 2/10/01 8:03AM
From: John Tsao

Created By: JCT@nrc.gov

Recipients

[stpegs.com]
jtconly (GWIA:jtconly@[stpegs.com])

owf4_po.OWFN_DO
MCT CC (Mohan Thadani)

Post Office

[stpegs.com]
owf4_po.OWFN_DO

Route

GWIA

Files

MESSAGE

Size

952

Date & Time

02/10/01 08:03AM

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject:

No

Security:

Standard

From: "John T Conly" <jtconly@stpegs.com>
To: <JCT@nrc.gov>
Date: 2/12/01 2:46PM
Subject: Review Question of 2/8/01

John,

You asked the following question on 2/8/01:

"The last paragraph on page 2-9 in the Adendum to WCAP-15163 states: 'The tubes to be expanded must have no circumferential indication at the expansion transition, no indications within one inch above or below the TSP and no +Point confirmed bobbin indications greater than one bobbin volt within the confines of the TSP.' Please justify using a tube with a 1 bobbin volt indication within the TSP for expansion."

The response is attached to this e-mail.

If there are any questions at all, please do not hesitate to contact me immediately. Thank you for your effort.

CC: <MCT@nrc.gov>

2/12/01

Response

The required inspection for expanded tubes is the following:

- Bobbin inspection
- +Point inspection for bobbin DSI
- Exclude tubes with +Point confirmed DSI indication >1 volt as candidate for expansion
- Perform post-expansion inspection to verify adequate expansion

A 1 volt DSI is a very small flaw that will not affect the expansion process nor the axial load carrying capacity of the tube. The technical support document for ODSCC at TSP ARC for 3/4" tubing (EPRI NP-7480-L, Volume 2, Revision 1, August 1996) provides data for bobbin voltage vs. throughwall crack length. A 1V bobbin signal is a lower bound for all throughwall cracks in the available database; that is, throughwall cracks greater than 0.01" in length result in bobbin voltages greater than 1 volt. Therefore, a 1 volt indication would be extremely short or not a throughwall crack. A significant flaw at a TSP would not pass the 1 volt criterion.

For a ductile material¹ such as Alloy 600 MA used in the STP tubes, a crack opening of about 0.040" is required for the crack to tear. Assuming that a throughwall crack at the TSP is initially tight, and further assuming that the tube/TSP diametral gap is 0.010"², the maximum possible crack opening would be 0.031"; thus the crack would not tear during the expansion process. If a 1 volt flaw is assumed to tear, the length of the flaw would be much less than the 0.75" span of the TSP, and thus, would not affect the expansion bulges above and below the TSP.

Alternatively, assuming a non-throughwall crack within the span of the TSP, the ductility of the material and the TSP would prevent tearing of the flaw. Under the same assumption made above, a 1.3% uniform elongation of the tube section results in contact between the tube and the TSP. The assumption of uniform elongation is justified because the elongation of a very short (<0.010" long, axially) ligament of less than 50% of the wall thickness (residual tube wall below corrosion) is negligible (<1%) compared to the elongation (diametral) of the total tube section under internal pressure. Clearly, the total diametral growth of the tube is much less than the ductility of the material; thus a flawed tube would be constrained by the TSP well before tearing of the flaw would occur.

The essential function of the tube expansions is to provide axial load carrying capability to lock the TSPs in place. Assuming a throughwall flaw is present at an expanded TSP location, the axial load capacity of the tube is not degraded. For SP displacement between the tube bulges, the TSP must extrude (reduce the diameter) the bulge. The TSP load to extrude the tube bulge through the TSP hole is independent of the a crack in the

¹ The tensile elongation of tubes pulled from STP 2 was measured at about 40%. Ref. LTR-CDME-00-103; South Texas Unit 2 Examination of 2 Tubes Removed in October 1998; July 2000.

² The assumption of a 0.010" diametral gap is conservative since it ignores the deposits in the crevice that must be there for corrosion cracking to occur.

tube. The load capacity of the tube depends on the tube cross section, and the completion of acceptable expansions. The tube cross section is not affected by even a throughwall crack; thus the axial load capacity of the tube is unchanged. As shown above, the expansion process is unaffected by the presence of a 1 volt bobbin indication.

The final step of the expansion process is an inspection with the bobbin probe to assure the correct expansions have been achieved. Although the principal purpose of the inspection is to verify correct bulge size, the bobbin probe will also detect tearing of the bulge. If a tear is detected in a bulge, an adjacent alternate tube will be selected for expansion.

Mail Envelope Properties (3A883D78.B62 : 9 : 39778)

Subject: Review Question of 2/8/01
Creation Date: 2/12/01 2:45PM
From: "John T Conly" <jtconly@stpegs.com>

Created By: jtconly@stpegs.com

Recipients

nrc.gov
owf4_po.OWFN_DO
MCT CC (Mohan Thadani)

nrc.gov
owf2_po.OWFN_DO
JCT (John Tsao)

Post Office

owf4_po.OWFN_DO
owf2_po.OWFN_DO

Route

nrc.gov
nrc.gov

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Header	628	

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: "John T Conly" <jtconly@stpegs.com>
To: <MCT@nrc.gov>
Date: 2/12/01 2:58PM
Subject: Reconstituted TS Pages

Bob Gramm called today to determine how critical March 1st is for NRC approval of our 3-volt request. We understand that the staff is against the wall in trying to get the various reviewer's portions of the SE compiled and through the review chain.

In order to expedite the NRC typing job, attached is an electronic copy of the reconstituted TS pages with the changes and NRC recommendations incorporated. This file has been checked word-by-word against the existing TS pages. This file includes the NRC recommendation to use the defining words for a DSI rather than introducing a new term "DSI" into the Tech Specs. You recall that I e-mailed you that the hard-copy reconstituted TS pages that we submitted to you inadvertently did not have this recommendation incorporated.

If this file will be of any use to you, please use it as you see fit.

Regards,
John

Mail Envelope Properties (3A893E56.4D8 : 2 : 46296)

Subject: Fwd: Reconstituted TS Pages
Creation Date: 2/13/01 9:01AM
From: "John T Conly" <jtconly@stpegs.com>
Created By: jtconly@stpegs.com

Recipients

nrc.gov
owf4_po.OWFN_DO
MCT (Mohan Thadani)

Post Office

owf4_po.OWFN_DO

Route

nrc.gov

Files	Size	Date & Time
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Mail		
TSC-228a markups recon.doc	63488	
Header	629	

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: "John T Conly" <jtconly@stpegs.com>
To: <MCT@nrc.gov>
Date: 2/13/01 9:02AM
Subject: Fwd: Reconstituted TS Pages

My apologies.

From: "John T Conly" <jtconly@stpegs.com>
To: "Mohan Thadani" <MCT@nrc.gov>
Date: 2/12/01 2:57PM
Subject: Reconstituted TS Pages

Bob Gramm called today to determine how critical March 1st is for NRC approval of our 3-volt request. We understand that the staff is against the wall in trying to get the various reviewer's portions of the SE compiled and through the review chain.

In order to expedite the NRC typing job, attached is an electronic copy of the reconstituted TS pages with the changes and NRC recommendations incorporated. This file has been checked word-by-word against the existing TS pages. This file includes the NRC recommendation to use the defining words for a DSI rather than introducing a new term "DSI" into the Tech Specs. You recall that I e-mailed you that the hard-copy reconstituted TS pages that we submitted to you inadvertently did not have this recommendation incorporated.

If this file will be of any use to you, please use it as you see fit.

Regards,
John

REACTOR COOLANT SYSTEM3/4.4.5 STEAM GENERATORLIMITING CONDITION FOR OPERATION

3.4.5 Each steam generator shall be OPERABLE.

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

ACTION:

With one or more steam generators inoperable, restore the inoperable generator(s) to OPERABLE status prior to increasing T_{avg} above 200°F.

SURVEILLANCE REQUIREMENTS

4.4.5.0 Each steam generator shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirements of Specification 4.0.5.

4.4.5.1 Steam Generator Sample Selection and Inspection - Each steam generator shall be determined OPERABLE during shutdown by selecting and inspecting at least the minimum number of steam generators specified in Table 4.4-1.

4.4.5.2 Steam Generator Tube Sample Selection and Inspection - The steam generator tube minimum sample size, inspection result classification, and the corresponding action required shall be as specified in Table 4.4-2 and Table 4.4-3. The inservice inspection of steam generator tubes shall be performed at the frequencies specified in Specification 4.4.5.3 and the inspected tubes shall be verified acceptable per the acceptance criteria of Specification 4.4.5.4. When applying the exceptions of 4.4.5.2.a through 4.4.5.2.c, previous defects or imperfections in the area repaired by sleeving are not considered an area requiring reinspection. The tubes selected for each inservice inspection shall include at least 3% of the total number of nonrepaired tubes in all steam generators and (for Model E steam generators only) 20% of the total number of repaired tubes in all steam generators; the tubes selected for these inspections shall be selected on a random basis except:

- a. Where experience in similar plants with similar water chemistry indicates critical areas to be inspected, then at least 50% of the tubes inspected shall be from these critical areas;
- b. The first sample of tubes selected for each inservice inspection (subsequent to the preservice inspection) of each steam generator shall include:
 - 1) All nonplugged tubes that previously had detectable wall penetrations (greater than 20%),
 - 2) Tubes in those areas where experience has indicated potential problems, and

REACTOR COOLANT SYSTEM

STEAM GENERATORS

SURVEILLANCE REQUIREMENTS (Continued)

- 3) A tube inspection (pursuant to Specification 4.4.5.4a.9) shall be performed on each selected tube. If any selected tube does not permit the passage of the eddy current probe for a tube inspection, this shall be recorded and an adjacent tube shall be selected and subjected to a tube inspection.
 - 4) For Model E steam generators only, indications left in service as a result of application of the tube support plate voltage-based repair criteria shall be inspected by bobbin coil probe during all future refueling outages.
- c. The tubes selected as the second and third samples (if required by Table 4.4-2 or Table 4.4-3) during each inservice inspection may be subjected to a partial tube inspection provided:
- 1) The tubes selected for these samples include the tubes from those areas of the tube sheet array where tubes with imperfections were previously found, and
 - 2) The inspections include those portions of the tubes where imperfections were previously found.
- d. For Model E steam generators only, implementation of the steam generator tube/tube support plate repair criteria requires a 100-percent bobbin coil inspection for the flow distribution baffle plate intersections, for the hot-leg tube support plate intersections, and for the cold-leg tube support plate intersections down to the lowest cold-leg tube support plate with known outside diameter stress corrosion cracking (ODSCC) indications. The determination of the lowest cold-leg tube support plate intersections having ODSCC indications shall be based on the performance of at least a 20-percent random sampling of tubes inspected over their full length.
- 1) All intersections with mechanically induced dent signals greater than 5 volts identified by bobbin coil inspection shall be inspected by rotating pancake coil (or equivalent).
 - 2) All intersections with large mixed residuals that could potentially mask flaw responses at or above the voltage repair limits shall be inspected by rotating pancake coil (or equivalent).

- 3) At the flow distribution baffle intersections, at the cold leg support plate intersections, and at the hot leg support plate intersections with support plates L through R (as identified in Figure 5.1 of WCAP-15163, Revision 1), tubes with degradation attributed to axially-oriented ODSCC within the bounds of the tube support plate with a bobbin voltage greater than the lower voltage repair limit (defined in 4.4.5.4.a.11) shall be inspected by rotating pancake coil (or equivalent).

SOUTH TEXAS – UNITS 1 & 2
~~82,83,90,96,107~~

3/4 4-13

Unit 1 - Amendment No.

Unit 2 - Amendment No. ~~77,83,94~~

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

- 4) At the hot leg support plate intersections with support plates C, F, and J (as identified in Figure 5.1 of WCAP-15163, Revision 1), all tubes with degradation attributed to axially-oriented ODSCC within the bounds of the tube support plate with a bobbin voltage greater than 3 volts shall be inspected by rotating pancake coil (or equivalent) eddy current probe. An additional 100 tube intersections with support plates C, F, and J with degradation attributed to axially-oriented ODSCC within the bounds of the tube support plate with a bobbin voltage less than 3 volts (100 total over all steam generators, not necessarily selected at random) shall be inspected by rotating pancake coil (or equivalent).

The results of each sample inspection shall be classified into one of the following three categories.

<u>Category</u>	<u>Inspection Results</u>
C-1	Less than 5% of the total tubes inspected are degraded tubes and none of the inspected tubes are defective.
C-2	One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes.
C-3	More than 10% of the total tubes inspected are degraded tubes or more than 1% of the inspected tubes are defective.

Note: In all inspections, previously degraded tubes must exhibit significant (greater than 10%) further wall penetrations to be included in the above percentage calculations.

SOUTH TEXAS – UNITS 1 & 2

3/4 4-13a

Unit 1 – Amendment No. 83

Unit 2 – Amendment No.

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

4.4.5.3 Inspection Frequencies - The above required inservice inspections of steam generator tubes shall be performed at the following frequencies:

- a. The first inservice inspection following steam generator replacement shall be performed after 6 Effective Full Power Months but within 24 calendar months of initial criticality after the steam generator replacement. Subsequent inservice inspections shall be performed at intervals of not less than 12 nor more than 24 calendar months after the previous inspection. If two consecutive inspections, not including the preservice inspection, result in all inspection results falling into the C-1 category or if two consecutive inspections demonstrate that previously observed degradation has not continued and no additional degradation has occurred, the inspection interval may be extended to a maximum of once per 40 months;

Note: Inservice inspection is not required during the steam generator replacement outage.

- b. If the results of the inservice inspection of a steam generator conducted in accordance with Table 4.4-2 at 40-month intervals fall in Category C-3, the inspection frequency shall be increased to at least once per 20 months. The increase in inspection frequency shall apply until the subsequent inspections satisfy the criteria of Specification 4.4.5.3a.; the interval may then be extended to a maximum of once per 40 months; and
- c. Additional, unscheduled inservice inspections shall be performed on each steam generator in accordance with the first sample inspection specified in Table 4.4-2 during the shutdown subsequent to any of the following conditions:
 - 1) Primary-to-secondary tube leaks (not including leaks originating from tube-to-tube sheet welds) in excess of the limits of Specification 3.4.6.2, or
 - 2) A seismic occurrence greater than the Operating Basis Earthquake, or
 - 3) A loss-of-coolant accident requiring actuation of the Engineered Safety Features, or
 - 4) A main steam line or feedwater line break.

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)4.4.5.4 Acceptance Criteria

a. As used in this specification:

- 1) Tubing or Tube means that portion of the tube or sleeve which forms the primary system to secondary system pressure boundary;
- 2) Imperfection means an exception to the dimensions, finish, or contour of a tube from that required by fabrication drawings or specifications. Eddy-current testing indications below 20% of the nominal tube wall thickness, if detectable, may be considered as imperfections;
- 3) Degradation means a service-induced cracking, wastage, wear, or general corrosion occurring on either inside or outside of a tube;
- 4) Degraded Tube means a tube containing imperfections greater than or equal to 20% of the nominal wall thickness caused by degradation;
- 5) % Degradation means the percentage of the tube wall thickness affected or removed by degradation;
- 6) Defect means an imperfection of such severity that it exceeds the plugging or repair limit. A tube containing a defect is defective;
- 7) Plugging Limit or Repair Limit means the imperfection depth at or beyond which the tube shall be removed from service by plugging or (for Model E steam generators only) repaired by sleeving in the affected area because it may become unserviceable prior to the next inspection. The plugging or repair limit imperfection depths are specified in percentage of the nominal wall thickness as follows:

a. original tube wall	40%
b. Westinghouse laser welded sleeve wall	40%

For Model E steam generators, this definition does not apply to tube support plate intersections for which the voltage-based repair criteria are being applied. Refer to 4.4.5.4.a.11 for the repair limit applicable to these intersections.

- 8) Unserviceable describes the condition of a tube if it leaks or contains a defect large enough to affect its structural integrity in the event of an Operating Basis Earthquake, a loss-of-coolant accident, or a steam line or feedwater line break as specified in Specification 4.4.5.3c., above;
- 9) Tube Inspection means an inspection of the steam generator tube from the point of entry (hot leg side) completely around the U-bend to the top support of the cold leg;

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

- 10) Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed prior to initial POWER OPERATION using the equipment and techniques expected to be used during subsequent inservice inspections.
- 11) For Model E steam generators only, Tube Support Plate Plugging Limit is used for the disposition of a mill annealed alloy 600 steam generator tube for continued service that is experiencing predominately axially oriented outside diameter stress corrosion cracking confined within the thickness of the tube support plates.

At the flow distribution baffle intersections, at the cold leg support plate intersections, and at the hot leg support plate intersections with support plates L through R (as identified in Figure 5.1 of WCAP-15163, Revision 1), the plugging (repair) limit is based on maintaining steam generator tube serviceability as described in a), b), c) and d) below:

- a) Steam generator tubes, whose degradation is attributed to outside diameter stress corrosion cracking within the bounds of the tube support plate with bobbin voltage less than or equal to the lower voltage repair limit (Note 1), will be allowed to remain in service.
- b) Steam generator tubes, whose degradation is attributed to outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than the lower voltage repair limit (Note 1), will be repaired or plugged, except as noted in 4.4.5.4.a.11.c below.
- c) Steam generator tubes, with indications of potential degradation attributed to outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than the lower voltage repair limit (Note 1) but less than or equal to the upper repair voltage limit (Note 2), may remain in service if a rotating pancake coil inspection does not detect degradation. Steam generator tubes, with indications of outside diameter stress corrosion cracking degradation with bobbin voltage greater than the upper voltage repair limit (Note 2) will be plugged or repaired.

SOUTH TEXAS – UNITS 1 & 2
~~82,82,90,96,107~~

3/4 4-16

Unit 1 - Amendment No.

Unit 2 - Amendment No. ~~77,83,94~~

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

- d) If an unscheduled mid-cycle inspection is performed, the mid-cycle repair limits apply instead of the limits identified in 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c. The mid-cycle repair limits will be determined from the equations for mid-cycle repair limits of NRC Generic Letter 95-05, Attachment 2, page 3 of 7. Implementation of these mid-cycle repair limits should follow the same approach as in TS 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c.

Note 1: The lower voltage repair limit is 1.0 volt for 3/4-inch diameter tubing.

Note 2: The upper voltage repair limit (V_{URL}) is calculated for each inspection according to the methodology in Generic Letter 95-05 as supplemented. V_{URL} may differ at the TSPs and flow distribution baffle. Voltage growth rate shall be the larger of the average growth rates experienced in the two prior cycles, but not less than 30% per effective full power year.

For Unit 2 Cycle 9 only, at the hot leg support plate intersections with support plates C, F, and J (as identified in Figure 5.1 of WCAP-15163, Revision 1), the plugging (repair) limit is based on maintaining steam generator tube serviceability as described in e) and f) below:

- e) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage less than or equal to 3.0 volts may remain in service.
- f) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than 3.0 volts shall be plugged or repaired regardless of whether or not a rotating pancake coil inspection detects degradation.
- 12) Tube Repair refers to a process that reestablishes tube serviceability for Model E steam generators only. Acceptable tube repair will be performed in accordance with the methods described in Westinghouse Reports WCAP-13698, Revision 2, "Laser Welded Sleeves for 3/4 Inch Diameter Tube Feeding-Type and Westinghouse Preheater Steam Generators," April 1995 and WCAP-14653, "Specific Application of Laser Welded Sleeves for South Texas Project Power Plant Steam Generators," June 1996, including

post-weld stress relief;

Tube repair includes the removal of plugs that were previously installed as a corrective or preventive measure. A tube inspection per 4.4.5.4.a.9 is required prior to returning previously plugged tubes to service.

SOUTH TEXAS – UNITS 1 & 2
~~83,90,96,107~~

3/4 4-16a

Unit 1 - Amendment No.

Unit 2 - Amendment No. ~~77,83,94~~

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

- b. The steam generator shall be determined OPERABLE after completing the corresponding actions [plug or (for Model E steam generators only) repair all tubes exceeding the plugging or repair limit and all tubes containing through-wall cracks] required by Table 4.4-2 and Table 4.4-3.

4.4.5.5 Reports

- a. Within 15 days following the completion of each inservice inspection of steam generator tubes, the number of tubes plugged or repaired in each steam generator shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2;
- b. The complete results of the steam generator tube inservice inspection shall be submitted to the Commission in a Special Report pursuant to Specification 6.9.2 within 12 months following the completion of the inspection. This Special Report shall include:
 - 1) Number and extent of tubes inspected,
 - 2) Location and percent of wall-thickness penetration for each indication of an imperfection, and
 - 3) Identification of tubes plugged or repaired.
- c. Results of steam generator tube inspections which fall into Category C-3 shall be reported in a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days and prior to resumption of plant operation. This report shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.
- d. For Model E steam generators, implementation of the voltage-based repair criteria to tube support plate intersections, notify the Staff prior to returning the steam generators to service should any of the following conditions arise:
 - 1) If estimated leakage based on the projected end-of-cycle (or if not practical, using the actual measured end-of-cycle) voltage distribution exceeds the leak limit (determined from the licensing basis dose calculation for the postulated main steam line break) for the next operating cycle. The calculation(s) shall be done using:
 - a) The methodology of Generic Letter 95-05 for intersections at the flow distribution baffles, at the applicable cold leg support plates, and at the hot leg support plates L through R; and

Unit 2 - Amendment No. ~~77,83,94~~

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

- b) The methodology of Generic Letter 95-05 modified for potential overpressurized tubes as described in WCAP-15163, Revision 1, for hot leg intersections at support plates C, F, and J.
- 2) If circumferential crack-like indications are detected at the tube support plate intersections.
- 3) If indications are identified that extend beyond the confines of the tube support plate.
- 4) If indications are identified at the tube support plate elevations that are attributable to primary water stress corrosion cracking.

- 5) If the calculated conditional burst probability based on the projected end-of-cycle (or if not practical, using the actual measured end-of-cycle) voltage distribution exceeds 1×10^{-2} , notify the NRC and provide an assessment of the safety significance of the occurrence. The calculation(s) shall be done using:
 - a) The methodology of Generic Letter 95-05 for intersections at the flow distribution baffles, at the applicable cold leg support plates, and at the hot leg support plates L through R; and
 - b) A total main steam line break tube burst probability of 1×10^{-5} for hot leg intersections at support plates C, F, and J.
- 6) If cracking is observed in the tube support plates.
- 7) If steam generator internals inspections are conducted and if indications detrimental to the integrity of the load path necessary to support the 3-volt alternate repair criteria are found, notify the NRC and provide an assessment of the safety significance of the

occurrence.

- e. For Model E steam generators, submit a report to the Staff that addresses "Information to be Provided Following Each Restart" per Generic Letter 95-05, 6.b, within 90 days following outage breaker closure.

SOUTH TEXAS – UNITS 1 & 2

3/4 4-16c

Unit 1 – Amendment No.

Unit 2 – Amendment No.

REACTOR COOLANT SYSTEM

BASES

STEAM GENERATORS (Continued)

plants have demonstrated the capability to reliably detect degradation that has penetrated 20% of the original tube wall thickness. Repaired tubes are also included in the inservice tube inspection program.

For Model E steam generators only, the voltage-based repair limits of SR 4.4.5 implement the guidance in GL 95-05 and are applicable only to Westinghouse-designed steam generators (SGs) with outside diameter stress corrosion cracking (ODSCC) located at the tube-to-tube support plate intersections. The criteria of GL 95-05 are also applicable to the Unit 2 flow distribution plate intersections. The voltage-based repair limits are not applicable to other forms of SG tube degradation nor are they applicable to ODSCC that occurs at other locations within the SG. Additionally, the repair criteria apply only to indications where the degradation mechanism is dominantly axial ODSCC with no significant cracks extending outside the thickness of the support plate. Refer to GL 95-05 for additional description of the degradation morphology.

Implementation of SR 4.4.5 for Model E steam generators requires a derivation of the voltage structural limit from the burst versus voltage empirical correlation and then the subsequent derivation of the voltage repair limit from the structural limit (which is then implemented by this surveillance).

The voltage structural limit is the voltage from the burst pressure/bobbin voltage correlation, at the 95-percent prediction interval curve reduced to account for the lower 95/95-percent tolerance bound for tubing material properties at 650°F (i.e., the 95-percent LTL curve). The voltage structural limit of the tube at flow distribution baffle intersections, (which have large tube to plate clearances) is based on a 3 ΔP_{NO} structural margin. For tubes at the cold leg tube support plate intersections and the hot leg intersections at plates L through R for which the small clearances provide constraint against tube burst during normal operation, the structural limit is based on a $1.43\Delta P_{SLB}$ structural margin. For the hot leg intersections at plates C, F, and J with the limited displacement of the lower tube support plates demonstrated by analyses in WCAP-15163, Rev. 1, Addendum 1, the constraint of the tube support plate reduces the burst probability of those tubes having axially oriented ODSCC indications that are confined within the tube support plate to negligible levels and the tube repair limit is not required to prevent tube burst. The need for tube repair is dictated by the need to satisfy allowable steam line break leakage limits.

For those intersections where the possibility of tube burst must be considered (i.e., at the flow distribution baffle, at cold leg intersections, and at the hot leg intersections at plates L through R), the voltage structural limit must be adjusted downward to obtain the upper voltage repair limit to account for potential flaw growth during an operating interval and to account for NDE uncertainty. The upper voltage

repair limit: V_{URL} , is determined from the structural voltage limit by applying the following equation:

$$V_{URL} = V_{SL} - V_{GR} - V_{NDE}$$

where V_{GR} represent the allowance for flaw growth between inspections and V_{NDE} represents the allowance for potential sources of error in the measurement of the bobbin coil voltage. Further discussion of the assumptions necessary to determine the voltage repair limit are discussed in GL 95-05.

SOUTH TEXAS - UNITS 1 & 2
~~82,83,90,96,107~~

B 3/4 4-3

Unit 1 - Amendment No.

Unit 2 - Amendment No. ~~77,83,94~~

From: Mohan Thadani
To: GWIA:jtconly@[stpegs.com]
Date: 2/22/01 1:19PM
Subject: UNCERTAINTY OF CRACK INDICATIONS FOR 3-VOLT AMENDMENT

John:

As stated in GL 95-05, the ARC for ODSCC indications are applicable only to cracks that are fully confined within the TSPs. GL 95-05 was based, in part, on experience that ODSCC on the tubing inside TSPs had not produced cracks with significant extensions into the free span.

Seven minor ODSCC indications that extended outside the TSPs were identified by destructive examination in the 210 pulled tube specimens and were not significant to structural or risk considerations. These minor extensions were not observed by NDE. The staff's evaluation of the 3-volt ARC is based on this information. However, the staff has concerns regarding the potential leakage from ODSCC indications if any are found at STP-2 to extend outside the tube support plate (TSP). If ODSCC cracks extending into the free span are detected by future inspections, they are likely to be of structural and leakage significance and require assessment. In addition, significant crack extensions would invalidate the staff's technical basis for concluding that there was no significant risk associated with the use of the 3-volt ARC. There is currently no approved method for performing an operational assessment of ODSCC cracks detected to extend beyond the TSPs. Developing an appropriate means for performing an acceptable operational assessment would need to be risk-informed, and its implementation would require additional time for the staff review and approval.

In the absence of a technically defensible basis for permitting potential axial crack indications to exist outside the confines of the TSPs, the staff requests that the licensee revise its Technical Specifications to require that if one or more indications in the TSP intersections are detected by NDE to extend beyond the edges of the TSP, the 3-volt ARC may not be used in any steam generators in STP-2.

If the licensee agrees with the above revision to TS, please send a revised TS page.

Thanks.

Mohan

P.S. I will be out of the office tomorrow, but will check my email.

CC: Edmund Sullivan, John Tsao, Robert Gramm

Mail Envelope Properties (3A95584A.533 : 15 : 21310)

Subject: UNCERTAINTY OF CRACK INDICATIONS FOR 3-VOLT
AMENDMENT
Creation Date: 2/22/01 1:19PM
From: Mohan Thadani
Created By: MCT@nrc.gov

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RAG CC (Robert Gramm)	Opened	02/22/01 02:20PM

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Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

To Be Delivered: Immediate
Status Tracking: Delivered & Opened



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

NUCLEAR QUALITY & LICENSING DEPARTMENT

FAX #: 361-972-8298

TELECOPY TRANSMITTAL

DATE: FEB 23, 2001

TO: BOB GRAMM / JOHN TSAO

FAX NO. 3061 / 2444

FROM: JOHN CONLY Phone: 361/972- 7336

RE: RESPONSE TO FEB 22 E-MAIL

QUESTION ON 3-VOLT ARC

*4/23
Mohan -
Plse make sure this
gets on docket.
Thanks
Bob*

TOTAL NUMBER OF PAGES (INCLUDING COVER SHEET) 2

FOR CONFIRMATION, PLEASE CALL 361-972-7751

NRC Question:

As stated in GL 95-05, the ARC for ODSCC Indications are applicable only to cracks that are fully confined within the TSPs. GL 95-05 was based, in part, on experience that ODSCC on the tubing inside TSPs had not produced cracks with significant extensions into the free span.

Seven minor ODSCC indications that extended outside the TSPs were identified by destructive examination in the 210 pulled tube specimens and were not significant to structural or risk considerations. These minor extensions were not observed by NDE. The staff's evaluation of the 3-volt ARC is based on this information. However, the staff has concerns regarding the potential leakage from ODSCC indications if any are found at STP-2 to extend outside the tube support plate (TSP). If ODSCC cracks extending into the free span are detected by future inspections, they are likely to be of structural and leakage significance and require assessment. In addition, significant crack extensions would invalidate the staff's technical basis for concluding that there was no significant risk associated with the use of the 3-volt ARC. There is currently no approved method for performing an operational assessment of ODSCC cracks detected to extend beyond the TSPs. Developing an appropriate means for performing an acceptable operational assessment would need to be risk-informed, and its implementation would require additional time for the staff review and approval.

In the absence of a technically defensible basis for permitting potential axial crack indications to exist outside the confines of the TSPs, the staff requests that the licensee revise its Technical Specifications to require that if one or more indications in the TSP intersections are detected by NDE to extend beyond the edges of the TSP, the 3-volt ARC may not be used in any steam generators in STP-2.

If the licensee agrees with the above revision to TS, please send a revised TS page.

Response:

Beginning with the last paragraph on page 6-4 of the Addendum to WCAP-15163, STPNOC has provided a technically defensible basis for permitting potential axial crack locations to exist outside the confines of the TSPs. A burst probability of 1.2×10^{-6} was conservatively calculated for an assumed 509 cracks extending beyond the TSP. Even more conservative assumptions resulted in a cumulative probability of at least one burst during a postulated SLB event being 6×10^{-3} , still significantly less than 10^{-2} . With these extremely low burst probabilities, it is not apparent that any cracks extending beyond the TSP would likely be of structural and leakage significance. Additionally, since such cracks have been assumed to exist in the analysis, they are part of the technical basis for concluding there is no significant risk associated with the use of the 3-volt ARC.

Secondly, a requirement already exists to notify the Staff if such indications are found. Technical Specification 4.4.5.5.d. requires that the NRC Staff be notified prior to returning the steam generators to service should any of the following conditions apply:

- 3) If indications are identified that extend beyond the confines of the tube support plate.

From: Mohan Thadani
To: GWIA:jtconly@[stpegs.com]
Date: 2/26/01 3:52PM
Subject: 3-VOLT ALTERNATE REPAIR CRITERIA...STP-2 TECHNICAL SPECIFICATION

John:

The NRC staff has suggested the following insert for the Technical Specification, TS 4.4.5.4.a.11. Let me know if these words are consistent with the licensee's expectations. The staff's reference to "indications" implies indications detected by NDE.

Thanks.

Mohan

Add-

If one or more indications in the TSP intersections are detected by NDE to extend beyond the edges of the TSP, the 3-volt ARC shall not be used in any steam generators in STP-2; except in the event the indications detected beyond the TSP(s) are determined by the staff to be physically insignificant for the purposes of safety and risk assessment, approval for the use of the 3-volt ARC may be granted by the staff in writing on a one-time basis, following staff review and consideration of the factors related to the crack extensions that are found.

CC: Edmund Sullivan, Emmett Murphy, John Tsao, Robert Gramm, Steven Long

Mail Envelope Properties (3A9AC222.533 : 15 : 21310)

Subject: 3-VOLT ALTERNATE REPAIR CRITERIA...STP-2 TECHNICAL SPECIFICATION
Creation Date: 2/26/01 3:52PM
From: Mohan Thadani
Created By: MCT@nrc.gov

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ELM CC (Emmett Murphy)		
JCT CC (John Tsao)	Opened	02/26/01 04:00PM
RAG CC (Robert Gramm)	Opened	02/27/01 06:16AM
SML CC (Steven Long)	Opened	02/26/01 03:54PM

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Options

Auto Delete: No
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Notify Recipients: Yes
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

To Be Delivered: Immediate
Status Tracking: Delivered & Opened

From: "John T Conly" <jtconly@stpegs.com>
To: <MCT@nrc.gov>
Date: 2/26/01 10:39AM
Subject: Response

Attached is a response offered for consideration for the phone conference at 12:30 EST today.

CC: <ejs@nrc.gov>, <JCT@nrc.gov>, <Rag@nrc.gov>

DRAFT-2/23/01

**Response to NRC E-Mail of February 22, 2001
Uncertainty of Crack Indications for a 3-Volt Amendment**

NRC Letter

As stated in GL 95-05, the ARC for ODSCC indications are applicable only to cracks that are fully confined within the TSPs. GL 95-05 was based, in part, on experience that ODSCC on the tubing inside TSPs had not produced cracks with significant extensions into the free span.

Seven minor ODSCC indications that extended outside the TSPs were identified by destructive examination in the 210 pulled tube specimens and were not significant to structural or risk considerations. These minor extensions were not observed by NDE. The staff's evaluation of the 3-volt ARC is based on this information. However, the staff has concerns regarding the potential leakage from ODSCC indications if any are found at STP-2 to extend outside the tube support plate (TSP). If ODSCC cracks extending into the free span are detected by future inspections, they are likely to be of structural and leakage significance and require assessment. In addition, significant crack extensions would invalidate the staff's technical basis for concluding that there was no significant risk associated with the use of the 3-volt ARC. There is currently no approved method for performing an operational assessment of ODSCC cracks detected to extend beyond the TSPs. Developing an appropriate means for performing an acceptable operational assessment would need to be risk-informed, and its implementation would require additional time for the staff review and approval.

In the absence of a technically defensible basis for permitting potential axial crack indications to exist outside the confines of the TSPs, the staff requests that the licensee revise its Technical Specifications to require that if one or more indications in the TSP intersections are detected by NDE to extend beyond the edges of the TSP, the 3-volt ARC may not be used in any steam generators in STP-2.

If the licensee agrees with the above revision to TS, please send a revised TS page.

Response

Based on the crack initiation mechanisms for axial ODSCC, the potential for finding a crack outside the TSP is independent of the application of a 1 or 3 volt ARC. The cracks are initiated at multiple initiation sites as very short microcracks (typically 0.03 to < 0.1 inch long) formed under sludge deposits, which tend to concentrate corrosive species. The microcracks form as bands of a few to many cracks wide. Growth to form a longer macrocrack (typical crack) occurs by joining of the closely spaced individual microcracks. As a consequence, the ligaments in an ODSCC axial crack may be in the dominant plane of the crack or out of plane joining closely spaced microcracks. A macrocrack can extend significantly outside the TSP only if the environment for microcrack initiation is present outside the TSP. The macrocracks do not grow from inside the TSP to outside the TSP unless coalescing with existing microcracks outside the TSP. The potential for microcrack initiation outside the TSP is independent of the size of the crack inside the TSP. The microcracks outside the TSP may initiate in deposits formed on the tube (a source for freespan ODSCC) or deposits formed on the surface of the TSP. Three of the seven indications found outside the TSP were identified in SGs that also had freespan ODSCC away from the edges of the TSPs. Hence, cracks at the edges of TSPs were also found, as expected, in these SGs where no crack was present within the TSP. Another two of the seven indications were found in a

DRAFT-2/23/01

plant with very thick OD deposits on the tubes, which is an environment conducive to freespan ODSCC. The tube conditions for the plant with the other two of the seven indications are not known. Inspections of the South Texas-2 SG tubing show only light deposits on the tubing. Due to the different environment outside the TSP from that within the TSP, the cracks outside the TSP have been very short and shallow even when the cracks inside the TSP were found to be very large and deep. It is therefore concluded that the very small risk associated with potential indications outside the TSP is the same for a 1 or 3 volt ARC, and this small risk is the same for a 3 volt ARC as accepted by the staff for a 1 volt ARC. In fact, the occurrence is independent of any ARC, the evaluation of any freespan (outside the TSP) indications should be independent of the ARC, and the evaluation should not require ARC methods specifically approved by the NRC. The finding of an indication outside the TSP would not "invalidate the staff's technical basis for concluding that there was no significant risk associated with the use of the 3-volt ARC."

The South Texas-2 SGs will apply +Point inspections for confirmation of bobbin coil indications and may inspect a large number of TSP intersections dependent upon the sizes of indications found in the inspection. The +Point coil has improved detectability compared to the pancake coils that were used for inspections at the time GL 95-05 was issued. Therefore, there is not a priori basis to assume that any indications found outside the TSPs are "likely to be of structural and leakage significance." If such indications exist, there is every reason to believe that future inspections will detect non-significant indications simply because of advancements in the technology of inspection, not because the indications are any more severe than those found during the destructive examinations. Any indications found outside the TSP will be reported to the NRC as required by GL 95-05, and the tube integrity evaluation will be performed as required by NEI 97-06.

STNOC is currently establishing a database to perform sizing based tube integrity analyses for axial ODSCC per the guidelines of NEI 97-06 and supporting documents. STNOC is conducting +Point sizing performance testing of field analysts to determine sizing uncertainties for axial ODSCC. The indications used for these sizing tests are the EPRI ARC database indications with +Point inspection data. Growth rates for axial ODSCC at TSP intersections are being developed from South Texas and other plant data, and these data can be compared with existing freespan and sludge pile data to define the growth rates. If freespan ODSCC indications are found, these sizing and growth data will be used to support the condition monitoring and operational assessments required by NEI 97-06. The assessments will be performed against the deterministic $3\Delta P_{NO}$ burst margin requirements and a "risk-informed" operational assessment would not be performed. Since the assessments would be against deterministic criteria rather than risk-informed, NRC staff review and approval of the tube integrity assessments would not be required. All freespan +Point indications would be repaired and the results of the condition monitoring and operational assessments will be applied consistent with other degradation mechanisms and NEI 97-06.

Based on the above, STNOC has a technically defensible position to evaluate freespan axial ODSCC indications consistent with the requirements of NEI 97-06 and the EPRI tube integrity assessment guidelines. No revisions to the Technical Specifications are required if one or more indications are detected by NDE beyond the edges of the TSP.

Mail Envelope Properties (3A88403B.C03 : 20 : 39939)

Subject: Reconstituted TS Pages
Creation Date: 2/12/01 2:57PM
From: "John T Conly" <jtconly@stpegs.com>

Created By: jtconly@stpegs.com

Recipients

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MCT (Mohan Thadani)

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owf4_po.OWFN_DO

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Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard



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

NUCLEAR QUALITY & LICENSING DEPARTMENT

FAX #: 361-972-8298

TELECOPY TRANSMITTAL

DATE: FEB 27

TO: MINAN TRADANI

FAX NO. _____

FROM: JOHN CRAWLEY Phone: 361/972-7336

RE: I GIVE UP! WHEN I COPIED THE
FILE INTO THE BODY OF THE
E-MAIL, ALL UNDERLINES AND
STRIKEOUTS DISAPPEARED.

TOTAL NUMBER OF PAGES (INCLUDING COVER SHEET) 2

FOR CONFIRMATION, PLEASE CALL 361-972-7751

If one or more indications in the TSP intersections are ~~detected~~
confirmed by NDE to extend beyond the edges of the TSP, the 3-volt
 ARC shall not be used in any steam generator. ~~in STP 2; except in the~~
~~event the indications detected beyond the TSP(s)~~ Exceptions to this
requirement may be allowed for those indications that are determined
 by the NRC staff to be physically insignificant for the purposes of safety
 and risk assessment. ~~approval for the use of the 3-volt ARC may be~~
~~granted by the staff in writing on a one-time basis, following staff~~
~~review and consideration of the factors related to the crack extensions~~
~~that are found.~~

Note 1

Editorial
Reword

Note
2

Notes:

1. Unnecessary words because of the position in the TS as subparagraph (g) under "For Unit 2 Cycle 9 only..." in TS 3/4.4.4.5.4.a.11)
2. These are instructions to the NRC staff on how to handle STP's request for approval (review and consider the factors) and how to provide that approval (in writing on a one-time basis). These instructions do not belong in the Tech Specs.

From: "John T Conly" <jtconly@stpegs.com>
To: <MCT@nrc.gov>
Date: 2/27/01 8:50AM
Subject: Tech Spec Words

Attached is a WORD file that proposes modifications to the NRC's requested addition to TS 4.4.5.4.a.11). Would you please review our proposal and respond with your recommendations.

Thanks for your consideration.

CC: <ejs@nrc.gov>, <elm@nrc.gov>, <jct@nrc.gov>, <Rag@nrc.gov>, <sml@nrc.gov>

Mail Envelope Properties (3A9BB0A6.E13 : 15 : 19987)

Subject: Tech Spec Words
Creation Date: 2/27/01 8:49AM
From: "John T Conly" <jtconly@stpegs.com>

Created By: jtconly@stpegs.com

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Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

Note**2****Editorial****Note 1****Reword** If one or more indications in

the TSP intersections are detected confirmed by NDE to extend beyond the edges of the TSP, the 3-volt ARC shall not be used in any steam generator. s in STP-2; except in the event the indications detected beyond the TSP(s) Exceptions to this requirement may be allowed for those indications that are determined by the NRC staff to be physically insignificant for the purposes of safety and risk assessment. , approval for the use of the 3-volt ARC may be granted by the staff in writing on a one-time basis, following staff review and consideration of the factors related to the crack extensions that are found.

Notes:

1. Unnecessary words because of the position in the TS as subparagraph (g) under "For Unit 2 Cycle 9 only..." in TS 3/4.4.4.5.4.a.11)
2. These are instructions to the NRC staff on how to handle STP's request for approval (review and consider the factors) and how to provide that approval (in writing on a one-time basis). These instructions do not belong in the Tech Specs.

From: "John T Conly" <jtconly@stpegs.com>
To: <Mct@nrc.gov>
Date: 2/27/01 2:25PM
Subject: Commitment letter

Attached

In the referenced letter, STP Nuclear Operating Company (STPNOC) submitted a supplement to the proposed Technical Specification amendment to implement 3-volt alternate repair criteria for certain Unit 2 steam generator tubes for one fuel cycle. This letter submits a commitment to meet certain requirements requested by the NRC as a result of the supplement.

STPNOC makes the following commitment to the NRC:

“This commitment is for Unit 2 Cycle 9 at the steam generator hot leg tube-to-tube support plate intersections with plates C, F, and J only. If one or more indications in the tube support plate intersections are confirmed by non-destructive examination to extend beyond the edge of the tube support plate, STPNOC will inform the NRC and will provide the documentation necessary for the NRC to determine if the indications are physically insignificant for the purposes of safety and risk assessment, and reach joint consensus with STPNOC for the continued application of the 3-volt alternate repair criteria.”

If there are any questions regarding this commitment, please contact me at (361) 972- 8757.

J. J. Sheppard
Vice President
Engineering & Technical Services

Mail Envelope Properties (3A9BFF0D.FA6 : 14 : 24486)

Subject: Commitment letter
Creation Date: 2/27/01 2:24PM
From: "John T Conly" <jtconly@stpegs.com>

Created By: jtconly@stpegs.com

Recipients

nrc.gov
owf4_po.OWFN_DO
MCT (Mohan Thadani)

Post Office

owf4_po.OWFN_DO

Route

nrc.gov

Files

	Size
MESSAGE	11
3-volt Commitment letter.doc	21504
Header	619

Date & Time

02/27/01 02:24PM

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: "John T Conly" <jtconly@stpegs.com>
To: <Mct@nrc.gov>
Date: 2/28/01 9:48AM
Subject: Final 3-volt Letter

Attached is the WORD file for the signed letter that I faxed to you this morning. The header can be removed from the "reconstituted" page and the page used for your response.

Please contact me if there are any problems with the file or if there is something else you need.

February 28, 2001
NOC-AE-01001049
File No.: G21.02.01
10CFR50.90

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

South Texas Project
Unit 2
Docket No. STN 50-499

Change to Supplement to Proposed Technical Specification 3/4.4.5 Amendment (TAC No. MA8271)

Reference: Letter, J.J. Sheppard to NRC Document Control Desk, Supplement to Proposed Amendment to South Texas Project Technical Specification 3/4.4.5 - Modify Acceptance Criteria for Repair of Steam Generator Tubes at Certain Intersections of Tubes and Tube Support Plates (TAC No. MA8271), NOC-AE-01000997, dated January 24, 2001

In accordance with an NRC request, STP Nuclear Operating Company (STPNOC) submits herein a change to the Technical Specification revision proposed in the referenced letter regarding application of 3-volt alternate repair criteria for Unit 2 steam generators. This change adds a requirement in Technical Specification 4.4.5.4.a.11.g for NRC approval if certain indications are found during steam generator inspection. No revision is necessary to the "Determination of No Significant Hazards Consideration" submitted in the referenced letter and the conclusion that the alternate repair criteria present no significant hazards remains valid. Likewise, the determination submitted in the referenced letter that the change satisfies the criteria of 10CFR51.22(c)(9) for categorical exclusion from environmental assessment remains valid.

The Plant Operations Review Committee and the Nuclear Safety Review Board have reviewed and approved the revised change package.

In accordance with 10CFR50.91(b), STPNOC is providing a copy of this letter and its attachments to the State of Texas.

If there are any questions regarding this submittal, please contact Mr. Mark Kanavos, Manager, Steam Generator Replacement Project Engineering & Fabrication, at (361) 972-7181.

J. J. Sheppard
Vice President,
Engineering & Technical Services

STI-31243851

Attachments

STI-31243851

NOC-AE-01001049
Page 2 of 2

cc:

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Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

Jon C. Wood
Matthews & Branscomb
112 East Pecan, Suite 1100
San Antonio, Texas 78205-3692

John A. Nakoski
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U. S. Nuclear Regulatory Commission
Project Manager, Mail Stop OWFN/7-D-1
Washington, DC 20555-0001

Institute of Nuclear Power
Operations - Records Center
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Mohan C. Thadani
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Washington, DC 20555-0001

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of Health
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Austin, TX 78756-3189

Cornelius F. O'Keefe
c/o U. S. Nuclear Regulatory Commission
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Bay City, TX 77404-0910

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Houston Lighting & Power Co.
P. O. Box 1700
Houston, TX 77251

A. H. Gutterman, Esquire
Morgan, Lewis & Bockius
1800 M. Street, N.W.
Washington, DC 20036-5869

C. A. Johnson/R. P. Powers
AEP - Central Power and Light Company
P. O. Box 289, Mail Code: N5012
Wadsworth, TX 77483

M. T. Hardt/W. C. Gunst
City Public Service
P. O. Box 1771
San Antonio, TX 78296

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

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

NOC-AE-01001049

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)		
)		
STP Nuclear Operating Company)	Docket No.	50-499
)		
South Texas Project)		
Unit 2)		

AFFIDAVIT

I, J. J. Sheppard, being duly sworn, hereby depose and state that I am Vice President, Engineering & Technical Services, of STP Nuclear Operating Company; that I am duly authorized to sign and file with the Nuclear Regulatory Commission the attached change to the proposed Technical Specification revision to modify acceptance criteria for certain steam generator tubes; that I am familiar with the content thereof; and that the matters set forth therein are true and correct to the best of my knowledge and belief.

J. J. Sheppard
Vice President,
Engineering & Technical Services

STATE OF TEXAS)
)
COUNTY OF MATAGORDA)

Subscribed and sworn to before me, a Notary Public in and for the State of Texas,
this _____ day of _____, 2001.

Notary Public in and for the
State of Texas

MARKED-UP PAGE

NOC-AE-01001049

REACTOR COOLANT SYSTEM

STEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

- d) If an unscheduled mid-cycle inspection is performed, the mid-cycle repair limits apply instead of the limits identified in 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c. The mid-cycle repair limits will be determined from the equations for mid-cycle repair limits of NRC Generic Letter 95-05, Attachment 2, page 3 of 7. Implementation of these mid-cycle repair limits should follow the same approach as in TS 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c.

Note 1: The lower voltage repair limit is 1.0 volt for 3/4-inch diameter tubing.

**Info added
from WCAP**

Table 2-2 Note 2: The upper voltage repair limit (V_{URL}) is calculated for each inspection according to the methodology in Generic Letter 95-05 as supplemented. V_{URL} may differ at the TSPs and flow distribution baffle. Voltage growth rate shall be the larger of the average growth rates experienced in the two prior cycles, but not less than 30% per effective full power year.

NRC comment

Bounding calculation For Unit 2 Cycle 9 only, at the hot leg support plate intersections with support plates C, F, and J, ~~L, and M~~ (as identified in Figure 5.1 of WCAP-15163, Revision 1), the plugging (repair) limit is based on maintaining steam generator tube serviceability as described in e), f), and g) below:

NRC Editorial

- e) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage less than or equal to 3.0 volts may remain in service.

NRC Editorial

MARKED-UP PAGE

NOC-AE-01001049

- f) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than 3.0 volts shall be plugged or repaired regardless of whether or not a rotating pancake coil inspection detects degradation.

NRC

- g) **Request** if one or more indications in the tube support plate intersections are confirmed by non-destructive examination to extend beyond the edge of the tube support plate, the 3-volt alternate repair criteria shall not be used in any steam generator. Exceptions to this requirement may be allowed for those indications that are determined by the NRC staff to be physically insignificant for the purposes of safety and risk assessment. Approval for the use of the 3-volt alternate repair criteria may be granted by the staff in writing on a one-time basis, following the staff review and consideration of the factors related to the crack extensions that are found.
- 12) Tube Repair refers to a process that reestablishes tube serviceability for Model E steam generators only. Acceptable tube repair will be performed in accordance with the methods described in Westinghouse Reports WCAP-13698, Revision 2, "Laser Welded Sleeves for 3/4 Inch Diameter Tube Feeding-Type and Westinghouse Preheater Steam Generators," April 1995 and WCAP-14653, "Specific Application of Laser Welded Sleeves for South Texas Project Power Plant Steam Generators," June 1996, including post-weld stress relief;

Tube repair includes the removal of plugs that were previously installed as a corrective or preventive measure. A tube inspection per 4.4.5.4.a.9 is required prior to returning previously plugged tubes to service.

SOUTH TEXAS – UNITS 1 & 2

3/4 4-16a

Unit 1 – Amendment No. ~~83, 90, 96~~, 107Unit 2 – Amendment No. ~~77, 83~~, 94

RECONSTITUTED PAGE

NOC-AE-01001049

REACTOR COOLANT SYSTEMSTEAM GENERATORSSURVEILLANCE REQUIREMENTS (Continued)

- d) If an unscheduled mid-cycle inspection is performed, the mid-cycle repair limits apply instead of the limits identified in 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c. The mid-cycle repair limits will be determined from the equations for mid-cycle repair limits of NRC Generic Letter 95-05, Attachment 2, page 3 of 7. Implementation of these mid-cycle repair limits should follow the same approach as in TS 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c.

Note 1: The lower voltage repair limit is 1.0 volt for 3/4-inch diameter tubing.

Note 2: The upper voltage repair limit (V_{URL}) is calculated for each inspection according to the methodology in Generic Letter 95-05 as supplemented. V_{URL} may differ at the TSPs and flow distribution baffle. Voltage growth rate shall be the larger of the average growth rates experienced in the two prior cycles, but not less than 30% per effective full power year.

For Unit 2 Cycle 9 only, at the hot leg support plate intersections with support plates C, F, and J (as identified in Figure 5.1 of WCAP-15163, Revision 1), the plugging (repair) limit is based on maintaining steam generator tube serviceability as described in e), f), and g) below:

- e) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage less than or equal to 3.0 volts may remain in service.
- f) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than 3.0 volts shall be plugged or repaired regardless of whether or not a rotating pancake coil inspection detects degradation.
- g) If one or more indications in the tube support plate intersections are confirmed by non-destructive examination to extend beyond the edge of the tube support plate, the 3-

RECONSTITUTED PAGE

NOC-AE-01001049

volt alternate repair criteria shall not be used in any steam generator. Exceptions to this requirement may be allowed for those indications that are determined by the NRC staff to be physically insignificant for the purposes of safety and risk assessment. Approval for the use of the 3-volt alternate repair criteria may be granted by the staff in writing on a one-time basis, following the staff review and consideration of the factors related to the crack extensions that are found.

- 12) Tube Repair refers to a process that reestablishes tube serviceability for Model E steam generators only. Acceptable tube repair will be performed in accordance with the methods described in Westinghouse Reports WCAP-13698, Revision 2, "Laser Welded Sleeves for 3/4 Inch Diameter Tube Feeding-Type and Westinghouse Preheater Steam Generators," April 1995 and WCAP-14653, "Specific Application of Laser Welded Sleeves for South Texas Project Power Plant Steam Generators," June 1996, including post-weld stress relief;

Tube repair includes the removal of plugs that were previously installed as a corrective or preventive measure. A tube inspection per 4.4.5.4.a.9 is required prior to returning previously plugged tubes to service.

SOUTH TEXAS – UNITS 1 & 2

3/4 4-16a

Unit 1 - Amendment No. ~~83,90,96,107~~Unit 2 - Amendment No. ~~77,83,94~~

Mail Envelope Properties (3A9D0FC0.C3C : 7 : 31804)

Subject: Final 3-volt Letter
Creation Date: 2/28/01 9:47AM
From: "John T Conly" <jtconly@stpegs.com>

Created By: jtconly@stpegs.com

Recipients

nrc.gov
owf4_po.OWFN_DO
MCT (Mohan Thadani)

Post Office

owf4_po.OWFN_DO

Route

nrc.gov

Files	Size	Date & Time
MESSAGE	279	02/28/01 09:47AM
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Header	621	

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard



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

NUCLEAR QUALITY & LICENSING DEPARTMENT

FAX #: 361-972-8298

TELECOPY TRANSMITTAL

DATE: FEB 28

TO: MOHAN THADANI

FAX NO. _____

FROM: JOHN CONLY Phone: 361/972-7336

RE: ORIGINAL LETTER COMING VIA NORMAL
CHANNELS AND I WILL E-MAIL YOU THE
LETTER & ATTACHMENTS SHORTLY -
WCAP-15164 WILL ARRIVE TOMORROW
MORNING. REGARDS

TOTAL NUMBER OF PAGES (INCLUDING COVER SHEET) 6

FOR CONFIRMATION, PLEASE CALL 361-972-7751



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

February 28, 2001
NOC-AE-01001049
File No.: G21.02.01
10CFR50.90

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

South Texas Project
Unit 2
Docket No. STN 50-499

Change to Supplement to Proposed Technical Specification 3/4.4.5 Amendment (TAC No. MA8271)

Reference: Letter, J.J. Sheppard to NRC Document Control Desk, Supplement to Proposed Amendment to South Texas Project Technical Specification 3/4.4.5 - Modify Acceptance Criteria for Repair of Steam Generator Tubes at Certain Intersections of Tubes and Tube Support Plates (TAC No. MA8271), NOC-AE-01000997, dated January 24, 2001

In accordance with an NRC request, STP Nuclear Operating Company (STPNOC) submits herein a change to the Technical Specification revision proposed in the referenced letter regarding application of 3-volt alternate repair criteria for Unit 2 steam generators. This change adds a requirement in Technical Specification 4.4.5.4.a.11.g) for NRC approval if certain indications are found during steam generator inspection. No revision is necessary to the "Determination of No Significant Hazards Consideration" submitted in the referenced letter and the conclusion that the alternate repair criteria present no significant hazards remains valid. Likewise, the determination submitted in the referenced letter that the change satisfies the criteria of 10CFR51.22(c)(9) for categorical exclusion from environmental assessment remains valid.

The Plant Operations Review Committee and the Nuclear Safety Review Board have reviewed and approved the revised change package.

In accordance with 10CFR50.91(b), STPNOC is providing a copy of this letter and its attachments to the State of Texas.

If there are any questions regarding this submittal, please contact Mr. Mark Kanavos, Manager, Steam Generator Replacement Project Engineering & Fabrication, at (361) 972-7181.

A handwritten signature in black ink, appearing to read "J. J. Sheppard".

J. J. Sheppard
Vice President,
Engineering & Technical Services

Attachments

STI-31243851

cc:

Ellis W. Merschoff
Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

John A. Nakoski
Addressee Only
U. S. Nuclear Regulatory Commission
Project Manager, Mail Stop OWFN/7-D-1
Washington, DC 20555-0001

Mohan C. Thadani
Addressee Only
U. S. Nuclear Regulatory Commission
Project Manager, Mail Stop OWFN/7-D-1
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Cornelius F. O'Keefe
c/o U. S. Nuclear Regulatory Commission
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Bay City, TX 77404-0910

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1800 M. Street, N.W.
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721 Barton Springs Road
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Institute of Nuclear Power
Operations - Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

D. G. Tees/R. L. Balcom
Houston Lighting & Power Co.
P. O. Box 1700
Houston, TX 77251

C. A. Johnson/R. P. Powers
AEP - Central Power and Light Company
P. O. Box 289, Mail Code: N5012
Wadsworth, TX 77483

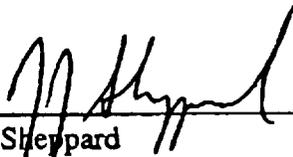
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)		
)		
STP Nuclear Operating Company)	Docket No.	50-499
)		
South Texas Project)		
Unit 2)		

AFFIDAVIT

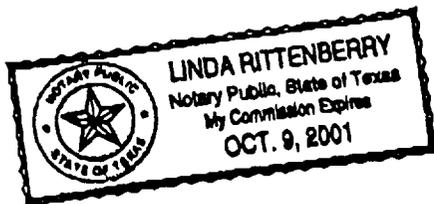
I, J. J. Sheppard, being duly sworn, hereby depose and state that I am Vice President, Engineering & Technical Services, of STP Nuclear Operating Company; that I am duly authorized to sign and file with the Nuclear Regulatory Commission the attached change to the proposed Technical Specification revision to modify acceptance criteria for certain steam generator tubes; that I am familiar with the content thereof; and that the matters set forth therein are true and correct to the best of my knowledge and belief.

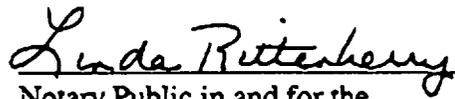


 J. J. Sheppard
 Vice President,
 Engineering & Technical Services

STATE OF TEXAS)
)
 COUNTY OF MATAGORDA)

Subscribed and sworn to before me, a Notary Public in and for the State of Texas, this 28th day of February, 2001.





 Notary Public in and for the
 State of Texas

REACTOR COOLANT SYSTEM

STEAM GENERATORS

SURVEILLANCE REQUIREMENTS (Continued)

- d) If an unscheduled mid-cycle inspection is performed, the mid-cycle repair limits apply instead of the limits identified in 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c. The mid-cycle repair limits will be determined from the equations for mid-cycle repair limits of NRC Generic Letter 95-05, Attachment 2, page 3 of 7. Implementation of these mid-cycle repair limits should follow the same approach as in TS 4.4.5.4.a.11.a, 4.4.5.4.a.11.b, and 4.4.5.4.a.11.c.

Note 1: The lower voltage repair limit is 1.0 volt for 3/4-inch diameter tubing.

Note 2: The upper voltage repair limit (V_{URL}) is calculated for each inspection according to the methodology in Generic Letter 95-05 as supplemented. V_{URL} may differ at the TSPs and flow distribution baffle. Voltage growth rate shall be the larger of the average growth rates experienced in the two prior cycles, but not less than 30% per effective full power year.

Info added from WCAP Table 2-2

NRC comment

Bounding calculation

NRC Editorial

NRC Editorial

NRC Request

For Unit 2 Cycle 9 only, at the hot leg support plate intersections with support plates C, F, and J, L, and M (as identified in Figure 5.1 of WCAP-15163, Revision 1), the plugging (repair) limit is based on maintaining steam generator tube serviceability as described in e), f), and g) below:

e) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage less than or equal to 3.0 volts may remain in service.

f) Steam generator tubes, whose degradation is attributed to axially oriented outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than 3.0 volts shall be plugged or repaired regardless of whether or not a rotating pancake coil inspection detects degradation.

g) If one or more indications in the tube support plate intersections are confirmed by non-destructive examination to extend beyond the edge of the tube support plate, the 3-volt alternate repair criteria shall not be used in any steam generator. Exceptions to this requirement may be allowed for those indications that are determined by the NRC staff to be physically insignificant for the purposes of safety and risk assessment. Approval for the use of the 3-volt alternate repair criteria may be granted by the staff in writing on a one-time basis, following the staff review and consideration of the factors related to the crack extensions that are found.

- 12) Tube Repair refers to a process that reestablishes tube serviceability for Model E steam generators only. Acceptable tube repair will be performed in accordance with the methods described in Westinghouse Reports WCAP-13698, Revision 2, "Laser Welded Sleeves for 3/4 Inch Diameter Tube Feeding-Type and Westinghouse Preheater Steam Generators," April 1995 and WCAP-14653, "Specific Application of Laser Welded Sleeves for South Texas Project Power Plant Steam Generators," June 1996, including post-weld stress relief;

Tube repair includes the removal of plugs that were previously installed as a corrective or preventive measure. A tube inspection per 4.4.5.4.a.9 is required prior to returning previously plugged tubes to service.

March 22, 2001

MEMORANDUM TO: Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management

FROM: Mohan C. Thadani, Senior Project Manager, Section 1 /RA/
Project Directorate IV & Decommissioning
Division of Licensing Project Management

SUBJECT: US NUCLEAR REGULATORY COMMISSION AND SOUTH TEXAS
PROJECT NUCLEAR OPERATING COMPANY (STPNOC)
CORRESPONDENCE VIA FACSIMILE AND EMAIL (TAC NO. MA8271)

The purpose of this memorandum is to put the attached correspondence between the NRC and STPNOC on the public docket. The correspondence was regarding the issuance of Amendment No. 114 to the South Texas Project Unit 2 license, which permitted the use of 3-volt alternate repair criteria for steam generator tubes repair. The correspondence is listed below.

<u>Attachment No.</u>	<u>Date</u>	<u>Description</u>
1	02/08/01	EMail from NRC's John Tsao to STPNOC's John Conly
2	02/08/01	EMail from STPNOC's John Conly to NRC's John Tsao
3	02/10/01	EMail from NRC's John Tsao to STPNOC's John Conly
4	02/12/01	EMail from STPNOC's John Conly to NRC's John Tsao
5	02/12/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
6	02/13/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
7	02/22/01	EMail from NRC's Mohan Thadani to STPNOC's John Conly
8	02/23/01	Facsimile from STPNOC's John Conly to NRC's Robert Gramm
9	02/26/01	EMail from NRC's Mohan Thadani to STPNOC's John Conly
10	02/26/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
11	02/27/01	Facsimile from STPNOC's John Conly to NRC's Mohan Thadani
12	02/27/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
13	02/27/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
14	02/28/01	EMail from STPNOC's John Conly to NRC's Mohan Thadani
15	02/28/01	Facsimile from STPNOC's John Conly to NRC's Mohan Thadani

Attachments: As listed (15)

cc w/o atts: See next page

DISTRIBUTION:

PUBLIC RidsNrrDlpmLpdiv (RGramm)
PDIV-1 RF RidsNrrPMMThadani
RidsNrrLAMMcAllister JTsao

ADAMS ACCESSION NUMBER:

OFFICE	PMTHAD-1	LA:PMIV-1	SC:PDIV-1
NAME	MThadani:db	MMcAllister <i>mkm</i>	RGramm
DATE	3/21/2001	3/20/2001	/ /2001

G:\PDIV-1\SouthTexas\memma8271.wpd

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