

"TEMPORARY CHANGE"

OF LIBRARY

Three Mile Island Nuclear Station Temporary Change Notice (TCN)

NOTE: Instructions and guidelines in AP1001A must be followed when completing this form.

12. TCN No. 1-82-0021 (From TCN Log Index)

13. Implementation Date 3/1/83

SS/SF Signature

[Handwritten Signature]

1. Procedure 1300-4B 1 Eddy Current Exam of OTSG
No Present Rev No Title

2. Change (include page numbers, paragraph numbers, and exact wording of change. (Attach additional sheets if necessary and provide the generic nature of the change on this sheet.)

See attached. (Previous TCN # 1-82-0119)

3. Reason for Change: *Add procedure No. 42-EC-056 and 42-EC-057. These procedures add additional capability to resolve tube problems.*

4. Duration of TCN - No longer than ninety days from implementation date of TCN or as in (a) or (b) below, whichever occurs first.

(a) TCN will be cancelled by a procedure revision issued as a result of a Procedure Change Request to be submitted by JR BASHISTA (Submit PCR as soon as possible) Individual Submitting TCN

(b) TCN is not valid after -NA- (Fill in circumstances which will result in TCN being cancelled)

5. Is procedure "Important to Safety"? yes no
If "Yes" a safety evaluation is required (side 2).

6. Is procedure "Environmental Impact Related"? yes no
If "Yes" an environmental impact evaluation is required (side 2).

7. Does the change effect the intent of the original procedure? yes no
NOTE: If answers to #5, 6 and 7 are "no" the change may be approved by the Shift Supervisor.

NOTE: If answer to #7 is "yes" the change must be reviewed and approved in accordance with Table 2 prior to implementation.

NOTE: If answer to #7 is "no" and answers to #5 or 6 are "yes" change may be either (a) two member reviewed or (b) reviewed and approved in accordance with table 2.

Review Signatures:

8. Change Recommended By: JR Bashista Date 2/28/83

9. *Procedure Owner Concurrence: JR Bashista Date 3/1/83
* Responsible Technical Reviewer, Responsible Office Department Head, or his Designate may concur if Procedure Owner is unavailable
* May be by Telecon

10. Tech. Functions Rep. Notified (If reqd.) Not Required Date _____

11. Approval(s):
(a) Two Members of the GPUN Mng. Staff Route
1. _____ Date _____
Signature Date
2. _____ Date _____
Signature Date
Within fourteen (14) days: (Approval per AP 1001A must occur)

Signature Date

Signature Date

(b) Normal Route (Per AP1001A):
MacAuliffe 3/1/83
Signature Date
R. J. Tule 3-2-83
Signature Date

(c) SS Approval Only: (This approval only used if answers to questions #5, 6 and 7 are all "No")
NA
SS Signature Date

14. TCN is Cancelled _____

"EVALUATION"

Sid

Three Mile Island Nuclear Station
Safety/Environmental Impact Evaluation

TCN No 1-83-005

1. Procedure 1300-4B Eddy Current of DT56
No. Title

2. Safety Evaluation

Does the attached procedure change:

- * (a) increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety? yes no
- * (b) create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report? yes no
- * (c) reduce the margin of safety as defined in the basis for any technical specification? yes no

Details of Evaluation (Explain why answers to above questions are "no". Attach additional pages if required.)

These NDE procedures have been reviewed against applicable T-S requirements, operating procedure requirements and code requirements and have been found acceptable. Therefore, safety is not reduced.

Evaluation By JR Barchetta Date 2/28/83

*If any of these questions are answered "YES" the change must be reviewed and approved by the NRC prior to implementation.

3. Environmental Impact Evaluation

Does the attached procedure change:

- (a) possibly involve a significant environmental impact? yes no
- (If 3(a) is "yes", answer questions (b) and (c) and fill in "Details of Evaluation" below. If no, state why by filling in the "Details of Evaluation" below)
- * (b) have a significant adverse effect on the environment? yes no
- * (c) involve a significant environmental matter or question not previously reviewed and evaluated by the N.R.C. yes no

Details of Evaluation (Attach additional pages if required)

NA

Evaluation By _____ Date _____

*If any of these questions are answered "YES" the change must be reviewed and approved by the NRC prior to implementation.

<p>4. (1) Normal Approval(s) (Per AP 1001A)</p> <p><u>Metcalf</u> 3/1/83 Signature Date</p> <p><u>R. Cook</u> 3-4-83 Signature Date</p>	<p>4. (2) If "Two (2) members of the GPM management staff route:</p> <p><u>R. Cook</u> 3-2-83 Signature Date</p>	<p>Within fourteen (14) Approval per AP 1001A</p> <p>_____ Signature</p> <p>_____ Signature</p>
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- 6.1.7 Procedure No. 42-EE-016, Procedure for Multifrequency Eddy Current Examination of OTSG Tubing. (This procedure is applicable for use with the Zetac MIZ 12 multifrequency Eddy Current instrument.)
- 6.1.8 Procedure No. 42-EE-048 Multifrequency Eddy Current Procedure Babcock and Wilcox Once-Thru Steam Generator Tubing Examination with Remote Amplifiers. (This procedure is applicable for use with Zetac MIZ 12 Multifrequency Eddy Current Instrument in combination with remote amplifiers).
- 6.1.9 Procedure No. 42-EE-052, Special 4-Single Coil Absolute Probe and Modified MIZ 12 Eddy Current Instrument.

Insert
Attached
step
6.1.10 +
6.1.11

7.0 ACCEPTANCE CRITERIA

- 7.1 Each inservice inspection of OTSG tubing shall be acceptable if:
- 7.1.1 The steam generator tubing minimum sample size has been inspected pursuant to Tech Spec. 4.19 and the inspection results are categorized as C-1.
- 7.1.2 Or, the steam generator tubing minimum sample size has been inspected pursuant to Tech. Spec. 4.19 and the inspection results are not categorized as C-1 but the additional actions required by Tech Spec. 4.19.4.2 have been completed.
- 7.2 The reporting requirements of Tech. Spec. 4.19.5 shall be observed.

6.1.10 Procedure No. 42-EC-056, Multifrequency
Eddy Current Procedure Babcock & Wilcox
Once-Thru Steam Generator Tubing
Examination with Increased Gain.

6.1.11 Procedure No. 42-EC-057, Special
8 Single Coil Absolute (8X1)
Probe & Modified MIZ 12
Eddy Current Instrument. =

ISSUED 6-29-82

MULTIFREQUENCY EDDY CURRENT PROCEDURE
 BABCOCK & WILCOX ONCE-THRU STEAM
 GENERATOR TUBING EXAMINATION
 WITH INCREASED GAIN

42-EC-056

REVISION NO.

PREPARED BY & DATE

QA REVIEWED BY & DATE

APPROVAL

COMMENTS

0

John Funnic
 SNT-TC-1A Level III
 6-29-82

R Marlow
 6/29/82

R Marlow
 ASNT TC 1A
 LEVEL III
 6/29/82

1

John Funnic
 SNT-TC-1A Level III
 7-13-82

R Marlow
 7/13-82

R Marlow
 ASNT TC 1A
 LEVEL III
 7-13-82

2

John Funnic
 SNT-TC-1A Level III
 7-23-82

R Marlow
 7/23-82

R Marlow
 ASNT TC 1A
 LEVEL III
 7-23-82

MULTIFREQUENCY EDDY CURRENT PROCEDURE
BABCOCK & WILCOX ONCE-THRU STEAM
GENERATOR TUBING EXAMINATION
WITH INCREASED GAIN

PROC. NO. 42-EC-056

REV. NO. 2

ISSUED 6-29-82

REVISED 7-23-82

1.0 SCOPE

- 1.1 This procedure is provided to assure compliance with the Regulatory Commission Regulatory Guide 1.83, dated June 1975, for the eddy current examination of Babcock & Wilcox Generator Tubing.

2.0 EQUIPMENT

2.1 Eddy Current Instruments: ZETEC MIZ 12

2.2 Display: ZETEC MIZ 12

2.3 Tape Recorders: ZETEC HP 3968 AZ

2.4 Strip Chart Recorders: Brush MK 220 or equivalent

2.5 Probes: 2 Coil Differential

2.6 Variable Speed D.C. Probe Pusher

2.7 Calibration Standard

2.7.1 The calibration standard will be machined from the same alloy and tube size as the material under test.

2.7.1.1 For defect calibration there will be flat bottomed holes drilled in the calibration standard. One hole .052" diameter drilled thru wall, one hole 5/64" diameter drilled 80% thru wall, one hole 7/64" diameter drilled 60% thru wall, one hole 3/16" diameter drilled 40% thru wall and a series of 4 holes 3/16" diameter drilled 90° apart around the circumference of the tube 20% thru wall.

3.0 PERSONNEL

3.1 Personnel performing examination and analyzing data shall be qualified to Conam procedure 99-CNTP-001. This procedure conforms to ASNT-TC-1A.

4.0 SURFACE PREPARATION

4.1 Inside diameter of tubes must be clean with no obstructions.

5.0 EQUIPMENT PREPARATION

5.1 All probes and other equipment shall be cleaned with approved cleaner free of halogens, etc.

ISSUED 5-29-82
REVISED 7-23-82

MECHANICAL FREQUENCY EDDY CURRENT PROCEDURE
BABCOCK & WILCOX ONCE-THRU STEAM
GENERATOR TUBING EXAMINATION
WITH INCREASED GAIN

PROC. NO. 42-EC-056
REV. NO. 2

6.0 EQUIPMENT SET-UP AND CALIBRATION

6.1 Set-Up

- 6.1.1 Using multipin connector interconnect MIZ 12 tape recorder output to tape recorder input.
- 6.1.2 Using multipin connector interconnect tape recorder output to MIZ 12 display input.
- 6.1.3 Using BNC coax cables interconnect the following:
 - 6.1.3.1 MIZ 12 upper mix vertical output to Number 1 channel of strip chart recorders.
 - 6.1.3.2 Tape recorder channel 1 vertical output to Number 2 channel of strip chart recorder.
 - 6.1.3.3 MIZ 12 lower mix vertical output to Number 3 channel of strip chart recorders.
 - 6.1.3.4 MIZ 12 lower mix horizontal output to Number 4 channel of the strip chart recorders.
- 6.1.4 Connect multipin connector and phone connector from start box to tape recorder.
- 6.1.5 Connect the strip chart cables from start box to both strip chart recorders.
- 6.1.6 Connect probe to probe connection on remote amplifier box using ~~110 foot probe extension cable.~~
two (2) 10-foot probe extension cables.
- 6.1.7 Connect remote amplifier boxes together with required length extension cable.
- 6.1.8 Using 3 to 1 cable, connect the differential, absolute and remote plugs to back of MIZ 12. Place switch on back of MIZ 12 in remote position.
- 6.1.9 Plug in all instruments in 110 volt outlet.

1 | 2

3 |

6.2 Channel Calibrations

- 6.2.1 Turn on all instruments and allow 15 minute warm-up.

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MULTIFREQUENCY EDDY CURRENT PROCEDURE
 BABCOCK & WILCOX ONCE-THRU STEAM
 GENERATOR TUBING EXAMINATION
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PROC. NO. 42-EC-056

REV. NO. 2

- 6.2.2 Check horizontal trace alignment on MIZ 12 display. If necessary, adjust the horizontal trace with trace adjustment on back of MIZ 12 display.
- 6.2.3 Set the following frequencies and gain on the 4 channels of the MIZ 12.

<u>CHANNEL</u>	<u>FREQUENCIES</u>	<u>MODE</u>	<u>INITIAL GAIN</u>
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1	400 kHz	Differential	
2	200 kHz	Differential	
3	45 kHz	Differential	
4	800 kHz	Differential	

* SEE INJECT NEXT PAGE
 See 6.2.6.3
 60 LF Probes
 45 HF Probes

* SEE INJECT NEXT PAGE

~~Check the amplitude of the .052" through wall hole. The peak to peak voltage should be 14 volts minimum. Increase the gain if necessary and record on the magnetic tape and strip chart recordings the new gain setting.~~

- 6.2.4 Set all 4 channels of strip chart recorders at 100 MV/DIV.
- 6.2.5 Channel 1 Calibration Procedure.
 - 6.2.5.1 Insert probe in defect free area of standard and press auto balance.
 - 6.2.5.2 Press in channel 1 button, turn up intensity, press in store buttons on MIZ 12 display and set V/DIV on 1. All other buttons must be out.
 - 6.2.5.3 Check phase of 100% thru wall hole signal on MIZ 12 display as probe is pulled thru standard. If 100% hole does not go down and to the right when probe is pulled thru standard and probe motion is not horizontal, phase can be rotated by phase controls. Estimate the phase angle error and make that direct change using phase controls. Re-check phase to make sure defect signals go down first and probe motion is horizontal. Continue this procedure until phase is correct.
- 6.2.6 Channel 2 Calibration Procedure.
 - 6.2.6.1 Insert probe in defect free area of standard (auto balance does not need to be pressed as probe is balanced in all frequencies. However, if any gain is changed probe must be re-balanced).
 - 6.2.6.2 Re-press channel 1 button so it is out and press in channel 2 button on MIZ 12 display.

*Insert : Adjust the amplitude of the
0.052" diameter through wall hole to
15 volts peak to peak.

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REVISED 7-23-82

MULTIFREQUENCY EDDY CURRENT PROCEDURE
 BABCOCK & WILCOX ONCE-THRU STEAM
 GENERATOR TUBING EXAMINATION
 WITH INCREASED

DOC. NO. 42-EC-056

REV. NO. 2

6.2.6.3 Adjust gain of channel 2 so the simulated support signal, or actual steam generator tube in support area is approximately equal in amplitude to the same support signal in channel 1.

6.2.6.4 Follow same procedure used in paragraph 6.2.5.3.

6.2.8 ~~6.2.7~~ Channel ⁴~~3~~ Calibration Procedure.

6.2.8.1 ~~6.2.7.1~~ Insert probe in defect free area of standard.

6.2.8.2 ~~6.2.7.2~~ Repress channel ³~~2~~ button so it is out and press in channel ~~2~~⁴ button on MIZ 12 display.

6.2.8.3 ~~6.2.7.3~~ Adjust the phase of the .052" diameter 100% thru wall hole so it is vertical (90°) and moves down first.

6.2.7 ~~6.2.6~~ Channel ³~~2~~ Calibration Procedure

6.2.7.1

~~Insert probe in defect free area of standard~~
Set phase to the same setting as channel #1.

6.2.7.2

~~Repress channel 2 button so it is out and press in channel 3 button on MIZ 12 display~~

6.2.7.3

~~Follow same procedure as used in paragraph 6.2.5.3.~~

6.2.9 Re-check Calibration

6.2.9.1 Press in all 4 channel buttons on display. Set display on 2V/DIV and with probe in defect free area of standard, repress auto. balance. Position all 4 channel dots on screen and as probe is pulled thru standard check for proper display on each channel as described in calibration procedures.

6.3 Upper mix calibration, set internal switches on upper mix at S1 9 & 10, S2 7 & 8.

6.3.1 Set vertical and horizontal gain at 5.0.

6.3.2 Release all buttons on display except 1 V/DIV and press in vertical set.

6.3.3 Pass probe back and forth in defect free area of calibration standard with simulated support signal, or use actual steam generator tube in support area.

6.3.4 Set upper mix vertical phase until signal is a straight line at approximately 135°. (See Figure 1).

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MULTIFREQUENCY EDDY CURRENT PROCEDURE
 BABCOCK & WILCOX ONCE-THRU STEAM
 GENERATOR TUBING EXAMINATION
 WITH INCREASED GAIN

PROC. NO. 42-EC-056

REV. NO. 2

- 6.3.5 Release upper mix vertical set and press in upper mix horizontal set.
- 6.3.6 As probe is passing back and forward under support, set upper horizontal mix phase until signal is a straight line at approximately 135°. (See Figure 1).
- 6.3.7 Release upper mix horizontal set, press in upper mix output and set both vertical and horizontal gain on upper mix to zero.
- 6.3.8 As probe is passing back and forward under support adjust upper mix horizontal gain until signal size is minimized. Repeat procedure with upper mix vertical gain. Repeat this procedure until support signal is as small as possible.
- 6.3.9 Adjust phase of simulated or tube I.D. chatter so it is horizontal (0°) and the 100% hole goes down first.
- 6.4 Lower mix calibration, set internal switches on lower mix at S1 1 & 2, S2 ~~3+4~~
3+4
- 6.4.1 Set vertical and horizontal phase to 000.
- 6.4.2 Set V gain and H gain to 0.00.
- 6.4.3 Set out phase to 000.
- 6.4.4 Adjust the horizontal gain to minimize the simulated or tube I.D. chatter.
- 6.4.5 Pull the probe past the 100% thru wall hole and note phase angle of signal. Adjust the out-phase so the 100% thru wall hole goes down first and is laying at approximately 40°.
- 6.5 Recording of Calibration
- 6.5.1 The following information will be recorded on the magnetic tape and strip chart at each initial probe calibration.
- 6.5.1.1 Eddy current instrument model, serial number of each frequency and mixing module, and phase of all frequencies.
- 6.5.1.2 Tape recorder model and serial number.
- 6.5.1.3 Display model and serial number.
- 6.5.1.4 Strip chart recorders model numbers, serial numbers, and vertical and horizontal sensitivities.

ISSUED 6-29-82

REVISED 7-23-82

MULTIFREQUENCY EDDY CURRENT PROCEDURE
BABCOCK & WILCOX ONCE-THRU STEAM
GENERATOR TUBING EXAMINATION
WITH INCREASED GAIN

PROC. NO. 42-EC-056

REV. NO. 2

- 6.5.1.5 Operators name and certification level.
- 6.5.1.6 Date of examination.
- 6.5.1.7 Calibration standard identification.
- 6.5.2 Operation of tape recorder and strip chart recorders is all controlled by start box.
 - 6.5.2.1 Pressing mike button down sets tape recorder on proper speed (3-3/4" second), sets record and turns on recorder. Release of button starts strip chart recorders. Hold mike button down to record voice.
- 6.6 Frequency of Calibration Checks and Re-calibrations.
 - 6.6.1 Initial calibration will be made on each probe prior to use. Additional calibration checks will be made at the beginning and end of each magnetic tape or every 4 hours, whichever comes first.
 - 6.6.2 Additional calibrations will be performed when changing: test probe, extension cables, eddy current instrument, recording instrument, or any other parts of the examination system.
 - 6.6.3 If undesirable variations are noted during the calibration check, the probe will be re-calibrated and all tubes examined since the last calibration will be re-examined.

7.0 EXAMINATION PROCEDURE

- 7.1 After probe is calibrated it will be attached to probe pusher and inserted into tube to be tested.
- 7.2 At the beginning of each magnetic tape and strip chart, the following information will be recorded:
 - 7.2.1 Name of owner.
 - 7.2.2 Plant site.
 - 7.2.3 Heat exchanger identification.
 - 7.2.4 Date of examination.
 - 7.2.5 Test frequencies (Hz).



ISSUED 5-29-82

REVISED 7-23-82

MULTIFREQUENCY EDDY CURRENT PROCEDURE
BABCOCK & WILCOX ONCE-THRU STEAM
GENERATOR TUBING EXAMINATION
WITH INCREASED GAIN

PROJ. NO. 42-20-056

REV. NO. 2

- 7.2.6 Reel number.
- 7.2.7 Calibration standard identification.
- 7.2.8 Operator's name, certification level and company affiliation.
- 7.2.9 Probe size and model number.

7.3 Before the scan is made on each tube, the tube number will be recorded on the magnetic tape and strip chart.

7.4 During the scan, the operator will monitor channels 1, 2, 3, 4 and the upper mix on the MIZ 12 display to determine that the equipment is operating properly and calibration has not changed. In addition, the operator will monitor the strip chart recorders for proper signals.

The tape recorder will pass thru signals to the strip chart recorders without the tape being recorded. Therefore, the signals on the 2 strip chart recorders are set up so one signal on each strip chart recorder is coming directly from the MIZ 12 and the other signal is coming directly from the tape recorder. If the tape recorder is recording, the 2 signals on each strip chart will be slightly displaced from each other. This must be checked continuously as this is the only assurance you have that the tape recorder is recording.

7.5 The operator will initial each tube examined on the data sheet after the tube is scanned.

7.6 The probe speed during the scan will not exceed 70 feet per minute.

7.7 The number of tubes inspected, the length inspected and the frequency of inspection will be determined by the NRC Regulatory Guide 1.83 and specific customer requirements.

7.8 Examination of tubes at additional frequencies may be performed to evaluate possible discontinuity indications.

8.0 DATA INTERPRETATION

8.1 Data interpretation will be made using information from the initial calibration of the 400 kHz data. The data interpreter may use the additional information from the multifrequency signal mixing as an aid in interpreting the 400 kHz data.

8.2 All tubes with defect signals which indicate defects 20% thru wall or greater will be reported on data sheets, with the exception of defects above US + 20. These defects will be disregarded as they will be above new roll area. Tubes which indicate defects which are considered unacceptable will be listed as unacceptable in the data sheets.

ISSUED 6-29-82
REVISED 7-23-82

MULTIFREQUENCY EDDY CURRENT PROCEDURE
BABCOCK & WILCOX ONCE-THRU STEAM
GENERATOR TUBING EXAMINATION
WITH INCREASED GAIN

PROC. NO. 42-EC-056
REV. NO. 2

8.3 Special evaluation method or methods will be used to evaluate tubes in tube sheet area to insure all defects US + 20 and below will be listed on data sheets.

9.0 RECORD OF TEST RESULTS

9.1 Permanent records will include magnetic tape, strip chart and tabulated results. These records will be kept at the facility for the life of the facility.

9.1.1 Tabulated results will include the following:

9.1.1.1 Contract reference or purchase order number.

9.1.1.2 Personnel operating equipment.

9.1.1.3 Personnel certification records.

9.1.1.4 Instrument used.

9.1.1.5 Calibration record.

9.1.1.6 Instrument setting.

9.1.1.7 Interpretation results and interpreter.

9.1.1.8 Specification and procedure used.

9.1.1.9 Date of examination.

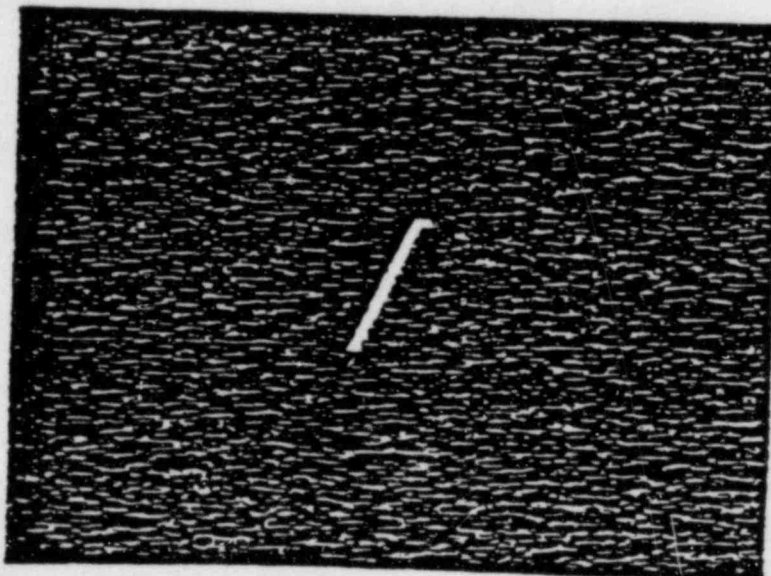


Figure 1

1.0 SCOPE

1.1 This procedure is provided to establish techniques & methods used to examine the Steam Generator tubing using a special 8 coil absolute probe with a modified MLZ 12 Eddy Current Tester.

2.0 EQUIPMENT

2.1 Eddy Current Instruments: Two (2) zetec modified MLZ 12s.

2.2 Tape Recorders: Two (2) HP 3968 AZ.

2.3 Strip Chart Recorders: As Required.

2.4 Probes: Special 8 Coil Absolute.

2.5 Displays: Two (2) MLZ 12.

2.6 Calibration Standard

2.6.1 The calibration standard will be machined for the same alloy and tube size as the material under test.

2.6.1.1 For defect calibration there will be four (4) circumferential cuts .005" wide x .250" long approximately 40% depth spaced 90° apart. These cuts will be on the outside diameter and inside diameter of the tube.

2.6.1.2 For calibration verification there will be five (5) circumferential cuts .015" wide 360° around the tube with the following approximate depths; 100%, 80%, 60%, 40% and 20% through wall from the outside diameter of the tube.

ISSUED
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EDDY CURRENT PROCEDURE
SPECIAL 3 SINGLE COIL ABSOLUTE (8x)
PROBE & MODIFIED MLZ 12
EDDY CURRENT INSTRUMENT

PROC. NO. 42-EC-057
REV. NO.

3.0 PERSONNEL

3.1 Personnel performing the examination and analyzing data shall be qualified to Conam Procedure 99-CNTP-001. This procedure conforms to ASNT-TC-1A.

4.0 SURFACE PREPARATION

4.1 Inside diameter of tubes must be clean with no obstructions.

5.0 EQUIPMENT PREPARATION

5.1 All probes and other equipment shall be cleaned with approved cleaner free of halogens, etc.

6.0 EQUIPMENT SET-UP AND CALIBRATION

6.1 Set-Up

- 6.1.1 Using multi-pin connector interconnect Unit #1 MLZ 12 tape recorder output (back of MLZ 12) to the input of the number 1 tape recorder.
- 6.1.2 Using multi-pin connector interconnect Unit #2 MLZ 12 tape recorder output (back of MLZ 12) to the input of the number 2 tape recorder.
- 6.1.3 Using multi-pin connector interconnect tape recorder output from number 1 tape recorder to display input of MLZ 12 display number 1.
- 6.1.4 Using multi-pin connector interconnect tape recorder output from number 2 tape recorder to display input of MLZ 12 display number 2.
- 6.1.5 Using BNC coax cables interconnect the following:
 - 6.1.5.1 #1 Tape Recorder channel 1 vertical input to number 1 channel of strip chart recorder.
 - 6.1.5.2 #1 Tape Recorder channel 2 vertical input to number 2 channel of strip chart recorder.

ISSUED

REVISED

EDDY CURRENT PROCEDURE
SPIRAL 8 SINGLE COIL ABSOLUTE (8)
PROBE & MODIFIED MLZ 12
EDDY CURRENT INSTRUMENT

PROC. NO. 42-EC-057

REV. NO.

- 6.1.5.3 #1 Tape Recorder channel 3 vertical input to number 3 channel of strip chart recorder.
- 6.1.5.4 #1 Tape Recorder channel 4 vertical input to number 4 channel of strip chart recorder.
- 6.1.5.5 #2 Tape Recorder channel 1 vertical input to number 5 channel of strip chart recorder.
- 6.1.5.6 #2 Tape Recorder channel 2 vertical input to number 6 channel of strip chart recorder.
- 6.1.5.7 #2 Tape Recorder channel 3 vertical input to number 7 channel of strip chart recorder.
- 6.1.5.8 #2 Tape Recorder channel 4 vertical input to number 8 channel of strip chart recorder.
- 6.1.6 Connect multi-pin connectors and phone connectors from start box to the 2 tape recorders.
- 6.1.7 Connect 4 to 2 cable to Unit #1 and Unit #2 MLZ 12's.
- 6.1.8 Connect sync. cord between Unit #1 and Unit #2 MLZ 12's remote connections.
- 6.1.9 Place switch on back of MLZ 12's to local position.
- 6.1.10 Connect one end of 4 to 2 cable labeled reference probe to reference probe with 110' of extension cables.
- 6.1.11 Connect end of 4 to 2 cable labeled probe to examination probe with 110' of extension cables.
- 6.1.12 Place reference probe into reference material standard.
- 6.1.13 Connect a BNC coax between the remote balance connection on back of both MLZ 12 Units.

REVISION
REVISED

EDDY CURRENT PROCEDURE
SPEC L 8 SINGLE COIL ABSOLUTE (8x)
PROBE & MODIFIED MLZ 12
EDDY CURRENT INSTRUMENT

PROC. NO. 42-EC-057
REV. NO.

6.2 Channel Calibrations

- 6.2.1 Turn on all instruments and allow 15 minute warm-up.
- 6.2.2 Check horizontal trace alignment on both MLZ 12 displays. If necessary, adjust the horizontal trace with the adjustment on the back of the MLZ 12 displays.
- 6.2.3 Set the mode switches on all frequency modules to differential.
- 6.2.4 Set the frequencies of the eight frequency modules to an initial 400 KHZ and the gain to 40.
- 6.2.5 Adjust frequency and gain of each frequency module between 390 KHZ to 450 KHZ to reduce noise to a minimum.
- 6.2.6 After frequencies are set adjust the gains of each module to numerically coincide with the frequency setting.
Example: Frequency set at 410 KHZ adjust gain to 41.
- 6.2.7 Set all channels of strip chart recorder to 5 volts full scale.
- 6.2.8 Check that all variable sensitivity controls are set fully clockwise.
- 6.2.9 Channel 1 Calibration Procedure Unit #1.
- 6.2.9.1 Insert probe in defect free area of standard and press auto balance.
- 6.2.9.2 Press in channel 1 button, turn up intensity, press in store buttons on #1 MLZ 12 display and set $\sqrt{V_{SW}}$ on 1. *DIV 9/15 3/5/3*
All other buttons must be out.
- 6.2.9.3 Check phase of 100% thru wall signal on MLZ 12 display. 100% thru wall signal must go down and to the right. Rotate phase controls until probe motion is horizontal and 100% thru wall signal goes down and to the right.

EDDY CURRENT PROCEDURE
SPECIAL 8 SINGLE COIL ABSOLUTE (8x1)
PROBE & MODIFIED MLZ 12
EDDY CURRENT INSTRUMENT

PROC. NO. 42-EC-057

REV. NO.

6.2.10 Channel 2 Calibration Procedure Unit #1

6.2.10.1 Insert probe in defect free area of standard and press auto balance.

6.2.10.2 Re-press channel 1 button so it is out and press in channel 2 button on #1 MLZ 12 display.

6.2.10.3 Follow same procedure used in paragraph 6.2.7.3. ⁹ JB 8/31/82

6.2.11 Channel 3 Calibration Procedure Unit #1

6.2.11.1 Insert probe in defect free area of standard and press auto balance.

6.2.11.2 Re-press channel 2 button so it is out and press in channel 3 button on #1 MLZ 12 display.

6.2.11.3 Follow same procedure used in paragraph 6.2.7.3. ⁹ JB 8/31/82

6.2.12 Channel 4 Calibration Procedure Unit #1

6.2.12.1 Insert probe in defect free area of standard and press auto balance.

6.2.12.2 Re-press channel 3 button so it is out and press in channel 4 button on #1 MLZ 12 display.

6.2.12.3 Follow same procedure used in paragraph 6.2.7.3. ⁹ JB 8/31/82

6.2.13 For channel 1 through 4 calibration on Unit #2 MLZ 12 follow same procedure used in 6.2.7 through 6.2.8.

6.2.14 Re-Check Calibration ⁹ JB 8/31/82

6.2.14.1 Press in all 4 channel buttons on #1 and #2 MLZ 12 displays. Set displays on LV/DW and with probe in defect area of standard press auto balance. Position all four channel signals on each screen of both MLZ 12 ^{DV} JB 8/31/82

displays. As the probe is pulled through the standard check for proper display on each channel as described in the calibration procedures. Each channel signal should be the same as all other channel signals.

6.3 Upper and Lower MIX Calibration

6.3.1 No MIX calibration is used for this examination.

6.4 Recording of Calibration

6.4.1 The following information will be recorded on the magnetic tape and strip chart at each initial probe calibration.

6.4.1.1 Eddy current instrument models, serial number of each frequency module, ^{frequency, JLB 8/3/82} phase of all frequencies, and gain of each frequency module.

6.4.1.2 Tape recorder model and serial numbers.

6.4.1.3 Display model and serial numbers.

6.4.1.4 Strip chart recorders model numbers, serial numbers, and channel 1 through 8 sensitivities.

6.4.1.5 Operators name and certification level.

6.4.1.6 Date of examination.

6.4.1.7 Calibration standard identification.

6.4.2 Operation of tape recorders are controlled by start box.

6.4.2.1 Pressing mike button down sets tape recorders on proper speed (3-3/4" second), sets record and turns on recorders. Hold mike button down to record voice.

6.5 Frequency of Calibration Checks and Re-Calibrations

6.5.1 Initial calibration will be made on each probe prior to use at the operating station. Standard ET-101 will be run prior to

EDDY CURRENT PROCEDURE
SPECIAL 8 SINGLE COIL ABSOLUTE (8xl)
PROBE & MODIFIED MLZ 12
EDDY CURRENT INSTRUMENT

PROC. NO. 42-EC-057

REV. NO.

attaching probe to probe pusher. Standard Z 1098 will also be run prior to probe attachment.

6.5.2 Additional calibration checks will be made at the beginning and end of each magnetic tape or every 4 hours, whichever comes first. This will be accomplished with the in line 4xl standard.

6.5.3 If undesirable variations are noted during the calibration check the probe will be re-calibrated and all tubes examined since the last calibration will be re-examined.

7.0 EXAMINATION PROCEDURE

7.1 After probe is calibrated it will be attached to probe pusher and inserted into tube to be tested.

7.2 At the beginning of each magnetic tape and strip chart, the following information will be recorded:

7.2.1 Name of owner.

7.2.2 Plant site.

7.2.3 Heat exchanger identification.

7.2.4 Date of examination.

7.2.5 Test frequencies (Hz).

7.2.6 Reel number.

7.2.7 Calibration standard identification.

7.2.8 Operator's name, certification level and company affiliation.

7.3 Before the scan is made on each tube, the tube number will be recorded on the magnetic tape and strip chart.

- 7.4 During the scan of each tube operator with monitor channel 1, 2, 3 and 4 on both MLZ 12 displays and the strip charts to determine the equipment is operating properly and the calibration has not changed.
- This examination is the same as operating 8 separate Eddy Current Instruments and 8 separate Eddy Current coils at the same time. Therefore, a failure of one of the 8 systems is a complete failure and it has to be corrected before exam can continue.
- 7.5 The operator will initial each tube examined on the data sheet after the tube is scanned.
- 7.6 The probe speed during the scan will not exceed 70 feet per minute. Scan speed in the area of interest shall be approximately 5 inches per second or slower.
- 7.7 The number of tubes inspected, the length inspected and the frequency of inspection will be determined by specific customer requirements.
- 7.8 Examination of tubes at additional frequencies may be performed to evaluate possible discontinuity indications.

8.0 DATA INTERPRETATION

- 8.1 Data interpretation will be made using information from the initial calibration.
- 8.2 All tubes with defect signals which indicate defects 40% thru wall or greater shall be reported on the data sheets. Tubes with signals which indicate defects which are considered unacceptable will be listed as unacceptable on the data sheets.

GENERAL PUBLIC UTILITIES
OTSG REPAIRS

DATE 3/8/83

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>	<u>DATE REQUIRED</u>
1.	Cut and Cap Thio Line . Revised Installation Spec - Elec		TBD
2.	Round Robin Samples-NWT Lab . Spent Fuel . BWST . Decay Heat - Monthly Samples . Ship Next Monthly Samples	J. Colitz	End of Month 3/31
3.	Restoration Secondary Side A. Temp. Chem. System		
4.	Ops OTSG Status . A and B OTSG Full Wet Layup . Receive Backing Plates for "A" Upper Manway		2/7 4/1
5.	Post Expansion . Felt Plug Blowing Device-Store at Reactor Bldg . Final Freepath - Blow Plugs from Top . B&W Proposal		TBD 3/27
6.	Immunol Flush System . Extra - Duplex Strainers and O Rings . Receive Spare Cold Leg Plugs . Receive Vyton Tubing		3/1 3/4
	<i>slow flow flush A 9:30 B 11:00 unless we see changes going to hold with what they got</i>	<i>Immunol</i>	<i>6ppm</i>
7.	Tube Plug Stabilization . Stabilizer Material Deliver-Pcd 69 Remaining Stab. Material . Spec for Plugging Final Rev 8 Issue-For Comment . Procedure Received--for Review Remove Stabilizers and Restabilize Explosive Plug Removal Procedure Tapered Plug Removal W Plug Removal-Needs Reviewed . DRF - Safety Eval. on Stabilization . Installation Procedure-Insertion & Welding . Receive Eddy Current Templates	C. K. Lee	2/25 3/7 TBD TBD TBD TBD TBD 3/7 3/14

For increase the number of stabilizations

-2-
OTSG REPAIRS

DATE 3/8/83
DATE
REQUIRED

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>	<u>DATE REQUIRED</u>
8.	Miscellaneous Items to Resolve . Hydrogen Peroxide Tube Soak		
9.	Waiting Documentation <u>MNCR</u>	<u>Responsibility</u>	
	215-82 Plug Exploded at Wrong Area of Tube	B&W	
	345-82 2 Tubes Plugged Incorrectly		
	354-82 Documentation for Immunol-1st Batch	Eng	
	426-82 Wire Brush B6-1		
	009-83 Immunol at Cold Legs		
	041-83 Tube Ends	Eng.	
10.	Tube Endmilling		
11.	Rad Con Exposure Data (Based on SRDs) . Immunol Flush Exposure as of 3/7 - 10.7 Man Rem . Immunol Flush Estimate - 30 Man Rem . Total OTSG Exposure since 1st Blast - 671 Man Rem . Total OTSG Exposure since Nov 1981 - 848 Man Rem		
12.	Freepath Work		
15.	<i>cleaning the cold legs</i>		
13.	Bubble and Drip Test Draft Detailed Spec Final	T. Reichter	3/18 3/25
14.	Anticipated Jumps	<u>Responsibility</u>	
	<u>Date</u> <u>Description</u>		
	3/8 A - Upper - A - Lower -	Levin/Catalytic	
	3/8 B - Upper - B - Lower -		

GENERAL PUBLIC UTILITIES

OTSG REPAIRS

DATE 3/9/83

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>	<u>DATE REQUIRED</u>
1.	Cut and Cap Thio Line <ul style="list-style-type: none"> . Revised Installation Spec - Elec 		TBD
2.	Round Robin Samples-NWT Lab <ul style="list-style-type: none"> . Spent Fuel . BWST . Decay Heat - Monthly Samples . Ship Next Monthly Samples 	J. Colitz L.L./SE	End of Month 3/31
3.	Restoration Secondary Side <ul style="list-style-type: none"> A. Temp. Chem. System 		
4.	Ops OTSG Status <ul style="list-style-type: none"> . A and B OTSG Full Wet Layup . Receive Backing Plates for "A" Upper Manway 		2/7 4/1
5.	Post Expansion <ul style="list-style-type: none"> . Felt Plug Blowing Device-Store at Reactor Bldg . Final Freepath - Blow Plugs from Top . B&W Equipment 		TBD 3/27
6.	Immunol Flush System <ul style="list-style-type: none"> . Extra - Duplex Strainers and O Rings . Receive Spare Cold Leg Plugs . Receive Vyton Tubing 		3/1 3/4
7.	Tube Plug Stabilization <ul style="list-style-type: none"> . Stabilizer Material Deliver-Rcd 69 Remaining Stab. Material . Spec for Plugging Final Rev 8 Issue-For Comment . Resolve Pulling Plug Process . Procedure Received--for Review Remove Stabilizers and Restabilize Explosive Plug Removal Procedure Tapered Plug Removal W Plug Removal-Needs Reviewed . DRF - Safety Eval. on Stabilization . Installation Procedure-Insertion & Welding . Receive Eddy Current Templates 	C. K. Lee	2/25 3/7 TBD TBD TBD TBD TBD 3/7 3/14

-2-
OTSG REPAIRS

DATE 3/9/83

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>	<u>DATE REQUIRED</u>
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8. Miscellaneous Items to Resolve
 . Hydrogen Peroxide Tube Soak

9. Waiting Documentation
MNCR

Responsibility

215-82	Plug Exploded at Wrong Area of Tube	B&W
345-82	2 Tubes Plugged Incorrectly	
354-82	Documentation for Immunol-1st Batch	Eng
426-82	Wire Brush B6-1	
009-83	Immunol at Cold Legs	
041-83	Tube Ends	Eng.

10. Tube Endmilling

11. Rad Con Exposure Data (Based on SRDs) as of 3/7

- . Immunol Flush Exposure - 10.7 Man Rem
- . Immunol Flush Estimate - 30 Man Rem
- . Total OTSG Exposure since 1st Blast - 671 Man Rem
- . Total OTSG Exposure since Nov 1981 - 848 Man Rem

12. Freepath Work

13. Bubble and Drip Test		
Draft Detailed Spec	T. Reichter	3/18
Final		3/25
Cleaning of the Cold Legs		

14. Anticipated Jumps

<u>Date</u>	<u>Description</u>	<u>Responsibility</u>
3/9	A - Upper - A - Lower -	Levin/Catalytic
3/9	B - Upper - B - Lower -	

k SRI Phone Call

The SRI at Hope Creek has been subpoenaed to appear on behalf of the U.S. Government in the case against former Con-Chem employee(s) regarding falsified certification of paint testing results. He will testify in San Francisco during the week of March 20th regarding the use of such Con-Chem paint on concrete at Hope Creek and its subsequent removal.

e Island Fax from SRI 2/8

TMT-1

Once Through Steam Generator (OTSG) Tube Degradation Update. The licensee is completing the immuno flush of both OTSGs and is expected to be completed by March 10, 1983. Preparations are being made to perform a free path check on all tubes that are scheduled to be plugged or stabilized. Free pathing is being conducted to ensure all debris has been removed from these tubes prior to being removed from service. The tubes being removed from service are those tubes that cannot be repaired using the kinetic expansion process. Free pathing and tube plugging/stabilization is scheduled to take two to three weeks. The licensee is currently on schedule in support of both OTSGs being operable for Hot Functional Testing in the middle of May 1983.

MORNING REPORT-REGION I

3/10/83

-2-

Facility Notification/Subject

Description of Items or Events

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diffs
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8
RRI Phone 3/9

Prompt Report. The licensee determined on 3/9 that the post reactor trip setpoint for the Main Feedwater Bypass valves for both units was set too high, causing more feedwater addition to the steam generators than assumed in the main steam line break safety analysis (FSAR). The FSAR assumed 5% flow through the bypass valves. The incorrect setpoint would have resulted in approximately 11.9% flow. The valve setpoints have been readjusted to provide (calculated) 5% feedwater flow.

na Per SRI Telecon

The licensee plans to perform a Main Steam Isolation Valve (MSIV) closure test from approximately 100% of rated thermal power on 3/10/83 at 11:15 P. This is the last major start-up test prior to the Warranty run which is currently scheduled to be performed the week of 3/14/83.

101
Y

GENERAL PUBLIC UTILITIES
OTSG REPAIRS

DATE 3/11/83
DATE
REQUIRED

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>	<u>DATE REQUIRED</u>
1.	Round Robin Samples-NWT Lab <ul style="list-style-type: none"> . Spent Fuel . BWST . Decay Heat - Monthly Samples . Ship Next Monthly Samples 	J. Colitz	End of Month 3/31
2.	Restoration Secondary Side A. Temp. Chem. System		
3.	Ops OTSG Status <ul style="list-style-type: none"> . A and B OTSG Full Wet Layup . Receive Backing Plates for "A" Upper Manway 		2/7 4/1
4.	Post Expansion <ul style="list-style-type: none"> . Felt Plug Blowing Device-Store at Reactor Bldg . Final Freepath - Blow Plugs from Top . B&W Equipment 		TBD 3/27
5.	Immunol Flush System <ul style="list-style-type: none"> . Receive Vyton Tubing . Received Spec for Flushing Revised 	T. Functions	TBD
6.	Tube Plug Stabilization <ul style="list-style-type: none"> . Spec for Plugging Final Rev 8 Issue-For Comment . Resolve Pulling Plug Process (Westinghouse) . Procedure Received--for Review Remove Stabilizers and Restabilize Explosive Plug Removal Procedure Tapered Plug Removal W Plug Removal-Needs Reviewed . DRF - Safety Eval. on Stabilization . Installation Procedure-Insertion & Welding . Receive Eddy Current Templates 	C. K. Lee Westinghouse	2/25 TBD TBD TBD TBD TBD 3/7 3/14

Stabilization procedures

*Safety File 3424
3122
330 floor?*

A OTSG list almost complete

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>	<u>DATE REQUIRED</u>
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7. Miscellaneous Items to Resolve
 . Hydrogen Peroxide Tube Soak

8. Waiting Documentation
MNCR

Responsibility

215-82	Plug Exploded at Wrong Area of Tube	B&W	
345-82	2 Tubes Plugged Incorrectly		
354-82	Documentation for Immunol-1st Batch	Eng	
426-82	Wire Brush B6-1		
009-83	Immunol at Cold Legs		
041-83	Tube Ends	Eng.	

9. Tube Endmilling
 photographs

10. Rad Con Exposure Data (Based on SRDs) as of 3/8
 . Immunol Flush Exposure - 11 Man Rem *11.4*
 . Immunol Flush Estimate - 30 Man Rem
 . Total OTSG Exposure since 1st Blast - 674.5 Man Rem
 . Total OTSG Exposure since Nov 1981 - 849.7 Man Rem

11. Freepath Work
 A complete
 B

12.	Bubble and Drip Test		
	Draft Detailed Spec	T. Reichter	3/18
	Final		3/25
	Cleaning of the Cold Legs		

13. Anticipated Jumps
Date Description

Responsibility

3/11	A - Upper - A - Lower -	Levin/Catalytic	
3/11	B - Upper - B - Lower -		

*what is the plan to ensure all tubes are clear
 what is the status of AP 1043
 pushing - have per marker down*